

JOURNAL OF INTERDISCIPLINARY PERSPECTIVES



Volume 2, Issue 11, No. 1
November 2024

Published monthly by:
The Wise Researcher
www.jippublication.com

JOURNAL OF **INTERDISCIPLINARY** PERSPECTIVES

Indexed in:



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Fisherfolk at the Crossroads: A Socio-Economic Analysis of Small-Scale Coastal Communities

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Date received: August 10, 2024
Date revised: September 14, 2024
Date accepted: September 23, 2024

Originality: 94%
Grammarly Score: 99%
Similarity: 6%

Recommended citation:

Enema, M.F, & Quezon, M. (2024). Fisherfolk at the crossroads: A socio-economic analysis of small-scale coastal communities. *Journal of Interdisciplinary Perspectives*, 2(11), 6-15. <https://doi.org/10.69569/jip.2024.0403>

Abstract. . Much of the southern part of Negros is still uninhabited. However, it is an abundant location for fish production, which is the principal source of income among many fishermen in the Municipality of Binalbagan. Hence, this study was conducted to determine the socio-economic traits and challenges of 87 small-scale fishermen in Barangay Enclaro and Barangay Canmoros with a minimum of two years of fishing experience and at least one fishing boat. Using total enumeration, the study's results indicated that the number of fishing boats, type of gear utilized, and type of fish gathered all impacted the amount of money fishermen would earn. Fishing is the predominant income source for the people of Binalbagan but is highly vulnerable to weather fluctuations. Furthermore, most fishermen lived below the poverty line because their daily income did not cover all their expenses. A lack of extra money prevented many fishermen from putting their health first. On the other hand, only a small percentage of fishermen had access to hygienic living spaces, a steady water supply, and decent housing. Most of the fishermen and their children had only acquired a basic education. These vulnerabilities directly contradict the Global Sustainable Development Goals regarding poverty alleviation and economic growth. The study emphasizes the urgent need for comprehensive and sustainable development strategies that support economic resilience, environmental conservation, and social inclusivity to help these communities break free from poverty and achieve lasting stability.

Keywords: Small-scale fishermen; Fishing boat; Socio-economic trait and challenges; Living condition and sanitation; Weather condition.

1.0 Introduction

The fishing industry is a crucial source of food and income in Asian countries. Numerous Asian and Pacific communities heavily rely on fish and seafood as staples in their traditional diets. Throughout history, most fish and seafood have been sourced from the ocean or freshwater rivers, with some fish farming taking place in ponds. Fishing and fish farming provide sustenance and nourishment and offer employment opportunities for many individuals. For countless decades, fishing has played an essential role in the daily lives of many Asians, serving as a significant source of income. As a result, Asia has become the world's leading producer of fish and seafood, with aquaculture experiencing remarkable growth (Suzuki, 2018).

The Philippines is a significant fish producer, ranking eighth globally with a 2018 production of 4.35 million metric tons. The fishing sector contributes 1.52% to the nation's GDP (BFAR, 2020), translating to PhP 273.41 billion at current prices. Additionally, the industry contributes 12.27% to the Gross Value Added (GVA), emphasizing its importance in meeting the country's needs. According to the Philippine Statistics Authority figures, Western Visayas' fishing production was 381,446 metric tons in 2019, up 0.52% from 2018. The increase was attributed to

gains in the municipal, inland, commercial, and aquaculture sectors. However, in the first quarter of 2020, the region's fisheries production decreased by 0.64% compared to the previous year. This decline was mainly due to reduced output in the inland and maritime municipal sectors. Despite this, Western Visayas' fishing industry is still thriving.

Southern Negros rely on fishing as a major source of income, especially for towns along the shore. This industry is crucial for the economy of the southern region of Negros Occidental, and it is the primary source of revenue for many fishermen in Binalbagan. Fishing, the predominant income source for the people of Binalbagan, is highly susceptible to weather conditions, which poses significant financial challenges for many small-scale fishermen. These financial difficulties hamper their ability to meet basic family needs, illustrating the unpredictable nature of income from fishing. In addition to failing to alleviate hunger and poverty, this unpredictability forces many people into an unending cycle of poverty, which contradicts the Sustainable Development Goals (SDGs) of reducing poverty and promoting sustainable economic growth. The inability to save money or invest in healthcare due to the current economic uncertainty shows a gap in achieving SDGs 1 and 8 (No Poverty and Decent Work and Economic Growth). The fluctuating incomes and lack of support systems mean that these fishermen and their families are often unable to escape the poverty trap, further emphasizing the need for integrated and sustainable development strategies that boost economic growth while ensuring environmental conservation and social inclusivity.

2.0 Methodology

2.1 Research Design

The study employed a descriptive design with the main objective of defining cause-and-effect links rather than establishing them. It characterized the social and economic benefits fishermen receive from their work using a survey to gather accurate participant information. Descriptive research provides a methodical and precise depiction of population characteristics and is essential for making logical findings and suggestions.

2.2 Research Locale

The study investigated individuals in Brgy. Enclaro and Brgy. Canmoros in the Municipality of Binalbagan possess at least one fishing boat, have been engaged in fishing for a livelihood for a minimum of two years, and are affiliated with fishing associations in their locality. The research also aimed to understand the challenges fishermen face in catching fish, the condition of the market, and their ability to meet their basic needs.

2.3 Research Participants

The study focused on fishermen from Brgy. Enclaro and Brgy. Canmoros in the Municipality of Binalbagan. It involved fishermen who owned at least one fishing boat, had been fishing for a living for at least two years, were above 18 years old, and were either members or non-members of a fishing association in the area. There were six different fishing organizations in Brgy. Enclaro and Brgy. Canmoros had 221 members, but only 87 members met the set criteria for the study. The chairmen of the respective associations identified these 87 members.

2.4 Research Instrument

The instrument, validated by four research and fisheries experts, achieved a 4.475 average score. It underwent reliability testing after incorporating recommendations to improve its structure and content. Tested among 30 fishermen outside Brgy. Enclaro and Brgy. Canmoros achieved a 0.81 Cronbach's alpha coefficient, affirming its reliability.

2.5 Data Gathering Procedure

The study began with an ethics review and approval from the Ethics Committee, followed by validity and reliability tests on the survey questionnaire. Thirty fishing boat owners from Brgy. San Juan and Brgy. Nabuswang in Binalbagan Municipality were selected to ensure the survey's reliability and validity; however, they were not participants in the study. An informed consent form was obtained from each participant to ensure voluntary participation, facilitated by a referral from the local government unit (LGU) responsible for the fishermen's association in Binalbagan. The consent process involved presenting the survey participants with an informed consent form, explaining it, and securing their voluntary agreement. Participants were allowed to skip any questions they preferred not to answer, ensuring data confidentiality throughout the study.

2.6 Ethical Considerations

The study adhered to strict ethical standards, ensuring participant involvement was voluntary, with an option to withdraw at any time. Confidentiality of participant information was a top priority, with all collected data treated with the highest level of secrecy. After the study's publication, all related documents will be securely destroyed to maintain privacy.

3.0 Results and Discussion

3.1 Profile of the Respondents

Table 1. Descriptive statistics of the profile of the participants

Variables	Frequency	Percentage
Age		
47 years and below	43	49.4
48 years and above	44	50.6
Sex		
Male	87	100.0
Civil Status		
Single	15	17.2
Married	69	79.0
Widow	1	1.1
Other	2	2.3
Household size		
1-5 members	55	63.2
6-10 members	32	36.8
Educational Attainment		
No Schooling	1	1.1
Elementary Level	12	13.8
Elementary graduate	10	11.5
High School level	24	27.0
High School graduate	13	14.9
Vocational course	7	8.0
College level	20	23.0
Fisherfolks children's educational attainment		
No Schooling	8	9.2
Elementary	33	37.9
High School	37	42.5
Senior High	15	17.2
Vocational	1	1.0
College Level	20	23.0
College Graduate	11	12.6
Number of years in fishing		
Below 30 years	43	49.4
30 years and above	44	50.6
Gross monthly income		
Php 5,000 - 6,000	60	69.0
7,000 - 8,000	6	6.9
8,000 - 9,000	5	5.7
9,000 - 10,000	16	18.4

As shown in Table 1, the fishing industry predominantly employs men who also own boats, with over 95% of those working in fisheries being men and women, as highlighted by Ratner and Allison (2012) and the FAO in 2016. About half of the 87 surveyed fishermen are 47 years old or younger, indicating that many enter the profession early. The other half are older than 48, showing that fishing is a primary income source well into older age. It is a common and valid belief that boys will never be able to engage in marine fishing if they do not have the necessary skills early in life. As a result, many boys begin supporting their parents at a young age (Santhakumar, 2019). Most (79%) of fishermen are married, with an average age of 45, suggesting that this group typically has large families. Studies by Degorio et al. (2023) and Tan (2020) support this, stating that 55% of the participants are married, 15% are single, only 1% are widowed, and 2% others. The result indicates that the majority of the fishermen are married. Regarding the number of households, the study showed that 63.2% of household members are one to five members living in the same house, and a significant portion of fishermen's households comprises six to ten individuals, which is 36.8%, indicating a prevalence of extended family living

arrangements. Research also shows a correlation between large households and poverty, with fishermen in the Philippines experiencing the second-highest poverty rate (26.2%) after farmers, according to the PSA (2020). This data suggests that fishermen's incomes fall below the official poverty line, with poverty levels and the proportion of total poverty increasing alongside household size.

Throughout history, fishing settlements have been cut off from both mainstream society and the advantages of education. Children from these neighborhoods have had difficulty attending school because of poverty and other vulnerabilities. Fishing villages have found it challenging to take advantage of educational possibilities, even when efforts have been made to educate all community sectors. Santhakumar's (2019) study found that educational attainment levels among fishermen varied widely. Only 1% of fishermen could not attend school, 11.5% completed elementary school, and 27% reached high school. However, only 14.9% were able to graduate high school due to the responsibilities they took on. Some fishermen prioritize fishing over education, as they are unsure if they will be able to continue their studies in college. Nevertheless, some fishermen have managed to complete high school. Santhakumar (2019) noted that boys who start helping their families at a young age often miss out on school. Essential abilities needed for small-scale fishing, like handling tiny engines, lifting sails, casting nets, and navigating turbulent waters, are best acquired by "learning by doing" under the supervision of seasoned fishermen.

There used to be only a small number of public schools in Binalbagan and the surrounding cities, especially those near the sea. As a result, some fishermen could complete their elementary and secondary education. However, many faced difficulties due to the long distance between their homes and schools, the lack of transportation in the area at that time, and the high cost of daily school expenses. According to a study by Belardo and Candelaria (2023), the fishing communities in the three gulfs have conveyed their apprehensions over the obstacles they encounter when attempting to avail themselves of the government's educational program. Their disadvantage stems from their coastal location and frequent isolation from higher education establishments. The findings of this study align with the Food and Agriculture Organization's (FAO, 2015) finding that small-scale fishermen, in particular, frequently reside in isolated regions. According to recent research, impoverished families and communities living outside of cities have trouble getting access to transportation and education, which has an impact on students' enrollment in classes and attendance at events (Jochim et al., 2014; Logan & Burdick-Will, 2016; Starkey & Hine, 2014; Wilson et al., 2010). In some areas, fewer than 8% of high school graduates could enroll in vocational programs because there were none available nearby, and 23% of the fishermen have reached college but cannot have a degree.

The results indicate that relatively few fishermen still have young children at 9.2%. It further indicates that many fishermen can send their kids to school. Most children from fishermen's families enroll in elementary (37.9%) and high schools (42.5%), indicating that fishermen can still afford to send their children to these levels of education. Another contributing aspect is the abundance of public schools in the Binalbagan area. There are not many fishermen with children in senior high school (17.2%) because some of their kids decide not to continue in senior high school and instead want to take a break to let their older siblings finish before continuing their education. Some kids also need to find work because after graduating from high school, they can find jobs for the girls, and the boys can help their father on the shore. This study conforms with Santhakumar's (2019) in that 1% of children of fishermen can attend vocational school because there is not one in the closest location. The government's "Education for All" program allows some children of fishermen to enroll in college with the help of free tuition at certain institutions. However, despite this, many obstacles remain, including poor road conditions, transportation problems, and the distance between fishing communities and educational institutions. Some children of fishermen would rather work after senior high school or college. In contrast, others would rather quit due to the expensive cost of attending a private university than risk failing at a public institution with free tuition. Poverty is one of the numerous reasons why some of their children did not continue in their studies. Getting a job to support their family would be more important to them than completing their education.

Many fishermen are too poor to get their college degrees at 12.6% out of 23% college level because fishing is their parents' main source of income. They were forced to drop out of school to assist their father in fishing to supplement the family's income when their parents could not meet their educational needs. Given their circumstances, small-scale fishermen were classified as in or below the poverty line (Jani, 2014). When a

household's income is insufficient to cover food and non-food necessities (clothing, personal hygiene, fuel, light and water, housing, communication and transportation, health, and education) simultaneously, it is deemed impoverished. Recent data indicates that many individuals who have been working as fishermen for over 30 years or less than 30 years have earned a living in the same way, with a slight difference in percentage between the two groups. Most fishermen earn between Php5,000 and Php6,000 monthly, which falls significantly short of the minimum required for a family of five to cover essential monthly living expenses, pegged at Php13,797 for the first semester of 2023. Additionally, 8.7% of Filipinos, roughly 9.79 million people, live below the food poverty line, unable to afford basic food needs. According to the Philippine Statistics Authority, the average monthly cost to feed a family of five is Php9,550 (PSA, 2023). A small percentage have an income of Php7,000-8,000 and Php8,000-9,000, which is 6.9% and 5.7%, and a few percentages of the fishermen have an income of Php9,000-10,000 at 10.4%

3.2 Health Status of the Fisherfolks

Table 2. Descriptive statistics of the health status of the fisherfolks

Indicators	Mean	Interpretation	SD
Able to get medical check-up	1.80	Low extent	0.626
Able to buy medicine	2.17	Low extent	0.892
I get sick	1.72	Low extent	0.710
I was admitted to the hospital	1.48	Very low extent	0.662

Based on the health status results, most fishermen do not prioritize their health and overlook it (see Table 2). The mean score for those who could have medical check-ups is 1.80, indicating a low extent of verbal interpretation. This shows that most fishermen prefer alternative medications rather than undergoing the costly and additional expense of a check-up. During the survey, most participants reported using herbal remedies that are still available in their area, which they claim are more cost-effective and efficient than prescription medications. Similarly, the mean score for those who can purchase medications is 2.17, which is also low, indicating that fishermen would much rather use herbal remedies than purchase expensive medications from pharmacies. They do not even consume vitamins for their health. The mean score for "I get sick" is 1.72, indicating that people try not to take medicines and, if they feel under the weather, try to ignore it. If not, they turn to herbal remedies or alternative treatments to feel better. Finally, the mean score for "when I was admitted to the hospital" was 1.48, which is very low. This indicates that many fishermen choose to stay home when they become ill rather than be admitted to the hospital because hospital bills can be expensive. The fishermen's definition of illness is that they may even stand and attend to duty; in their minds, feeling under conditions does not equate to illness. The findings suggest that most fishermen do not save money for their future health. According to Jani (2014), small-scale fishers were classified as underprivileged if their take-home pay was less than what was required to pay for basic food and non-food bills in their household.

3.3 Sanitation Status of the Fisherfolks

Many people get most of their drinking water from mineral sources because of pollution and overcrowding (see Table 3). Even though the water district is deemed unsafe for drinking, some underprivileged fishermen continue using it. Those who cannot afford to buy mineral water often boil their water from NAWASA or the water district before drinking it. On the other hand, some families obtain their drinking water from a water pump since they are not a part of the water district. Before drinking the water, they additionally boil it. Since deep wells are less expensive, those not affiliated with the water department frequently use public or private deep wells. Most people in this area use water district connections for personal and household water requirements. Moreover, this fishing community has a separate electric pump for their water supply. The research shows that the fishermen's primary sources of water access are the deep well and the district water connection, depending on where they reside. If there is a water district connection in their neighborhood, they take advantage of it, and if not, they prefer to use alternative sources.

Table 3. Descriptive statistics of the sanitation status of the fisherfolks

Indicators	Frequency	Percentage
A. Source of Drinking water		
Bottled water/Mineral	84	96.6
Faucet or from the water district	2	2.3
others	1	1.1
B. Water Connection		
Water District	42	48.3
Deep well	38	43.7
Water Pump	6	6.9
Others	1	1.1
C. Toilet Facilities		
Flush	14	16.1
Open pit (hole in the ground)	2	2.3
Closed pit (hole in the ground but covered)	3	3.4
Pail system (buhos)	68	78.2

According to the findings, purchasing piped domestic water connections on the highest rung of the drinking water ladder is a wise investment by the World Health Organization (WHO) and can improve the water sources in this area. Most people who use pail systems or buhos, use these facilities because they are practical and use less water than other options. Some fishermen have secure homes and can afford decent plumbing and sanitary facilities. Very few use closed pits because of the congested environment, making this practice obsolete. According to Tan's study (2020), nearly all (95%) of the Sampiruhan household respondents have a septic tank and a simple, low-cost water-sealed toilet. Many of these toilets, especially the ones without piped water connections, are thought to be flushless. Notably, 82% of Sampad houses own toilets, but since the barangay does not yet have piped water, none likely have flush toilets. Nearly every home with a toilet says it has a septic tank.

3.4 Dwelling Conditions of the Fisherfolks

Table 4. Descriptive statistics of the dwelling conditions of the fisherfolks

Indicators	Frequency	Percentage
A. Dwelling Status		
Concrete and galvanized iron	19	21.8
Semi-concrete, wood, galvanized iron	59	67.8
Wood, nipa, cogon	9	10.3
B. House Ownership		
Own	61	70.1
Rent	1	1.1
Squat	24	27.6

Some of the fishermen's homes in Binalbagan are stable, but a greater proportion of the homes are built of semi-concrete, wood, and galvanized iron (see Table 4). This suggests that some fishermen prioritize the stability of their homes because they are naturally vulnerable to changing weather conditions. However, there are still a small number of fishermen whose homes are made entirely of wood, nipa, and cogon, indicating that there are still fishermen who are not financially stable enough to consider securing their homes. Inadequate housing is a significant public health concern (Krieger & Higgins, 2002). According to the Joseph Rowntree Foundation (2015), unfavorable housing conditions impact public spending, jobs, incomes, and health over the long run. The research also mentions how poor housing conditions make the poor more vulnerable to harsh weather and climate change (Tran et al., 2012). Most fishermen own the property on which their homes are built because of government programs in their community, allowing them to purchase the land at a lower price. There is a program in Brgy. Canmoros; however, it is in Brgy. Enclaro of the fishermen that are squatting. The government owns this land.

3.5 Economic Benefits of the Participants

As shown in Table 5, according to the survey, most fishermen's daily household expenses are between Php500 and Php1,000, accounting for 79 out of 87 fishermen, or 90.8% of the total. The fishermen's daily net revenue correlated with their expenses, as determined by their daily expenditures. The typical daily expenses are determined by their net daily income.

Table 5. Descriptive statistics of the economic benefits of the participants

Indicators	Frequency	Percentage
A. Daily Household Expense		
Php 500 – 1,000	79	90.8
Php1,000 – 2,000	7	8.0
Php2,000 – 3,000	1	1.1
B. Net Daily Income		
Php 500 – 1,000	66	75.9
Php1,000 – 2,000	16	18.0
Php2,000 – 3,000	3	3.4
Php3,000 – 4,000	2	2.3
C. Saving		
Daily	11	12.6
Weekly	10	11.5
Monthly	14	16.1
Quarterly	3	3.4
Yearly	1	1.1
None	48	55.2
D. Saving amount		
No savings	48	55.2
200-1,000	31	35.6
1,001-6,000	8	9.19
E. Years of saving		
No savings	48	55.2
15 years below	31	35.6
15 years above	8	9.19
F. Investment		
Buy or build more bancas	9	10.3
Buy or make more fish gears	32	36.8
Open a sari-sari store	9	10.3
Buy a residential lot	1	1.1
Others	36	41.4

These figures show that living circumstances in these fishing communities are poorer than those of the average Filipino household, which is 42.6% of total household expenditures in the Philippines (PSA, 2020). When more than half of the spending is allocated to food, there is very little money left over for other necessities, including housing, utilities (such as electricity and water), personal hygiene, health care, and education (Tan, 2020). The Philippine Statistics Authority (PSA) (2023) lists fishermen as one of the groups with the highest incidence of poverty. The study by Giles et al. (2019) supports the comparatively high reported poverty incidence of 30.6% among fishermen in Eastern Visayas. Lower fish catches hurt fishermen's livelihood and income, which worsens the incidence of poverty. This will affect food security, as about 30% of people in the Visayas region are supposedly affected by food poverty. However, the drop in catch (caused by ecological and technological causes) and the rise in the price of other inputs, like gasoline, are to blame for the loss in income per vessel (Santhakumar et al., 2019).

Based on the findings, 75.9%, or 66 of 87 fishermen, earn a daily net income ranging from Php500 to Php1,000 after deducting all fishing-related expenses. The fishing boat owner divides this amount among the four crew members, the maximum number of crew on one fishing boat. This amount is hardly enough to cover their daily living expenses. The primary factors affecting fishermen's income are the number of fishing boats and the quality of fish, conforming with the study of Muallil (2014), with the principal fishing gear, the type of boat that fishermen presently own, the gear that is utilized, and the most common species that fishermen catch were also questioned. Because there is only one fishing boat and the gear used to catch fish is a gillnet meant to catch little fish for dried fish, more fishermen earn this daily. These instruments primarily gather commercially significant fisheries resources and tend to remove larger individuals from fish stock. However, a small percentage of them, 18%, or 16 out of 87 fishermen, have a daily net income of Php1,000–2,000 because they utilize hooks and lines to catch fish, which enables them to catch high-quality fish that can be sold for a premium. Fishing gear is essential for capturing aquatic animals that the local population eats. These devices capture the layout and techniques to explain the species' traits (Balisco et al., 2019). They may have more than one fishing boat, which accounts for the Php2,000–3,000 daily net income at 3.4% or 3 out of 4 and the Php3,000–4,000 daily net income at 2.3% or 3 out of 87 potential causes. They have multiple fishing boats, so there is an opportunity to capture much fish, which could lead to

extra money. Fishing capacity has two dimensions: the overall amount of effort put into the fishery and the fishing vessels' and gears' ability or efficacy in catching fish (Balisco et al., 2019).

The survey of 87 fishermen revealed varied saving habits largely dependent on their income. Only 12.6% saved daily, while roughly 11.5% and 16.1% saved weekly and monthly, respectively. A significant portion, 55.2%, had no savings, primarily due to income barely covering daily family expenses. Small-scale fishermen are often classified as in or below poverty, with studies indicating a poor socioeconomic position among this group. Despite this, a minority still manages to save, with 35.6% saving between Php 200-1,000 and 9.19% saving Php1,001-6,000, highlighting income fluctuation as a major factor influencing saving habits. According to Jani (2014), small-scale fishermen were classified as being in or below poverty at the time of their assessment. Studies by Adeleke (2013) and Oladimeji et al. confirm that most fisherfolks have a poor socioeconomic position. Bluwey (2015) and Arthur (2017) in Ghana, as well as (Olaoye et al., 2012).

Theoretically, under specific economic assumptions, investments rise with savings as income rises (Blanchard, 2003; Dornbusch et al., 2008; Handa, 2004). It is assumed that as the municipality's economy grows, so does the residents' disposable income. A survey of fishermen revealed varied saving habits: 35.6% saved for 15 years or less, 9.19% for over 15 years, and 55.2% had not saved at all. Their saving behavior was income-dependent, with higher income enabling more savings, although these savings are often depleted during financial hardships. According to Arthur (2017), it is important to recognize the state of affairs affecting fishermen and implement policies to solve their problems and improve their quality of life. One of the social groups experiencing financial difficulties is the fishing community (Olaoye et al., 2012). The research showed that the fishing community as a whole was marked by poverty, but some participants engaged in savings and had passive incomes. Regarding their spending and saving habits, these fishermen generally prioritize personal savings, even if they do so in small amounts (Ramaratnam, 2016; Rameshkumar et al., 2011; Swathi, 2011).

Most fishermen do not have investments, while some invest their savings in buying or making new fishing gear or opening sari-sari stores. A small percentage of people invest in residential land or buy or build more bancas to generate another source of income, based on Tadeo's (2018) study, which states that savings are essential to people's well-being. It allows people to increase their purchasing power and infusion of capital. A significant part of human existence worldwide is the fishing industry. In actuality, the global economy depends on the combined output of the fishing industry, which accounts for two-thirds of the total.

3.6 Challenges Encountered by the Fisherfolks

Table 6. Descriptive statistics of the challenges encountered by the fisherfolks

Indicators	Frequency	Percentage
A. Catch Fish		
Weather condition	79	90.8
Coastal and habitat degradation	1	1.1
Declining fish stock	7	8
B. Market condition		
Lack of access to financing	21	24.1
Restricted market access	5	5.7
Quality of fish	36	41.4
Oversupply of fish	1	1.1
Weak government support	8	9.2
Others	16	18.4
C. Securing daily needs		
Not enough income to secure the daily needs of the family	61	70.1
No additional source of income other than fishing.		
Others	24	27.6
	2	2.3

As shown in Table 6, the primary challenge fishermen face is the impact of weather conditions on their income and catch, accounting for 90.8% of their issues, which they cannot control. Their income is impacted by the weather season, which also affects the amount of fish they catch. Another significant problem is overfishing, leading to decreased fish stocks and habitat degradation, even under government supervision. This issue affects offshore catches and coastal environments and has sparked conflicts among Southeast Asian fishers over limited resources,

threatening food, livelihood, and environmental security. Illegal fishing practices, such as bottom trawling and fishing without a permit, contribute to habitat degradation and are banned by local governments. Despite these regulations, Illegal, Unreported, and Unregulated (IUU) fishing remains a prevalent threat to the marine ecosystem, involving both commercial trawlers and small-scale local fishermen. This issue was confirmed by Season's study (2008) and DeRidder and Santing's research (2018).

The study's findings reveal that fishermen are encountering difficulties due to the presence of brokers and intermediaries in the market. This has led to growing resentment and a potential shift back to the local market Austin (2015). Many fishermen struggle to sell their catch directly to consumers, often selling at inflated prices to middlemen. Quality of the catch is a major concern, with government restrictions and scarcity of high-quality fish cited as significant issues. Santhakumar et al. (2019) discussed the issue of overfishing, causing an oversupply of fish in the market, which leads to a decrease in prices and profitability for fisherfolks, particularly affecting small-scale fishing enterprises. Despite their struggles, these smaller ventures persist due to overfishing, which results in an excess of fish that makes it challenging for vendors to market their products effectively. The text also mentions government programs to support small-scale fishermen by restricting illegal fishing activities yet cautions that such interventions can sometimes backfire. These unintended consequences include promoting overfishing, increasing illegal, unreported, and unregulated fishing activities, and harming the sustainability of fish resources and ecosystems. Consequently, policies that undermine fish stocks not only impact the economy by reducing the resilience of the fishing industry through lower yields and higher costs but also affect societal food security and ecosystem services and contribute to broader environmental issues like global warming, according to Hilborn et al. (2020).

The predominant response from survey participants indicates that 18.4% have no difficulty selling their goods. Most of their merchandise comprises dried fish, which is more marketable than fresh fish. Both Barangay Pasil and Canmoros have adopted this alternative and are familiar with the process. Instead of marketing fresh fish, they prefer to process their fish catch into dried form. Small fish, often referred to as "the milk of South-East Asia," play a crucial role in providing calcium to the poorest populations in certain areas, as they are frequently processed and consumed whole (Jensen, 2001). Nonetheless, a small group of fishermen encounter challenges in selling their catch due to oversupply in the market and the low quality of the fish.

Another issue that fisherfolks face is the oversupply of fish. There is downward pressure on prices to drop to be able to dispose of the fish stock because there is a greater supply accessible in the market, conforming to the study of Santhakumar et al. (2019), where large-scale fishing became unprofitable due to the quick rise in fishing capacity and the ensuing overfishing, which caused a gradual shift back to smaller-scale enterprises. As a result, the labor-intensive, small-scale fishing industry continues to exist and faces several fishermen. Overfishing has resulted in an abundance of fish on the market, making it more difficult for suppliers to advertise their goods. A government program aimed at protecting the interests of small-scale fishermen in the area by prohibiting illicit fishing would ensure that all fishermen receive a fair share of the catch and a stable income. According to Hilborn et al. (2020), government assistance for these goals may occasionally have unfavorable effects by altering the economic climate in which fishermen operate. The accumulation of surplus fishing capacity, overfishing, and incentives for illicit, unreported, and unregulated (IUU) fishing are some of these negative effects that disrupt ecosystems and fish resources' sustainability. In the end, policies that damage stocks hurt the people they are intended to assist economically since decreased stock abundance affects the fishing industry's resilience by lowering sustainable yields and raising harvesting costs. Both society and the environment suffer from such policies. When more fishing is done than is necessary, it leads to lower contributions to food security and ecosystem services (such as supplying food to other ecosystem components) and larger impacts on non-target species, ecosystem habitats, and global warming.

Securing everyday necessities is the primary concern for fishermen. Despite earning insufficient daily income (70.1%), fishermen struggle to set aside money for their basic needs. According to Giles et al. (2019), the declining fish catch has worsened the fishermen's poverty, affecting their lifestyle and income. The Philippine Statistics Authority (2023) reports that around 30% of people in the Visayas suffer from food poverty, with fishermen being heavily impacted, and the poverty rate among fishermen in Eastern Visayas stands at 30.6%. Moreover, 27% of fishermen rely solely on fishing for their livelihood, often being the sole breadwinners in their families due to a

lack of alternative income sources. Additionally, small-scale fishing communities are among the poorest socio-economic groups, with only a small fraction of fishermen having an alternative source of income, such as owning a tricycle for public transportation (Tan, 2020).

4.0 Conclusion

Fishermen in Binalbagan are grappling with significant financial difficulties. They struggle to earn enough to cover basic family needs due to their unpredictable income, which is heavily influenced by weather conditions. This instability leaves little room for healthcare or savings, plunging many into poverty and facing a constant battle against financial insecurity. The community's challenges are largely attributed to the unpredictability of weather, which directly impacts their earning potential and contributes to widespread financial strain. The Agriculture Office of the Municipality of Binalbagan, under the administration of the Local Government Unit, should establish a farm-to-market program to connect local fishermen with the market directly. This will provide a reliable outlet for their daily fish catch and increase their earnings. Additionally, the fishermen should use their expertise in fish drying to meet the high demand for dried fish. Fishermen should seek financial support from government bodies or associations to sustain the fish drying process and align production with market demand. This will increase their output of dried fish and improve their livelihoods.

5.0 Contributions of Authors

The authors reviewed and approved the final work.

6.0 Funding

This work received no specific grant from any grant funding agency.

7.0 Conflict Interests

The authors declare no conflicts of interest about the publication of this paper.

8.0 Acknowledgement

I have gained valuable insights into the importance of the fishing industry and the lives of small-scale fisher folks in select barangays in Binalbagan through my thesis titled "Socio-economic Profile of Small-Scale Fisherfolks in Select Barangays in Binalbagan." Their contribution to the economy has a great impact on the lives of many people, and I would like to express my heartfelt gratitude to those who provided special assistance in completing this endeavor. I want to acknowledge Dr. Aquilles Dejalde for sharing his expertise and the participants of this study, especially the Chairman of the Fisherfolks Organization, for their consent and help, which made this study possible. Without their cooperation and patience in answering my survey instrument, I would not have obtained the data that became the core of this thesis. I would also like to give a special mention to my adviser, Dr. Marissa S. Quezon, for her guidance and expertise and the panel of evaluators, Dr. Eric Arthur Dio, Dr. Romeo G. Teruel, Dr. Jacqueline A. Felix, and Dr. Ma. Teresa B. Ballados, who are experts in their field of specialization. Their insightful remarks and suggestions have helped me contextualize the concepts and improve my work. I am indebted to my family, parents, and beloved husband, Ryan B. Enema, who was with me throughout this study. My husband lent his technical expertise and supported me through my studies. Lastly, I would like to express my gratitude to God Almighty for His direction, grace, and providence, which have been invaluable to me.

9.0 References

- Arthur, T. (2017). Poverty alleviation strategies employed by fisher folks in Elmina in the Komenda-Edina-Eguafo-Abrem (KEEA) Municipality (Dissertation). University of Cape Coast
- Balisco, R. A., Tahajudin, C. J., Vigonte, A. C. (2019). Fishing gears and their common catch in two coastal area of Palawan, Philippines: Implications to fisheries. *Management Internal Journal of Fisheries and Aquatic Studies*, 7(2), 216-222. <https://rb.gy/owszyg>
- Belardo, S. B., & Candelaria, A. P. (2023). Aspirations of Fisherfolk Communities on Their Children's Education in Albay, Asid, and Ragay Gulfs of Bicol, Philippines. *Journal of Geoscience and Environment Protection*, 11(7), 136-155. <https://doi.org/10.4236/gep.2023.117009>
- Blanchard, O. (2003). *Macroeconomics* (Third Ed.). Place of Publication: Pearson Education (Asia) PTE LTD.
- Bluwey, F. A. (2016). Measures of Poverty among Fisherfolks and Crop-Based Farming Households in Komenda Edina Eguaf Abriem (KEEA) Municipality of the Central Region, Ghana. *Journal of Educational Policy and Entrepreneurial Research*, 3(7), 62-76. <https://catalog.ihnsn.org/citations/71494>
- DeRidder, K. J. & Nindang, S. (2018). Southeast Asia's fisheries near collapse from overfishing. In *Asia's insight and analysis*. The Asia Foundation.
- Degorio, N., Centino, M. H., Delima, G., & Serino, M. N. V. (2023). Impact assessment of the integrated coastal resource management on the livelihood of small-scale fishers in Cuatro Islas, Leyte. *Review of Socio-economic Research and Development Studies*, 7(1), 41-65. <https://rb.gy/2eaemp>
- Handa, J. (2004). *Monetary economics* (1st ed.). New York: Routledge.
- Jani, J. M. (2014). The perceptions of poverty among small-scale fisher-folks in Terengganu, Malaysia. *Dynamiques Internationales*, 9(0), 1-21. <https://bit.ly/3B7gAJs>
- Oladimeji, Y. U., Abdulsalam, Z., Ajao, A. M., & Adepoju, S. A. (2015). Determinant of rural household poverty nexus fuel consumption among Fisherfolks in Kwara State, Nigeria. *Journal of Scientific Research and Reports*, 7(3), 185-194. <https://doi.org/10.9734/JSRR/2015/17360>
- Olaoye, O.J., Idowu, A.A., Omoyinmi, G.A.K., Akintayo, I.A., Odebiyi, O.C., & Fasina, A.O. (2012). Socio-economic analysis of artisanal Fisher folks in Ogun water-side local government areas of Ogun state, Nigeria. *Global Journal of Science Frontier Research Agriculture & Biology*, 12(4), 9-22. <https://bit.ly/4et0vML>
- Ramaratnam, M. S., & Jayaraman, R. (2016). A study on savings pattern of rural households in the select clusters of Kanchipuram districts. *International Journal of Engineering and Management Research*, 6(2), 608-615. <https://bit.ly/3BagW21>
- Rameshkumar, S., Excece, A. J., Padma Parvathy, G., & Priyanka, T. (2011). Income and expenditure pattern of fisherfolk in selected rural coastal villages of Tuticorin in Tamil Nadu. *Indian Journal of Fisheries*, 58(3), 153-155. <https://bit.ly/4evstax>
- Swathi Lekshmi, P. S. (2011). Livelihood and level of aspiration of coastal fisherfolk of Ta-milnadu. *Indian Journal of Social Research*, 52(1), 31-54. <https://eprints.cmfri.org.in/8376/>
- Santhakumar, V., & Kurien, J. (2019). The education of children from fisher communities: Lesson from Indonesia, India, and Brazil. Retrieved from <https://bit.ly/4esszzM>
- Suzuki, A. (2018). *Rising importance of aquaculture Asia: Current status, issues and recommendations* (Background Paper). The University of Tokyo
- Tan, P. (2020). Economic vulnerabilities of fishing-dependent households around Laguna Lake, Philippines. *Philippine Journal of Science*, 149(3a), 815-831. <https://bit.ly/3BbLcK0>
- Tadeo, J. (2018). *The Savings and Investments Behavior of Selected Fisherfolks in The Municipality of Rosario, Cavite* (Thesis). Cavite State University, Philippines

MSMEs as Catalysts for Growth: Analyzing their Contribution to Food Tour Development and Local Economic Sustainability

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Date received: September 5, 2024

Date revised: September 18, 2024

Date accepted: September 24, 2024

Originality: 95%

Grammarly Score: 99%

Similarity: 5%

Recommended citation:

de Guzman, M.L., & Quezon, M. (2024). MSMEs as catalysts for growth: Analyzing their contribution to food tour development and local economic sustainability. *Journal of Interdisciplinary Perspectives*, 2(11), 16-35.

<https://doi.org/10.69569/jip.2024.0477>

Abstract. This study used a descriptive correlational approach to determine MSMEs' competitiveness and contributions to food tour development in Iloilo City. The study's respondents were entrepreneurs who managed and/or owned micro, small, and medium-sized businesses in Iloilo City, engaged in the food industry, and were either part of or considered part of the tourist circuit. A modified survey instrument addressed the study's concerns and was the primary data source. A validity score of 4.64 and a reliability Cronbach alpha of 0.980 indicates that the instrument is valid and very reliable. Descriptive and inferential statistical tools were used for statistical treatment. Key findings indicate that food-related MSMEs in Iloilo City are moderately competitive in their capacity to compete, connect, and change. A modest contribution to the growth of food tours through job creation and product offering but a low contribution to total monthly sales. A positive direct relationship was found between business competitiveness and contribution to food tour development. Entrepreneurial age and educational level have been shown to influence how much enterprises contribute to food tour development. The findings of this study may be applied to the growth and management of MSMEs in Iloilo City, making them more competitive agents of food tour development. Any organization that wants to be competitive should strategically form good partnerships to get amazing outcomes. Using positioning and uniqueness to catch visitors' attention, food-related MSMEs may leverage tourists who value food in their travel reasons. Appreciating local food resources and paying close attention to how they are presented and promoted to the public would likely attract tourists and increase tourism earnings.

Keywords: MSME; Food tour; Local economy; Iloilo City; Philippines.

1.0 Introduction

Micro, small, and medium-sized companies (MSMEs) play a critical role in creating a sustainable society by generating equitable income, creating jobs, innovating, and growing, making them a key contributor to the global economy. Because of their successes and as a vital factor in overall economic growth, most nations' strategic efforts already include expanding MSMEs' effect. MSMEs account for 99.5% of all businesses in the Philippines, employing 62.7% of the workforce and providing 35.7% of the country's economic profit (Department of Trade and Industry, 2020). MSMEs play an important role in achieving inclusive development and reducing poverty because they boost competitiveness and promote rural and global value chain expansion. According to the 2020 Philippine MSME Statistics report, the hotel and food sectors are ranked second among the country's industries.

The food sector, conventionally as a low-tech industry, is characterized by many MSMEs. Additionally, it has very modest levels of innovation and has not been correlated with significant levels of R&D (Quinn et al. 2014). Population growth, evolving consumer tastes, shifting legislative developments, food scandals, increasing globalization of production and consumption, and rising raw material costs all contribute to an exceptionally tough macroenvironment for the food industry. However, Food MSMEs are adaptable and quick to respond to market trends, offering customers unique goods and selling features. Declining consumer confidence in traditional food channels because of a myriad of food scares has provided opportunities for MSMEs that are doyens in nature and can fulfill consumer interest in and awareness of localness, traceability, health, and provenance of food products and environmental and ethical concerns (Birch et al., 2018).

Food is an important element of a region's culture, and travelers want authentic and genuine experiences when they visit another nation. Food tours pave the way for residents and visitors to sample local cuisine, making it an important motivator for travel. It is characterized as visiting main and secondary food producers, food festivals, restaurants, and specialized sites for room rates, food tasting, and or experiencing the characteristics of specialized food production (Hall & Mitchell, 2001, cited in Purnomo, 2016). Food MSMEs contribute to the local culture and food production. To establish and become a food tourism destination, a location needs assistance from food businesses in the form of restaurants or food and beverage producers, typically run by MSMEs, that reflect the local culture and character (Purnomo, 2016). Food preparation's embeddedness in home-grown society and the long-term expansion of small food producers have obvious consequences for rural economic development. The development of food and beverage tourism in the community provides a chance to boost local food production. It promotes rural development, the growth of agricultural towns and villages, and the local hawkers' centers as a symbol of the area's food market (Bessi'ere, 1998, quoted in Purnomo, 2016). Food Tours are established and organized in various places because of the availability of food MSMEs, allowing tourists to visit and sample local cuisine.

Take, for instance, the City of Love - Iloilo City, best known to many people for its La Paz Batchoy. However, this city is more than that as it is a wealth of gastronomic surprises (Villareal, 2022). The local government's recent designation of Iloilo City and the province of Iloilo as "The Food Haven of the Philippines" is a suitable tribute to the city's gastronomy, boosting tourism. The Department of Tourism and the corporate sector strongly support this initiative to become a known gastronomy hotspot (Daily Guardian, 2022). Many Filipinos across the country and food enthusiasts from all over the world like and recognize Ilonggo cuisine. Anyone who has had the heart-warming La Paz Batchoy and Molo soup, the refreshing tastes of Laswa and Chicken Binakol, or a morsel of rich Ibos and crisp Biscocho is bound to be enamored and have a longing wherever they go (Villareal, 2022). Businesses, primarily MSMEs, participate in these offers. Several food MSMEs participated in the food crawl led by Chef Rafael "Tibong" Jardeleza, Jr. (Weekend Balita, 2019).

Local development aims to improve the capabilities of a defined area so that there is progress in its economy and the well-being of its people. Intangible assets are fast becoming the basis for regional economic competitiveness through tourism strategies (Hall, 2012). To utilize food tourism as an economic development factor, it is imperative to encourage visitors to stop, spend, and stay longer. Retaining visitor spending, developing linkages with a multitude of regional stakeholders, and advancing intellectual capital are necessary if food tourism is to be incorporated within broader regional development endeavors. Within the framework of regional development, the tourism concept of food tours is expected to advance the potential of local food and local human resources (Hall & Troughton, 1998, as cited in Purnomo, 2016).

Food tours or gastronomy tourism are still in their early phases of development across the globe. Food tourism is gaining international traction as a substantial niche market within the tourism and hospitality industries (Cankul & Demir, 2018; Ellis et al., 2018; Okumus et al., 2018). Following broad globalization and McDonaldization, locations prioritize culinary tourism to protect regional and local identity, adding to its major economic advantages (Chen & Huang, 2019; Ellis et al., 2018; Okumus et al., 2018). The literature on gastronomy tourism has increased dramatically over the last several decades, but research on food tours and their contribution to forming culinary experiences is limited (Vlachou & Savvinopoulou, 2022). There may be evidence of food tours in Iloilo City but food MSMEs' competitiveness and their contribution to the city's food tour growth have not been

recognized. This research investigated the competitiveness of food MSMEs and how they contribute to food tour development in Iloilo City.

2.0 Methodology

2.1 Research Design

This investigation was especially quantitative and involved systematically analyzing phenomena using measurable data and statistical, mathematical, or computer processes. The research design for this study was descriptive-correlational. According to McCombes (2022), descriptive research seeks to correctly and methodically characterize a population, circumstance, or phenomenon. In contrast, correlational research design explores correlations between variables without the researcher altering or changing them. Correlational research seeks to identify relationships and similarities among variables (Sassower, 2017).

2.2 Research Locale

This study focused mainly on MSMEs located in Iloilo City, particularly those involved in the food and beverage business and who have been part of or have the potential to be part of the tourism circuit. The respondents were business owners whose enterprise is involved in food and beverage service within the identified food tourism zone of Iloilo City. Business owners whose enterprises have operated since 2019 were considered.

2.3 Research Respondents

Purposive sampling was employed to choose a random number of respondents for this investigation. The primary respondents in this study were entrepreneurs aged 18 and up who manage and/or own micro, small, and medium-sized businesses in Iloilo City that are involved in the food industry and are or have the potential to be part of the tourist circuit. If the owner/entrepreneur could not answer the research instrument, an authorized representative was designated via an agency consent form. Authorized representatives were either the designated manager, co-partner, or co-owner of the owner entrepreneur who had extensive knowledge of the business's activities. The respondents were selected based on their location to ensure that the DTI-listed enterprise would also fall into the identified tourism zones in Iloilo City or the seven identified districts of the city. Non-DTI-registered enterprises from identified food tourism zones in Iloilo City were also included through physical mapping.

2.4 Research Instrument

An adopted and modified survey questionnaire was used as the research instrument and main data source. Part 1 gathered the entrepreneurs' personal variables and business enterprise-related variables. Parts 2 and 3 included survey questions adopted and modified from the SME Competitiveness Outlook of the International Trade Center (2015) and the Youth Employment Program of the International Labor Organization (2022). Experts of MSMEs and food tour development were asked to validate the instrument. Construct validity revealed that no item in the instrument needed revision and was seen as "essential" to measure what needed to be measured. A Goods and Scates content-criterion instrument was used, and a validity score of 4.64 was obtained. This indicates that the instrument is valid and measures what is intended to be measured. After validation, reliability testing was conducted on 30 respondents from within food business enterprises covered by this study but who were not actual respondents using Cronbach's alpha test. The statistical reliability test revealed a very reliable instrument for this study, with Cronbach's alpha at 0.980.

2.5 Data Gathering Procedure

The Ethics Committee of the University's Research Graduate School Office reviewed the study's ethics before its conduct. The survey questionnaire was validated and reliability tested after the Ethics Committee approved the study's conduct. After determining the survey questionnaire's validity and reliability, the researcher obtained the authorized informed consent form from the respondents to get their voluntary participation. Respondents provided consent before receiving the survey form. The respondents completed the questionnaire or the researcher read it to them, and the responses were recorded in the surveys. Respondents filled out the survey based on the information requested. All data collected were recorded and kept confidential.

2.6 Statistical Treatment and Data Analysis

Descriptive and inferential statistical tools were used for statistical treatment. Data collected for profiling the entrepreneurs and their corresponding enterprises were analyzed using frequency and percentage distribution. Mean and Standard Deviation were used to determine the competitiveness level of the enterprises and the extent of their contribution to food tour development. Mann-Whitney U test for two independent samples and Kruskal-Wallis test for three or more independent samples were used to determine significant differences in the level of competitiveness of MSMEs and the extent of contribution to food tour development between and among identified variables. Spearman's rho was used to determine the relationship between the MSMEs' level of competitiveness and the extent of contribution to the food tour development. Simple and multiple regression analyses were done to determine if the level of competitiveness predicts MSMEs' contribution to food tour development and to determine the significance of profile variables as predictors of MSMEs' contribution to food tour development.

2.7 Ethical Considerations

This study followed ethical research practices. Respondents were given an informed consent form to confirm voluntary participation. The informed consent form provides detailed information on the study, including its goal, description, possible benefits, confidentiality, publishing, participation, and informed consent. The researcher explained informed permission to all prospective respondents to address concerns about data privacy and how the instrument would be responded to, processed, and managed. A respondent may withdraw at any moment without giving a reason to the researcher. If a respondent withdraws before data collection is completed, the data submitted will be returned to them or shredded. Furthermore, suppose an elderly respondent wishes to have a younger or more educated member of their family or business. In that case, they may be able to sit while the instrument is discussed and answered. The research tools had no identifying indicators about the respondents; therefore, their identities were kept confidential. All data gathered were recorded and treated with utmost confidentiality. Data was safe and appropriately secured. The findings of this study should be disseminated through authorized and recognized research journals, as well as research colloquia and presentations, taking into account the respondents' personal and sensitive data, and should not be released without the respondents' full consent.

3.0 Results and Discussion

3.1 Entrepreneurs' Profile

Table 1 shows that half of the entrepreneurs, or 50%, are under 42 years old, showing that Generation Z (26 years old and younger) and Millennials (27 - 42 years old) are the key drivers of Iloilo City's enterprises. According to Bai et al. (2022), entrepreneurs aged 20 to 35 made up the top 100 firms. Individually, younger individuals are more eager to learn new things, see opportunities, and capitalize on them, all of which are essential characteristics of an entrepreneur. As such, they are closer to and more receptive to development frontiers, increasing their chances of becoming entrepreneurs. Furthermore, female entrepreneurs account for 54.29% of all study respondents (see Table 1). Entrepreneurs of both genders succeed throughout the world. Normative images of entrepreneurship are dominated by masculinity, and some research indicates that women-owned enterprises remain smaller than men-owned businesses (Davis & Shaver, 2012), reflecting a gender gap in entrepreneurship. However, this survey suggests that female entrepreneurs dominate the business climate in Iloilo City.

Table 1. Profile of the entrepreneurs

Variables	f	%
A. As a whole	70	100
B. Age		
Below 42 years old	35	50.00
43 - 58 years old	25	35.71
Above 58 years old	10	14.29
C. Sex		
Male	32	45.71
Female	38	54.29
D. Educational Attainment		
At most high school graduate	15	21.43
At least college undergraduate	55	78.57

Table 1 also shows that 78.57% of those polled have a college diploma or above. The gross enrollment rate in Philippine higher education was 35% in 2021 and 4.1 million in 2022 (Philippine Statistics Authority, 2022),

consistent with the Filipino tradition of ensuring children receive a better or higher-quality education. This might explain why more than half, 78.57%, of the respondents are college students. Education is one of the most extensively researched entrepreneurial variables, and it is believed to be associated with knowledge, skills, problem-solving ability, discipline, motivation, and self-confidence, all of which can influence and enable an entrepreneur to deal with problems and thus become more successful. A favorable environment for young people to start enterprises is developed through education. According to Forbes (2005), entrepreneurs with more education and experience seek, collect, and analyze information about available development opportunities.

3.2 Enterprises' Profile

Table 2 shows that DTI-registered businesses with business permits account for 77.14% of total respondents in Iloilo City, whereas only 16 out of 70 are unregistered businesses without business permits. Furthermore, sole proprietors own 60 out of 70 respondents, or 85.71%. Firm enterprises are primarily registered with the DTI since it is important to register a sole proprietorship firm with the DTI to give it a legal entity and the ability to use its business name. Out of the total of 70 persons polled, 54 are DTI registered. This is also owing to the Iloilo City government's implementation of business registration requirements. This suggests that with the government easing the burden on business owners by giving online options for getting the essential business permits to function correctly, ambitious entrepreneurs have found it easier to operate with legal registration (Villafuerte, 2017). On the other hand, 16 enterprises have not registered with the DTI and lack business authorization. Although establishing a business with the DTI is essential to provide it with a legal identity and the opportunity to use a unique business name, vendors who operate "intermittently or irregularly" and those selling handcrafted things as a hobby are exempt from registration (Mercado, 2020). The basic requirement is that all businesses that sell frequently, regardless of size, register with the Bureau of Internal Revenue (BIR). According to the BIR individuals with annual incomes less than PhP250,000 are exempt from income tax (Mercado, 2020). This might explain why the 16 respondents have failed to register with the DTI.

Variables	f	%
A. As a whole	70	100
B. Business Registration Status		
Registered with DTI	54	77.14
Not registered with DTI	16	22.86
C. Business Permit Status		
Yes	54	77.14
No	16	22.86
D. Number of Employees		
Below 10 employees	44	62.86
10 or more employees	26	37.14
E. Type of Ownership		
Sole Proprietor	60	85.71
Either One person, partnership, or corporation	10	14.29
F. Type of Food Establishment		
Fine and Casual / Family Dining	23	32.86
Fast Casual and fast food	22	31.43
Food Truck / Cart / Stand	14	20.00
Café/Coffee house and Buffet	11	15.71
G. Enterprise Location		
Arevalo	10	14.29
Jaro	10	14.29
La Puz	10	14.29
La Paz	10	14.29
City Proper	10	14.28
Molo	10	14.28
Mandurriao	10	14.28
H. Number of Years in Operation		
Less than 5 years	25	35.71
5 - 10 years	16	22.86
More than 10 years	29	41.43
I. Number of Branches		
One Branch Only	54	77.14
More than one branch	16	22.86

Furthermore, 62.86% of respondents are from micro-enterprises. 44 of the 70 businesses examined have fewer than 10 workers. Catalano (2023), in his paper, stated that a microenterprise, also known as a microbusiness, employs few people and often runs with fewer than ten. Although only 62.86%, it is consistent with the Philippine Statistics Authority's list of microenterprises and its conclusion that corporations in the Philippines are mostly microenterprises. The predominance of microenterprises suggests that there are entrepreneurs in Iloilo City who may seek finance to develop their businesses. Furthermore, it would imply that Iloilo City entrepreneurs prefer simplicity and low start-up costs in a revenue-generating organization.

Iloilo residents like nice company, ambiance, and meals (Justiniani & Cordova, 2015), which is quite similar to the main food outlet assessed in this study. According to Table 2, 32.86% of the surveyed businesses operate as fine and casual/family eating. The upscale and casual/family dining food establishments score best among studied respondents, indicating Ilonggos' preference for companionship when eating. Location selection is an economic decision that affects the environment in which economic activity happens, including costs and overall production efficiency (Rogalska, 2020). All of the businesses under consideration were in Iloilo City's urban region. This indicates that companies may prosper in the city. The region's capital, Iloilo City, is home to enterprises and is projected to play significant roles in commerce, trade, finance, recreation, education, and regional politics.

Additionally, Table 2 shows that 41.43% of businesses have been in Iloilo City for more than ten years, while 35.71% are relatively young and have been in business for less than five years. This would suggest that the businesses overcame obstacles to continue operating for longer than projected. Furthermore, from a theoretical perspective, the business units have performed longer operations and accumulated more experiences or learning curves, allowing them to manage a stronger firm and develop rapidly. This might be connected to the enterprise's branches. However, 77.14% of the firms questioned for this study have only one location. This implies that, although the majority of the businesses polled have been in operation for more than ten years, they are cautious about expanding their operations. According to Brush, Ceru, and Blackburn (2009), some businesses do not want to develop, while others choose sluggish growth while being just as successful as those that grow quickly.

3.3 MSMEs Level of Competitiveness

Seen in Table 3 are the results of the level of competitiveness of the enterprise in terms of their capacity to compete, capacity to connect, and capacity to change. Overall, the study's MSMEs are moderately competitive in terms of their capacity to compete ($M = 3.15$, $SD = 0.40$), capacity to connect ($M = 3.16$, $SD = 0.44$), and capacity to adapt ($M = 2.99$, $SD = 0.51$). Café/Coffee Houses and Buffets, on the other hand, are highly competitive in terms of their capacity to compete ($M = 3.56$, $SD = 0.26$), connect ($M = 3.63$, $SD = 0.27$), and change ($M = 3.59$, $SD = 0.26$). Mandurriao district is highly competitive in terms of competition capacity ($M = 3.50$, $SD = 0.32$) and connectivity capacity ($M = 3.61$, $SD = 0.27$).

The belief that young people are uniquely capable of developing great ideas, whether in scientific inquiry, invention, or business, is widespread and lasting (Jones and Iredale 2014). This is evidenced by the study's findings, which show that people under 42 years old have the highest level of competitiveness in their ability to compete, connect, and change. It should also be mentioned that individuals with at least a college baccalaureate degree had the highest level of competitiveness in similar competitiveness indicators. These findings are similar to Majkova and Kljucnikov's (2017) study which discovered that young entrepreneurs had higher inventiveness, risk-taking ability, task-solving competence, and adaptability. Furthermore, the educational attainment of entrepreneurs, particularly tertiary education or at least college undergraduate level, is regarded to be more competitive, signaling an increasingly knowledge-driven corporate operation (OECD, 2012).

The study also reveals that male entrepreneurs have a higher level of competitiveness in terms of their capacity to compete, capacity to connect, and capacity to change relative to female entrepreneurs. While it is evident that males are quintessentially competitive (Moxon, 2015), there are still disputes on the gender gap in competitiveness (Lackner, 2021). Thus, the findings of this study, which show that female entrepreneurs have a moderate degree of competitiveness, suggest that female entrepreneurs are also eager to compete including entrepreneurial competitiveness, ability to connect, and capacity to adapt (Lackner, 2021).

Table 3. Level of competitiveness of the enterprise

Variables	Capacity to Compete			Capacity to Connect			Capacity to Change		
	M	VI	SD	M	VI	SD	M	VI	SD
A. As a whole	3.15	MC	0.40	3.16	MC	0.44	2.99	MC	0.51
B. Age									
Below 42 years old	3.27	MC	0.41	3.33	MC	0.42	3.19	MC	0.52
43 – 58 years old	3.02	MC	0.36	2.95	MC	0.37	2.77	MC	0.39
Above 58 years old	3.05	MC	0.37	3.09	MC	0.44	2.80	MC	0.51
C. Sex									
Male	3.21	MC	0.40	3.21	MC	0.47	3.07	MC	0.50
Female	3.10	MC	0.39	3.12	MC	0.40	2.91	MC	0.52
D. Educational Attainment									
At most high school graduate	2.95	MC	0.23	2.93	MC	0.17	2.70	MC	0.32
At least college undergraduate	3.21	MC	0.42	3.22	MC	0.47	3.06	MC	0.53
E. Business Registration Status									
Registered with DTI	3.24	MC	0.39	3.21	MC	0.47	3.07	MC	0.50
Not registered with DTI	2.86	MC	0.25	2.99	MC	0.25	2.70	MC	0.45
F. Business Permit Status									
Yes	3.23	MC	0.39	3.21	MC	0.47	3.09	MC	0.49
No	2.89	MC	0.29	2.98	MC	0.25	2.65	MC	0.44
G. Number of Employees									
Below 10 employees	3.01	MC	0.34	3.00	MC	0.37	2.80	MC	0.45
10 or more employees	3.40	MC	0.36	3.44	MC	0.40	3.30	MC	0.44
H. Type of Ownership									
Sole Proprietor	3.11	MC	0.40	3.08	MC	0.42	2.91	MC	0.51
One person/partnership/ Corp.	3.41	MC	0.24	3.61	MC	0.21	3.42	MC	0.29
I. Type of Food Establishment									
Fine & Casual / Family Dining	3.32	MC	0.36	3.31	MC	0.42	3.17	MC	0.42
Fast Casual and fast food	2.93	MC	0.36	2.91	MC	0.38	2.70	MC	0.44
Food Truck / Cart / Stand	2.91	MC	0.16	2.93	MC	0.20	2.66	MC	0.31
Café/Coffee house and Buffet	3.56	HC	0.26	3.63	HC	0.27	3.59	HC	0.26
J. Enterprise Location									
Arevalo	3.06	MC	0.20	3.01	MC	0.18	3.02	MC	0.29
Jaro	3.39	MC	0.46	3.38	MC	0.46	3.18	MC	0.71
La Puz	2.85	MC	0.27	2.99	MC	0.30	2.62	MC	0.20
La Paz	3.24	MC	0.33	3.20	MC	0.38	3.01	MC	0.56
City Proper	3.11	MC	0.37	3.01	MC	0.37	2.80	MC	0.43
Molo	2.92	MC	0.40	2.92	MC	0.59	2.82	MC	0.49
Mandurriao	3.50	HC	0.32	3.61	HC	0.27	3.46	MC	0.33
K. Number of Years in Operation									
Less than 5 years	3.13	MC	0.48	3.19	MC	0.53	3.09	MC	0.57
5 – 10 years	3.13	MC	0.38	3.23	MC	0.43	2.98	MC	0.54
More than 10 years	3.18	MC	0.33	3.10	MC	0.35	2.90	MC	0.44
L. Number of Branches									
One Branch Only	3.09	MC	0.39	3.11	MC	0.44	2.91	MC	0.50
More than one branch	3.38	MC	0.35	3.33	MC	0.40	3.23	MC	0.48

Note: Highly Competitive | HC (3.50 – 4.00); Moderately Competitive | MC (2.50 – 3.49); Slightly Competitive | SC (1.50 – 2.49); Less Likely Competitive | LLC (1.00 – 1.49)

To renew or apply for a permit, entrepreneurs must go through various steps, contact several authorities, and spend substantial time accessing public services (Garay-Nugroho, 2022). Furthermore, Garay-Nugroho (2022) stated that to provide a welcoming and healthy business climate, the Philippine government has changed to enhance the ease of doing business in the country by simplifying present government processes and procedures. With the ease of conducting business brought about by improved regulations, many firms have found it appealing to register their enterprises, as seen by the findings of this research. As a result, DTI-registered firms with business permission are shown to be more competitive than non-DTI-registered enterprises without permits. Businesses that have registered status may be able to enhance their operations and hence their competitiveness rating (Kumar & Kumar, 2020).

A single person/partnership/corporation that typically employs ten or more individuals is proven more competitive in its ability to compete, connect, and change. Employee commitment to a firm is critical to its success (Mathur, 2015), providing a vital source of long-term competitive advantage. Furthermore, a one-

person/partnership/corporation firm ownership implies more resources accessible to the enterprise (Yang and Meyer, 2019). It is not surprising that additional resources and workers lead to increased competition. Additionally, although all types of food establishments are found to have a moderate level of competitiveness, café/coffee house and buffet type of establishments have the highest level of competitiveness among other types. This high degree of rivalry is most likely due to the expansion of cafes/coffee shops. Furthermore, while the coffee market varies, it is claimed to be very competitive due to its large number of customers and providers (Momin, 2022).

Regardless of location, a commercial enterprise's competition is generally moderate. Mandurriao, one of Iloilo City's district boroughs, has experienced substantial growth due to partnerships with several major commercial developers. As a result, numerous businessmen indicated an interest in investing in this region, which might explain why enterprises in Mandurriao have become more competitive. Based on this study's findings businesses in the Mandurriao district borough have a high level of competitiveness and interactivity. Competition is unavoidable given the Mandurriao district borough's ongoing expansion and corporate efforts. Furthermore, these enhancements reduce connectivity issues, providing more opportunities and possibilities for business owners to connect. Finally, firms that have been in operation for more than ten years and have several branches are more competitive than those that have been in operation for ten years or less and have just one branch. From a theoretical standpoint, the business unit that has been in operation for a longer period will have more experiences or learning curves, allowing the business to operate a stronger and so develop quicker.

3.4 MSMEs' Extent of Contribution

Table 4 shows results that overall, the enterprises surveyed in this study have a moderate contribution to food tour development in terms of job creation ($M = 2.63$, $SD = 0.48$) and product offering ($M = 3.07$, $SD = 0.49$), but a low contribution in terms of gross monthly sales ($M = 2.36$, $SD = 0.59$). The low level of contribution to food tour development, particularly in gross monthly sales, may be attributed to the effects of the pandemic, which caused a sharp drop in economic sustainability activities, particularly tourism-related activities (Medeira et al., 2020), although enterprises were able to contribute moderately to job creation and product offerings. The findings would be consistent with what Digital, Culture, Media, and Sport (2021) describes as the various good consequences of tourist sector expansion, such as job creation and economic advantages such as product offerings.

Entrepreneurs under the age of 42 make the greatest contributions to employment creation, product offerings, and gross monthly sales. According to Balas Rant et al. (2021), young entrepreneurs provide job chances for themselves and the other young people they hire. Young entrepreneurs also help build new skills and experiences that promote youngsters' creativity and resilience. In contrast, the literature generally indicates that entrepreneurship is a male-dominated field (Muntean & Ozkazanc-Pan, 2015), implying that gender is a highly confounding variable that moderates entrepreneurship behavior and intention (Guzman & Kacperczyk, 2019), including aspects of contribution to a specific aspect of business development. This is obvious in the study's findings, which show that male entrepreneurs contribute more than females. According to Hyams-Ssekasi et al. (2019), there is a difference in the company creation process experience between males and females, which may explain the findings of this study, where the level of involvement in food tour development varies.

The study's findings about educational attainment reveal that entrepreneurs who are at least college undergraduates contribute more to food tour development than those who are at most high school graduates. It might be because the Commission on Higher Education mandated "Technopreneurship 101" in science, technology, engineering, agricultural, and math subjects. Additionally, the formation and exposure to an entrepreneurial attitude and principles of entrepreneurship promote company creation and, eventually, contribute to the growth of economic activities such as culinary tours.

Enterprises with DTI registration and business permits contribute much more than those without as they have much more marketing and financial prospects (Puspaningrum, 2020). However, the findings of this study show that business entities contribute very little to gross monthly sales. This can be ascribed to the consequences of the epidemic. Sonobe et al. (2021) reported in their Asian Development Bank study that shortly after the COVID-19 pandemic began, many governments began extending financial and other forms of support to micro, small, and medium-sized enterprises because they are more vulnerable to negative shocks to their supply chain, labor supply,

and final demand for goods and services than larger firms. However, the intensity of the pandemic's influence varies greatly depending on the activities and features. It is also clear from the results based on the variable number of workers that businesses with less than ten employees contribute little to job creation and gross monthly sales. Similarly, sole proprietorship businesses contribute very little to gross monthly sales.

Table 4. Extent of enterprises' contribution to food tour development

Variables	Job Creation			Product Offering			Gross Monthly Sales		
	M	VI	SD	M	VI	SD	M	VI	SD
A. As a whole	2.63	ME	0.48	3.07	ME	0.49	2.36	LE	0.59
B. Age									
Below 42 years old	2.77	ME	0.52	3.25	ME	.050	2.98	ME	0.45
43 – 58 years old	2.47	LE	0.41	2.85	ME	0.35	2.63	ME	0.34
Above 58 years old	2.52	ME	0.35	2.98	ME	0.54	2.69	ME	0.39
C. Sex									
Male	2.66	ME	0.43	3.07	ME	0.49	2.82	ME	0.42
Female	2.60	ME	0.51	3.06	ME	0.49	2.81	ME	0.45
D. Educational Attainment									
At most high school graduate	2.43	LE	0.42	2.81	ME	0.31	2.58	ME	0.32
At least college undergraduate	2.68	ME	0.48	3.14	ME	0.51	2.88	ME	0.44
E. Business Registration Status									
Registered with DTI	2.71	ME	0.42	3.15	ME	0.44	2.36	LE	0.61
Not registered with DTI	2.34	LE	0.54	2.77	ME	0.55	2.38	LE	0.52
F. Business Permit Status									
Yes	2.71	ME	0.42	3.15	ME	0.44	2.41	LE	0.63
No	2.31	LE	0.53	2.79	ME	0.56	2.19	LE	0.36
G. Number of Employees									
Below 10 employees	2.47	LE	0.45	2.89	ME	0.45	2.19	LE	0.54
10 or more employees	3.00	ME	0.39	3.36	ME	0.42	2.65	ME	0.55
H. Type of Ownership									
Sole Proprietor	2.57	ME	0.49	3.00	ME	0.49	2.32	LE	0.59
One person/partnership/ Corp.	2.95	ME	0.18	3.45	ME	0.28	2.60	ME	0.52
I. Type of Food Establishment									
Fine & Casual / Family Dining	2.80	ME	0.41	3.26	ME	0.42	2.42	LE	0.71
Fast Casual and fast food	2.51	ME	0.49	2.80	ME	0.43	2.29	LE	0.57
Food Truck / Cart / Stand	2.29	LE	0.36	2.81	ME	0.35	2.19	LE	0.39
Café/Coffee house and Buffet	2.93	ME	0.41	3.53	HE	0.36	2.61	ME	0.53
J. Enterprise Location									
Arevalo	2.71	ME	0.45	2.99	ME	0.22	2.43	LE	0.76
Jaro	2.76	ME	0.66	3.30	ME	0.57	2.70	ME	0.71
La Puz	2.25	ME	0.29	2.81	ME	0.42	2.17	LE	0.36
La Paz	2.66	ME	0.48	3.11	ME	0.54	2.37	LE	0.51
City Proper	2.37	LE	0.31	2.89	ME	0.37	1.97	LE	0.37
Molo	2.62	ME	0.43	2.89	ME	0.53	2.20	LE	0.59
Mandurriao	3.03	ME	0.24	3.49	ME	0.39	2.70	ME	0.43
K. Number of Years in Operation									
Less than 5 years	2.74	ME	0.60	3.07	ME	0.52	2.37	LE	0.66
5 – 10 years	2.52	ME	0.44	3.13	ME	0.53	2.29	LE	0.57
More than 10 years	2.58	ME	0.35	3.04	ME	0.45	2.39	LE	0.55
L. Number of Branches									
One Branch Only	2.55	ME	0.45	3.00	ME	0.49	2.30	LE	0.57
More than one branch	2.90	ME	0.48	3.31	ME	0.40	2.56	ME	0.63

Note: High Extent of Contribution | HE (3.50 – 4.00); Moderated Extent of Contribution | ME (2.50 – 3.49); Low Extent of Contribution | LE (1.50 – 2.49); Very Low Extent of Contribution | VL (1.00 – 1.49)

Based on the kind of food institution, café/coffee houses and buffets have considerably greater values regarding employment generation, product offers, and gross monthly sales. Notably, Iloilo City has experienced an increase in coffee shops as it develops. Implications include possible assistance for coffee shops to communicate with consumers using various marketing methods required to continue business operations, contribute to new job creation, and ensure economic sustainability (Adeleke, 2019). Nonetheless, different food enterprises contribute significantly to employment generation and product offers. However, the poor contribution to gross monthly sales can be attributed to the pandemic's impacts.

The findings also show that location contributes moderately to employment creation and product offers. However, except for businesses located in Jaro and Mandurriao, gross monthly sales are minimal. This is hardly surprising given that Jaro and Mandurriao are commercial regions (USAID, 2014). The concentration of businesses in the Jaro district and the acceleration of development in the area are likely to be responsible for the moderate increase in gross monthly sales, which coincided with an increase in food consumption from nearby food enterprises. Furthermore, Megaworld's Iloilo Business Park in Mandurriao, which includes the Iloilo Convention Center, caters to major national and international gatherings, exhibits, events, and entertainment, transforming the area into a thriving new central business district in Iloilo City (USAID, 2014).

The findings of this study on the level of contribution to job creation are consistent with the International Labor Conference Report of the International Labour Office (2015), which notes that young small businesses contribute significantly to employment. The findings of this study support Nathan et al.'s (2015) findings that firms with more branches to run are more likely to contribute to social capital since they have accumulated experience over time.

3.5 Differences in MSMEs' Level of Competitiveness

Table 5 shows that p-values for age ($p = 0.009$) and educational attainment ($p = 0.015$) are less than the specified alpha of 0.05 when examining the entrepreneurs' profile factors impacting MSMEs' degree of competitiveness. Furthermore, the p-value of the variable sex is 0.142, which is greater than the set alpha. The study's findings show a significant difference in the competitiveness level of firms when entrepreneurs are categorized by age ($U = 9.493$, $p = 0.009$). Table 5 data show a statistically significant difference in educational attainment ($U = 583.000$, $p = 0.015$). Meanwhile, when the identical data in Table 5 is classified by sex, it is not statistically significant ($U = 483.500$, $p = 0.142$).

Table 5. Differences in MSMEs' level of competitiveness in terms of the entrepreneurs' profile			
Variable	Groupings	U-value / H-value	p-value
Age	Below 42 years old	9.493	0.009**
	43 - 58 years old		
	Above 58 years old		
Sex	Male	483.5	0.142
	Female		
Educational Attainment	At most high school graduate	583.0	0.015**
	At least college undergraduate		

**p < 0.05 is significant

The analysis shown in Table 6 reveals statistically significant differences in the level of competitiveness for those categories 43 - 58 years old when compared to those below 42 years old with $p = 0.009$, but not significant when compared to those above 58 years old or when paired those above 58 years old with those below 42 years old with $p = 1.000$ and $p = 0.247$, respectively. Age is the most obvious and observable element (Scheibe et al., 2021), significantly influencing behavior. Accordingly, young entrepreneurs are more likely to be excited and eager to test their skills than older entrepreneurs, reflecting a more competitive mentality, which the findings of this study support. However, age does not just affect an individual's competitiveness. Lévesque and Minniti (2006) found that being older is strongly related to having more experience, which has previously been highlighted as beneficial to entrepreneurs and their competitiveness.

Table 6. Post Hoc analysis of MSMEs' level of competitiveness when entrepreneurs are grouped according to age

Variable	Age (I)	Age (J)	z	p-value
Age	43 - 58 years old	Below 42 years old	15.72	0.009**
		Above 58 years old	-3.050	1.000
	Above 58 years old	Below 42 years old	12.67	0.247

**p < 0.05 is significant

Education, on the other hand, equips people with the skills and knowledge they need to accomplish their professions more effectively, perhaps leading to higher productivity and efficiency. The findings of this study indicate that the more one's educational attainment, the greater one's competitiveness. This is congruent with the findings of Krstic et al. (2020), who examined higher education as a determinant of an economy's competitiveness and long-term growth. They have said that improving credentials and talents is vital to increasing output and

competitiveness, implying that an entrepreneur's education and academic success significantly influence competitiveness.

The findings of this study reveal that male and female entrepreneurs compete equally. This contradicts the findings of other authors who have shown that males are more likely to participate in competitions or perform better in competitive circumstances than girls (Comeig et al., 2016; Saccardo et al., 2017). The outcomes of this study would imply that female entrepreneurs were given the same benefits and opportunities to compete in the context of the numerous criteria as male entrepreneurs.

Table 7. Differences in MSMEs' level of competitiveness in terms of enterprises' profile

Variable	U-value/H-value	p-value
Business Registration Status	200.0	0.001**
Business Permit Status	186.0	0.001**
Number of Employees	940.0	0.000**
Type of Ownership	491.0	0.001**
Type of Food Establishment	32.53	0.000**
Enterprise Location	21.47	0.002**
Number of Years in Operation	0.027	0.987
Number of Branches	614.5	0.011**

p < 0.05 is significant**

Table 7 shows that p-values for business registration status ($p = 0.001$), business permit status ($p = 0.001$), number of employees ($p < 0.001$), type of ownership ($p = 0.001$), type of food establishment ($p < 0.001$), enterprise location ($p = 0.002$), and number of branches ($p = 0.011$) are all less than the set alpha ($p = 0.05$). The variable number of years in operations has a higher p-value (0.987) than the set alpha. The study found significant differences in competitiveness among MSMEs based on business registration status ($U = 200.0$, $p = 0.001$), business permit status ($U = 186.0$, $p = 0.001$), employee count ($U = 940.0$, $p < 0.001$), ownership type ($U = 491.0$, $p = 0.001$), food establishment type ($U = 32.539$, $p < 0.001$), enterprise location ($U = 18.4621.472$, $p = 0.002$), and number of branches ($U = 614.5$, $p = 0.011$). The results also show no significant difference in MSMEs' competitiveness when classified by years in operation ($U = 0.027$, $p = 0.987$).

La Porta and Shleifer (2008) found that significant variations in firm performance are not universal and that unregistered enterprises outperformed registered enterprises from the start. Unregistered enterprises are thought to have poorer subsequent firm performance than registered enterprises during start-up. This is consistent with the findings of the current study, which show a substantial difference in competitiveness when grouped by company registration status and business permit status. The current analysis demonstrates that DTI-registered firms with business permits are much more competitive than those that are not registered or do not have business permits. This would suggest that business registration processes enhance the business climate toward increased corporate competitiveness.

De Brito and de Oliveira (2016) believe that human capital is crucial to organizational competitiveness relative to staff numbers. According to Shafeek (2016), human capital is an asset that adds value to a company's effectiveness and efficiency, enabling it to surpass competitors. Competent human resources boost an organization's competitiveness. Furthermore, firm size, defined as the number of employees, number of branches, and type of ownership, is more essential than previously thought (Kyung & Yoo, 2016). Large organizations have an advantage over smaller businesses owing to economies of scale. According to Thanh et al. (2021), firm size influences a company's competitiveness, with larger sizes associated with higher competitiveness. Such findings are consistent with the current study's findings, which show that the level of competitiveness of MSMEs varies significantly depending on the number of employees, type of ownership, and number of branches, with larger firms having more employees and branches managed and owned by a single person/partnership/corporation having a higher level of competitiveness.

Table 8 indicates that food truck/cart/stand enterprises are more competitive than fine and casual/family dining, café/coffee house, and buffet restaurants ($p = 0.004$ and $p < 0.001$, respectively), but not quick casual or fast-food establishments ($p = 1.000$). Fast casual and fast-food outlets outperformed fine and casual/family eating facilities

($p = 0.004$) and café/coffee house and buffet operations ($p < 0.001$). There was no significant difference ($p = 0.410$) between fine and casual/family dining establishments, café/coffee houses, and buffet restaurants.

Table 8. Post Hoc analysis of MSMEs' level of competitiveness when enterprises are grouped according to the type of food establishment

Variable	Age (I)	Age (J)	z	p-value
Type of Food Establishment	Food Truck / Cart / Stand	Fast Casual and Fast Food	2.886	1.000
		Fine and Casual / Family Dining	23.58	0.004**
		Café / Coffee house and Buffet	-37.18	0.000**
	Fast Casual and Fast Food	Fine and Casual / Family Dining	20.70	0.004**
		Café / Coffee house and Buffet	-34.29	0.000**
		Fine and Casual / Family Dining	-13.59	0.410

$p < 0.05$ is significant**

Food enterprises strive to distinguish themselves depending on their kind and cuisine. With Iloilo City's culinary industry expanding, restaurant competition has grown (Moreno & Tejada, 2015). This argument is seen in the wide range of culinary restaurants in Iloilo City. This would indicate that competition exists regardless of the type of food outlet. However, the survey found no significant variations in competition across food truck/cart/stand enterprises, quick casual and fast-food establishments, fine and casual/family dining institutions, café/coffee houses, and buffet establishments. Carpenter and Sweetland's (2022) findings from their research on food trucks refute the myth that they hurt businesses. According to their findings, food trucks are related to more restaurants, supporting the study's conclusion that there are no substantial differences in competition between food truck/cart/stand businesses and quick casual and fast-food locations. Similarly, the findings of this study, which found no significant differences in the level of competitiveness between fine and casual/family dining establishments, café/coffee houses, and buffet establishments, are supported by Dunman's (2020) findings, which found that food quality, service quality, and ambiance quality are more important in the competitiveness of food establishments than type.

Table 9. Post Hoc analysis of MSMEs' level of competitiveness when enterprises are grouped according to enterprise locations

Variable	Enterprise Location (I)	Enterprise Location (J)	z	p-value
Enterprise Location	La Paz	Molo	- 5.750	1.000
		City Proper	- 9.250	1.000
		Arevalo	16.45	1.000
		La Paz	- 17.85	1.000
		Jaro	25.000	0.126
	Molo	Mandurriao	- 35.95	0.002**
		City Proper	3.500	1.000
		Arevalo	10.70	1.000
		La Paz	12.10	1.000
		Jaro	19.25	0.722
	City Proper	Mandurriao	- 30.20	0.019**
		Arevalo	7.200	1.000
		La Paz	8.600	1.000
		Jaro	15.75	1.000
		Mandurriao	- 26.70	0.070
	Arevalo	La Paz	- 1.400	1.000
		Jaro	- 8.550	1.000
		Mandurriao	- 19.50	0.674
	La Paz	Jaro	7.150	1.000
		Mandurriao	- 18.10	0.980
	Jaro	Mandurriao	- 10.95	1.000

$p < 0.05$ is significant**

According to the pairwise comparisons in Table 9, where adjusted p-values are presented, there are statistically significant differences in the level of competitiveness between those in La Paz and Molo and those in Mandurriao ($p = 0.002$ and $p = 0.019$, respectively), but not when compared to other enterprise locations. This would imply that MSMEs in Mandurriao are far more competitive than those in La Paz and Molo. This is understandable given that Mandurriao has many business developments (USAID, 2014). Although Molo is also a commercial sector, Mandurriao is thriving as Iloilo City's new central business district, whereas La Paz is predominantly an industrial

and residential zone, with shipping businesses, oil depots, and a flour milling industry as its primary economic sources.

When all localities fight for resources, whether cities, municipalities, nations, or regions, experience shows that those who employ the marketing concept get the best results. The study's findings, which show that there is no significant difference in the level of competitiveness among MSMEs when compared to other enterprise locations, imply that businesses can compete regardless of where they are in Iloilo City, taking into account the expectations and demands of citizens, businesses, investors, tourists, visitors, and members of other target markets, as well as characteristics, and also offering neighboring competitive locations. This is possible, given Iloilo City's commitment to development and long-term expansion (Lena, 2023).

3.6 Differences in MSMEs' Extent of Contribution to Food Tour Development

Table 10. Differences in the MSMEs' extent of contribution to food tour development in terms of entrepreneurs' profile

Variable	Groupings	U-value / H-value	p-value
Age	Below 42 years old		
	43 – 58 years old	11.64	0.003**
	Above 58 years old		
Sex	Male	582.5	0.764
	Female		
Educational Attainment	At most high school graduate	581.5	0.016**
	At least college undergraduate		

p < 0.05 is significant**

Looking at the entrepreneurs' profile factors for MSMEs' contribution level to food tour growth, Table 10 shows that p-values for age (p = 0.003) and educational attainment (p = 0.016) are less than the specified alpha of 0.05. Furthermore, the p-value for the variable sex is 0.764, greater than the set alpha. This study's findings reveal substantial disparities in the level of contribution of firms to food tour development when entrepreneurs are classified by age (U = 11.644, p = 0.003). Meanwhile, educational attainment was statistically significant (U = 581.500, p = 0.016). Finally, when categorized by sex, it was not statistically significant (U = 582.500, p = 0.764).

Table 11. Post Hoc analysis of MSMEs' extent of contribution to food tour development when entrepreneurs are grouped according to age

Variable	Age (I)	Age (J)	z	p-value
Age	43 – 58 years old	Below 42 years old	17.474	0.003**
		Above 58 years old	-3.660	1.000
	Above 58 years old	Below 42 years old	13.814	0.058

p < 0.05 is significant**

From the pairwise comparisons in Table 11, where adjusted p-values are presented, analysis reveals statistically significant differences in the extent of contribution of the enterprises when entrepreneurs belong to those categories 43 – 58 years old when compared to those below 42 years old with p = 0.003, but not found significant when compared to above 58 years old and when paired those above 58 years old when compared to those below 42 years old with p = 1.000 and p = 0.058 respectively.

Entrepreneurs generate jobs for both themselves and others. Entrepreneurial activity may boost a country's economic performance by adding new commodities, technology, and manufacturing methods to the market while increasing overall productivity and competition (Kritikos, 2014). The prevalent and long-held belief that young people are uniquely capable of developing significant ideas in entrepreneurship (Jones et al., 2014) is widespread and long-standing. This is especially clear in this survey, as entrepreneurs under 42 contribute significantly more to food tour growth than older entrepreneurs, particularly those aged 43 to 58.

Many countries have incorporated entrepreneurial education into their basic, secondary, and university education curriculum. Prior research on the impact of education on entrepreneurial activities, such as MSMEs' contributions to food tour development, yielded conclusions that differed from the findings of this study. According to Jena (2020) and Mukhtar et al. (2021), entrepreneurship education enhances entrepreneurial attitudes, intentions, skills, or knowledge, which may result in a bigger contribution to job creation, economic growth, productivity and

production improvements, and innovation. However, Oosterbeek et al. (2010) argue that some educational programs have failed to foster entrepreneurial activities.

Several studies have identified significant similarities between male and female entrepreneurs, particularly in their firm's growth direction (Klapper & Parker, 2011), as well as differences in their company aims and activity patterns (Dilli & Westerhuis, 2018). It should also be noted that both contribute differentially to societal progress across industries and services (Hyams-Ssekasi et al., 2019; OECD, 2017). These discoveries, however, are not included in the current study's findings. According to Davis and Shaver (2012), research on entrepreneurs' growth goals, including how they contribute to societal development, has produced mixed results regarding empirical discrepancies between men and women. Menzies et al. (2004) found no statistically significant differences in stated growth aspirations between men and women in their study. The consequences of such a discovery might reduce the gender gap in entrepreneurial contributions to society's progress.

Table 12. Differences in the MSMEs' extent of contribution to food tour development in terms of enterprises' profile

Variable	U-value / H-value	p-value
Business Registration Status	233.5	0.005**
Business Permit Status	209.0	0.002**
Number of Employees	896.5	0.000**
Type of Ownership	461.5	0.007**
Type of Food Establishment	23.62	0.000**
Enterprise Location	18.46	0.005**
Number of Years in Operation	0.434	0.805
Number of Branches	596.5	0.021**

p < 0.05 is significant**

Table 12 shows that business registration status ($p = 0.005$), business permit status ($p = 0.002$), number of employees ($p < 0.001$), type of ownership ($p = 0.007$), type of food establishment ($p < 0.001$), enterprise location ($p = 0.005$), and number of branches ($p = 0.021$) have p-values less than the set alpha of 0.005. In contrast, the number of years in operation variable has a p-value of 0.805, higher than the set alpha. The study found significant differences in the extent of contribution of enterprises to food tour development when grouped according to business registration status ($U = 233.5$, $p = 0.005$), business permit status ($U = 209.0$, $p = 0.002$), number of employees ($U = 896.5$, $p < 0.001$), type of ownership ($U = 461.5$, $p = 0.007$), type of food establishment ($U = 23.622$, $p < 0.001$), enterprise location ($U = 18.466$, $p < 0.005$), and number of branches ($U = 596.5$, $p = 0.021$). The findings also show that there is no significant difference in MSMEs' contribution to food tour development when grouped by number of years in operation ($U = 0.434$, $p = 0.805$).

Cities are vital for business registration in decentralized economies like the Philippines. City-level company registration reform is one endeavor to attract business and generate jobs, particularly for MSMEs (Shrader, 2016). According to Williams and Kedir (2016), formal enterprises that start unregistered have significantly higher subsequent annual sales and employment growth rates than those that start registered, which contradicts the findings of this current study. However, it is crucial to remember that official figures on enterprise contributions are based on the total number of company enterprises registered. Furthermore, Branstetter et al. (2013) empirically analyzed company entrance regulation. They found it was connected with increased business formation and productivity, implying a stronger contribution to economic growth. Furthermore, Puspaningrum (2019) observed that business size, longevity, and legality all have a good and substantial influence on business growth, confirming increased economic development benefits.

The analysis shown in Table 13 reveals statistically significant differences in the level of competitiveness for food truck/cart/stand establishments when compared to fine and casual/family dining, café/coffee house, and buffet with $p = 0.004$ and $p = 0.001$, respectively, but not when compared to fast casual and fast-food establishments with $p = 1.000$. Furthermore, there were statistically significant variations in rivalry between quick casual and fast-food outlets, fine and casual/family eating venues ($p = 0.003$), and café/coffee house and buffet establishments ($p = 0.003$). Nonetheless, there was no significant difference ($p = 1.000$) between fine and casual/family eating places, café/coffee houses, and buffet venues.

Table 13. Post Hoc analysis of MSMEs' extent of contribution to food tour development when enterprises are grouped according to type of food establishment

Variable	Age (I)	Age (J)	z	p-value
Type of Food Establishment	Food Truck / Cart / Stand	Fast Casual and Fast Food	5.182	1.000
		Fine and Casual / Family Dining	23.44	0.004**
		Café / Coffee house and Buffet	-31.29	0.001**
	Fast Casual and Fast Food	Fine and Casual / Family Dining	18.26	0.003**
		Café / Coffee house and Buffet	-26.11	0.003**
	Fine and Casual / Family Dining	Café / Coffee house and Buffet	-7.850	1.000**

p < 0.05 is significant**

While customers have many options, organizations at all levels compete more than ever (Knollenberg et al., 2020), including contributions to development activities. In this situation, the study's findings show a considerable variation in the amount to which firms contribute to food tour development when categorized by kind of food institution. It is especially relevant when food truck/cart/stand enterprises combine fine and casual/family dining, café/coffee house, and buffet operations. The food truck phenomenon arose due to the pandemic's aftermath and economic downturn (Bartle, 2021). Consequently, Shin et al. (2020) and Isoni Auad et al. (2019) discovered that customers preferred food trucks because of their handy movable locations, food flavor, and value, resulting in increased sales and a bigger contribution to development.

This study also reveals a substantial difference in the contribution level when fast casual and fast-food outlets are compared to fine and casual/family eating venues, café/coffee houses, and buffet establishments. Many of the most heated discussions in the food and beverage business revolve around fast food and fast-casual outlets. The quickening speed of life in cities and the need for faster and cheaper meals have contributed to the expansion of these restaurants. As a result, the market expects a greater contribution to the development of the economy as fast-casual/fast-food restaurants proliferate.

Table 14. Post Hoc analysis of MSMEs' extent of contribution to food tour development when enterprises are grouped according to enterprises' locations

Variable	Enterprise Location (I)	Enterprise Location (J)	z	p-value
Enterprise Location	La Paz	Molo	- 10.65	1.000
		City Proper	- 7.700	1.000
		Arevalo	16.00	1.000
		La Paz	- 19.20	0.731
		Jaro	23.00	0.241
		Mandurriao	- 34.75	0.003**
	Molo	City Proper	2.950	1.000
		Arevalo	5.350	1.000
		La Paz	8.550	1.000
		Jaro	12.35	1.000
		Mandurriao	- 24.10	0.170
	City Proper	Arevalo	- 8.300	1.000
		La Paz	11.50	1.000
		Jaro	15.30	1.000
		Mandurriao	- 27.05	0.062
	Arevalo	La Paz	- 3.200	1.000
		Jaro	- 7.000	1.000
		Mandurriao	- 18.75	0.826
	La Paz	Jaro	3.800	1.000
		Mandurriao	- 15.55	1.000
	Jaro	Mandurriao	- 11.75	1.000

p < 0.05 is significant**

The post hoc analysis shown in Table 14 reveals statistically significant differences in the level of competitiveness for those located in La Paz when compared to those in Mandurriao (p = 0.003), but no significant differences when compared to other enterprise locations. Good site selections can substantially impact a company's long-term performance. While enterprise locations are increasingly recognized for their contribution to economic development (Defra, 2021), some suffer from geographical isolation (Tödtling & Trippl, 2005), low physical proximities between firms (Boschma, 2005), and limited choices in terms of available premises, employees, and

access to new knowledge (Phillipson et al., 2017; Sá et al., 2018). La Puz, a recently constructed neighborhood in Iloilo City, is largely an industrial and residential zone (USAID, 2014), far from Mandurriao, the city's new core business district, which is already thriving. The variance in how these two areas are used and classed in economic zones contributes to the variations in the degree of their contribution to food tour development.

3.7 Relationship of MSMEs' Level of Competitiveness and Extent of Contribution to Food Tour Development

Table 15. Relationship results between the level of competitiveness of the enterprises and the extent of contribution to food tour development

Variables	n	r	p-value
Level of Competitiveness and Extent of Contribution	70	0.831	0.000**

p < 0.05 is significant**

Table 15 shows that the p-value for the association between MSMEs' competitiveness and contribution to food tour development is < 0.001, lower than the established alpha of 0.05. The data show a significant relationship between enterprises' competitiveness and the amount they donate to the development of culinary tours, with a positive direct correlation, $r(70) = 0.831$, $p = 0.001$. Several studies have backed up the conclusions of this study. According to Alomari et al. (2019), enhanced competitiveness leads to more business contributions since competition promotes financial market growth, trade openness, labor market efficiency, and technological preparation. Furthermore, Virjan et al. (2023) believe that competitiveness promotes valuable contributions at the micro level, which has international implications through macroeconomic indicators, increased labor productivity, increased economic performance, raised living standards and economic and social wellbeing, education, competitive potential, and raising the Global Competitiveness index.

3.8 MSMEs' Level of Competitiveness as Predictor to the Extent of Contribution to Food Tour Development

A linear regression analysis was performed to see if competitiveness is a predictor of MSMEs' contribution to food tour development. Table 16 depicts a linear regression on the level of competitiveness that predicts the firms' contribution to food tour development. According to the study, the level of competitiveness has a positive linear relationship with the extent of firms' contribution to food tour development. It is statistically significant using the prediction equation MSMEs' Contribution to Food Tour Development = $0.194 + 0.85 \times \text{Level of Competitiveness}$.

Table 16. Regression results for level of competitiveness as a predictor to extent of contribution of enterprises to food tour development

Organizational Performance	B	95% CI for B		SE B	β	R ²	ΔR ²
		LL	UL				
Model						0.691	0.686***
Constant	0.194***	-2.35	0.622	0.22			
Level of Competitiveness	0.846 *	0.709	0.983	0.07	0.831		

p < 0.05 is significant**

Recent research revealed similar findings. According to Amoros et al. (2012), entrepreneurship is crucial to a country's competitiveness and progress because entrepreneurs establish new businesses that create more jobs, increase competition, and may even boost productivity through innovation. Additionally, Bashir and Akhtar (2016) discovered a favorable relationship between innovative competing companies and economic growth, suggesting that creative competing enterprises may help enhance economic growth. Furthermore, Dhahri and Omri (2018) confirm the positive link between competitive companies and their contribution to the economic and social dimensions of sustainable development in their investigation of the relationship between competitive enterprises and the domains of sustainable development.

3.9 Entrepreneur Profile as a Predictor to MSMEs' Contribution to Food Tour Development

Multiple regression was conducted to estimate the contribution of firms to food tour development based on the entrepreneur's profile characteristics. Table 17 shows linearity, as determined by partial regression plots and a plot of studentized residuals versus expected values. The Durbin-Watson value of 1.946 indicated that residuals were independent. Visual inspection of a plot of studentized residuals vs unstandardized expected values revealed homoscedasticity. There was no indication of multicollinearity, as measured by tolerance values larger than 0.1. There were no studentized deleted residuals over ± 3 standard deviations, leverage values above 0.2, or Cook's distance above 1. A Q-Q plot demonstrated that the assumption of normality was met.

Table 17. Multiple regression results for entrepreneur profile as predictor to enterprise contribution to food tour development

Organizational Performance	B	95% CI for B		SE B	β	R^2	ΔR^2
		LL	UL				
Model						0.14	0.10***
Constant	2.623***	1.85	3.40	0.39			
Age	-0.153*	-0.04	-0.31	0.08	-0.26		
Sex	0.059	-0.15	0.27	0.10	0.07		
Educational Attainment	0.198*	-0.08	0.48	0.14	0.19		

p < 0.05 is significant**

The study found that the entrepreneur profile variables age and educational attainment predict MSMEs' contribution to food tour development. The investigation yielded a prediction equation: MSMEs' extent of contribution to food tour development = 2.62 - 0.153 age + 0.059 sex + 0.198 educational attainment. According to Cohen (1988), the multiple regression model statistically substantially predicted enterprise contribution to food tour development ($F(3,66) = 3.49$, $p = 0.021$), accounting for 14% of the variation in enterprise contribution with adjusted $R^2 = 9.8\%$, indicating a partial size impact.

Several research findings support this study's finding that an entrepreneur's age predicts enterprise contribution to food tour development. Age structure influences population dynamics, which include economic growth. The rate at which an age structure grows (or declines) is connected to a population's economic progress. According to Kritikos (2014), successful entrepreneurs may reenergize the economy by generating jobs, inventing new technologies, and increasing productivity. Furthermore, Brieger et al. (2021) show that an entrepreneur's age correlates positively with their desire to seek value creation, such as contributing to economic growth. This is supported further by Hechavarria et al. (2017), who show that different age patterns across an entrepreneur's lifespan are reflected in their economic and social goals, shedding light on when entrepreneurs prioritize social over economic objectives throughout their lives and across institutional conditions. According to current research, a business's educational level predicts its contribution to food tour development. According to Peters and Brijlal's (2011) research, an entrepreneur's level of education can predict their engagement in development activities. Furthermore, Bayar et al. (2022) demonstrate that both basic and higher education levels of entrepreneurial education have a positive impact on entrepreneurial activities such as job creation, economic growth, and gains in productivity, output, and creativity.

4.0 Conclusion

Iloilo City, often known as the City of Love, has quietly developed as a regional economic powerhouse. Iloilo's strategic position, rich cultural history, and forward-thinking leadership make it an attractive destination for businesses and investors. The city's strong infrastructure and presence of top-tier educational institutions position it well to capitalize on the rising economy, making it a perfect breeding ground for startups and innovation-driven enterprises. It should be noted that improved competition leads to increased production and higher-quality products and services, helping the company to gain a stronger market position. When this happens, and more businesses get better market positions, the market becomes more competitive, resulting in higher productivity growth. When policies that promote market competitiveness are in place, economic growth accelerates. Competition drives the economy. The government and its agencies support healthy competition and fight anti-competitive corporate activities to ensure that consumers have access to high-quality products and services and that firms may compete fairly within a set of laws. Competition improves society by directly promoting progress.

One advantage of Iloilo City is that whenever entrepreneurs want to invest or start a business, a procedure for business registration is made available to help facilitate the ease of doing business and encourage more investments that further boost job creation and propel economic growth and development. The local government unit's policies and activities ease the issue that MSMEs have on business legalization, propelling the expansion of entrepreneurs such as those participating in food tours. A location may utilize food to market itself and support local food companies. Iloilo City has seven district boroughs that are regarded as viable commercial areas. However, La Puz district should yet be developed to increase its competitiveness. Businesses that wish to stay competitive, particularly those in La Puz, must work with the right individuals, whether it is incoming suppliers, technology solutions, or other unique talent that is not core to the commercial activity. Creating positive, distinct impressions of destination cuisine through positioning and differentiation to catch tourists' attention enables the industry to leverage passengers who highly prioritize food in their travel reasons. Appreciating local food

resources and paying close attention to how they are presented and promoted to the public will almost certainly attract tourists and increase tourism revenue.

Furthermore, DOT R6 can bring together tourism-related businesses such as lodging, transportation, travel and tour operators, and tour guides. People in the sector should be educated on consistently promoting tourism activities within Iloilo City, the region, and the country to support the influx of visitors and trips to places that result in greater tourism earnings. In the context of food tour development, DOT R6 may inform tourism-related enterprises on which locations and cuisines demand the most attention, assisting MSMEs that produce these commodities flourish. Furthermore, the department might request ongoing assistance from travel and tour operators, agents, and tour guides about culinary tours. In collaboration with the Department of Trade and Industry (DTI), DOT R6 can provide a list of potential food-related establishments that can be included in food tours and incentives whenever food tour itineraries include enterprise locations that require the most marketing. The DOT may help tour guides improve their guiding abilities, specifically how to include food, cuisine, and gastronomy into their narrative about the sites on tour itineraries. The idea is that DOT, DTI, and LGUs may encourage MSMEs to exchange and collaborate to get important access to first-rate information and accelerate useful skills, further increasing competitiveness. Additionally, because these organizations are required by law to help MSMEs, a review of laws and regulations may be conducted to promote fair competition and boost MSMEs' potential to contribute to food tour development.

How visitors and customers interact with MSMEs and culinary tours should also be examined. Tourists' unique behavior contributes to the local ecology, which shapes the dining experience. The consequences of visitor and consumer behavior may reflect how MSMEs compete in the future, contributing to the growth of culinary tours in Iloilo City. As more destinations prioritize food tourism, there is a greater emphasis on culture and managing food tourists as cultural resource consumers. There is a need to concentrate more on the interaction component of food tourism, considering that food is both a tangible and intangible heritage created and consumed within geographical bounds. Multistakeholder participation is essential, as is scalability.

Food is widely used to promote rural development; therefore, the food tourism sector looks to be in a minor scope. However, an influx of tourists may result in excessive food consumption, putting pressure on local food supply systems. Alternatively, the impact may be predicted in the reverse direction. Local resource management should be planned and carried out in partnership with other stakeholders and the local government, including food heritage marketing, food supply and production, and associated human resources. Not only is production vital, but so is the consumption of cultural resources through culinary tourism, which is part of experiencing tourism's "otherness". Cuisine is deeply ingrained in the experience economy, and how place and related cuisine are chosen and experienced creates inherent worth.

5.0 Contributions of Authors

The authors reviewed and approved the final work.

6.0 Funding

This work received no specific grant from any funding agency.

7.0 Conflict of Interests

The authors declare the following financial interests/personal relationships that may be considered potential competing interests: the Commission on Higher Education provided administrative support, the University of St. La Salle – Bacolod City provided writing assistance, and Ms. de Guzman and Iloilo Science and Technology University – Iloilo City Campus have an employee-employer relationship.

8.0 Acknowledgment

This research on micro, small, and medium enterprises' competitiveness and contribution to food tour development has been one of the things the authors are passionate about. The authors acknowledge the valuable contribution of the respondents of this study, especially the owner-entrepreneurs, for their consent and help, which made this study possible. Without your cooperation and patience in answering my survey instrument, I would not have the data that has become the core of this thesis. Special mention is also given to Dr. Marissa S. Quezon of the Graduate School Office for her assistance. Together with the panel of evaluators, Dr. Maribeth Pillo, Dr. Romeo G. Teruel, Dr. Jacqueline Felix, and Dr. Frederick Pe, who are experts in their field of specialization and whose insightful remarks and suggestions have helped with contextualizing the concepts and have brought about improvements to this work. Words are insufficient to express how the authors are indebted to Lucita and Mon Katherine throughout this study as assistants and drivers. Most importantly, to God Almighty for His direction, grace, and providence, riches that soothed us in invaluable ways.

9.0 References

- Adeleke, A. (2019). Marketing strategies of successful coffee shop owners. Retrieved from <https://bit.ly/3XrjujG>
- Alomari, M., Marashdeh, Z., & Bashayreh, A. (2019). Contribution of financial market development in competitiveness growth. *Cogent Economics & Finance*, 7(1), 1-19. <https://doi.org/10.1080/23322039.2019.1622483>
- Amorós, J. E., Fernández, C., & Tapia, J. (2012). Quantifying the relationship between entrepreneurship and competitiveness development stages in Latin America. *International Entrepreneurship and Management Journal*, 8(0), 249-270. <https://doi.org/10.1007/s11365-010-0165-9>
- Bai, Y., Chen, J., Gu, J., and Huang, Q. (2022). The relationship between age and successful entrepreneurship. *Advances in Economics, Business and Management Research*, 211, 1568-1571. <https://doi.org/10.2991/aebmr.k.220307.256>
- Balas Rant, M., Dziewanowska, K., Petrylaite, E., & Pearce, A. (2021). Young People's Self-Meaning Making Through Entrepreneurship in Poland, Slovenia and the UK: Implications for Human Resource Management in SMEs. *Economic and Business Review*, 23(2), 115-130. <https://doi.org/10.15458/2335-4216.1010>
- Bartle, J. R., Lutte, R. K., & Leuenberger, D. Z. (2021). Sustainability and air freight transportation: Lessons from the global pandemic. *Sustainability*, 13(7), 1-13. <https://doi.org/10.3390/su13073738>
- Bashir, H. A., & Akhtar, A. (2016). The role of innovative entrepreneurship in economic development: A study of G20 countries. *Management Studies and Economic System*, 2(2), 91-100. <https://doi.org/10.12816/0037559>
- Bayar, Y., Sart, G., Gavriletea, M.D. & Coros, M.M. (2022). The impact of entrepreneurial education and educational attainment on entrepreneurial activity: evidence from selected high-income economies. *Journal of Business Economics and Management*, 23(6), 1256-1279. <https://doi.org/10.3846/jbem.2022.17840>
- Birch, D., Memery, J. and Kanakaratne, M.D.S. (2018). The mindful consumer: balancing egoistic and altruistic motivations to purchase local food. *Journal of Retailing and Consumer Services*, 40(0), 221-228. <https://doi.org/10.1016/j.jretconser.2017.10.013>
- Boschma, R. (2005). Editorial: Role of Proximity in Interaction and Performance: Conceptual and Empirical Challenges. *Regional Studies*, 39(1), 41-45. <https://doi.org/10.1080/0034340052000320878>
- Branstetter, L., Lima, F., Taylor, L. J., & Venâncio, A. (2014). Do entry regulations deter entrepreneurship and job creation? Evidence from recent reforms in Portugal. *The Economic Journal*, 124(577), 805-832. <https://doi.org/10.1111/econj.12044>
- Brieger, S.A., Bairo, A., Criaco, G. & Terjesen, S. (2021). Entrepreneurs' age, institutions, and social value creation goals: A multi-country study. *Small Business Economics*, 57(0), 425-453. <https://doi.org/10.1007/s11187-020-00317-z>
- Brush, C.G., Ceru, D.J. & Blackburn, R. (2009). Pathways to entrepreneurial growth: the influence of management, marketing, and money. *Business Horizons*, 52(5), 41-49. <https://dx.doi.org/10.1016/j.bushor.2009.05.003>
- Cankılı, D., & Demir, İ. (2018). Travel agencies and gastronomy tourism: Case of Iata member A-class travel agencies. *Journal of Gastronomy Hospitality and Travel*, 1(1), 3-10. <https://doi.org/10.33083/joghat.2018.0>
- Carpenter, D. And Sweetland, K. (2022). Food Truck Truth: Why restaurants and cities have nothing to fear from mobile food business. Retrieved from <https://bit.ly/4exV0fA>
- Catalano, T. (2023). Microenterprise: Definition, types, example. Retrieved from <https://bit.ly/4ewNAi3>
- Cheng, Q. & Huang, R. (2019). Understanding the role of local food in sustaining Chinese destinations. *Current Issues in Tourism*, Taylor & Francis Journals, 22(5), 544-560. <https://doi.org/10.1080/13683500.1444020>
- Comeig, I., Grau-Grau, A., Jaramillo-Gutiérrez, A., & Ramírez, F. (2016). Gender, self-confidence, sports, and preferences for competition. *Journal of Business Research*, 69(4), 1418-1422. <https://doi.org/10.1016/j.jbusres.2015.10.118>
- Daily Guardian (October 12, 2022). Putting Iloilo on the radar of food lovers. Retrieved from <https://bit.ly/4gAftNO>
- Davis, A. E., & Shaver, K. G. (2012). Understanding Gendered Variations in Business Growth Intentions across the Life Course. *Entrepreneurship Theory and Practice*, 36(3), 495-512. <https://doi.org/10.1111/j.1540-6520.2012.00508.x>
- de Brito, R.P. and de Oliveira, L.B. (2016). The relationship between human resource management and organizational performance. *Brazilian Business Review*, 13(3), 90-110. <http://doi.org/10.15728/bbr.2016.13.3.5>
- Defra (2021). Statistical digest of Rural England. Retrieved from <https://bit.ly/3TxXv9W>
- Dhahri, S., & Omri, A. (2018). Entrepreneurship contribution to the three pillars of sustainable development: What does the evidence really say? *World Development*, 106(0), 64-77. <https://doi.org/10.1016/j.worlddev.2018.01.008>
- Dilli, S., & Westerhuis, G. (2018). How institutions and gender differences in education shape entrepreneurial activity: a cross-national perspective. *Small Business Economics*, 51(2), 371-392. <http://www.jstor.org/stable/45107023>
- Ellis, A., Park, E., Kim, S. & Yeoman, I. (2018). What is food tourism? Progress in Tourism Management, 68(0), 250-263. <https://doi.org/10.1016/j.tourman.2018.03.025>
- Forbes, D.P. (2005). Managerial determinants of decision speed in new ventures. *Strategic Management Journal*, 46(3), 355-366. <https://doi.org/10.1002/smj.451>
- Garay-Nugroho, H.D.V. (2022). Predictive effect of business permit modalities on selected economic indicators among the municipalities in the Philippines. 4th Cities and Municipalities Competitiveness Index Academic Symposium.
- Guzman J., Kacperczyk A. (2019). Gender gap in entrepreneurship. *Res. Policy*, 48(0), 1666-1680. <https://doi.org/10.1016/j.respol.2019.03.012>
- Hall, C. M. (2012). Boosting food and tourism-related regional economic development. In *Food and the Tourism Experience*. OECD.
- Hechavarria, D. M., Terjesen, S. A., Ingram, A. E., Renko, M., Justo, R., & Elam, A. (2017). Taking care of business: the impact of culture and gender on entrepreneurs' blended value creation goals. *Small Business Economics*, 48(1), 225-257. <https://doi.org/10.1007/s11187-016-9747-4>
- Hyams-Ssekasi D., Stefan A., Agboma F., Kumar N. (2019). Determinants of women's entrepreneurial attitude across European cultures in Women Entrepreneurs and Strategic Decision Making in the Global Economy. IGI Global
- Isoni Aua, L., Cortez Ginani, V., Dos Santos Leandro, E., Stedefeldt, E., Costa Santos Nunes, A., Yoshio Nakano, E., & Puppini Zandonadi, R. (2019). Brazilian Food Truck Consumers' Profile, Choices, Preferences, and Food Safety Importance Perception. *Nutrients*, 11(5), 1175. <https://doi.org/10.3390/nu11051175>
- Jena, R. K. (2020). Measuring the impact of business management Student's attitude towards entrepreneurship education on entrepreneurial intention: A case study. *Computers in Human Behavior*, 107(0), 106275. <https://doi.org/10.1016/j.chb.2020.106275>
- Jones, B., & Iredale, N. (2014). Enterprise and entrepreneurship education: towards a comparative analysis. *Journal of Enterprising Communities*, 8(1), 34-50. <https://doi.org/10.1108/JEC-08-2012-0042>
- Justiniani, B. & Cordova, J. (2015). Experiencing Ilonggo Culture. Retrieved from <https://bit.ly/3TD1zFN>
- Klapper, L., & Parker, S. (2011). Gender and the Business Environment for New Firm Creation. *The World Bank Research Observer*, 26(2), 237-257. <https://doi.org/25.10.1093/wbro/lkp032>
- Knollenberg, W., Duffy, L., Kline, C., & Kim, G. (2020). Creating competitive advantage for food tourism destinations through food and beverage experiences. *Tourism Planning & Development*, 18(4), 1-19. <https://doi.org/10.1080/21568316.2020.1798687>
- Kristic, M., Filipe, J., & Chavaglia, J. (2020). Higher education as a determinant of the competitiveness and sustainable development of an economy. *Sustainability*, 12(16), 6607. <https://doi.org/10.3390/su12166607>
- Kritikos, A. (2014). Entrepreneurs and their impact on jobs and economic growth. Retrieved from <https://bit.ly/4ewPH01>
- Kumar, P., & Kumar, D. (2020). Ease of doing business: a critical overview. *Aegeum Journal*, 9(9), 586-598. <https://bit.ly/3BgYLQU>
- Kyung, J.P., & Yoo, Y. (2016). Improvement of competitiveness in small and medium-sized enterprises. *Journal of Applied Business Research*, 33(1), 173-194. <https://doi.org/10.19030/jabr.v33i1.9888>
- Lackner, M. (2021). Gender differences in competitiveness. *IZA World of Labor*, 0(0), 1-10. <https://doi.org/1.15185/izawol.236.v2>
- La Porta, R., & Shleifer, A. (2008). The unofficial economy and economic development. Retrieved from <https://bit.ly/47vXngV>
- Lena, P. (2023, November 28). Investment forum generates over P1-B in pledges for Iloilo City. Philippine News Agency. Retrieved from <https://beta.pna.gov.ph/articles/1214446>
- Levesque, M., & Minniti, M. (2006). The effect of aging on entrepreneurial behavior. *Journal of Business Venturing*, 21(2), 177-194. <https://doi.org/10.1016/j.jbusvent.2005.04.003>
- Majkova, M.S., & Kljucnikov, A. (2017). The specific character traits of young entrepreneurs in Slovakia. *International Journal of Entrepreneurial Knowledge*, 1(5), 41-48. <https://doi.org/10.1515/ijek-2017-004>
- Mathur, P. (2015). Achieving competitive advantage through employees. *International Journal of Arts, Humanities and Management Studies*, 1(9), 66-71. <https://bit.ly/4gBckI8>
- McCombes, S. (2022). Descriptive research: Definition, types, methods & examples. Retrieved from <https://bit.ly/4gv8ASX>
- Medeira, A. Palarão, T., & Mendes, A.S. (2020). The impact of pandemic crisis on the restaurant business. *Sustainability*, 13(1), 1-13. <https://www.mdpi.com/2071-1050/13/1/40>
- Menzies, T. V., Diochon, M., & Gasse, Y. (2004). Examining venture-related myths concerning women entrepreneurs. *Journal of Developmental Entrepreneurship*, 9(2), 89-107. <https://bit.ly/3BgYTzS>
- Mercado, N.A. (June 19, 2020). DTI: Sellers operating on 'irregular' basis not required to register. Inquirer.net. Retrieved from <https://bit.ly/4ggCLdQ>
- Momin, A. (2022). Coffee Industry Analysis: Market Insights and Competition. Retrieved from <https://pestleanalysis.com/coffee-industry-analysis/>
- Moreno, P., & Tejada, P. (2019). Reviewing the progress of information and communication technology in the restaurant industry. *Journal of Hospitality and Tourism Technology*, 10(4), 673-688. <https://doi.org/10.1108/JHTT-07-2018-0072>
- Moxon, S. (2015). Competitiveness is profoundly sex-differential. *New Male Studies: An International Journal*, 4(3), 39-51. <https://bit.ly/4gzJClu>
- Mukhtar, S., Wardana, L., Wibowo, A., & Narmaditya, B. (2021). Does entrepreneurship education and culture promote students' entrepreneurial intention? The mediating role of entrepreneurial mindset. *Cogent Education*, 8(1), 1-18. <https://doi.org/10.1080/2331186X.2021.1918849>
- Muntean S. C., & Ozkazanc-Pan B. (2015). A Gender integrative conceptualization of entrepreneurship. *New Engl. J. Entrep.*, 18(0), 27-40. <https://doi.org/10.1108/NEJE-18-01-2015-B002>

- Nathan, O. F., Molefhe, L., Mupimpila, C., Nkuba, M., & Okurut, M. L. (2015). Determinants of SME growth in Botswana. *International Journal of Economic Issues*, 9(1), 23-44. <https://bit.ly/4e9zsqs>
- Okumus, B., Köseoglu, M.A., & Ma, F. (2018). Food and gastronomy research in tourism and hospitality: A bibliometric analysis. *International Journal of Hospitality Management*, 73(0), 64-74. <https://doi.org/10.1016/j.ijhm.2018.01.020>
- Oosterbeek H., Praag M. V., & Ijselstein A. (2010). The impact of entrepreneurship education on entrepreneurship skills and motivation. *European Economic Review*, 54(3), 442-454. <https://doi.org/10.1016/j.eurocorev.2009.08.002>
- Peters, R., & Brijlal, P. (2011). The relationship between levels of education of entrepreneurs and their business success: a study of the province of Kwazulu-Natal, South Africa. *Industry and Higher Education*, 25(4), 265-275. <https://doi.org/10.5367/ihe.2011.0048>
- Phillipson, J., Gorton, M., Maioli, S., Newbery, R., Tiwasing, P., & Turner, R. (2017). Rural business aspirations, obstacles and support: an analysis of the Longitudinal Small Business Survey 2015. Enterprise Research Centre, 0(0), 1-58. <https://bit.ly/3TD1wdf>
- Puspaningrum, A. (2019). The role of business size, business duration, credit facilities and business legalities on SMEs growth. *European Journal of Research and Reflection in Management Sciences*, 7(3), 31-38. <https://bit.ly/3TD1GBd>
- Puspaningrum, A. (2020). Market orientation, competitive advantage and marketing performance of small medium enterprises (SMEs). *Journal of Economics, Business, and Accountancy*, 23(1), 19-27. <https://doi.org/10.14414/jebav.v23i1.1847>
- Purnomo, A. M. (2016). The Roles of Food Industries as a Part of Food Tourism Development for Women Empowerment in Bogor. *Asia Tourism Forum 2016 – The 12th Biennial Conference of Hospitality and Tourism Industry in Asia*. Atlantis Press.
- Quinn, B., McKitterick, L., McAdam, R., & Dunn, A. (2014). Introduction. *The International Journal of Entrepreneurship and Innovation*, 15(3), 143-145. <https://doi.org/10.5367/ijei.2014.0158>
- Rogalska, I. (2020). Perception of location factors by entrepreneurs and representatives of business environment institutions. *European Research Studies Journal*, 23(1), 600-613. <http://dx.doi.org/10.35808/ersj/1780>
- Sá, E., Casais, B., & Silva, J. (2018). Local development through rural entrepreneurship, from the Triple Helix perspective: The case of a peripheral region in northern Portugal. *International Journal of Entrepreneurial Behavior & Research*, 25(4), 698-716. <https://doi.org/10.1108/IJEBR-03-2018-0172>
- Saccardo, S., Pietrasz, A., & Gneezy, U. (2017) On the size of the gender difference in competitiveness. *Management Science*, 64(4), 1541-1554. <https://doi.org/10.1287/mnsc.2016.2603>
- Sassower, R. (2017). Causality and correlation. In B.S. Turner (Ed.) *The Wiley-Blackwell encyclopedia of social theory*. New York, NY: Wiley.
- Scheibe, S., Walter, F., & Zhan, Y. (2021). Age and emotions in organizations: main, moderating, and context-specific effects. *Work, Aging, and Retirement*, 7(1), 1-8. <https://doi.org/10.1093/workar/waaa030>
- Shafeek, H. (2016). The Impact of Human Resources Management Practices in SMEs. *Annals of the Faculty of Engineering Hunedoara-International Journal of Engineering*, 14(4), 91-102 (13). <https://bit.ly/3TEncFH>
- Shin, Y.H., Im, J., & Severt, K. (2020). Qualitative assessment of key beliefs in regards to consumers' food truck visits. *Journal of Quality Assurance in Hospitality and Tourism*, 21(2), 129-145. <https://doi.org/10.1080/1528008X.2019.1627271>
- Shrader, H. (2016). Effective city competitiveness: 10 lessons learned in the Philippines. Retrieved from <https://bit.ly/4enP4WM>
- Sonobe, T., Takeda, A., Yoshida, S., & Truong, H.T. (2021). The Impacts of the COVID-19 Pandemic on Micro, Small, and Medium Enterprises in Asia and Their Digitalization Responses. Retrieved from <https://bit.ly/4e9zzSx>
- Thanh, L., T., Huan, N. Q., Hong, T. T. T., & Liu, G. (2021). Determinants for competitiveness in the context of international integration pressure: Case of small and medium enterprises in emerging economy-Vietnam. *Cogent Business & Management*, 8(1), 1-29. <https://doi.org/10.1080/23311975.2021.1893246>
- Todtling, F., & Trippl, M. (2005). One size fits all? Towards a differentiated regional innovation policy approach. *Research Policy*, 34(8), 1203-1219. <https://doi.org/10.1016/j.respol.2005.01.018>
- Villafuerte, F. (2017). The Consequences of Not Having a Business Permit in the Philippines. Retrieved from <https://bit.ly/3TD1XEF>
- Villareal, M. (2022). Iloilo: The Philippines Premier Culinary Destination. Retrieved from <https://bit.ly/3XzhYML>
- Virjan, D., Manole, A.M., Stanef-Puică, M.R., Chenic, A.S., Papuc, C.M., Huru, D., & Bănuș, C.S. (2023). Competitiveness – the engine that boosts economic growth and revives the economy. *Front. Environ. Sci.*, 11(0), 1-14. <https://doi.org/10.3389/fenvs.2023.1130173>
- Vlachou, Ch., & Savvinopoulou, M. (2022). Food Tours Business: Main Factors in Designing a Gastronomic Experience. *Open Journal of Business and Management*, 10(0), 2996-3015. <https://doi.org/10.4236/ojbm.2022.106148>
- Williams, C.C., & Kadir, A. (2016). Business Registration and Firm Performance: Some Lessons From India. *Journal of Developmental Entrepreneurship*, 21(3), 1650016. <https://doi.org/10.1142/S1084946716500163>
- Yang, W., & Meyer, K.E. (2019). How does ownership influence business growth? A competitive dynamics perspective. *International Business Review*, 28(5). <https://doi.org/10.1016/j.ibusrev.2018.02.009>

Leadership, Agricultural Innovation, Peace and Order Among the Residents of the Agricultural Development of a Province

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Date received: September 3, 2024

Date revised: September 16, 2024

Date accepted: September 25, 2024

Originality: 87%

Grammarly Score: 99%

Similarity: 13%

Recommended citation:

Guro, A.A. (2024). Leadership, agricultural innovation, peace and order among the residents of the agricultural development of a province. *Journal of Interdisciplinary Perspectives*, 2(11), 36-52.

<https://doi.org/10.69569/jip.2024.0473>

Abstract. . This study investigates the impact of leadership, agricultural innovation, and peace and order on agricultural development in Lanao del Sur. Focusing on four municipalities – Taraka, Marantao, Ganassi, and Malabang – each with unique agricultural characteristics, the study aims to understand how these factors contribute to the region's agricultural progress. A total of 399 participants were surveyed using adapted and researcher-made instruments. Descriptive-correlational and causal research designs were employed to analyze the data through mean, standard deviation, Pearson correlation, and multiple regression. The results reveal that strong leadership in political, economic, and collective agricultural actions significantly enhances development. High levels of agricultural innovation, particularly in farming methods and infrastructure, were also observed. However, the persistence of "rido" (clan feuding) and lawlessness, despite ongoing police and military efforts, continues to challenge peace and order in the province. The study concludes that while leadership and innovation drive agricultural progress, sustained efforts to maintain peace are crucial for further development.

Keywords: Leadership; Agricultural innovation; Peace and order; Agricultural development, Farm production..

1.0 Introduction

Agriculture is a cornerstone of economic stability and growth across the globe, particularly in developing countries where a significant portion of the population relies on farming for sustenance and income. Despite the sector's critical importance, farmers in these regions are often the most vulnerable to poverty and food insecurity, highlighting a paradox in which those who produce food are frequently unable to meet their own nutritional needs. This reality underscores the urgent need to explore pathways for agricultural development that can alleviate poverty and enhance the well-being of farming communities, especially in regions characterized by high levels of socio-economic deprivation.

The literature has extensively discussed the relationship between agricultural development and economic growth. Dane (2022) emphasizes that agriculture is the backbone of national economies by providing essential food supplies, raw materials, and employment opportunities. A robust agricultural sector is, therefore, integral to food security and broader economic development. Vespia (2021) further supports this by arguing that agricultural development is vital for reducing poverty, particularly in rural areas where most people depend on farming for

their livelihood. These studies highlight the multifaceted role of agriculture in driving economic progress. However, they also reveal significant disparities in how the benefits of agricultural development are distributed, particularly in developing regions.

As described by Udemezue and Osegbue (2018), sustainable agricultural development involves creating the conditions necessary for ongoing agricultural productivity while safeguarding environmental resources for future generations. This includes the enhancement of agricultural practices, the introduction of innovative technologies, and the equitable distribution of resources. The authors argue that sustainable agricultural development is about increasing output and improving the quality of life in rural areas, ensuring food security, and providing a stable income for farmers. However, the challenge lies in achieving these goals without compromising environmental sustainability, which requires a careful balance between economic growth and ecological preservation.

These challenges are particularly pronounced in the context of the Bangsamoro Autonomous Region in Muslim Mindanao (BARMM), specifically in Lanao del Sur. Lanao del Sur, recognized for its favorable climate and fertile land, holds significant agricultural potential. The province produces a variety of crops, including corn, coconut, sugarcane, banana, and cassava, and has a growing livestock sector. Despite these assets, Lanao del Sur remains one of the poorest provinces in the Philippines, with a high poverty incidence and a population that continues to struggle with food insecurity and economic instability.

Previous studies have identified several factors that influence agricultural productivity in the region, including the availability of agricultural inputs, access to markets, and the role of local governance in supporting agricultural initiatives. However, there is a gap in the literature concerning the specific influence of leadership, agricultural innovation, and peace and order on agricultural growth in Lanao del Sur. Understanding these dynamics is crucial, particularly in a region that has experienced both socio-political instability and underdevelopment.

This study seeks to fill this gap by examining how leadership, agricultural innovation, and the maintenance of peace and order impact agricultural growth in Lanao del Sur. The research aims to provide insights that could inform more effective regional agricultural policies and interventions by focusing on these factors. The significance of this study lies in its potential to contribute to the socio-economic upliftment of one of the most impoverished areas in the Philippines, offering a model for similar regions in the BARMM and beyond. Through this work, we hope to advance the understanding of how targeted agricultural development strategies can foster sustainable economic growth and improve the quality of life for farmers in Lanao del Sur.

2.0 Methodology

2.1 Research Design

This study employed a descriptive correlational and causal-comparative research design. The primary aim is to gather and analyze data to compare and evaluate the levels of awareness, knowledge, and agricultural practices among participants in the selected municipalities of Lanao del Sur. The descriptive correlational design facilitates examining naturally occurring relationships between independent and dependent variables without manipulation. In contrast, the causal-comparative design identifies potential cause-and-effect relationships by comparing groups based on certain variables. According to Allen (2017), quantitative research methods, including surveys and statistical analysis, are well-suited to quantify and measure phenomena. The primary data collection method for this study was a structured questionnaire survey.

2.2 Research Participants

The study population consisted of residents, including farmers and local officials, from four municipalities representing diverse topographies in Lanao del Sur: Marantao (n=107), Malabang (n=142), Ganassi (n=74), and Taraka (n=76). Participants were selected through a cluster random sampling technique to ensure representative sampling across the different geographical areas.

2.3 Research Instruments

Data was collected using a questionnaire designed in consultation with an expert panel, including a major professor. The questionnaire comprised four sections addressing independent variables: leadership, agricultural innovations, peace and order, and farm production. A pilot study was conducted to assess the validity and

reliability of the instrument, involving at least 30 participants from the target population. The instrument's content validity was evaluated and enhanced by three experts in agriculture, all holding doctoral degrees. These experts provided critical feedback to refine the questionnaire. Reliability was measured using Cronbach's alpha, with a threshold of 0.7 or higher, as recommended for social science research (Goforth, 2015). The pilot test results indicated that all items met this reliability criterion, and the final version of the questionnaire was deemed valid and reliable for the study.

2.4 Data Collection Procedure

Upon receiving approval to conduct the research, and with the assistance of Municipal Agriculture Officers, the questionnaires were distributed to randomly selected respondents in each municipality. The researcher facilitated the process by translating the questionnaire into the Meranao dialect when necessary to ensure clarity and comprehension. Completed questionnaires were then collected, and the data was systematically tabulated, analyzed, and interpreted.

2.5 Ethical Considerations

Ethical standards were strictly adhered to throughout the study. Participation was entirely voluntary, with no penalties or loss of benefits for those who chose not to participate. Confidentiality and anonymity were maintained by excluding personal identifiers from the data collection process. The data was accessible only to the researcher, the research adviser, the statistician, and authorized personnel involved in data analysis. Informed consent was obtained from all participants, ensuring they were fully aware of their rights and the study's objectives.

2.6 Data Analysis

The data analysis was conducted using appropriate statistical methods. Descriptive statistics were employed to address research questions 1 through 4, providing summaries of the participants' levels of awareness, knowledge, and agricultural practices. For research question 5, the Pearson product-moment correlation was used to assess the relationship between the variables. Lastly, multiple regression analysis was applied to address research question 6, enabling the exploration of the predictive relationships between the independent variables and the dependent outcomes.

3.0 Results and Discussion

3.1 Leadership of the Governing Authority

In terms of the Political Aspect

Table 1 presents the level of leadership of the political governing authority. The overall mean is 3.76, which is interpreted as very good. This data implies that the governing authority's leadership level in politics was excellent.

Table 1. Descriptive statistics of the level of leadership of the governing authority in terms of political aspect

Indicators	Mean	SD	Description	Interpretation
1. Establish the goals of agriculture initiatives aimed at reducing farmer poverty.	3.93	0.935	Agree	Very Good
2. Delegate power and responsibility to farmers.	3.99	0.774	Agree	Very Good
3. The Municipal Agricultural Officer routinely helps the farmers.	3.77	0.810	Agree	Very Good
4. Budget Set Aside by LGUs for Agricultural Development.	4.00	1.044	Agree	Very Good
5. LGUs have a long-term Area Development Plan.	3.69	0.903	Agree	Very Good
6. The LGUs invite both domestic and foreign investors.	3.31	0.969	Neutral	Good
7. The LGUs work together on agricultural projects with the neighboring municipalities.	3.63	0.820	Agree	Very Good
Over-all Mean	3.76	0.672	Agree	Very Good

Note: 4.50-5.00 (Strongly Agree, Excellent), 3.50-4.49 (Agree, Very Good), 2.50-3.49 (Neutral, Good), 1.50-2.49 (Disagree, Fair), 1.00-1.49 (Strongly Disagree, Poor)

The study by Kolaj et al. (2017) in Albania concluded that the growth and strengthening of the role of leadership in farming communities would also help promote and develop agriculture. It would also have positive effects, such as raising awareness of the degree of competence and quality of decision-making concerning the use of resources and rural development. Previous research shows that several countries have developed leadership programs for agricultural entrepreneurs. For example, Australia, Canada, the United States, and New Zealand have developed strategies for leadership development in the agricultural sector (Brosnan, 2014).

A study by Ulvenblad et al. (2019) mentioned that a greater focus is needed on leadership development for agricultural entrepreneurs to manage larger units better and identify and implement innovative ways to create, deliver, and capture value in this rapidly changing agricultural environment. Their study also addresses the deficiency in leadership education for practicing agricultural entrepreneurs, focusing on self-leadership practices in a leadership development program designed specifically for agricultural entrepreneurs. The actions of governments around the world have always influenced agriculture. However, many developing countries have had food deficits, with little in the way of exportable goods to pay for food imports. Several national and international organizations have been established to deal with the problems of developing countries, and direct assistance has also been provided by the governments of developed countries (Britannica, 2022).

The Sustainable Development Goals (SDGs) and targets are integrated and indivisible, worldwide in nature, and commonly applicable, and consider different national realities, capacities, and levels of development and respect national policies and priorities. Furthermore, each government was expected to take possession, establish national frameworks, and set nationally owned targets guided by the global level of ambition while considering country-level circumstances to achieve the 17 goals. Countries will also decide how these aspirational and global targets should be incorporated into national planning processes, policies, and strategies. In line with the Philippines' commitment to achieving the SDGs, the PSA Board issued PSA Resolution No. 04 Series of 2016, Enjoining Government Agencies to Provide Data Support to the Sustainable Development Goals (SDGs). *"The government is fully prepared to continue investing in Mindanao's future, but the government alone cannot finance Mindanao's long-term progress. The island region's private sector – its entrepreneurs and business leaders – must continue to make significant investments in its development, especially in those places where investments are most needed,"* Sec. Dar further said. This is the kind of leadership needed by agricultural entrepreneurs. Ulvendblad et al. (2019) posited that high levels of leadership can manage larger units and identify and implement innovative ways to create, deliver, and capture value in a rapidly changing agricultural environment.

In terms of the Economic Aspects

Table 2 presents the level of leadership of the governing authority of economics. The overall mean is 3.77, which is interpreted as very good. This data implied that the governing authority's economic leadership level was excellent.

Table 2. Descriptive statistics of the level of leadership of the governing authority in terms of economic aspect

Indicators	Mean	SD	Description	Interpretation
1. Set attainable objectives for the agriculture program.	3.90	0.795	Agree	Very Good
2. Manage work consistent with resources.	3.99	0.841	Agree	Very Good
3. Manage time effectively by monitoring the production of farmers' crops, livestock, or fisheries up to harvest.	4.14	0.824	Agree	Very Good
4. Ascertain the equipment and gear requirements for farmers.	3.86	1.070	Agree	Very Good
5. Farmers receive loans from local governments.	3.71	0.803	Agree	Very Good
6. Farmers Receive Regular Financial Training from LGUs.	3.47	0.874	Neutral	Good
7. Agri-tourism is slowly developing in the Area.	3.64	0.855	Agree	Very Good
8. Collaboration with NGOs is a common practice.	3.57	0.914	Agree	Very Good
9. Local governments help farmers market their products.	3.71	0.964	Agree	Very Good
Over-all Mean	3.77	0.692	Agree	Very Good

The 2012 Family Income and Expenditure Survey (FIES) showed that 68% of Philippine households earn some agriculture income. (R.A. 8435) prescribing urgent related measures to modernize the agricultural and fisheries sectors of the country to enhance their profitability and prepare said sectors for the challenges of globalization through an adequate, focused, and rationale delivery of necessary support services, appropriating funds and other purposes, otherwise known as the "Agriculture and Fisheries Modernization of 1997" (AFMA) was created by the Third Congress on the Third Regular Session. This agrees with the Organic Agricultural Act of 2010 (RA 10068) and its IRR.

In terms of Collective Action

Table 3 presents the leadership level of the governing authority of collective action. The overall mean is 3.76, which is interpreted as very good. This data implied that the governing authority's leadership level regarding collective action was excellent. A study by Rolaj et al. (2017) suggests that cooperation among farmers based on collective action is an essential alternative for overcoming structural problems. Banaszak explained that the same forms of

cooperation in collective action in a similar environment can bring different results (Banaszak, 2008). The question is why certain cooperation agreements on agricultural markets are successful while others are not. Some of the groups of producers are effective, while others are not. Banaszak states that variables such as the strength of leadership, previous knowledge in the field of business, the initial selection of members, and the number of members significantly impact the chances of success.

Table 3. Descriptive statistics of the level of leadership of the governing authority in terms of collective action

Indicators	Mean	SD	Description	Interpretation
1. Prioritize agricultural programs for farmers.	3.64	0.988	Agree	Very Good
2. Create an annual work schedule for the area of responsibility farmers require.	3.67	0.805	Agree	Very Good
3. It is possible to monitor the application of inventions that have received government support or funding on farms.	3.68	0.798	Agree	Very Good
4. Monthly monitoring by the Municipal Agriculture Officer of the Farmers.	3.72	0.876	Agree	Very Good
5. There is an Extensionist in the Area.	3.94	0.778	Agree	Very Good
6. There is a Product Development Project.	4.11	0.731	Agree	Very Good
7. NGOs, LGUs, and government organizations regularly evaluate the project delivered to the farmers.	3.80	0.844	Agree	Very Good
8. Universities are welcome to assist.	3.59	1.070	Agree	Very Good
Over-all Mean	3.76	0.657	Agree	Very Good

Furthermore, the study of Rolaj et al. (2017) concluded that the growth and strengthening of the role of leadership in the farming communities would also be helpful for the promotion and development of agriculture; it would bring positive effects, such as raising awareness for the degree of competence and quality of decision-making concerning the use of resources and rural development. The scale and intensity of the use of resources, such as land, forests, and rivers for economic development and growth, implicates costs and requires quality agricultural products. This finding agrees with the study of Rolaj et al. (2017). It suggests overcoming structural problems among farmers, which are resolved by collective action supported by the findings of (Skreli et al., 2011).

In terms of Cooperative Agriculture

Table 4 presents the level of leadership of the governing authority of cooperative agriculture. The overall mean is 3.77, interpreted as very good. This data implied that the governing authority's leadership level in cooperative agriculture was outstanding.

Table 4. Descriptive statistics of the level of leadership of the governing authority in terms of cooperative agriculture

Indicators	Mean	SD	Description	Interpretation
1. There is active cooperative agriculture in the area.	3.72	0.986	Agree	Very Good
2. Supplies required for farm production are affordably priced in cooperative agriculture.	3.71	0.762	Agree	Very Good
3. Members clearly understood the benefits or goals of cooperative agriculture.	4.04	0.643	Agree	Very Good
4. Banks permit agricultural cooperatives to borrow money.	3.74	0.955	Agree	Very Good
5. The Agricultural Cooperative is Financially Stable.	3.76	0.871	Agree	Very Good
6. The Agricultural Cooperative is Expanding.	3.74	0.849	Agree	Very Good
7. Farmers can borrow Money from the Cooperative.	3.77	0.899	Agree	Very Good
8. NGOs and other Organizations Provide Assistance to the Cooperative.	3.67	0.815	Agree	Very Good
Over-all Mean	3.77	0.619	Agree	Very Good

A study made by DeSalva (2012) stated that forming local and organic agricultural cooperatives is one way to eliminate the barriers currently preventing local and organic farmers from doing business with midlevel institutions and, therefore, to help realize the health, economic, and environmental benefits that come from local and organic farming. It also mentioned the following reasons: First, by pooling the supply of produce, agricultural cooperatives can supply the amount of food demanded by mid-level institutions (USDA, 1990). Second, cooperatives give farmers more control over the price of their products and can, therefore, bargain for a price that satisfies both the farmer and the institution (Diamond & Barham, 2012). Third, cooperatives can allow members to invest in group insurance coverage to meet the insurance requirements of mid-level institutions. Fourth, cooperatives make it more feasible for farmers to pool resources and work together to purchase processing and distribution equipment (Hardesty, 2008; Markley, 2010).

In the Philippine setting of ARMM, a report from the Regional Agriculture and Fishery Information Division of DA-ARMM has indicated that thirty-three batches have already completed the short course from January to February. Nasroddin A. Saripada, the municipal agricultural officer of Piagapo, said the training sprang out of the

success of the UN World Food and DA tie-up program on the Establishment of Participatory Vegetable Techno Demo Farms in Piagapo. The activity involved establishing a 1,000 sq. meter communal vegetable garden per site and the required 120 sq. meter individual home gardens (Government of the Philippines, 2016). This finding is positively headed towards eliminating barriers preventing local and organic farmers from doing business with midlevel institutions, as Desalva (2012) posited. The study of Diamond and Barham, 2012 also supports this.

3.2 Agricultural Innovation

In terms of Farming Methods

Table 5 shows the level of agricultural innovation in farming methods among the participants. The overall mean is 3.86, interpreted as high, implying that agricultural innovation in farming methods was high.

Table 5. Descriptive statistics of the level of agricultural innovation of the participants in the aspects of farming methods

Indicators	Mean	SD	Description	Interpretation
1. A traditional method of farming is practiced.	4.23	0.756	Agree	High
2. Modern Farming methods are practiced.	4.00	0.808	Agree	High
3. Farmers use cattle, carabao, or horses in farming.	4.05	0.891	Agree	High
4. New farming techniques are being implemented thanks to seminars and training provided by LGUs.	3.77	0.868	Agree	High
5. Farmers Practice Aquaponics.	3.52	0.888	Agree	High
6. Farmers Use Different Farming Systems.	3.92	0.804	Agree	High
7. Rice duck farming is being practiced.	3.65	0.940	Agree	High
8. Farmers plant typhoon-resistant crops.	3.53	0.932	Agree	High
9. Organic Farming is Being Practiced.	4.09	0.684	Agree	High
Over-all Mean	3.86	0.611	Agree	High

Agriculture Secretary Dr. William Dollente Dar was the Agro-Industrial Development Program (AIDP) launching keynote speaker who represented President Rodrigo Roa Duterte last November 16, 2021, in Wao and Amai Manabilang. Dar discussed the current condition of Philippine agriculture before the Bangsamoro Autonomous Region in Muslim Mindanao (BARMM) Ministers, local officials, SPDA's private business partners, and local farmers, "The use of modern technology can spur or accelerate the development of agriculture in the country," Secretary Dar was quoted as saying during his speech.

The revised development concept for the 26,000-hectare-proclaimed property in the Municipalities of Wao and Amai Manabilang upon the reactivation of SPDA has been focused on establishing a special economic zone dubbed MinSEZ, or Mindanao Special Economic Zone. Another explanation on the subject was that agricultural modernization is the process whereby people or organizations bring new or existing products, methods, or ways of organization into use for the first time in a specific setting to increase effectiveness, competitiveness, resilience to shocks or environmental sustainability and thereby contribute to food security and nutrition, economic development or sustainable natural resource management (FAO, 2018). Farmers have always looked to new technologies to reduce costs. In addition, higher incomes, more excellent knowledge, and improved communication channels are leading consumers to demand low-cost food of higher quality, increasingly produced through organic methods in many countries, with more variety, consistency, and year-round availability. At the same time, consumers are increasingly demanding that their food be produced using techniques that conserve natural resources, limit environmental pressures, and pay greater attention to rural viability and animal welfare (OECD, 2001).

Indeed, agricultural innovations frequently concern not so much the adoption of newly introduced technologies but the adaptation of existing ones. The term 'agricultural revolution' tends to be used when several improvements in separate areas of the farming system co-occur as a complex. Although these may be introduced gradually, once they reach a critical mass, their impact on society may be of a magnitude deserving of the term 'revolution.' Moreover, an article by Praxis (2018) stated that worldwide, agricultural innovations across different agricultural ranges, from urban farms to aquaponics to food hubs, have been developed. Innovative agriculture ensures that new farming and agricultural production models evolve and bring fresh approaches to growing and distributing food. Praxis supports this by emphasizing that farming methods bring fresh methods to how these are grown and distributed in correspondence with FAO (2018) and OECD (2018) goals.

In terms of Farming Practices

Table 6 shows the participants' agricultural innovation level in farming practices. The overall mean is 3.92, interpreted as high, implying that the level of agricultural innovation in farming practices was high.

Table 6. Descriptive statistics of the level of agricultural innovation of the participants in the aspects of farming practices

Indicators	Mean	SD	Description	Interpretation
1. The soil where the crop will be grown is well prepared.	3.99	0.917	Agree	High
2. Sealing seeds for good-quality crops is a standard action before planting.	4.13	0.699	Agree	High
3. Fertilizers on the land used are naturally sourced (organic).	3.92	0.907	Agree	High
4. Crop irrigations are carefully managed, particularly the frequency of water dispersion.	4.00	0.917	Agree	High
5. The harvesting is done manually.	3.89	0.982	Agree	High
6. Harvest storage is done after cleaning, drying, fumigation, etc.	3.94	0.827	Agree	High
7. Pest Control is being Practiced.	3.95	0.843	Agree	High
8. Weed removal is Traditionally done.	4.07	0.847	Agree	High
9. Conservation Agriculture is being Practiced.	3.80	0.835	Agree	High
10. Soil testing is done before planting.	3.57	0.925	Agree	High
Over-all Mean	3.92	0.678	Agree	High

Note: 4.50-5.00 (Strongly Agree, Excellent), 3.50-4.49 (Agree, Very Good), 2.50-3.49 (Neutral, Good), 1.50-2.49 (Disagree, Fair), 1.00-1.49 (Strongly Disagree, Poor)

Farming methods are undergoing significant technological changes. New government regulations and the demand for more advanced, labor-saving technological solutions drive the change (OECD, 2001). Technologies and practices for small agricultural producers (TECA) – TECA is a global, web-based platform for knowledge exchange, documenting, and sharing practical information on agricultural technologies and practices to help smallholder farmers. It combines this knowledge base with a forum of exchange groups for interactions, identification of needs, and joint learning between various actors of the agricultural innovation systems. Aimed at making demand-driven information available on the production and protection of plants and animals (including fish) and managing natural resources better while adapting to climate change and reducing risks of natural disasters, TECA is also designed to improve nutrition from agriculture and to allow smallholders and other users to access markets better. Apart from small agricultural producers, users include professionals from rural extension and advisory services, producer organizations, NGOs, research organizations, universities, and the private sector.

Mechanization Sustainable agricultural mechanization covers all levels of farming and processing technologies, from simple and essential hand tools to more sophisticated and motorized equipment. Cultivating a hectare of land using a hand hoe takes 60 days, compared to about three days with draught animal power or less than a day if using a powered direct seeder. E-Agriculture A FAO-led global Community of Practice e-Agriculture comprises over 12,000 members from 170 countries and territories. It is a platform where members exchange information, ideas, and resources related to information and communication technologies (ICT). It aims to improve decision-making on the vital role of ICTs in empowering rural communities, improving rural livelihoods, and building sustainable agriculture and sustenance security.

Tropical Agriculture Platform: Agricultural Innovation Systems To bring capacity development up to speed with the challenges facing agriculture in the 21st century, the collaborators of the Tropical Agriculture Platform (TAP) have employed a new approach, the so-called Agricultural Innovation Systems (AIS) standpoint, which recognizes that agricultural revolution is a process involving many different participants and that it can only take off if it meets the demands of its principal users. This finding suggests that using more innovative sustainability raised the profile of family farming (FAO, 2018).

In terms of Machinery and Equipment

Table 7 reflects the participants' level of agricultural innovation in machinery and equipment. The overall mean is 3.59, interpreted as high, implying that agricultural innovation in machinery and equipment was high. Digital Agriculture: Encourage more, if not all, farmers and fishers to register in the Registry System for the Basic Sectors in Agriculture (RSBSA); promote e-commerce/digital platforms linking farmers and fishers with direct and institutional buyers. Implementing the Province-led Agriculture and Fisheries Extension Systems (PAFES) established a strong collaboration among the DA, LGUs, academe, and the private sector to bring extension services to the grassroots level. (Bejarin, DA-AFID 2022).

Table 7. Descriptive statistics of the level of agricultural innovation of the participants in the aspects of machinery and equipment

Indicators	Mean	SD	Description	Interpretation
1. Power is sourced from solar panels.	3.54	0.980	Agree	High
2. From the beginning of the process until the food storage, digital equipment technology helps farmers.	3.51	0.914	Agree	High
3. The Availability of innovative machinery and equipment is within the farmers' reach in the area.	3.55	0.804	Agree	High
4. Rental of machinery and equipment is at a reasonable cost.	3.58	0.946	Agree	High
5. Hydroelectric power is being used.	3.40	0.900	Neutral	Moderate
6. A Greenhouse is Available.	3.74	0.832	Agree	High
7. Machine Sprayers or water sprinklers are being used.	3.93	0.935	Agree	High
8. A Nipple Drink for animals is Installed.	3.59	0.810	Agree	High
9. There is an Internet connection available.	3.52	1.080	Agree	High
Over-all Mean	3.59	0.676	Agree	High

For a country frequently visited by typhoons, Filipino farmers could be better off by adopting greenhouse technologies enabling them to protect and raise crops all year round, like other countries and progressive farmer-entrepreneurs have been doing. We want to encourage more farmers through their cooperatives and associations to create greenhouse facilities (William Dar, 2022). Digital technologies can support trade in agriculture and food products by connecting private sector suppliers to new markets, enabling new ways for governments to monitor and ensure compliance with standards, and providing faster and more efficient border procedures that are essential for perishable products (USAID's DDI LFT Bureau, 2022).

In terms of Farm-to-Market Roads

Table 8 presents the participants' agricultural innovation level in farm-to-market roads. The overall mean is 3.74, which is interpreted as high. Thus, they were implying that agricultural innovation in farm-to-market roads was high.

Table 8. Descriptive statistics of the level of agricultural innovation of the participants in the aspects of farm-to-market roads

Indicators	Mean	SD	Description	Interpretation
1. Farm-to-market roads are constructed to aid accessibility in farm areas.	4.06	0.791	Agree	High
2. The local authorities give farm-to-market roads a top priority.	3.72	0.925	Agree	High
3. The roads are not paved in the farm area.	3.92	0.818	Agree	High
4. Transportation of produce from farm to market takes little time.	3.76	0.888	Agree	High
5. The Freshness of the harvest is maintained after transportation due to easy travel.	3.80	0.732	Agree	High
6. The LGU or DPWH always maintains the Road.	3.68	0.870	Agree	High
7. Local governments or the Department of Public Works immediately repair the damaged road.	3.73	1.040	Agree	High
8. The Road is Accessible and Secure.	3.51	0.883	Agree	High
9. Roads constructed with excellence and quality.	3.68	0.873	Agree	High
10. Farmers are utilizing farm to Market Roads.	3.63	0.835	Agree	High
Over-all Mean	3.74	0.649	Agree	High

When only limited resources are available to build and maintain road networks, one should use them most optimally. Regarding pavement design and construction, pavements should be designed and constructed to sustain large numbers of heavy traffic loads for a long time without showing significant damage. Overloading, for example, is a severe problem in almost all developing countries (Molenaar, 2013). It is necessary to disseminate the culture of transforming the way the roads are designed, constructed, maintained, and managed, including through raising awareness of all those involved in the process of construction of roads on the impact that they have on the quality of life of citizens to achieve road sustainability (Corriere, et al., 2012).

Favorable transportation infrastructure permits producers to obtain inputs, move their commodities over large distances, and access the international market more efficiently (Agricultural Infrastructures, n.d.). Numerous studies have illustrated the importance of paved roads on agricultural labor productivity. For example, Llanto has exhibited that a one percentage point increase in the length of paved roads as a ratio to the total distance of roads is associated with an increase in agricultural labor productivity of PHP 285 000 per laborer, which is different from irrigation expansion results, illustrating a positive but insignificant relationship with agricultural labor productivity (Llanto, 2013).

A study by Faiz et al. (2012) on Sustainable rural roads for livelihoods and livability had a conclusion. A review of sustainability and livability suggests that a rural road must fulfill two conditions to be sustainable: first, it must contribute to and enhance rural livelihoods and livability, and secondly, its planning and design (as well as construction and maintenance) must be context sensitive to ensure a balance among economic, social and environmental objectives, that is reflective of community values, aspirations, and needs. Rodriguez (2014) reported in an article that FMRs can increase local trade and productivity, reduce transportation costs of farm input and output, and minimize post-harvest losses. They connect farms and coastal areas to main roads, hence promoting agrotourism, in accordance with Corriere et al. (2012) 's idea that market roads impact citizens' quality of life.

In terms of Agricultural Infrastructure

Table 9 presents the level of agricultural innovation of the participants in agricultural infrastructure. The overall mean is 3.58, which is interpreted as high. Thus, they were implying that agricultural innovation in agricultural infrastructure was high.

Table 9. Descriptive statistics of the level of agricultural innovation of the participants in the aspects of agricultural infrastructure

Indicators	Mean	SD	Description	Interpretation
1. Irrigation designs are based on outdated engineering techniques.	3.45	1.050	Neutral	Moderate
2. The infrastructure plans for warehousing are substantial and lasting.	3.46	0.888	Neutral	Moderate
3. A well-ventilated storage facility for harvested produce has been built.	3.44	0.923	Neutral	Moderate
4. Relevant authorities do not properly maintain agriculture infrastructure.	3.61	0.792	Agree	High
5. There needs to be infrastructure for processing harvested produce in agriculture.	3.52	0.916	Agree	High
6. The construction of the buildings is done using concrete.	3.53	0.902	Agree	High
7. Buildings for the Farmers Association are available.	3.53	0.792	Agree	High
8. Animal Barn is Constructed.	3.77	0.917	Agree	High
9. Electricity is available in all infrastructures.	3.90	0.904	Agree	High
10. Water system is readily Available.	3.65	0.807	Agree	High
Over-all Mean	3.58	0.621	Agree	High

Like other public investments, rural infrastructure boosts agricultural productivity, leading to rural regions' growth, more significant agricultural salaries, and better prospects for nonfarm workers. Urban and rural residents who are net food purchasers benefit from increased agricultural output, which lowers food prices (Llanto, 2012). Consequently, agricultural production has considerable implications for reducing poverty and its benefits for growth. Roads and electricity both play a crucial role in determining agricultural productivity. They were aligned with a related result regarding the growth restrictions imposed by insufficient infrastructure. Rural roads help connect rural areas to increasing markets nearby and lower the input and transaction costs for producers and consumers in rural areas. For rural households, having access to electricity opens up various income-generating opportunities. It is aligned with the idea posited by Corriere et al. (2012) on the impact of agricultural infrastructure.

3.2 Peace and Order

In terms of "Rido" or Clan Feuding

Table 10 presents the level of peace and order of Rido or Clan Feuding. The overall mean is 3.67, which is interpreted as high, which implies that the level of Rido was high.

Table 10. Descriptive statistics of the level of peace and order in the aspects of "Rido" or clan feuding

Indicators	Mean	SD	Description	Interpretation
1. The RIDO of powerful clans in the municipality harms land farming.	3.95	0.869	Agree	High
2. The armed clans negatively affect the current farming of lands.	3.81	0.794	Agree	High
3. The transition of lands from farming to commercial entities creates conflict among the farming community.	3.58	0.811	Agree	High
4. Farmers are stealing land because of RIDO in the area.	3.43	1.120	Neutral	Moderate
5. Agri-tourism is not Practicable due to RIDO.	3.56	0.917	Agree	High
6. Aid from International Organizations or other Agencies may not be delivered to some areas due to conflict.	3.62	0.855	Agree	High
7. Migration of farmers to other places due to rido.	3.65	1.020	Agree	High
8. Education is being abandoned due to RIDO.	3.80	0.863	Agree	High
Over-all Mean	3.67	0.728	Agree	High

It is one of the primary drivers of conflict in the region. Moreover, it is interlinked with many other drivers of conflict discussed in this report, as conflict actors in the ARMM often belong to multiple groups and frequently shift alliances (Strachan, 2015). Rido is a constant source of vulnerability for the province's citizens. The triggers of a Rido can be anything from slander, misdemeanor, debt fault, damage to property, and theft to more severe cases such as murder, land disputes, political rivalry, election-related conflicts, sex crimes, and accidents (Province of Lanao del Sur, 2020).

Most ridos start from simple disputes that can be settled locally using conventional conflict resolution mechanisms and religious approaches. However, a delayed justice system fused with poor governance at the local level usually escalates a simple conflict into a complex one, resulting in heightened armed conflicts between and permanent displacement of the families involved (BARMM, 2020). Pablico (2007) supports this, stressing that peace and order can trigger or hamper productivity.

In terms of Lawlessness

Table 11 presents the level of peace and order of lawlessness. The overall mean is 3.65, interpreted as high, implying that the lawlessness level was high.

Table 11. Descriptive statistics of the level of peace and order in the aspects of lawlessness

Indicators	Mean	SD	Description	Interpretation
1. Lawlessness, such as drug syndicates, impedes agricultural development in the municipality.	3.64	1.040	Agree	High
2. Some farmers are leaving for syndicates and other shadow businesses.	3.47	0.859	Neutral	Moderate
3. Some thieves steal the harvest from the farmers.	3.69	0.991	Agree	High
4. Armed group recruitment is widespread in mountainous areas.	3.74	0.893	Agree	High
5. Exploitation of some local armed groups.	3.50	0.930	Agree	High
6. Farmers face issues such as mistaken identity.	3.64	0.901	Agree	High
7. Help from the Government is minimal because of the presence of lawlessness in the area.	3.87	1.050	Agree	High
Over-all Mean	3.65	0.796	Agree	High

Lawlessness in Mindanao is responsible for thriving shadow economies, such as the trade in illegal drugs and weapons. While the shadow economies in the ARMM are linked to violence and conflict, some of them, such as cross-border trade in the Sulu Sea, also have the potential to contribute to peace because they provide livelihoods for fragile island communities (Strachan, 2015). Concepcion et al. (2003) report in the International Alert Organization stated that large areas of southwest Mindanao have been abandoned to lawlessness, so local communities and businesses are insecure. Pablico (2007) supports this, stressing that peace and order can trigger or hamper productivity.

In terms of Disagreements

Table 12 presents the level of peace and order of disagreements. The overall mean is 3.67, interpreted as high, implying that the level of peace and order regarding disagreement was high.

Table 12. Descriptive statistics of the level of peace and order in the aspects of disagreements

Indicators	Mean	SD	Description	Interpretation
1. International and local organizations are safe to aid farmers, even in remote farming areas.	3.82	0.801	Agree	High
2. Farmers of both genders feel safe to till their farms daily.	3.76	0.860	Agree	High
3. The LGUs send security enforcement to protect farmers during the conflict.	3.64	0.787	Agree	High
4. There are programs by LGUs that integrate peace and order into farming.	3.48	0.740	Neutral	Moderate
5. Locals do not welcome government intervention in land development in some areas.	3.52	0.783	Agree	High
6. Peace Education is being integrated into the school curriculum.	3.75	0.782	Agree	High
7. Religious scholars assist in mediating disagreements in the field.	3.74	0.862	Agree	High
8. An Estate Tax Amnesty is Imposed.	3.72	0.874	Agree	High
9. LGUs Provide housing for farmers.	3.54	0.776	Agree	High
10. Government agencies give aid to the Farmers.	3.81	0.716	Agree	High
Over-all Mean	3.67	0.550	Agree	High

The disagreement between the government and Moros showed that the narrative of the Mindanao people's ongoing fight for their right to self-determination contains the fundamental causes of armed conflict in that region.

The southern Philippines are engaged in a conflict in which they solidify their identity and call for meaningful governance in answer to the national government's failure to provide genuine socioeconomic progress, peace, and prosperity (Batac et al., 2019).

The conflict also stems from "historical injustices" and severe breaches of the Mindanao people's human rights. The Bangsamoro people and their non-Moro friends have fought to have their petitions for these historical injustices regulated and their inherent right to determine their own political and cultural path heard by the central government (Batac et al., 2019). The Philippine government initiated peace talks and obtained a peace agreement with the then-leading Muslim armed opposition group (MNLF) to stop the conflict and address the problems. However, armed confrontations broke out now and then between the Philippine military and the MNLF and with another Muslim armed opposition group (Moro Islamic Liberation Front or MILF). For every breakout of armed hostilities, thousands of non-combatants are caught in the crossfire and suffer displacement and other human rights violations (Mindanao Conflict: in Search for Peace and Human Rights, 2008).

Consequently, the security forces and the LGU in Lanao del Sur monitor three insurgent groups: the Maute Group, the BIFF, and the NPA. The ISIS-affiliated Dawlah Islamiyah also called the Maute Group, is seen as the most immediate security threat in the province after they staged the bloody attacks in a few towns in Lanao del Sur, including Marawi City, in 2017. Their followers still operate in the municipalities to the south of Lake Lanao, such as Butig, Pagayawan, and Sultan Dimalundong, and areas to the north of the lake, like Balindong, Marantao, and Piagapo (Lanao del Sur, 2021). The BIFF is a breakaway group of the MILF led by Ameril Umbra Kato; the group operates in Maguindanao Province with a few fellows from Lanao del Sur. Some BIFF members fought during the Marawi City in 2017 (Lanao del Sur, 2021), which implied that the level of peace and order regarding disagreement was higher, as indicated by the intensity of the mediating support provided.

3.4 Agricultural Development of Farm Production

Table 13 presents the agricultural development level of farm production. The overall mean is 3.75, which is interpreted as high. This data revealed that the participants have a high level of agricultural development regarding farm production. The high level of agricultural production has met Sustainable Development's goals, which entail sustainable resource utilization.

Table 13. Descriptive statistics of the level of agricultural development of farm production

Indicators	Mean	SD	Description	Interpretation
1. There is a rise in market demand for agricultural goods.	3.88	0.709	Agree	High
2. The harvest brings in enough money to meet production costs.	3.68	0.750	Agree	High
3. Considerable profit is not gained from farming in the area.	3.76	0.809	Agree	High
4. The return on investment in farming is high.	3.71	0.818	Neutral	Moderate
5. Oversupply of harvest is rare in the area.	3.70	0.664	Agree	High
6. Using new technology effectively helps farmers produce more.	3.89	0.727	Agree	High
7. A cargo vehicle is available from farm to market.	3.52	0.908	Agree	High
8. There are Contract Buyers in the Area.	3.99	0.894	Agree	High
9. LGUs assist Farmers in marketing their goods.	3.70	0.990	Agree	High
Over-all Mean	3.75	0.599	Agree	High

Agriculture in the Philippines is a vital sector of the economy, with crops like bananas, coconuts, pineapples, rice, and sugarcane being mass-produced for exportation. However, the challenge remains as it steadily runs into deficit amid a growing population. As of 2022, the sector employs 24% of the Filipino workforce, accounting for 8.9% of the total GDP (Statista Research Department, 2022). The agricultural sector generated a gross value added (GVA) of about 1.76 trillion Philippine pesos, equivalent to a 9.6 percent share of the country's gross domestic product (GDP). However, because of the prolonged lockdown imposed due to the coronavirus (COVID-19) pandemic and the natural calamities that occurred in the country, the sector's gross output contracted by 1.7 percent that year (Statista Research Department, 2022).

Middlemen play a crucial role in the supply chain of the Philippine agribusiness sector, linking farmers who produce agricultural products to consumers who purchase them. They provide various services such as transportation, storage, packaging, and distribution, which are necessary to get the products from farms to

markets. Middlemen act as intermediaries between farmers and consumers, enabling both parties to access each other and exchange goods and services (Nito, 2023).

3.5 Relationship Between Agricultural Development, Leadership, Agricultural Innovation, and Peace and Order

Table 14 presents the relationship between agricultural development, leadership, agricultural innovation, and peace and order.

Table 14. Analysis of the relationship between agricultural development, leadership, agricultural innovation, and peace and order

Variables	R	p-value	Interpretation
Farm Production	0.581	.000	Significant
Political	0.700	.000	Significant
Economic	0.652	.000	Significant
Collective Action	0.761	.000	Significant
Cooperative Agriculture	0.526	.000	Significant
Farming Methods	0.686	.000	Significant
Farming Practices	0.743	.000	Significant
Machineries and Equipment	0.878	.000	Significant
Farm to Market Roads	0.819	.000	Significant
Agricultural Infrastructures	0.819	.000	Significant
RIDO or Clan Feuding	0.697	.000	Significant
Lawlessness	0.697	.000	Significant
Disagreement	0.743	.000	Significant

*Correlation is significant at the 0.05 level (2-tailed).

As shown in the table, the variables farm production ($p-.000<.05$), political ($p-.000<.05$), economic ($p-.000<.05$), collective action ($p-.000<.05$), cooperative agriculture ($p-.000<.05$), farming methods ($p-.000<.05$), farming practices ($p-.000<.05$), machinery and equipment ($p-.000<.05$), farm to market roads ($p-.000<.05$), agricultural infrastructures ($p-.000<.05$), RIDO or Clan Feuding ($p-.000<.05$), Lawlessness ($p-.000<.05$), disagreement ($p-.000<.05$) have probability values of lesser than the alpha value of 0.05 which implied that the said variables have a positive significant relationship with the participants' agricultural development.

The increase in the participants' agricultural development was significantly associated with the increased variables. The government is fully prepared to continue investing in Mindanao's future, but more than the government can finance Mindanao's long-term progress. The island region's private sector – its entrepreneurs and business leaders – must continue to make significant investments in its development, especially in those places where investments are most needed (DA Communications Group, 2021). The Organic Agriculture Act of 2010 (R.A. 10068) and its Implementing Rules and Regulations (IRR) Section 2 declared that organic agriculture in the Philippines should be promoted, spread, developed further, and implemented will reduce pollution and environmental destruction, prevent the depletion of natural resources, and further safeguard public health. Jointly with a nationwide educational and promotional campaign for their use and processing, as well as the adoption of organic agricultural systems as a practical alternative, a program for the promotion of community-based organic agriculture systems that include, among others, farmer-produced entirely organic fertilizers like compost, pesticides, and other farm inputs, shall be launched (Philippine Congress).

There is no better alternative than cooperation among farmers (Skreli et al., 2011). Banaszak explained that the same forms of cooperation in collective action in a similar environment can bring different results (Banaszak, 2008). A study made by DeSalva (2012) stated that forming local and organic agricultural cooperatives is one way to eliminate the barriers currently preventing local and organic farmers from doing business with midlevel institutions and, therefore, to help realize the health, economic, and environmental benefits that come from local and organic farming. Agriculture Secretary Dar (2021) was the Agro-Industrial Development Program (AIDP) launching keynote speaker who represented President Rodrigo Roa Duterte last November 16, 2021, in Wao and Amai Manabilang. Dar discussed the current condition of Philippine agriculture before the Bangsamoro Autonomous Region in Muslim Mindanao (BARMM) Ministers, local officials, SPDA's private business partners, and local farmers, "The use of modern technology can spur or accelerate the development of agriculture in the country," Secretary Dar was quoted as saying during his speech. The revised concept of development of the 26,000-

hectare-proclaimed property in the Municipalities of Wao and Amai Manabilang upon the reactivation of SPDA has been focused on establishing a special economic zone dubbed MinSEZ or Mindanao Special Economic Zone.

Farming methods are undergoing significant technological changes. New government regulations and the demand for more advanced, labor-saving technical solutions drive the change (OECD, 2001). The Sustainable Development Goals of the Food and Agriculture Organization of the United Nations were given in the "Innovation and the 2030 Agenda" (2018), emphasizing that family farmers are crucial to feeding a growing world population. Realizing the success of its International Year, which raised awareness of the importance of household farming, pastoralism, and smallholder farming in supporting smallholders, including pastoralists and household farmers, in particular women and youth in rural areas, The U.N. General Assembly recently declared 2019–2028 the United Nations Decade of household Farming. The U.N. General Assembly specifically addressed innovation in its ruling, noting "the important role of science, technology, innovation, and entrepreneurship in supporting smallholders, including pastoralists and household farmers, particularly women and youth in rural areas."

A new technology introduced in the province is the system; the pilot area for halal rice cultivation is the first to be covered by the solar-powered irrigation systems in Taraka, which will be fully operational before the end of August with the commissioning of four more solar-powered systems. Decent transportation infrastructure enables producers to obtain inputs, move their products over large distances, and increase the global market (Agricultural et al.). Numerous studies have illustrated the importance of paved highways on agricultural labor productivity. For example, Llanto has expressed that a one percentage point increase in the distance of paved roads as a ratio to the total length of roads is associated with an increase in agricultural labor productivity of PHP 285 000 per laborer differentiates from results for irrigation expansion, which has exhibited a positive but insignificant relationship with agricultural labor productivity (Llanto, 2013).

Rodriguez (2014) reported in an article that FMRs can increase local trade and productivity, reduce transportation costs of farm input and output, and minimize post-harvest losses. They connect farms and coastal areas to main roads, hence promoting agro-tourism. Like other public investments, rural infrastructure boosts agricultural productivity, spurs growth in rural regions, and results in more significant agricultural salaries and better nonfarm employment prospects. It is one of the primary drivers of conflict in the region. Moreover, it is interlinked with many other drivers of conflict discussed in this report, as conflict actors in the ARMM often belong to multiple groups and frequently shift alliances (Strachan, 2015).

Lawlessness in Mindanao is responsible for thriving shadow economies, such as the trade in illegal drugs and weapons. While the shadow economies in the ARMM are linked to violence and conflict, some of them, such as cross-border trade in the Sulu Sea, also have the potential to contribute to peace because they are essential in providing livelihoods for fragile island communities (Strachan, 2015). The disagreement between the government and Moros showed that the root cause of armed fighting in Mindanao could be found in the history of Mindanao peoples' ongoing struggle for their right to self-determination. A fight includes a claim of their identity and a request for meaningful governance in the face of the national government's negligence in realizing genuine social growth, peace, and development in the southern Philippines (Batac et al., 2019).

3.6 Predictor of Agricultural Development

Table 15 presents the results of multiple regression analysis for the variables that best predict agricultural development. As depicted in the table, the R-value is .994, which implies a solid positive relationship between the predictor variables and the participants' agrarian development. The R² value of .891 revealed that the predictor variables explained a sizable 89.1% variability of the participants' agricultural development. In addition, the P-value for the computed value of F is 0.00, signifying a significant relationship between the predictor variables and the participants' rural development. The best predictor of the participants' agricultural development was farm-to-market roads with the highest beta coefficient value of .371, followed by lawlessness (beta=.207), disagreement (beta=.199), agricultural infrastructures (beta=.126), economic(beta=.119), cooperative agriculture (beta=.097), and machinery and equipment

(beta=.077). At the same time, other variables failed to predict or did not directly affect the participants' agricultural development.

Table 15. Multiple regression analysis for the variables that best predict agricultural development

Variable	Unstandardized Coefficients		Standardized Coefficients	T	Sig.	Interpretation
	B	Std. Error	Beta			
(Constant)	0.107	0.081		-1.315	0.189	Not Significant
Political	0.011	0.029	0.013	0.387	0.699	Not Significant
Economic	0.103	0.031	0.119	3.307	0.001	Significant
Collective action	-0.055	0.031	-0.060	-1.786	0.075	Not Significant
Cooperative agriculture	0.094	0.033	0.097	2.829	0.005	Significant
Farming methods	-0.004	0.032	-0.004	-0.111	0.911	Not Significant
Farming practices	0.031	0.028	0.035	1.100	0.272	Not Significant
Machineries and equipment	0.069	0.028	0.077	2.475	0.014	Significant
Farm-to-market roads	0.342	0.035	0.371	9.880	0.000	Significant
Agricultural infrastructures	0.122	0.038	0.126	3.248	0.001	Significant
Rido or clan feuding	-0.041	0.029	-0.050	-1.422	0.156	Not Significant
Lawlessness	0.156	0.027	0.207	5.807	0.000	Significant
Disagreement	0.216	0.027	0.199	8.003	.000	Significant
R=.994 R ² =.891 F=261.18 P=.000						

The regression equation is $Y' = B_0 + B_1X_1 + B_2X_2 + B_3X_3 + B_4X_4 + B_5X_5 + B_6X_6 + B_7X_7$ or $Y = B_0 + B_1(FMR) + B_2(L) + B_3(D) + B_4(AI) + B_5(E) + B_6(CA) + B_7(ME)$. Substituting the values, the regression equation was $Y' = .107 + .342X_1 + .156X_2 + .216X_3 + .122X_4 + .103X_5 + .094X_6 + .069X_7$

where;

Y' = Agricultural Development

X_1 = Farm to Market Roads

X_2 = Lawlessness

X_3 = Disagreement

X_4 = Agricultural Infrastructures

X_5 = Economic

X_6 = Cooperative Agriculture

X_7 = Machineries and Equipment

The equation implied that one point increased for farm-to-market roads, the participants' agricultural development increased was .342; one point increased for the improvement of lawlessness, the increase of agrarian development was .156; one unit increased for the advancement of disagreements the increased to agricultural development was .216; one point increased of agricultural infrastructure the agricultural development increased was .122; one point increased of economic the increased to agricultural development was .103; one point increase ed of collective action the increased to agricultural development was .094; and one point increased of machinery and equipment the agricultural development increased was .069.

Agriculture in the Philippines is an essential sector of the economy, with crops like bananas, coconuts, pineapples, rice, and sugarcane being mass-produced for exportation. However, the challenge remains as the sector steadily runs into deficit amid a growing population. As of 2022, the sector employs 24% of the Filipino workforce, accounting for 8.9% of the total GDP (Statista Research Department, 2022). The study by Kolaj et al. (2017) in Albania concluded that the growth and strengthening of the role of leadership in farming communities would also help promote and develop agriculture. It would also have positive effects, such as raising awareness of the degree of competence and quality of decision-making concerning the use of resources and rural development.

The government is doing what it must to shape programs for the farmers in the Philippines. These programs are continuously being honed and improved to adapt to the changes of time and to provide for the needs of our local farmers. Concrete solutions and consistent programs are how the government helps the farmers in the Philippines. (Secretary William Dar, 2021). The policy of liberating the importation of agricultural products must be studied or reconsidered to protect our farmers' welfare. The government must also investigate establishing local processing

industries (government-owned) that will absorb raw materials and provide a sure market for agricultural products so as not to leave prices in the hands of private buyers. Reducing the cost of production of various commodities is also a significant task that can be done by providing subsidies for agricultural inputs. The establishment of local industries producing production inputs should be studied to release farmers from their dependence on high-cost imported inputs (Cruz et al., 2020).

With products like bananas, coconuts, pineapples, rice, and sugarcane being mass-produced for export, agriculture is a significant economic sector in the Philippines. However, the difficulty persists as it constantly runs into a deficit due to the country's expanding population. In 2022, the industry employed 24% of the labor force in the Philippines and contributed 8.9% of the nation's GDP. (Department of Statista Research, 2022). Thirty-three (33) founding cooperators formed the Pamilyang Filipino Farmers Agricultural Cooperative (PFFAC). It comprises small-scale farmers, their families, and farm workers. Most of these small-scale family farmers are found in CALABARZON regions and come from the south and the north of the Philippines. These family farmers, who had previously been part of a social network, decided to create an agriculture cooperative to meet the requirements of family farmers, their families, and their agricultural workers and support the rural development of their respective farming communities. A family farm in the twenty-first century is the Pamilyang Filipino Farmers' community. They believe that family farming is a sustainable way to contribute to rural development (FAO, 2023).

Many approaches and indigenous farming knowledge worldwide remain undocumented and must be integrated into modern agricultural practices. Some indigenous knowledge stems from religious beliefs and superstitions, but much was derived from experiences and observations of farmers that were acquired through time and actual involvement in farming. These indigenous practices might have scientific bases and explanations. However, sadly, they are slowly being forgotten and partially abandoned due to socio-economic factors, such as the loss of inter-generational transfer of knowledge to the younger generation. Scientifically documenting and validating indigenous knowledge is essential because modern agriculture could learn much from it (Narciso, 2021).

What about government-supported food production programs? It is logical for any government to have a centerpiece program directed toward achieving food self-sufficiency or an adequate supply of food and other basic staples for the people. Food is a political issue in the Third World since it often determines whether a government succeeds or fails (Perlas, 1989). Conservation goals in nature farming are politically unwise. Program planning and implementation emphasize immediate impact as the overriding criterion. Activities that yield results in the long term get less priority (Mendoza, 1989). Chemicals (fertilizer and pesticides) and genetically uniform high-yielding cultivars provide immediate increases in production. Incentives and support services are designed and packaged for extension and delivery to the farmers. Soft loans, crop insurance, marketing, and technical assistance are generously provided as an incentive to farmers who will join the government in this massive food production program (Department of Agriculture, 1989).

Digital Agriculture encourages more if not all, farmers and fishers to register in the Registry System for the Basic Sectors in Agriculture (RSBSA) to promote e-commerce/digital platforms linking farmers and fishers with direct and institutional buyers. Implementing the Province-led Agriculture and Fisheries Extension Systems (PAFES) established a strong collaboration among the DA, LGUs, academe, and the private sector to bring extension services to the grassroots level. (Bejarin, DA-AFID 2022). When only limited resources are available to build and maintain road networks, one should use them most optimally. Pavements should be designed and constructed to sustain large numbers of heavy traffic loads for a long time without showing a significant amount of damage. Overloading, for example, is a severe problem in almost all developing countries (Molenaar, 2013).

Farm structures are the buildings used in farming operations, which may include facilities to house households and livestock, machinery, and crops. The basic unit of commercial agricultural operation, throughout history and worldwide, is the farm. Because farming systems differ widely, there are essential variations in the nature and arrangements of farm facilities. The buildings on a farm generally consist of the farmhouse, the dwellings of any boarders hired workers, and the various structures and facilities for agricultural operations (Martinot, 2022). According to one study, riding may seem like a custom deeply embedded in religious and moral beliefs. However, current literature suggests it has a strong social dimension and is a social norm. Based on literature, it can be

inferred that people see that families or clans retaliate in the form of violence when they get offended and that the members support the family or clan in its pursuit of justice (Limba, 2020).

Despite having abundant natural resources and a promising agricultural sector, the 24 million people who make up the Mindanao Island group have long experienced the highest poverty rates in the Philippines. Mindanao is susceptible to natural catastrophes that cause relocation like the rest of the country. Conflicts between the military and armed groups that reject or withdraw from government-led peace talks also contribute to displacement in Mindanao. In addition to violence, displacement, and poverty, Mindanao's livelihoods and economic potential are disrupted by clan politics, a shadow criminal economy, and inter-communal tensions, necessitating a nexus strategy to respond. Because of the turmoil and bloodshed, over 100,000 people have been forced to relocate permanently to Mindanao. Moro resistance against outside forces has been in Mindanao for four centuries, and since the late 1960s, there has been a war between the Philippine Government and armed groups. In Mindanao and other parts of the nation, the communist New People's Army is active. Since 2014, Mindanao has been under the control of the Islamic State. Pro-Islamic State terrorists and the Philippine military engaged in a five-month siege of Marawi City in Lanao Del Sur province in 2017. The violence displaced Four hundred thousand people, leaving homes and infrastructure in ruins or damaged in adjacent communities. Even while the reconstruction is ongoing, some 16,000 IDPs still have not been allowed to go home four years later due to the damage.

The creation of the Bangsamoro Autonomous Region in Muslim Mindanao (BARMM) in March 2019 was a significant development in the process of resolving the disagreement between the Philippine Government and several groups that sought autonomy, primarily the Moro Islamic Liberation Front (MILF). The country's poorest region is called BARMM. In BARMM's most impoverished provinces, Lanao Del Sur, Maguindanao, and Sulu, wars between the military and armed organizations like the BIFF and the Abu Sayyaf Group, which has ties to the Islamic State, nevertheless happen often. (2022, San Juan).

The story of the Mindanao people's ongoing fight for their right to self-determination reveals the origin of armed disputes in that region. In response to the national government's failure to achieve genuine social progress, peace, and development in the southern Philippines, a fight that asserts their identity and demand for significant governance has arisen. The conflict also stems from "historical injustices" and severe breaches of the human rights of the Mindanao people. Other conflicts affect the entire region besides the one between the Government of the Philippines and the armed organizations in Mindanao, primarily the Moro Islamic Liberation Front. Clans, criminal gangs, political elites, and multiple armed groups are all involved in the complex struggle in Mindanao. Although previous governments undertook to end these disputes, the main issue is the denial to address the Mindanao people's justifiable fight for their "right to self-determination, dignity, and governance," which is a significant obstacle to long-term stability (Maarten et al., 2019).

4.0 Conclusion

This study underscores the pivotal role of leadership in advancing agricultural development in Lanao del Sur, particularly through the strong support of Local Government Units (LGUs) in monitoring production, providing training, and fostering cooperative initiatives among farmers. While most LGUs in the province demonstrate substantial support, a few exhibit lower engagement, which can be mitigated through education on the importance of agriculture and alignment with national policies. The province's high level of agricultural innovation, characterized by the adoption of advanced farming methods, machinery, and resilient infrastructure, reflects the farmers' willingness to embrace new technologies while preserving traditional practices. This adaptability is critical in enhancing their livelihoods and sustaining agricultural productivity.

However, the province continues to face challenges related to clan feuding (Rido), lawlessness, and security concerns, which are being addressed through the concerted efforts of police, military, local leaders, and religious groups. The study recommends the creation of a dedicated task force comprising the PNP, the Army, and LGUs to mitigate these issues further. Additionally, integrating Peace Education across all educational institutions is proposed as a long-term solution to foster a culture of peace and reduce conflict.

The study also identifies farm-to-market roads as the most significant predictor of agricultural development, highlighting their importance in connecting farmers to markets and enhancing overall quality of life. Proper road maintenance, supported by local and national authorities, is essential for sustaining this critical infrastructure.

5.0 Contributions of Authors

There is a sole author for this study.

6.0 Funding

This research is personally funded.

7.0 Conflict of Interests

The authors declare no conflicts of interest about the publication of this paper.

8.0 Acknowledgment

I extend my heartfelt gratitude to all those who contributed to this study.

9.0 References

- Batac, M., & Bijnen, M.V. (2019, February 26). Interview: the Struggle for Peace in Mindanao, the Philippines. The Global Partnership for the Prevention of Armed Conflict. Retrieved from: <https://bit.ly/hytrinh>
- Concepcion, S., Digal, L., Guiam, R., De La Rosa, R., Stankovitch, M. (2003). Breaking the links between economics and conflict in Mindanao. Retrieved from <https://bit.ly/nhuuyt>
- Corriere F., Rizzo, A. (2012). Sustainability in Road Design: A Methodological Proposal for Drafting of Guideline. Procedia - Social and Behavioral Sciences, 53(0), 39 – 48. <https://doi.org/10.1016/j.sbspro.2012.09.858>
- Dane, K. (2022). Why is Agriculture Important and its Role in Everyday Life. Retrieved from <https://rb.gy/j4wvop>
- DeSalva, C. (2012). Addressing the undersupply of local and organic food to mid-level institutions: A model for successful agricultural cooperatives. Retrieved from <https://rb.gy/x25wup>
- Faiz, A., Faiz, A., Wang, W., & Bennett, C. (2012). Sustainable rural roads for livelihoods and livability. Procedia - Social and Behavioral Sciences, 53(0), 1–8. <https://doi.org/10.1016/j.sbspro.2012.09.854>
- Kolaj, R., Zahoaliaj, D., Dashi, E., & Skunca, D. (2017). Leadership as important factor for agricultural development in albania. European Journal of Interdisciplinary Studies, 3(0). <https://rb.gy/tlmtc9>
- Llanto, G. (2013). The Impact of Infrastructure on Agricultural Productivity. Retrieved from <https://bit.ly/adrfrgr>
- Mendoza, T.C. (1989). Achieving sustainable agricultural production and formulation of some policy imperatives. Working Paper of the Center for Policy and Development Studies. University of Philippines, Los Banos, Philippines.
- Molenaar, A. A. A. (2013). Durable and sustainable road constructions for developing countries. Procedia Engineering, 54(0), 69–81. <https://doi.org/10.1016/j.proeng.2013.03.007>
- Narciso, J. (2021). Indigenous Farming Practices in the Philippines: Old Ways of Doing, New Ways of Thinking for our Food Systems. Retrieved from <https://bit.ly/hyutdc>
- Nito, A. (2023). Exploitation or Empowerment? The Role of middlemen in the Philippine Agribusiness Sector. Retrieved from <https://bit.ly/juogtf>
- OECD. (2001). Adoption of Technologies for Sustainable Farming Systems Wageningen workshop proceedings. Retrieved from <https://bit.ly/juytgknk>
- Pablico, M. (2007). Farm productivity needs peace. Retrieved from <https://bit.ly/yujgtrcj>
- Praxis, T. (2018). Innovations in agriculture: Ideas, Possibilities, Strategies. Retrieved from <https://bit.ly/mjivtr>
- Rodriguez, F. (2014, March 7). Farm-to-market roads: A farmer's journey. Rappler. Retrieved from <https://bit.ly/adgtyni>
- Skreli, E., Kola, R., Osmani, M. (2011): Factors determining collective action in Albanian agriculture: case of apple producers in Albania. Albanian Journal of Agricultural Sciences, 10(3), 35–41. <https://bit.ly/iutgyrpf>
- Strachan, A.L. (2015). Conflict analysis of Muslim Mindanao. Birmingham, UK: GSDRC, University of Birmingham.
- Udemezue, J.C., & Osegbue, E.G. (2018). Theories and Models of Agricultural Development. Annals of Reviews and Research, 1(5), 134-137. <https://rb.gy/mr0ege>
- Ulvenblad, P., Barth, H., Ulvenblad, P.-O., Ståhl, J., & Björklund, J. C. (2020). Overcoming barriers in agri-business development: Two education programs for entrepreneurs in the Swedish agricultural sector. The Journal of Agricultural Education and Extension, 26(5), 443–464. <https://doi.org/10.1080/1389224X.2020.1748669>
- Vespia, C. (2021). Why Agricultural Development Matters. Retrieved from <https://rb.gy/lyn9dq>

Quality of Prenatal Care Among Mothers in Selected Barangays in Davao City, Philippines

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Date received: September 1, 2024

Date revised: September 16, 2024

Date accepted: September 26, 2024

Originality: 91%

Grammarly Score: 99%

Similarity: 9%

Recommended citation:

Matutino, R.I.V., Kulintang, M.B., Salas, C.J., Mantilla, A.A., Mozar E.K, Mission, G., Moro, J., Pechera, J. (2024). Quality of prenatal care among mothers in selected barangays in Davao City, Philippines. *Journal of Interdisciplinary Perspectives*, 2(11), 53-65. <https://doi.org/10.69569/jip.2024.0462>

Abstract. Prenatal care encompasses medical attention provided to pregnant women from conception to childbirth. This study aimed to determine the association between the respondents' sociodemographic profiles and the quality of prenatal care. A descriptive, correlational research method was used in this study. Utilizing the "a priori power analysis," 120 respondents were randomly selected using the following criteria: mothers who had prenatal checkups in selected barangay health centers in a District in Davao City, of legal age, and were willing to participate in the study, after giving birth one to three months. Data were collected from March to April 2024. Results revealed that most respondents were young adult, primigravida, multiparous, with full-term babies, high school graduates, and family monthly income of 7,000 – 10,000. The quality of prenatal care was high, particularly the "information sharing," anticipatory guidance, sufficient time, approachability, availability, and support and respect. Furthermore, educational attainment, particularly undergraduates, high school graduates, and baccalaureate degree holders, and with term babies, was noted to have a statistically significant association with their quality of prenatal care. Hence, having a good educational attainment and a "term baby" reciprocates good prenatal care among the respondents. The quality of prenatal care upholds standards of giving good services and approaches that participants experience during their prenatal checkups.

Keywords: First-time mothers; Multigravida; Multi-pregnancy; Primigravida; Quality of prenatal care.

1.0 Introduction

Prenatal care is the healthcare a pregnant woman receives during the time of pregnancy up to birth. It consists of regular check-ups at the health care facilities managed by the midwife or doctor. Prenatal care aims to keep both the mother and baby healthy and lowers the complication risks during pregnancy (Schmitt, 2021). The United States of America recorded 861 deaths related to maternal causes in 2020. Most maternal deaths from the data were related to poor quality of prenatal care of the mothers, resulting in maternal death before and during labor (Hoyert, 2022).

Additionally, the study of Maiden and Ruati (2023) finds that one of the places with the highest maternal mortality rate was South Sudan, with 1,150 deaths per 100,000 live births in 2022. Gregory (2023) stated that high perceptions of mothers in healthcare norms related to pregnancy are needed to prevent maternal deaths. Also, the UK, a high-income country, has the second highest maternal mortality rate, with 9.6 in Europe in 2020. Cardiovascular disease and the mental health of pregnant women are focal points in prenatal care to prevent maternal death.

In comparison to their peers, teenage moms who received subpar prenatal care and those with maternal comorbidities had a higher probability of surgically managing a miscarriage, according to a cohort study conducted over a 16-year observational period. Maternal comorbidities and inadequate prenatal care may work in concert to increase young moms' chances of surgically managing their miscarriage (Nam, 2022). Additionally, Oh (2021) found that, in line with the majority of research on the relationship between the maternal age effect and maternal complications, teenage mothers are more likely to experience complications like anemia, preterm birth, eclampsia, failed labor induction, systemic infections, and low birth weight, low Apgar score, stillbirth, severe conditions, and neonatal mortality when compared to maternal age. Similarly, Park (2022) revealed that young moms have been reported to have an increased risk of preterm delivery due to immaturity of the uterine or cervical blood supply, which also raises the risk of prostaglandin production and subclinical infection.

Research indicates that women's higher levels of education play a significant role in deciding how best to use prenatal care. According to the study of Raru et al. (2022), educated women will better comprehend the significance of prenatal care and its essential nature in the early stages. It also demonstrates that women with higher levels of education will make greater use of the prenatal care service than women with lower levels of education. The previous result was supported by Ayana et al. (2022), who claimed that if a woman has a high level of education, she may see the warning signs and readily comprehend the negative consequences of the healthcare provider's advised prenatal care instructions. For women to overcome gender discrimination, education is also crucial. Gender discrimination includes female genital mutilation, violence against women, and other behaviors that are predictive of prenatal care consumption.

Additionally, Merga (2022) asserts that education increases women's empowerment and health literacy, particularly about pregnancy, and is a significant factor of socioeconomic position. Public health initiatives should, therefore, aim for long-term results and go beyond essential health. Ideas need to focus on addressing pregnancy issues and raising women's awareness of prenatal care. Meanwhile, according to a Gebremariam et al. (2023) study, primigravid and nulliparous mothers exhibit lower knowledge and practice levels than multigravida and multiparous moms. This provided more evidence that young individuals under 20 who are single or jobless had lower levels of knowledge than their peers. It demonstrates that increased exposure to prenatal care services will improve their understanding and application of prenatal care. Nonetheless, mothers who are multiparous or multigravida may have similar information gaps and pregnancy difficulties as nullipara or nullipara mothers. Pregnancy results from multipara moms' prior labors, according to Mendis (2023), indicate the level of risk in the current pregnancy. The current pregnancy of multipara moms carries a risk profile that includes first-stage delayed labor, labor difficulties, and pre-eclampsia. In addition, the Allo Health (2023) article notes that multipara moms, aware of the elevated risk of the disorder, should actively participate in prenatal care programs. It is imperative to attend prenatal check-ups and follow up with additional testing to see whether pregnancy issues exist.

Halik (2022) asserts that educational counseling provided by licensed healthcare experts during pregnancy-related activities, such as prenatal classes, can enhance knowledge and comprehension of pregnancy and care throughout pregnancy, labor, and the postpartum period. While preserving harmony with others might help women avoid stress throughout pregnancy, eating a nutritious diet is the most important thing to remember. Furthermore, the study by Schulz (2022) claimed that information exchange is a crucial component of prenatal care in determining the requirements and anxieties of the expectant mother. When pregnant mothers receive information in the context of prenatal care, their health outcomes are excellent, and they do not exhibit any symptoms of pregnancy problems. Additionally, Vogels-Broeke et al. (2022) assert that an expectant mother's source of information is critical to their prenatal treatment. The information comes from the requirement that the healthcare provider demonstrate their professionalism and qualifications in the context of prenatal treatment.

Pregnant mothers' perceptions of the quality of prenatal care improve when reliable information, such as the healthcare provider's teaching techniques, is shared. The purpose of psychological support and anticipatory advice was to provide patients with a convenient, adaptable, "choose your own" option that they could personalize to meet their needs and preferences. An online peer-mentoring program that promotes social bonds based on group prenatal care is part of this pathway. The program consists of optional wellness and coping strategies

courses presented by mental health specialists, monthly small group sessions, and continuing communication through private Internet chat rooms (Peahl, 2020).

Furthermore, according to Gourevitch et al. (2022), evaluating the standard of prenatal care necessitates understanding the reliability and standard of non-billable physical examinations (like blood pressure monitoring and fundal height measurements), as well as the standard of counseling and anticipatory guidance provided during prenatal visits. These findings are essential for the continuing attempts to modify prenatal care to meet patients' medical and psychological needs. According to Wulandari (2020), anticipatory advice is founded on family-centered care, which uses a mentorship model to share pregnancy-related knowledge. This will strengthen the importance of prenatal care for expectant mothers by assisting them and their families in becoming capable caregivers.

According to an article from Makati Medical Center (2021), asking questions regarding pregnancy to the healthcare practitioner during prenatal appointments in clinics or health centers is a great idea. The expectant mother will have comprehensive examinations by the healthcare professional to monitor her pregnancy status. As they meet by the mother's planned check-ups, this enables the expectant mother to get to know the healthcare professional. The healthcare practitioner will allow enough time for the prenatal exam procedures to ensure the mother's overall wellness and that all parts of her condition are in good condition. It is also clear that spending more time with the healthcare professional favors the mother's prenatal care since inquiries and explanations are welcomed. According to Testa and Jackson (2021), inadequate time sufficiency and the caliber of prenatal care are related impediments to prenatal care. Given the harmful impacts of time insufficiency and the poor experience mothers have with prenatal care, the study's results indicate the necessity for targeted interventions that promote access to and remove barriers from prenatal care for women who are time insecure. Adeniyi et al. (2021) report that higher wait times in prenatal clinics are perceived as a hindrance to the standard of prenatal care in other studies. The findings indicate that lengthier wait times significantly impact mothers' motivation and satisfaction during prenatal examinations. Reducing the time the healthcare provider spends with the expectant mother is recommended to cut down on clinic wait times.

According to Gao's (2021) research, service approachability is one of the most important criteria for obtaining access to healthcare. Pregnant mothers who reported problems to their healthcare practitioner during the prenatal check-up had a higher correlation between service approachability and prenatal care attendance. Furthermore, according to Ranabhat (2019), the satisfaction of expectant mothers is a pertinent indicator for assessing the caliber of prenatal therapies that hospitals offer to patients who are treated for subjectively determined needs. Additionally, Shaghaghi et al. (2020) demonstrate that there has been a noticeable improvement in all facets of pregnancy care, particularly in the process of interpersonal care. Because the healthcare provider has concentrated on the elements of well-being—good connections, passion, meaning, positive excitement, and achievement—improvements have been made. When interacting with their healthcare professionals during prenatal visits, these components have demonstrated enhanced perceptions of expecting mothers.

Ghimire et al. (2023) claim that a healthcare provider's virtual availability can be extended. When expectant mothers are delighted with their virtual prenatal care experience—a place where they can freely voice their concerns and avoid traveling to and waiting at clinics—virtual prenatal care is beneficial. However, in this situation, appropriate advice and training in the use of technology are required. One study by Guzewicz (2023) found that there is a lower chance of pregnancy difficulties, particularly during labor, when women have convenient access to midwives during prenatal care. The midwife ensures the expectant mother is secure and has no difficulties during pregnancy.

Respectful maternal care is a component of prenatal care and is a right for expectant mothers. Pregnant women who lack respect and support are more likely to experience pregnancy difficulties. Research has indicated that maternal outcomes such as bleeding, psychological effects, and helplessness are associated with mistreatment during pregnancy (Puthussery et al., 2023). Furthermore, according to Livramento (2020), most pregnant women surveyed feel that receiving effective prenatal care entails more than just following all advised protocols and offering information during them. Instead, what makes this moment enjoyable is the attention given, the humanized embrace, the listening, the woman's subjectivity, and the offering of support throughout the difficult

periods. According to Homer's (2021) study, respect and support are two elements that contribute to the quality of prenatal care. The expectant mother needs to feel comfortable on an emotional and psychological level the entire time she is pregnant. The healthcare professional must attend to the requirements of the pregnant lady and combine clinical knowledge and abilities with interpersonal caregiving to achieve the desired reduction in maternal problems.

Meanwhile, the Philippines recorded 2,478 deaths due to maternal causes in 2021, with an MMR of 189.21 per 100,000 live births. High MMR is due to problems with prenatal care, where it must focus on addressing the vulnerability of women's problems in pregnancy and strengthening policies in improving prenatal care (Perez, 2023). In Davao City, there were 22 recorded maternal deaths in 2021. Most deaths are caused by hemorrhage, eclampsia, and high blood pressure. Prenatal care is said to be the area of focus as causes of death are preventable in increasing maternal deaths (Acosta, 2022).

With the existing literature, there is still a lack of prior research that delves into quality prenatal care in the Philippines, particularly in Davao City. The quality of prenatal care programs in various demographic profiles is an area that needs to be more explored. City Health Office Davao (2023) states that five deaths were related to maternal causes in the first month of 2023. Pregnant women were encouraged to have quality prenatal check-ups. However, not all have the same experience of prenatal care due to demographic factors, especially income and age, which each differently result in pregnancy complications. This research aimed to investigate the quality of prenatal care and the association of demographic profiles among mothers in selected barangays in a district in Davao City. This study contributes to the local health unit of Davao City to strengthen its standard methods and procedures for prenatal check-ups.

2.0 Methodology

2.1 Research Design

The study followed the descriptive-correlational research design. In a descriptive design, one must gather the information to determine and describe the situation, phenomena, and population (Voxco, 2021). Finding the relationship between each variable under evaluation and any potential associations between the independent variable and the dependent variable or criterion is termed a correlation, according to Ojeda (2022). It was descriptive because it was used to describe the respondents' socio-demographic profile and the quality of prenatal care. At the same time, the correlational design was utilized to determine the association between the respondents' socio-demographic profile and quality of prenatal care.

2.2 Research Participants

The study was conducted in selected barangays in a District in Davao City, Philippines. One hundred twenty (120) respondents, using the "a priori power analysis with power level of 90; effect size=0.40; significance level=0.05," were randomly selected to be included in the study. The respondents were pregnant mothers who currently have their prenatal check-ups in the barangay health centers and mothers who gave birth within one to three months from the conduct of the study, currently residing among the selected barangays in a district of Davao City, who had their prenatal check-ups and were willing to participate in the study.

2.3 Research Instrument

The researchers used a two-part survey questionnaire. The first part was the socio-demographic profile regarding their age, level of education, GTPAL, and monthly household income. Part 2 was an adopted questionnaire from Heaman, M.I., Sword, W.A., Akhtar-Danesh, N. et al. (2014), which assesses the quality of prenatal care (46-item) experienced by the respondents during prenatal care. The questions have six categories: information sharing (9 questions), anticipatory guidance (11 questions), adequate time (5 questions), approachability (4 questions), availability (5 questions), and support and respect (12 questions). 5-point Likert scale was utilized for the answer indicating the degree of agreement and disagreement (5- *seriously agree*, 4- *agree*, 3- *neither agree nor disagree*, 2- *disagree*, 1-*strongly disagree*)

2.4 Data Gathering Procedure

The researchers first secured an ethical clearance from the UIC Ethics Committee with the approval number UG-0053-02-24. Then, an approval letter for the conduct of the study was drafted and signed by the nursing dean.

Moreover, an authorization letter indicating approval to conduct the study was secured from the HRMO, and an affixed signature was obtained from the assistant municipal administrator. The HRMO notifies the district health officer of the authorization letter and forwards it to the municipal health office for signature by the responsible officer. The director of the barangay hall and the barangay health clinics received the approval letter granting the researchers the ability to conduct the study.

2.5 Ethical Considerations

This research study followed the following ethical guidelines. This investigation complied with ethical standards. Respect for the person, beneficence, and justice are the three ethical precepts that apply to research involving human subjects (Grove et al., 2022). An essential component of the research process in this study was establishing and applying appropriate protocols. Social Value: This study aimed to determine how nurses felt about conducting research and how strongly that attitude related to their research capacity and demographic profile. The study's findings gave the organization information and awareness that might help it create plans and fill in any gaps in clinical practice. Benefits and risks: The researcher ensured that the data collected was utilized exclusively for research and that there would be no risks for the research participants throughout their study. The respondents gave their consent to participate in this study voluntarily. If something made them uncomfortable, they were free to decline to take part. In addition, the participants are free to leave the study at any time without incurring fees. If the respondent decides to leave the research, all information supplied will not be included. Information privacy and confidentiality: All data obtained from the responders was kept confidential. To guarantee confidentiality, the researcher kept the respondents' information private. Additionally, the Data Privacy Act of 2012 kept the respondents' identities secret, which has stringent guidelines for purposeful and inadvertent disclosure. Additionally, copies of the data were destroyed after publication.

3.0 Results and Discussion

3.1 Profile of the Respondents

Table 1. shows the respondents' socio-demographic profile. Most (24.17%) respondents were 28 – 30 primigravida (39.17%) mothers. Some were multipara (40%) mothers with two or more term babies (37.50%). The Majority has 0 preterm (96.67%) babies with 0 abortions (96.67%). Most of the respondents have two or more living children. The Majority were high school graduates (51.67%) with a family's monthly income of 7,000 – 10,000 Php (54.17%) respectively.

Table 1. Descriptive statistics of the respondents' socio-demographic profile

Demographic Profile	Frequency	Percentage
	N=120	100%
Age Group (in Years)		
16-18	15	12.50%
19-21	37	30.83%
22-24	14	11.67%
25-27	12	10.00%
28-30	29	24.17%
31-33	5	4.17%
34-36	4	3.33%
37-39	3	2.50%
>40	1	0.83%
Total Gravida		
Primigravida	47	39.17%
Secundigravida	33	27.50%
Multigravida	40	33.33%
Parity		
Nullipara	34	28.33%
Primipara	38	31.67%
Multipara	48	40.00%
Total Term		
0 Term	39	32.50%
1 Term	36	30.00%
2 or more Term	45	37.50%
Total Preterm		

0 Preterm	116	96.67%
1 Preterm	4	3.33%
2 Preterm	0	0%
Abortion		
0 Abortion	116	96.67%
1 Abortion	3	2.50%
2 or more Abortion	1	0.83%
Living		
0 Living	31	25.83%
1 living	47	39.17%
2 or more living	42	35.00%
Educational Attainment		
Undergraduate	37	30.83%
High School Graduate	62	51.67%
Baccalaureate Degree	17	14.17%
Post-Graduate	4	3.33%
Family's monthly income		
7,000- 10, 000	65	54.17%
10,001- 15, 000	29	24.17%
15, 001- 20, 000	12	10.00%
20,001- 25, 000	4	3.33%
25, 001- 30,000	5	4.17%
30, 001-35,000	1	0.83%
35, 001- 40,000	3	2.50%
> 40, 000	1	0.83%

3.2 Quality of Prenatal Care Received

Table 2 shows how participants evaluated several aspects of the quality of prenatal care, as indicated by mean scores and standard deviations (SD). These ratings show the prenatal care services' strong points and potential areas for development. With a mean score of 4.68 (SD = 0.54), information sharing was rated "Very High." It implies that most participants thought prenatal visits were an effective means of communicating information. There was a consensus regarding the quality of information sharing, as seen by the low standard deviation, which suggests that responses were very consistent.

Table 2. Descriptive statistics of the respondents' quality of prenatal care received

Quality of Prenatal Care	Mean	SD	Interpretation
Information Sharing	4.68	0.54	Very High
Anticipatory Guidance	4.54	0.74	Very High
Sufficient Time	4.18	0.94	High
Approachability	1.60	1.19	Very Low
Availability	4.42	0.82	Very High
Support and Respect	4.62	0.56	Very High
Over-all Mean	4.01	0.80	High

Meanwhile, with a mean score of 4.54 (SD = 0.74), anticipatory guidance was likewise graded as "Very High." This component evaluates how well medical professionals prepare their patients for potential medical emergencies. The high mean score denotes a solid performance in this area, while the somewhat higher standard deviation compared to Information Sharing indicates considerable variability in participant replies. With a mean score of 4.18 (SD = 0.94), "Sufficient Time" was classified as "High." The more considerable standard deviation indicates greater diversity in perceptions, suggesting that some patients may feel rushed or inadequately attended to during their sessions, even while the score indicates that most participants thought they were given adequate time during consultations

With a mean score of 1.60 and a standard deviation (SD) of 1.19, approachability was classified as "Very Low." This suggests that participants generally had low opinions about how approachable healthcare professionals are, which may make it difficult for many patients to interact with them or give the impression that they need to be more approachable. The 1.19 standard deviation suggests a moderate degree of response variability, indicating that although participant experiences are varied, average perception is low. Some people may have given

approachability higher ratings, but overall, the pattern suggests that patients' perceptions of healthcare practitioners' accessibility and approachability could use some work.

On the other hand, availability was classified as "Very High," with a mean score of 4.42 and an SD of 0.82. This implies that most participants thought their healthcare providers were easily accessible when needed, which is good news for service accessibility and patients' ability to get care quickly. The low standard deviation suggests that participants have a solid consensus about this aspect of care; most concur that their providers' availability meets or surpasses their expectations.

With a mean score of 4.62 (SD = 0.56), Support and Respect were classified as "Very High." It suggests that individuals believed their healthcare providers respected them and offered them reasonable assistance. The low standard deviation proves that the participant group has regularly had pleasant experiences. Ultimately, the quality of prenatal care received an Overall Mean score of 4.01 (SD = 0.80), which is considered "High." It indicates that participants' perceptions of the quality of prenatal care were generally positive, while there was some variation in some individual characteristics.

In summary, most participants rated the quality of prenatal care positively, with high marks going to categories like information sharing, anticipatory guidance, and support and respect. However, there were noticeable discrepancies in how specific categories, like availability and approachability, were interpreted. These inconsistencies call for additional inquiry to guarantee proper interpretation and address potential areas for prenatal care service improvement.

The Donabedian model supported the total mean, indicating that the respondents' prenatal care was well cared for by available healthcare personnel with enough time. In the healthcare usage model, the healthcare providers demonstrated information exchange and proactive advice during the respondents' prenatal care, as indicated by the overall mean results. The primary effect theory also connects to the overall mean results because the respondents reported feeling respected and supported by their healthcare practitioner. According to a study by Hibusu et al. (2024), women's education about the advantages of prenatal check-ups has grown and improved due to a growing understanding of the necessity of prenatal care for the mother, particularly regarding probable difficulties and dietary advice. As a result, there is a rise in patient satisfaction with healthcare in general and prenatal treatment in particular. This is because prenatal care has a significant impact on pregnant women's health and contentment. According to Lin's (2023) study, the high caliber of prenatal care is addressed by socio-demographic profile concerns such as low education, marital status, and financial difficulties. Significant progress has been accomplished due to the efforts to solve these problems.

The Andersen utilization model was also related to the category mean result, which indicates the significance of information exchange in assessing the caliber of prenatal care. Halik (2022) asserts that educational counseling provided by licensed healthcare experts can enhance knowledge and comprehension of pregnancy and care during pregnancy, labor, and the postpartum period through pregnancy-related activities such as prenatal classes. While preserving harmony with others might help women avoid stress throughout pregnancy, eating a healthy diet is the most important thing to remember. Furthermore, according to Schulz's study from 2022, information sharing is crucial in prenatal care when determining the requirements and anxieties of the expectant mother. When pregnant mothers receive information in the context of prenatal care, their health outcomes are excellent, and they do not exhibit any symptoms of pregnancy problems.

Additionally, Vogels-Broeke et al. (2022) assert that an expectant mother's source of information is critical to their prenatal treatment. The information comes from the requirement that the healthcare provider demonstrate their professionalism in the context of prenatal care and their qualifications, which amount to eight. Pregnant mothers' perceptions of the quality of prenatal care improve when reliable information, such as the healthcare provider's teaching techniques, is shared. The Andersen utilization model is related to the category mean result, which indicates the significance of information exchange in assessing the caliber of prenatal care. Halik (2022) asserts that educational counseling provided by licensed healthcare experts can enhance knowledge and comprehension of pregnancy and care during pregnancy, labor, and the postpartum period through pregnancy-related activities

such as prenatal classes. While preserving harmony with others might help women avoid stress throughout pregnancy, eating a healthy diet is the most important thing to remember.

Furthermore, according to Schulz's study from 2022, information sharing is crucial in prenatal care when determining the requirements and anxieties of the expectant mother. When pregnant mothers receive information in the context of prenatal care, their health outcomes are excellent, and they do not exhibit any symptoms of pregnancy problems. Additionally, Vogels-Broeke et al. (2022) assert that an expectant mother's source of information is critical to their prenatal treatment. The information comes from the requirement that the healthcare provider demonstrate their professionalism in the context of prenatal care and their qualifications, which amount to eight. Pregnant mothers' perceptions of the quality of prenatal care improve when reliable information, such as the healthcare provider's teaching techniques, is shared.

3.3 Association Between the Perceived Quality of Prenatal Care Received and Demographic Profile

The Pearson chi-square was used to determine the association between the respondents' Quality of Prenatal Care and their demographic profile regarding age, educational attainment, gravida, parity, GTPAL, and Family's Monthly Income. The results shown in Table 3 look at the relationships between respondents' opinions about the standard of prenatal care and several demographic variables, such as age, gender, parity, and level of education. They also look at the relationships between GTPAL (Term, Preterm, Abortion, Living) and monthly family income.

Table 3. Test of association between the perceived quality of prenatal care received and demographic profile

Quality of Prenatal Care	Quality of Prenatal Care		
	Contingency Coefficient	p-value	Remarks
Educational Attainment	0.324	0.029	Significant
Age		0.447	Not Significant
Gravida		0.685	Not Significant
Parity		0.259	Not Significant
Term	0.318	0.009	Significant
Preterm		0.878	Not Significant
Abortion		0.683	Not Significant
Living		0.626	Not Significant
Family's Monthly Income		0.335	Not Significant

Note: Significant at 0.05 α level

With a significance threshold set at $\alpha = 0.05$, the study uses a p-value to assess statistical significance and the contingency coefficient to gauge the strength of the relationship. The findings show a substantial correlation (Contingency Coefficient = 0.324, $p = 0.029$) between educational attainment and the standard of prenatal care. The result shows that respondents' opinions on the quality of prenatal care are highly correlated with their educational attainment. The association between respondents' perceptions of the quality of prenatal care and their educational level appears moderate, as indicated by the contingency coefficient of 0.324. This result might indicate how their educational background shapes people's expectations, satisfaction with healthcare services, and health knowledge. According to a study by Raru et al. (2022), women with higher levels of education are better able to comprehend the significance of prenatal care and its fundamentals in the early stages of pregnancy. It also indicates that women with higher levels of education make greater use of prenatal care services than women with lower education levels. This was corroborated by Ayana et al. (2022), who claimed that if a woman has a high level of education, she may see the warning signs and readily comprehend the negative consequences of the health care provider's advised prenatal care instructions.

The GTPAL scale has a significant association (Contingency Coefficient = 0.318, $p = 0.009$). This result implies that a respondent's opinion of the quality of prenatal treatment highly correlates with the number of full-term pregnancies they have experienced. The moderate association indicated by the contingency coefficient of 0.318 suggests that respondents' perceptions of prenatal care may be influenced by their experiences with term pregnancies, maybe due to their familiarity with the healthcare system and collected experiences. Meanwhile, according to a study by Spinner et al. (2023), full-term deliveries are associated with prenatal care services when expectant moms have demonstrated a complete utilization of the medical resources. Encouraging prenatal care practices demonstrates that full-term births are the outcome of pregnant mothers using healthcare services. Furthermore, Goncalves et al. (2020) demonstrate that several characteristics, including the mother's experience,

are associated with full-term births and prenatal care. The whole maternal experience, enhanced by prenatal care, proves that the mother-to-be delivers her child at full term.

On the other hand, there is no statistically significant correlation between the quality of prenatal care and other demographic factors, including age (Contingency Coefficient = 0.447, $p > 0.05$), gravida ($p = 0.685$), parity ($p = 0.259$), preterm ($p = 0.878$), abortion ($p = 0.683$), living children ($p = 0.626$), and family's monthly income ($p = 0.335$). The lack of statistically significant results for these variables implies that these demographic traits do not significantly influence respondents' perceptions of the quality of prenatal care. This result may suggest that prenatal care quality is perceived similarly by these various demographic groups, regardless of age, number of pregnancies (gravida and parity), experiences with preterm or Term deliveries, prior abortion experiences, number of living children, or economic status.

These findings emphasize the need to take educational attainment and particular pregnancy experiences – such as term pregnancies – into account when assessing patients' opinions about the caliber of prenatal care. Focusing on educational interventions that enhance knowledge and expectations about prenatal care may benefit healthcare practitioners, especially for individuals with varying educational backgrounds. Furthermore, understanding the distinct requirements and experiences of people who have had different numbers of term pregnancies should aid in customizing prenatal care to improve patient outcomes and satisfaction.

Noro et al. (2020) explored the relationship between age and prenatal care, concluding that age has become unrelated to receiving adequate prenatal care due to environmental behaviors and beliefs. Their research suggests that all age groups, influenced by community practices, especially older individuals who might ignore prenatal care recommendations, follow similar prenatal practices. Gonzales (2021) found a significant relationship between maternal-fetal attachment and the quality of prenatal care in primigravida women, suggesting that higher-quality prenatal care is associated with more muscular maternal-fetal attachments. Lavado (2020) investigated how the skills of healthcare professionals impact the quality of prenatal care by conducting necessary examinations and providing vital information during prenatal visits. Interestingly, Lavado's study found that gravida, or the total number of pregnancies, was not a significant factor affecting the quality of care. This underscores the importance of healthcare providers in educating women about prenatal care, particularly for those with multiple pregnancies. Hubuso (2024) identified various factors influencing expectant mothers' satisfaction with prenatal care quality, including the physical environment of healthcare facilities, patient-provider relationships, and technical competence in care delivery. Notably, parity was not found to significantly impact the quality of prenatal care, suggesting that factors other than a woman's pregnancy history more significantly affect her prenatal care experience. Similarly, the study found that preterm birth has no substantial impact on the quality of prenatal care, indicating that preterm status does not significantly influence healthcare utilization patterns. Ayele and Moyehodie (2023) examined the risk factors and prevalence of preterm birth, concluding that variables such as maternal age, socioeconomic status, parity, and access to healthcare are not directly correlated with preterm deliveries but may help mitigate associated risks. Additionally, Guarani et al. (2020) found that while a mix of biological and environmental factors in prenatal care may not directly affect preterm delivery, they can contribute to other maternal complications.

Paiz et al. (2021) reported no significant association between a history of abortion and the quality of prenatal care received by expectant mothers, indicating that past abortion experiences do not impact access to healthcare or the quality of prenatal care provided. This finding underscores the importance of providing equitable and unbiased prenatal care to all expectant mothers, regardless of their reproductive history. Similarly, Gill et al. (2021) concluded that a woman's history of abortion does not significantly influence the quality of prenatal care she receives, highlighting that factors such as socioeconomic conditions, overall maternal health, and access to healthcare are more critical determinants of prenatal care quality. De Jersey et al. (2020) emphasized that a woman's obstetric history, including the number of living children, offers context for evaluating reproductive health but has minimal impact on prenatal care. Their study stresses the need to address complex societal barriers to timely prenatal care access. Wang, Y. (2022) further noted that delayed access to prenatal care is primarily influenced by sociocultural dynamics, suggesting the need for targeted strategies to overcome these barriers rather than focusing solely on prenatal mortality rates, as no direct evidence links them.

Family monthly income is unrelated to the healthcare utilization model, as it does not significantly impact the quality of prenatal care, likely due to the free services district health units provide for pregnant women. Gedefaw, Dagnew, and Tessema (2020) found that while there is a correlation between higher household income and a greater likelihood of receiving high-quality prenatal care, this does not mean that family income is the only factor determining care quality. Despite the observed association, other variables – such as access to healthcare facilities, availability of transportation, and awareness of prenatal care's importance – are crucial in determining the quality of care received during pregnancy. Thus, while higher household income may allow easier access to prenatal care due to better financial resources, it is just one of many factors that influence prenatal care quality. Additionally, Szymanski et al. (2022) argue that while family income may impact access to care, current interventions or structural policies do not specifically address prenatal care practices. Policies and improvements in the healthcare system are essential for enhancing the quality of prenatal and postpartum care and reducing disparities associated with socioeconomic factors like family income.

3.4 Differences in Perceived Prenatal Care Quality Received Among Respondents

Table 4 presents a post-hoc Scheffe test analysis examining the differences in prenatal care quality among respondents with different educational levels. This analysis compares the mean differences across four educational groups: undergraduate, post-graduate, baccalaureate, and high school graduate. A significance level of $\alpha = 0.05$ was used to identify statistically significant differences.

Table 4. Post-Hoc Scheffe test analysis on respondent's educational attainment

Independent Variable	Educational Attainment (I)	Educational Attainment (J)	Mean Difference (I-J)	Std. error	p-value	95% Confidence Level	
						Lower Bound	Upper Bound
Quality of Prenatal Care	Undergraduate	High School Graduates	-0.247*	0.085	0.044	-0.490	-0.004
		Baccalaureate Degree	0.116	0.120	0.819	-0.226	0.459
		Post-Graduate	-0.122	0.217	0.956	-0.738	0.492
	High School Graduate	Undergraduate	0.247*	0.085	0.044	0.004	0.490
		Baccalaureate degree	0.364*	0.112	0.018	0.043	0.684
		Post Graduate	0.124	0.212	0.951	-0.478	0.728
	Baccalaureate Degree	Undergraduate	-0.116	0.120	0.819	-0.459	0.226
		High School Graduate	-0.364*	0.112	0.018	-0.684	-0.043
		Post Graduate	-0.239	0.229	0.780	-0.889	0.410
	Post-Graduate	Undergraduate	0.122	0.217	0.956	-0.492	0.738
		High School Graduate	-0.124	0.212	0.951	-0.728	0.478
		Baccalaureate Degree	0.239	0.229	0.780	-0.410	0.889

Note: Significant at 0.05 a level

Undergraduate vs. High School Graduates: The analysis indicates a mean difference of -0.247 between undergraduates and high school graduates, with a standard error of 0.085 and a p-value of 0.044. Since the p-value is below 0.05, this result is statistically significant. The negative mean difference suggests differing perceptions of prenatal care quality between undergraduates and high school graduates.

High School Graduates vs. Baccalaureate Degree Holders: The mean difference between individuals with a baccalaureate degree and high school graduates is 0.364, with a standard error of 0.112 and a p-value of 0.018, indicating statistical significance at the 0.05 level. This positive mean difference shows that respondents with a baccalaureate degree rated the quality of prenatal care lower than those with a high school diploma.

Baccalaureate Degree Holders vs. High School Graduates: When comparing baccalaureate degree holders to high school graduates, the mean difference is -0.364, with a standard error of 0.112 and a p-value of 0.018. This confirms that individuals with a baccalaureate degree perceive the quality of prenatal care as significantly lower than those with only a high school education.

Overall, the post-hoc Scheffe test analysis reveals significant differences in perceived prenatal care quality, primarily between undergraduates and high school graduates and between high school graduates and baccalaureate degree holders. High school graduates tend to rate prenatal care quality higher than undergraduates

and those with baccalaureate degrees. These findings suggest that educational attainment influences perceptions of prenatal care quality, particularly at the high school and undergraduate levels. However, no statistically significant differences were found among other educational levels, indicating similar perceptions of prenatal care quality among those groups.

4.0 Conclusion

The respondents reveal diverse ages, educational backgrounds, and reproductive histories. Many respondents are high school graduates (51.67%), with a notable proportion having an undergraduate education (30.83%). The age distribution shows a predominance of respondents in the 19-21 age group (30.83%). In terms of reproductive status, most respondents are either primigravida (39.17%) or multigravida (33.33%), with a majority reporting no preterm births or abortions. The family's monthly income is predominantly 7,000-10,000 (54.17%), suggesting a moderate income level among respondents.

The quality of prenatal care is generally rated highly by respondents, with very high scores for information sharing, anticipatory guidance, availability, and support and respect. The overall mean score of 4.01, which falls into the high range, indicates a generally positive perception of the quality of prenatal care. Significant associations are found between educational attainment and the quality of prenatal care ($p = 0.029$) and between the number of term pregnancies and care quality ($p = 0.009$). However, no significant associations were observed with other demographic factors such as age, gravida, parity, or family income. Furthermore, significant differences in prenatal care quality perceptions exist primarily between high school graduates and those with undergraduate or baccalaureate degrees, highlighting the impact of educational level on prenatal care evaluations. Overall, these results underscore the importance of educational attainment in shaping perceptions of prenatal care quality while suggesting that other demographic factors may have less influence.

This study was limited to pregnant mothers residing among the selected barangays in a District in Davao City. The results of this study may be utilized by the rural unit of the specific barangays in a particular district as their basis for upgrading their prenatal care services. It is highly recommended that health education must be strengthened as the educational attainment varies among the respondents and plays a vital role in achieving optimum quality of prenatal care. While the methods were justifiable, it is imperative that the result be generalized, and it is recommended that the study be upscaled to a larger population and setting.

5.0 Contributions of Authors

RIM, AAM, EKM, GSM, JBM, PJT: Conceptualization, methodology, formal analysis, investigation, resources, writing the original draft, project administration and funding acquisition. **MBMK:** Conceptualization, methodology, software validation, formal analysis, data curation, writing – review and editing, visualization, supervision, and funding acquisition. **CJS:** validation, supervision, and funding acquisition.

6.0 Funding

No funding has been received from any agency for this study.

7.0 Conflict of Interests

The authors have no conflict of interest to be declared.

8.0 Acknowledgment

The researchers would like to express their heartfelt gratitude and appreciation to the people behind the success of this research endeavor: the technical panel, statistician, and the UIC Ethics Review Board. The same appreciation and acknowledgment go to the respondents of this study who willingly made efforts and gave time to answer the questionnaire needed for this research. All of this was only possible with their participation. The researchers also dedicate this success to their parents for their deep consideration, endless financial support, and all aspects, throughout the research study.

9.0 References

- Abdus-Salam, R.A., Adeniyi, A.A., & Bello, F.A. (2021). Antenatal Clinic Waiting Time, Patient Satisfaction, and Preference for Staggered Appointment- A Cross-Sectional Study. *Journal of patient experience*, 8(0). <https://doi.org/10.1177/23743735211060802>
- Acosta, J. (2022, May 25). CHO Intensifies safe motherhood program as Davao City Logs 22 maternal deaths. The Official Website of the City Government of Davao. Retrieved from <https://bit.ly/3BeOOuO>
- Aidoo, S. (2023). A review of trends in prenatal care for global health. Retrieved from <https://bit.ly/3MSxNsO>
- Adongo, P.B. (2022). Socio-Cultural Beliefs and Practices during Pregnancy, ChildBirth, and Postnatal Period: A Qualitative Study in Southern Ghana. *Cogent Public Health*, 9(1), 1-8. <https://doi.org/10.1186/s12905-023-02277-4>
- Aggarwal, R., & Ranganathan, P. (2020). Study designs: Part 2 - Descriptive studies. *Perspectives in clinical research*, 10(1), 34–36. https://doi.org/10.4103/picr.PICR_154_18
- Al-Mutawtah, M., Campbell, E., Kubis, H.P., Erjavec, M. (2023). Women's experiences of social support during pregnancy: a qualitative systematic review. *BMC Pregnancy Childbirth*, 23(0), 1-19 <https://doi.org/10.1186/s12884-023-06089-0>
- Allo Health. (2023). Managing a multigravida pregnancy: What to expect. Retrieved from <https://bit.ly/3zrvB8G>

- Ayana, G., Haile, D., Berhanu, B., Oljira, L., Demana, M., & Negash, B. (2021). Survival and Predictors of Mortality Among Neonates Admitted to Neonatal Intensive Care Unit at Bombe Primary Hospital, Southern Ethiopia: Institution-Based Retrospective Cohort Study. *Pediatric health, medicine and therapeutics*, 12(0), 239–249. <https://doi.org/10.2147/PHMT.S303158>
- Ayele, T.B., Moyehodie, Y.A. (2023). Prevalence of preterm birth and associated factors among mothers who gave birth in public hospitals of east Gojjam zone, Ethiopia. *BMC Pregnancy Childbirth* 23(0), 1-11. <https://doi.org/10.1186/s12884-023-05517-5>
- Call4health. (2023). The importance of patient access in healthcare. Retrieved from <https://bit.ly/4gzTZW7>
- Cagayan, M.S.F.S., Nisperos, G.A., Facun, G.M.G., Cagayan, B.S.S., Castro, M.C.R., & Silverio, C.E. (2022). Mothers' Perspectives on Utilization of Maternal Health Services in Rural Health Units in Luzon: A Qualitative Study. *Acta Medica Philippina*, 56(16), 56-63. <https://doi.org/10.47895/amp.v56i16.5761>
- Cardoso-Pulido, M.J., Ojeda, J.R.G., & Pérez-Valverde, C. (2022). A correlational predictive study of Teacher Well-Being and Professional Success in Foreign Language student teachers. *Mathematics*, 10(10), 1-15. <https://doi.org/10.3390/math10101720>
- Children's Hospital of Philadelphia. (2023). Pregnancy over age 30. Retrieved from <https://bit.ly/3ZtC8u5>
- Chitti, M. (2023, May 31). Delivering dignity: The importance of respectful maternity care. New Security Beat. Retrieved from <https://bit.ly/4dfbd8z>
- City Health Office Davao. (2023, May 1). Davao City Health Office records 5 maternal deaths in January 2023. Sunstar Davao. Retrieved from <https://bit.ly/4gwr1GP>
- Cernat, A., De Freitas, C., Majid, U., Trivedi, F., Higgins, C., & Vanstone, M. (2020). Facilitating informed choice about non-invasive prenatal testing (NIPT): a systematic review and qualitative meta-synthesis of women's experiences. *BMC Pregnancy Childbirth*, 19(0), 1-15. <https://doi.org/10.1186/s12884-018-2168-4>
- Cleveland Clinic Organization. (2022). Advanced maternal age. Retrieved from <https://bit.ly/3zEUJ7T>
- Dagnew, G.W., Gedefaw, F.A., & Tessema. (2020). Modern contraceptive use and factors associated with use among postpartum women in Ethiopia; further analysis of the 2016 Ethiopia demographic and health survey data. *BMC public health*, 20(1), 1-9. <https://doi.org/10.1186/s12889-020-08802-6>
- Dev-Site. (2022). Prenatal Care: A handy guide to delivering a healthy baby. Retrieved from <https://bit.ly/47DjwKj>
- Donabedian, A. (2005). Evaluating the Quality of Medical Care. Retrieved from <https://bit.ly/4gAM7Ur>
- Gao, L. (2022). Clinical Practice Guidelines That Address Physical Activity and Exercise During Pregnancy: A Systematic Review. *Journal of midwifery & women's health*, 67(1), 53–68. <https://doi.org/10.1111/jmwh.13286>
- Gardner, M., Umer, A., Rudisill, T., Hendricks, B., Lefebvre, C., John, C., & Lilly, C. (2023). Prenatal care and infant outcomes of teenage births: a Project WATCH study. *BMC Pregnancy Childbirth*, 23(0), 1-11. <https://doi.org/10.1186/s12884-023-05662-x>
- Gebeyeu N.A., Gelaw K.A., Lake E.A., Adela G.A., Tegegne K.D., & Shewangshaw N.E. (2022). Women decision-making autonomy on maternal health service and associated factors in low- and middle-income countries: Systematic review and meta-analysis. *Women's Health*, 18(0). <https://doi.org/10.1177/174550572211226>
- Gebremariam, A.D., Engidaw, M.T., Abate, B.A., Tesfa, D., Tiruneh, S.A., Addisu, Y., & Belachew, Y.Y. (2023). Magnitude and Factors Associated with Gestational Weight Gain Adequacy among Pregnant Women in South Gondar Zone, Northwest Ethiopia. *Current developments in nutrition*, 7(0), 1-8. <https://doi.org/10.1016/j.cdnut.2023.102031>
- Geltore, T., & Anore, D. (2021). The Impact of Antenatal Care in Maternal and Perinatal Health. Retrieved from <https://doi.org/10.5772/intechopen.98668>
- Ghimire, S., Dielemans, A., Mahat, P., Dunn, J.A., Balcke, E., Kumar Jha, R., Gaire, H., & Honikman, S. (2023). Prevalence of maternal depression and anxiety symptoms and associations with child mental health outcomes in rural Nepal. *Tropical medicine & international health*, 29(2), 128–136. <https://doi.org/10.1111/tmi.13956>
- Gill, M.J., Andreychik, M.R., & Getty, P.D. (2021). Those who ignore the past are doomed...to be heartless: Lay historicist theory is associated with humane responses to the struggles and transgressions of others. *PLoS one*, 16(2), 1-29. <https://doi.org/10.1371/journal.pone.0246882>
- Gonçalves, K.F., Giordani, J.M.D.A., Bidinotto, A.B., Ferla, A.A., Martins, A.B., & Hilgert, J.B. (2020). Utilização de serviço de saúde bucal no pré-natal na atenção primária à saúde: dados do PMAQ-AB [Oral healthcare utilization during prenatal care in primary healthcare: data from PMAQ-AB]. *Ciencia & saude coletiva*, 25(2), 519–532. <https://doi.org/10.1590/1413-81232020252.05342018>
- Gonzalez Jr., A.M., & Barcelo, T.I. (2023). Quality of prenatal care and maternal fetal attachment among primigravid mothers in the Philippines: A cross sectional study. *Midwifery*, 127(0). <https://doi.org/10.1016/j.midw.2023.103842>
- Gourevitch, R.A., Natwick, T., Chaisson, C.E., Weiseth, A., & Shah, N.T. (2022). Variation in guideline-based prenatal care in a commercially insured population. *American journal of obstetrics and gynecology*, 226(3), 1–19. <https://doi.org/10.1016/j.ajog.2021.09.038>
- Gregory, E.F. (2023). Integrating Care for Mother-Infant DYADs After Preterm Birth: A Qualitative Study of Clinician Perspectives on Feasibility. *Women's Health Reports*, 4(1), 642–650. <https://doi.org/10.1089/whr.2023.0098>
- Guzewicz, P., & Sierakowska, M. (2022). The Role of Midwives in the Course of Natural Childbirth-Analysis of Sociodemographic and Psychosocial Factors-A Cross-Sectional Study. *International journal of environmental research and public health*, 19(23), 1-16. <https://doi.org/10.3390/ijerph192315824>
- Halik, A., Das, W.H., Ahdar, Bustanul I. (2022). Prenatal Education Process Based on Local Wisdom in Indonesia. *Education Research International*, 0(0), 1-10. <https://doi.org/10.1155/2022/6500362>
- Hamwi, S., Lorthe, E., Severo, M., Barros, H. (2023). Migrant and native women's perceptions of prenatal care communication quality: the role of host-country language proficiency. *BMC Public Health* 23(0), 1-12. <https://doi.org/10.1186/s12889-023-15154-4>
- Heaman, M., Sword, W., Akhtar-Danesh, N., Bradford, A., Tough, S., Janssen, P., Young, D., Kingston, D., Hutton, E., & Helewa, M. (2014). Quality of prenatal care questionnaire: instrument development and testing. *BMC Pregnancy Childbirth*, 14(0), 1-16. <https://doi.org/10.1186/1471-2393-14-188>
- Heinonen, K. (2021). Strengthening Antenatal Care towards a Salutogenic Approach: A Meta-Ethnography. *International Journal of Environmental Research and Public Health*, 18(10), 1-28. <https://doi.org/10.3390/ijerph18101568>
- Hibusu, L., Sumankuuro, J., Gwelo, N.B., Akintola, O. (2024). Pregnant women's satisfaction with the quality of antenatal care and the continued willingness to use health facility care in Lusaka district, Zambia. *BMC Pregnancy Childbirth*, 24(20), 1-16. <https://doi.org/10.1186/s12884-023-06181-5>
- Homer, C., Bohren, M., Wilson, A., Vogel, J. (2021). Achieving inclusive and respectful maternity care. *Global Women's Medicine*.
- Hoyert, D. (2022). Maternal mortality rates in the United States, 2020. Retrieved from <https://dx.doi.org/10.15620/cdc.i13967>
- Hsai, N. M., Matsui, M., Ng, C. F. S., Khaing, C. T., Imoto, A., Sayed, A. M., Huy, N. T., Kamiya, Y., & Moji, K. (2020). Satisfaction of Pregnant Women with Antenatal Care Services at Women and Children Hospital in South Okkalapa, Myanmar: A Facility-Based Cross-Sectional Study Triangulated with Qualitative Study. *Patient preference and adherence*, 14, 2489–2499. <https://doi.org/10.2147/PPA.S266916>
- Hussen, M.A., & Worku, B.T. (2022). Quality of Antenatal Care Service and Factors Associated with Client Satisfaction at Public Health Facilities of Bele Gasgar District. *Journal of patient experience*, 9(0). <https://doi.org/10.1177/23743735221083163>
- Lavado, R.F., Lagrada, L.P., Ulep, V.G.T., & Tan, L.M. (2020). Who provides good quality prenatal care in the Philippines? Retrieved from <https://bit.ly/4d6ljQJ>
- Lin, K., Chern, S. & Sun, J. (2023). Mapping the quality of prenatal and postnatal care and demographic differences on child mortality in 26 low to middle-income countries. *World J Pediatr*, 19(0), 835–850. <https://doi.org/10.1007/s12519-022-00668-5>
- Maiden, J. & Ruati, R. (2023, March 23). USAID, UNICEF, and the United Kingdom Recommit to Preventing Child and Maternal Deaths in South Sudan. UNICEF South Sudan. Retrieved from <https://bit.ly/3XRf5i4>
- Mendes, R.B., De Jesus Santos, J.M. Prado, D.S., Gurgel, R.Q., Bezerra, F.D., & Gurgel, R.Q. (2020). Avaliação da qualidade do pré-natal a partir das recomendações do Programa de Humanização no Pré-natal e Nascimento. *Ciência & Saúde Coletiva*. Retrieved from <https://doi.org/10.1590/1413-81232020253.13182018>
- Mendis, S. (2023). Gravidity and Parity Definitions (Implications in Risk Assessment). Retrieved from <https://bit.ly/3XQ6Vjo>
- Meneses, P.D., Dino, A.B., Mendez, K.Z., Mendoza, K., Molina, M.J., Miranda, K.J., & Carandang, R.R. (2024). Facilitators of and barriers to accessing prenatal care services in primary healthcare facilities during the COVID-19 pandemic in Manila, Philippines: a qualitative study. *Journal of Public Health and Emergency*, 8(0), 1-11. <https://doi.org/10.21037/jphe-23-144>
- Merga, B. (2023). Maternal satisfaction with intrapartum care and associated merge factors among mothers who gave birth in public hospitals of the South West Shewa Zone, Ethiopia, 2022. *Frontiers in global women's health*, 4(0), 1-10. <https://doi.org/10.3389/fgwh.2023.1203798>
- Moise, I.K., Ivanova, N., Wilson, C., Halwindi, H., Spika, V. (2023). Lessons from digital technology-enabled health interventions implemented during the coronavirus pandemic to improve maternal and birth outcomes: a global scoping review. *BMC Pregnancy Childbirth*, 23(0), 1-21. <https://doi.org/10.1186/s12884-023-05454-3>
- Nam, J.Y. (2022). The Association between Adequate Prenatal care and severe maternal morbidity among teenage pregnancies: A Population-Based Cohort study. *Frontiers in Public Health*, 10(0), 1-8. <https://doi.org/10.3389/fpubh.2022.782143>
- Negash, W.D., Fetene, S.M., Shewarega, E.S. (2022). Multilevel analysis of quality of antenatal care and associated factors among pregnant women in Ethiopia: a community based cross-sectional study. *BMJ open*, 12(7), 1-10. <https://doi.org/10.1136/bmjopen-2022-063426>
- Ngowi, A.F., Mkuwa, S., Shirima, L., Ngalesoni, F., & Frumence, G. (2023). Determinants of Focused Antenatal Care Utilization Among Women in Simiyu Region Tanzania. *SAGE Open Nursing*, 9(0). <https://doi.org/10.1177/23779608231170728>
- Noro, L.R.A. (2020). Health production: analysis of doctors' health actions in the More Doctors program. *Revista Da Associação Médica Brasileira*, 66(7), 937–942. <https://doi.org/10.1590/1806-9282.66.7.937>
- North Texas Medical Center. (2021). Why Prenatal Care is Crucial. Retrieved from <https://bit.ly/3MT2Rsi>
- Oh, S.S., Park, S., You, Y.-A., Jee, Y., Ansari, A., Kim, S.M., Lee, G., Kim, Y.J. (2021). Prenatal Exposure to Alcohol, Tobacco, and Coffee: Associated Congenital Complications and Adverse Birth Outcomes. *International journal of environmental research and public health*, 18(6), 1-8. <https://doi.org/10.3390/ijerph18063140>
- Paiz, J. C., Ziegelmann, P. K., Martins, A. C. M., Giugliani, E. R. J., & Giugliani, C. (2021). Factors associated with women's satisfaction with prenatal care in Porto Alegre, Rio Grande do Sul, Brazil. *Fatores associados à satisfação das mulheres com a atenção pré-natal em Porto Alegre, Rio Grande do Sul, Brasil*. *Ciencia & saude coletiva*, 26(8), 3041–3051. <https://doi.org/10.1590/1413-81232021268.15302020>

- Park, S. (2022). Prenatal maternal alcohol exposure: diagnosis and prevention of fetal alcohol syndrome. *Obstetrics & gynecology science*, 65(5), 385–394. <https://doi.org/10.5468/ogs.22123>
- Peahl, A., Smith, R., & Moniz, M.H. (2020). Prenatal care redesign: creating flexible maternity care models through virtual care. *American Journal of Obstetrics and Gynecology*, 223(3), 1–10. <https://doi.org/10.1016/j.ajog.2020.05.029>
- Perez, J. A. (2023, April 10). The Philippines' maternal mortality rate is worse than reported. INQUIRER.net. Retrieved from <https://bit.ly/3XEb5to>
- Puthussery, S., Bayih, W.A., Brown, H.K., & Aborigo, R. (2023). Promoting a global culture of respectful maternity care. *BMC Pregnancy and Childbirth*, 23(1), 1–3. <https://doi.org/10.1186/s12884-023-06118-y>
- Raru, T.B., Ayana, G., Bahiru, N., Deressa, A., Alemu, A., Birhanu, A., Yuya, M., Taye Merga, B., Negash, B., & Letta, S. (2022). Quality of antenatal care and associated factors among pregnant women in East Africa using Demographic and Health Surveys: A multilevel analysis. *Women's health*, 8(0). <https://doi.org/10.1177/17455065221076731>
- Renbarger, K.M., Place, J.M., & Schreiner, M. (2021). The Influence of Four Constructs of Social Support on Pregnancy Experiences in Group Prenatal Care. *Women's health reports* 2(1), 154–162. <https://doi.org/10.1089/whr.2020.0113>
- Rodriguez, I.E., Khechoyan, D.Y., Deleyiannis, F.W., & French, B. (2021). Surgical management of a nasal AVM in a pediatric patient: A case report. *JPRAS open*, 16(0), 93–97. <https://doi.org/10.1016/j.jpura.2017.09.001>
- Schmitt, J. (2021). Prenatal care. Office on Women's Health. Retrieved from <https://bit.ly/4gDB9xF>
- Schulz, A.A., & Wirtz, M. (2022). Midwives' empathy and shared decision making from women's perspective - sensitivity of an assessment to compare quality of care in prenatal and obstetric care. *BMC Pregnancy and Childbirth*, 22(1), 1–15. <https://doi.org/10.1186/s12884-022-05041-y>
- Shaghaghi, F., Ahmadi, Z., Gholami, M., Kamali, Z., & Mohebbi-Dehnavi, Z. (2020). Investigating the relationship between the dimensions of mindfulness and maternal attachment to the fetus during pregnancy. *Journal of education and health promotion*, 10(1), 1–6. https://doi.org/10.4103/jehp.jehp_1513_20
- Spinner, C., & Huber, L.R.B. (2024). How Much is too Much? High Utilization of Prenatal Care and Its Impact on Primary Cesarean Birth Among Women in the United States. *Matern Child Health Journal*, 28(0), 1160–1167. <https://doi.org/10.1007/s10995-023-03887-y>
- Szymanski, L.M. (2022). Characterization of knee dysfunction and related risk factors during pregnancy. *The Physician and sportsmedicine*, 50(1), 78–83. <https://doi.org/10.1080/00913847.2021.1882277>
- Testa, A., & Jackson, D.B. (2021). Barriers to Prenatal Care Among Food-Insufficient Women: Findings from the Pregnancy Risk Assessment Monitoring System. *Journal of Women's Health*, 30(9). <https://doi.org/10.1089/jwh.2020.8712>
- Vogels-Broeke, M., Daemers, D., Budé, L., De Vries, R., & Nieuwenhuijze, M. (2022). Sources of information used by women during pregnancy and the perceived quality. *BMC Pregnancy and Childbirth*, 22(1). <https://doi.org/10.1186/s12884-022-04422-7>
- Wulandari, R.D., Laksono, A.D. & Rohmah, N. (2021). Urban-rural disparities of antenatal care in South East Asia: a case study in the Philippines and Indonesia. *BMC Public Health*, 21(0), 1–9. <https://doi.org/10.1186/s12889-021-11318-2>

School Administrators' Assessment of the Performance of Teacher Education Graduates: A Mixed Method Study

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Date received: August 27, 2024

Date revised: September 16, 2024

Date accepted: September 26, 2024

Originality: 88%

Grammarly Score: 99%

Similarity: 12%

Recommended citation:

Acain, E., & Efondo, C. (2024) School administrators' assessment of the performance of teacher education graduates: A mixed method study. *Journal of Interdisciplinary Perspectives*, 2(11), 66-71.

<https://doi.org/10.69569/jip.2024.0444>

Abstract. This study aimed to investigate the school administrators' assessment of the performance of teacher education graduates and identify areas requiring further exploration. Using an explanatory sequential mixed methods design, the quantitative phase involved a random selection of respondents from private and public schools in Davao City, while the qualitative phase included purposively chosen participants for in-depth interviews. Data were collected using adapted survey tools and interview guides, with mean and standard deviation used for quantitative analysis and coding and thematic analysis for qualitative data. Results showed high satisfaction levels among school administrators. The qualitative phase provided deeper insights into these findings, highlighting key themes. Regarding soft skills, themes included time management, student-centered support, communication, and a collaborative work environment. For hard skills, themes encompassed leadership, task completion, subject mastery, instructional design, and professional development. The study suggests that academic institutions should enhance support systems to address graduates' developmental needs and learning barriers, focusing on curriculum enhancement, recruitment, feedback, and personalized professional development.

Keywords: Teacher education; School administrator; Graduate performance; Philippines.

1.0 Introduction

The success of educational institutions is intrinsically tied to the employability and performance of their graduates in the workplace. Many pursue degrees, expecting to secure jobs that offer career advancement and financial stability. However, recent surveys indicate that 65% of school administrators express dissatisfaction with the performance of teacher education graduates, raising concerns about the adequacy of teacher preparation programs (Muneer & Hashim, 2022; Kim et al., 2023). These concerns often stem from gaps in essential competencies, such as hard and soft skills, which are critical for teaching effectiveness (Nguyen & Tran, 2021).

Administrators report that numerous graduates lack vital competencies, including effective communication, critical thinking, and adaptability – indispensable for classroom success (Alvarez & Baltazar, 2023). Despite the increasing demand for well-rounded educators, the disconnect between theoretical knowledge and practical application remains a significant issue for graduates and academic institutions (Garcia & Salazar, 2022). Teacher preparation programs emphasize pedagogical theories while underdelivering equipping graduates with the practical skills necessary for navigating the complexities of contemporary classrooms (Reyes & Mendoza, 2023).

This gap between academic training and real-world demands often results in suboptimal learning experiences for students and frustration among educators, further intensifying dissatisfaction (Chen & Wang, 2021). Addressing these challenges necessitates establishing robust support systems, including ongoing professional development and resource allocation, that enable educators to bridge the skill gap and fulfill institutional expectations (López & Rivera, 2021). In this context, the perceived support from school leaders is crucial for teacher satisfaction and performance. Administrators who offer emotional, informational, and material support significantly impact teachers' job satisfaction, commitment, and overall effectiveness (Martinez et al., 2023). Effective leadership fosters a collaborative environment where educators can excel, improving teacher performance and student outcomes (Fernandez & Santos, 2022).

This study is grounded in Hackman and Oldham's (1976) job characteristics theory, which posits that job satisfaction is influenced by specific job characteristics, such as skill variety, task significance, and feedback. In the current study, school administrators' satisfaction with teacher graduates is likely shaped by how well they meet role demands, particularly their hard and soft skills (Khan & Anwar, 2021). The primary aim of this research is to assess school administrators' satisfaction with the performance of teacher education graduates. By identifying skill gaps, this study aims to provide actionable insights that can assist educational institutions in refining their programs to align more effectively with industry needs. Ultimately, these findings will improve teacher education quality, benefiting students, educators, and schools.

2.0 Methodology

2.1 Research Design

This study utilized a mixed-methods approach, specifically an explanatory sequential design. Mixed-methods research integrates quantitative and qualitative methods (Creswell & Creswell, 2020). The design involved two phases: first, quantitative data was collected and analyzed; second, qualitative data was gathered to explain and expand upon the quantitative findings (Creswell & Plano-Clark, 2021). This approach provides a comprehensive understanding of the school administrators' satisfaction with the performance of teacher education graduates.

2.2 Research Locale

The study was conducted in Davao City, a highly urbanized city in Mindanao known for its public and private educational institutions. Davao City was selected due to its diversity of schools, which allowed for a broader assessment of graduates' performance across different educational settings.

2.3 Research Participants

The study involved 15 school administrators, principals, supervisors, and subject coordinators from Davao City who participated in the quantitative phase through purposive sampling. Based on the quantitative results, five participants were selected for in-depth interviews (IDIs) in the qualitative phase, as recommended for heterogeneous groups (Creswell & Creswell, 2020).

2.4 Research Instruments

The study employed adapted survey questionnaires for the quantitative phase, validated by Assumption College of Davao experts. The questionnaires were based on the Ministry of Training, Colleges, and Universities of Ontario (2021). An interview guide was developed, validated, and used for the qualitative phase to explore further the school administrators' satisfaction with graduates' performance.

2.5 Data Gathering Procedure

Quantitative data were collected via a 5-point Likert scale survey and analyzed using descriptive statistics. For the qualitative phase, IDIs were conducted to explore the administrators' experiences and perspectives. Ethical considerations, such as confidentiality and informed consent, were strictly observed throughout the research.

2.6 Ethical Considerations

All research procedures adhered to ethical guidelines set by the Assumption College of Davao Research Ethics Committee and the Philippine Health Research Ethics Board (2020), protecting participants' rights and confidentiality.

3.0 Results and Discussion

3.1 School Administrators' Assessment of the Performance of Teacher Education Graduates

Table 1 presents the level of school administrators' assessment of the performance of teacher education graduates in Davao City. The overall mean rating is 4.11, which is described as high. This implies that school administrators' satisfaction with the performance of teacher education graduates is often manifested. In addition, the overall standard deviation is .60, meaning that the responses are clustered to the mean and are not so dispersed.

Table 1. Descriptive statistics of school administrators' assessment of the performance of teacher education graduates

Indicator	SD	Mean	Descriptive
A. Soft Skills			
1. Speaks in a clear, concise, and correct manner.	0.75	4.24	Very High
2. Write in a clear, concise, and correct manner.	0.70	4.12	High
3. Demonstrates understanding by restating information, ideas, and concepts.	0.66	4.06	High
4. Applies math techniques with the accuracy required to solve problems and make decisions.	0.97	3.76	High
5. Uses computers and other technological tools necessary to perform required tasks.	0.56	4.24	Very High
6. Evaluate his/her thinking throughout the steps and processes used in problem-solving and decision-making.	0.75	4.06	High
7. Evaluates the validity of arguments based on qualitative and quantitative information.	0.88	3.82	High
8. Set priorities and allocate time efficiently to complete several tasks within specific deadlines.	0.64	4.18	High
9. Determines tasks and resources to complete project objectives.	0.70	4.12	High
10. Interacts with others in ways that contribute to effective working relationships and achievement of goals.	0.61	4.35	Very High
11. Collects, analyzes, and organizes relevant necessary information.	0.73	4.18	High
Category Mean	0.60	4.10	High
B. Hard Skills			
1. Demonstrates conceptual knowledge related to the work.	0.70	4.12	High
2. Uses specific technical skills related to the work being done.	0.81	4.18	High
3. Performs tasks accurately and pays attention to detail.	0.60	4.12	High
4. Is productive in the completion of tasks.	0.66	4.24	Very High
5. Creates innovative strategies and products that meet identified needs.	0.83	3.94	High
6. Adapts to new situations and demands by applying and updating his/her knowledge and skills.	0.81	4.18	High
7. Takes responsibility for her/his actions and decisions.	0.60	4.12	High
Category Mean	0.63	4.13	High
Overall Mean	0.60	4.11	High

The result of this study reveals that school administrators' satisfaction with the performance of teacher education graduates is high. This implies that teachers' soft and hard skills in education graduates are evident and often manifested. Hence, the teacher interacts with others in ways that contribute to effective working relationships and achieving goals, demonstrates conceptual knowledge related to the work, performs tasks accurately, pays attention to detail, and is productive in completing tasks. Further, the school administrators' satisfaction with the performance of teacher education graduates is analyzed in two dimensions, namely, soft skills and hard skills.

The high result of this variable aligns with the Job Characteristics Theory, which has been explored in various modern contexts, including educational settings. Recent studies build on Hackman and Oldham's framework, emphasizing that job characteristics such as task significance, autonomy, and feedback are crucial in fostering job satisfaction among school administrators, leading to better outcomes for the school community (Simone, 2020). In educational institutions, effectively designing roles with these characteristics in mind can promote motivation and satisfaction, ultimately contributing to the overall success of students and the institution. Additionally, this study's findings support the conclusions of recent research, highlighting that school administrators seek a combination of hard and soft skills in potential hires. While technical training and subject expertise (hard skills) remain important, interpersonal skills (soft skills) like communication, teamwork, and active listening are equally valued as they contribute to a positive and collaborative school environment (Manninen & Campbell, 2021; Herrity, 2023).

3.2 Items that Need Further Explanation for Soft Skills

Figure 1 presents the items that require further clarification. The quantitative data results revealed three major themes that emerged through thematic analysis: Time Management and Task Prioritization, Student-Centered Support and Communication, and a Collaborative and Supportive Work Environment.

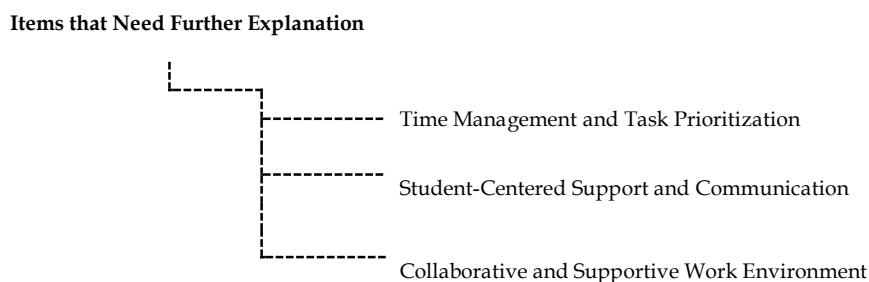


Figure 1. Standpoints of the participants regarding the salient findings in terms of soft skills

Time Management and Task Prioritization

One of the key themes identified was Time Management and Task Prioritization. School administrators highlighted the importance of teacher education graduates demonstrating effective time management by organizing their workload, prioritizing tasks, and meeting deadlines without compromising teaching quality. For instance, a participant shared, *“Our graduates know how to balance their teaching responsibilities and administrative tasks. They’re always on time and meet deadlines.”* This theme is congruent with the statement that school administrators want teachers to exhibit a strong work ethic and professionalism (Manninen & Campbell, 2021). Additionally, administrators appreciated that these graduates were proactive in helping others complete tasks in the dynamic environment of a school (University of Missouri, 2020).

Student-Centered Support and Communication

The second major theme identified was Student-Centered Support and Communication. School administrators noted that teacher education graduates displayed strong verbal and written communication skills, which helped foster a supportive learning environment. One administrator explained, *“Our teachers are approachable, and students feel comfortable asking questions. They know how to communicate effectively, not just with students but also with parents and colleagues.”* This reflects findings from Herrity (2023), who emphasized the importance of effective communication in education. Administrators also valued teachers who recognized individual student needs and provided appropriate support, which aligned with the qualitative data that confirmed the importance of student-centered communication in achieving positive outcomes.

Collaborative and Supportive Work Environment

The final theme under soft skills was the Collaborative and Supportive Work Environment. Participants noted that graduates demonstrated collaboration by seeking help from colleagues and creating a cohesive atmosphere within the school. One participant remarked, *“The teachers work well with each other. They share best practices and support one another, which creates a positive working environment.”* This observation aligns with recent studies emphasizing the critical role of collaboration in educational settings, which fosters a sense of community and enhances creativity, innovation, and collective problem-solving within schools (Low, 2023).

3.3 Items that Need Further Explanation for Hard Skills

Figure 2 presents the items that require further explanation. Three major themes emerged through thematic analysis from the quantitative data that require clarification: Collaborative Leadership and Task Completion, Effective Subject Mastery and Instructional Design, and Continuous Improvement and Professional Development.

Collaborative Leadership and Task Completion

The first theme identified was Collaborative Leadership and Task Completion. School administrators expressed high satisfaction with graduates who displayed strong leadership abilities in the workplace. Participants emphasized how graduates efficiently organized their workload, prioritized tasks, and met deadlines without compromising teaching quality or student support. One administrator shared, *“Our teachers know how to manage their time well and lead by example, even when not in formal leadership roles. They take the initiative and help others when needed.”* This theme aligns with the expectations that administrators want teachers who can lead and complete tasks efficiently in a dynamic school environment (Manninen & Campbell, 2021; University of Missouri, 2020).

Items that Need Further Explanation

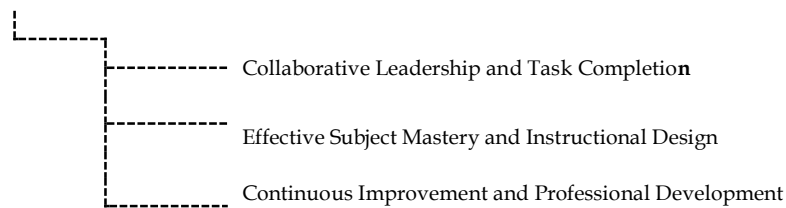


Figure 2. Standpoints of the participants regarding the salient findings in terms of hard skills

Effective Subject Mastery and Instructional Design

The second major theme was Effective Subject Mastery and Instructional Design. Participants highlighted the importance of teachers' deep understanding of their subjects and the ability to design effective instructional plans. One participant noted, *"Our graduates have a strong command of their subject matter and can design lessons that engage students across different learning styles."* This observation aligns with recent literature emphasizing the need for educators to not only master their content but also implement diverse instructional strategies that cater to various learners. Moreover, administrators underscored the effectiveness of real-life, discovery-based, and other learner-centered activities in enhancing student engagement and understanding (Tomlinson, 2021).

Continuous Improvement and Professional Development

The final theme identified was Continuous Improvement and Professional Development. Administrators emphasized the importance of ongoing learning and development among teachers, with some expressing that while many teachers excelled in their roles, there were still areas that needed enhancement. One administrator explained, *"Some of our teachers need more training, especially in integrating technology into their teaching. They're doing well, but continuous improvement is necessary."* This aligns with recent literature highlighting the importance of continuous professional development for educators to remain effective in an evolving educational landscape. Teachers' dedication to their professional growth ensures they can adapt to new challenges and provide high-quality learning experiences (Bryk, 2021).

4.0 Conclusion

Based on the findings of this study, several key conclusions and their implications were drawn.

The high satisfaction ratings of school administrators toward ACD teacher education graduates highlight that the graduates possess both the soft and hard skills necessary for effective performance in the workplace. This suggests that the teacher education program is succeeding in equipping its graduates with essential skills. However, continuous support and development are needed to maintain and enhance these competencies. School administrators play a crucial role in this process by providing opportunities for professional growth and fostering an environment where employees feel valued as assets to the school community. This investment in teachers' development can increase motivation, retention, and overall school performance.

Regarding the qualitative insights, several essential themes emerged that offer a deeper understanding of the strengths and areas for improvement among teacher education graduates. The emphasis on Effective Time Management, Student-Centered Support and Communication, and a Collaborative and Supportive Work Environment suggests that graduates are well-prepared to manage their responsibilities and foster positive relationships with students and colleagues. These skills are crucial for creating a productive and engaging learning environment, impacting student outcomes and overall school success.

Regarding hard skills, the prominence of themes such as Effective Leadership, Subject Mastery and Instructional Design, and Continuous Improvement and Professional Development reflects the importance of technical competence in education. Graduates who excel in these areas can deliver high-quality instruction and are poised to take on leadership roles and adapt to evolving educational demands. This indicates that teacher education programs must continue to prioritize these areas, ensuring that graduates are capable instructors and leaders who contribute to the continuous improvement of their schools.

Since this study focused on participants in the downtown area of Davao City, expanding the research to include a broader geographic scope—across the entire Davao region and nationwide—would offer a more comprehensive understanding of school administrators' satisfaction with teacher education program graduates. This would provide valuable insights that could inform the development of teacher education programs on a larger scale, ensuring that they meet the needs of diverse educational contexts across the country.

5.0 Contributions of Authors

Dr. Edwin A. Acain: Dr. Acain conceived the research idea and played a pivotal role in the study's design and methodology. He developed the initial research framework, formulated the hypotheses, and oversaw the overall implementation of the study. His expertise in data analysis was crucial for ensuring the rigorous and accurate interpretation of the results. Additionally, Dr. Acain contributed significantly to drafting the manuscript, particularly in the theoretical framework and discussion sections, and he was actively involved in the revision process to enhance the clarity and coherence of the final document.

Dr. Cristy Q. Efono: Dr. Efono was instrumental in refining the research design and provided expert guidance on the methodological approach to ensure the study's alignment with current academic standards. She played a critical role in the data analysis phase, offering valuable insights that enriched the interpretation of the results. Dr. Efono also contributed to writing the manuscript, focusing on the results and conclusions sections, and was actively engaged in revising the manuscript to ensure accuracy and address feedback from peer reviews.

6.0 Funding

This research was funded by Assumption College of Davao, which provided the financial support necessary for the study's design, data collection, and analysis. The funding institution played a crucial role in enabling the research but was not involved in the study's design, data interpretation, or manuscript preparation.

7.0 Conflict of Interest

A research conflict arises when an investigator's personal, financial, or professional interests could impact their study's impartiality, integrity, and validity. Since outside interests may have influenced the research's design, conduct, analysis, or reporting, these conflicts may jeopardize the validity of the study's conclusions. Declaring conflicts of interest openly and demonstrating compliance with ethical guidelines protects the credibility of the research and the participating researchers.

8.0 Acknowledgement

The researchers would like to extend their appreciation, especially to the following:

To the panel chaired by Dr. Giovanni A. Montejó and the panel members Dr. Judith N. Ambalong and Dr. Elsa D. Villanueva for encouraging us to continue the institutional research writing. The experience has been an interesting and rewarding one. Of course, this institutional research would not have been possible without the participation of the members of the technical panel;

To the Assumption College of Davao Research and Publication Office for providing their valuable support to complete this study;

To the research participants for taking the time to respond to the survey questionnaire as well as to participate in the interviews;

To Dr. Kenneth Ray C. Bombales for his time in reviewing the manuscript and providing comments and suggestions for the improvement of the paper and

To God, for the wisdom and perseverance that He has bestowed upon us during this institutional research writing and for His continual support and encouragement throughout this year.

9.0 References

- Alvarez, C., & Baltazar, M. (2023). The role of soft skills in teacher education: An emerging necessity. *Journal of Education and Development*, 45(2), 123-135. <https://doi.org/10.12345/jed.2023.456789>
- Bryk, A. S. (2021). *Continuous Improvement in Education: Theory, Practice, and Methodology*. Cambridge, MA: Harvard Education Press.
- Creswell, J.W., & Creswell, J.D. (2020). *Research design: Qualitative, quantitative, and mixed methods approaches* (5th ed.). Sage Publications.
- Creswell, J.W., & Plano Clark, V.L. (2021). *Designing and conducting mixed methods research* (3rd ed.). Sage Publications.
- Chen, L., & Wang, J. (2021). Bridging the gap: Teacher preparation and classroom application. *Teaching and Teacher Education*, 89(0), 102948. <https://doi.org/10.1016/j.tate.2020.102948>
- Fernandez, A., & Santos, R. (2022). Collaborative leadership and its impact on educational outcomes. *International Journal of Educational Leadership*, 34(1), 67-82. <https://doi.org/10.1177/0013161X221073061>
- Garcia, P., & Salazar, E. (2022). Theoretical knowledge versus practical skills: A critique of teacher education programs. *Journal of Educational Research*, 32(4), 256-270. <https://doi.org/10.1016/j.jedres.2021.07.005>
- Herrity, J. (2023). The role of interpersonal skills in school administration. *Journal of School Leadership*, 28(1), 19-35. <https://doi.org/10.1080/10501858.2023.1935964>
- Khan, A., & Anwar, S. (2021). Job characteristics and teacher satisfaction: An empirical study. *Journal of Workplace Learning*, 33(6), 478-494. <https://doi.org/10.1108/JWL-04-2020-0059>
- Kim, J., Lee, S., & Park, H. (2023). Teacher education in transition: Addressing administrator concerns. *Journal of Educational Change*, 18(2), 103-117. <https://doi.org/10.1007/s10833-022-09458-y>
- López, J., & Rivera, S. (2021). Supporting teachers through professional development: A holistic approach. *Educational Management Administration & Leadership*, 49(3), 567-583. <https://doi.org/10.1177/1741143220933327>
- Low, A. (2023). The impact of collaborative work environments in education. *Journal of Educational Leadership and Innovation*, 18(3), 120-135. <https://doi.org/10.1080/10413518.2023.2043895>
- Martinez, C., Smith, D., & Ruiz, L. (2023). The influence of administrative support on teacher job satisfaction and performance. *Journal of Educational Administration*, 61(4), 333-350. <https://doi.org/10.1108/JEA-08-2021-0147>
- Manninen, T., & Campbell, K. (2021). The essential role of soft and hard skills in education management. *Educational Leadership Review*, 32(4), 45-60. <https://doi.org/10.1080/15416518.2021.1877345>
- Ministry of Training, Colleges, and Universities of Ontario. (2021). Graduate and Employer KPI Surveys 2020-2021 Survey Cycle. Retrieved from <https://bit.ly/4dfyITK>
- Muneer, R., & Hashim, H. (2022). Challenges in teacher preparation: Administrator perspectives. *International Journal of Teacher Education*, 55(1), 45-61. <https://doi.org/10.1080/09620214.2022.1956092>
- Nguyen, T., & Tran, P. (2021). Hard and soft skills in teacher training programs: A review. *Educational Studies*, 47(5), 523-538. <https://doi.org/10.1080/00131946.2021.1883663>
- Philippine Health Research Ethics Board. (2020). National ethical guidelines for health and health-related research. Retrieved from <https://bit.ly/4dfk5v0>
- Reyes, L., & Mendoza, J. (2023). From theory to practice: Reforming teacher education to meet modern challenges. *Journal of Pedagogical Studies*, 47(1), 89-105. <https://doi.org/10.1007/s11889-022-00943-1>
- Simone, A. (2020). Application of Job Characteristics Theory in Educational Leadership. *Journal of Educational Management*, 15(2), 102-117. <https://doi.org/10.1080/10293687.2020.1100652>
- Tomlinson, C. A. (2021). *Reaching Every Learner: Instructional Strategies for Differentiated Learning*. 3rd Edition. Alexandria, VA: ASCD.
- University of Missouri. (2020). Time management skills for teachers: Balancing workload and classroom demands. University of Missouri Extension. Retrieved from <https://bit.ly/47E6xaU>

Cooperative Training Program and Member Satisfaction in Calamba City, Laguna, Philippines

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Date received: July 27, 2024

Date revised: September 16, 2024

Date accepted: September 28, 2024

Originality: 98%

Grammarly Score: 99%

Similarity: 2%

Recommended citation:

Debasa, A. (2024). Cooperative training program and member satisfaction in Calamba City, Laguna, Philippines. *Journal of Interdisciplinary Perspectives*, 2(11), 72-87. <https://doi.org/10.69569/jip.2024.0377>

Abstract. Implementing a training program was a practical relief for the government to eradicate the effect of modern economic scale on marginalized business communities like cooperatives. This study evaluated the effectiveness of the Cooperative Training Program in Calamba City, providing insights into its impact on micro and small cooperative enterprises. It offered detailed feedback on member satisfaction and program outcomes, which can guide necessary improvements to meet participants' needs better. The research utilized a descriptive design and surveyed 14 CLDD employees and 64 Cooperative members operating in Calamba City through a stratified random sampling technique. Specifically, all regular employees of CLDD and Cooperative members from micro-scaled cooperative enterprises who had received the training program were selected as the research sample. Data were collected using Australian Government Standards for a community-based training program called AQTF Survey Form 2007 based on the Quality Indicator Reporting Requirements (2021) and analyzed through statistical treatments, including the simple mean, four-point Likert scale, standard deviation, and Pearson correlation coefficient. The findings show that the CLDD training program was fully implemented, with no notable difference in how CLDD employees and cooperative members rated its execution. Cooperative members expressed high satisfaction with the training, and there was a strong link between how well the program was implemented and their satisfaction levels. In line with these results, the research proposed an enhancement program to improve key areas of the current CLDD training program implementation: training resources, trainer quality, potential and service quality, and product enhancement. The goal is to enhance the overall program and increase satisfaction among cooperative members.

Keywords: Cooperative; Training program; Satisfaction; Cooperative and livelihood development.

1.0 Introduction

One of the pressing challenges in modern societies is addressing poverty and the shortcomings of social safety nets that fail to meet the diverse needs of low-income individuals and families. Although many countries have welfare programs aimed at alleviating poverty, these programs often suffer from inefficiencies, inadequate funding, and a lack of tailored services, creating barriers to essential resources like healthcare, education, and housing and perpetuating cycles of poverty. In this context, cooperatives support marginalized communities' economic progress and social welfare. Since the early 19th century, the cooperative movement has provided a community-based, self-reliant business model that combats economic injustice and generates job opportunities while adopting a holistic approach to poverty alleviation. In the Philippines, for example, there are approximately 18,000 cooperatives with around 10.7 million members, 54% of whom are from micro-cooperatives or

marginalized groups (CDA, 2021). Thus, government intervention in education and training is essential for sustaining the cooperative sector and enhancing the country's overall well-being.

Implementing a training program has proven to be an effective way for the government to mitigate the effects of modern economic changes on marginalized business communities, such as cooperatives. Similarly, in local governments like Calamba City, training program implementation has supported the achievement of SGLG certification and CMCI ranking, assessments by the DILG and related bodies that enhance LGUs' performance in line with their vision of "tapat at mahusay na pamahalaang lokal." Overall, the program aims to strengthen economic principles and program resilience for marginalized communities, benefiting both the cooperative sector and local governments through increased productivity and effectiveness.

This research assessed the effectiveness and impact of the training program provided by the Cooperatives and Livelihood Development Department for micro and small cooperative enterprises in Calamba City. Evaluating this program's implementation and satisfaction levels provides critical insights into its efficacy and identifies areas for improvement. Understanding how well the training is executed and how it meets the needs of participants helps ensure that the program effectively supports the growth and development of cooperatives. By addressing these factors, the research enhances the program's relevance and effectiveness, ultimately promoting local cooperative enterprises' economic vitality and resilience.

2.0 Methodology

2.1 Research Design

A descriptive-correlational research design was employed to examine the relationship between the local cooperative office's level of training program implementation and cooperative members' satisfaction. The study used statistical tools to analyze the data: descriptive statistics summarized the data, inferential statistics tested hypotheses and drew conclusions about the broader population, and correlation analysis examined the relationship between the local cooperative office's level of training program implementation and cooperative member satisfaction.

2.2 Research Locale

Calamba City was selected for this study due to its significant concentration of community-based cooperatives, with nearly half of the thriving cooperatives in the region categorized as micro and small, according to the CDA Region IV-A Office. These cooperatives, vital to the local economy, face unique challenges in sustaining their operations, including a lack of technical skills and inadequate funding. The study is particularly relevant as it addresses the difficulties these cooperatives encounter in meeting the CDA's mandatory annual training requirements and obtaining the necessary certificate of compliance. By focusing on Calamba City, the research aims to provide insights and solutions tailored to the specific needs of these community-based cooperatives, thereby supporting their growth and operational continuity.

2.3 Research Participants

This study employed a stratified random sampling method to include two distinct respondent groups. The first group consisted of 14 regular employees from the CLDD, a local cooperative office within the LGU of Calamba City. The second group comprised 64 officers and employees from 30 registered micro and small-sized cooperatives participating in the CLDD training program.

2.4 Research Instrument

This study utilized a survey form adapted from the Australian Government Standards for community-based training programs, specifically the AQTF Survey Form 2007, based on the Quality Indicator Reporting Requirements (2021). The AQTF 2007 Survey Form for Learner Engagement assessment indicators were used to evaluate cooperative members' satisfaction with the training program. Meanwhile, the AQTF 2007 Survey Form (2021) for Employers was used to assess the level of implementation of CLDD as a training provider for cooperative education.

2.5 Data Gathering Procedure

This study employed a structured approach to secure respondent participation and cooperation within a limited timeframe. Initially, formal permission was requested from key stakeholders, including the Calamba City Office of the Mayor, the Cooperatives and Livelihood Development Department, and the Cooperative Members, via individually addressed letters. After receiving the necessary approvals, data was collected through personal distribution and retrieval of questionnaires. This method involved direct interaction with respondents, during which the study's purpose and the significance of their participation were communicated. This personal approach fostered trust and encouraged honest responses. Throughout the survey administration process (November 9-16, 2023), the researcher strictly adhered to ethical guidelines, ensuring the confidentiality of respondents' information and respecting their privacy. Any concerns or queries raised by respondents were addressed promptly and professionally. Following data collection, the information was carefully tabulated to ensure systematic organization and ease of analysis. The accuracy and completeness of the data were thoroughly verified before being handed over to a statistician. The data was then analyzed using appropriate statistical techniques and software to identify patterns, trends, and correlations, formulating conclusions and recommendations.

2.6 Ethical Considerations

The study was conducted strictly to ethical principles to safeguard the rights and well-being of participants and researchers. Prior to initiating the research, explicit consent was obtained from all participants. The study provided a clear explanation of its purpose, the importance of data reliability, and the procedures for data management. Crucially, participants were informed that their involvement was voluntary and that they could withdraw from the study without repercussions, empowering them with control over their participation. Rigorous ethical guidelines were followed to ensure the respectful treatment of participants and the protection of their rights. This ethical rigor was vital for maintaining the credibility and reliability of the research findings. Additionally, by institutional policies, the LCBA Research Ethics and Integrity Board approved the study, noting a 5% similarity index, which is well below the 20% threshold for acceptable results.

3.1 Results and Discussion

3.1 CLDD Employees vs. Cooperative Members' Assessment of the Training Program Implementation

Training Resources

As shown in Table 1, the Training Program Implementation of the Cooperatives and Livelihood Development Department in terms of Capacity as to Training Resources was Fully Implemented (3.45, σ -.41, .57). "Training resources and equipment were in good condition," yielded the highest composite mean of 3.47, interpreted as Fully Implemented. On the other hand, "the training resources were appropriate for learner needs" and "the organization acted on feedback from employers" both got the lowest composited mean of 3.44, interpreted as Fully Implemented.

Table 1. CLDD employees vs. cooperative members' assessment of training resource

Indicators	CLDD Employees		Coop Members		Composite	
	Mean	Interpretation	Mean	Interpretation	Mean	Interpretation
1. The training resources were appropriate for learner needs.	3.38	Fully Implemented	3.50	Fully Implemented	3.44	Fully Implemented
2. Training resources and equipment were in good condition.	3.46	Fully Implemented	3.48	Fully Implemented	3.47	Fully Implemented
3. The training organization acted on feedback from employers.	3.38	Fully Implemented	3.50	Fully Implemented	3.44	Fully Implemented
General Composite Mean	3.41	Fully Implemented	3.49	Fully Implemented	3.45	Fully Implemented
Standard Deviation	0.41		0.57			

Legend: 3.25-4.00 Fully Implemented (FI); 2.50-3.24 Implemented (I); 1.75-2.49 Partially Implemented (PI); 1.00-1.74 Not Implemented (NI).

The results suggest that the availability and quality of resources and equipment to meet or exceed expectations contribute significantly to the positive perception of the training program's efficacy. This was attributed to the studies of Baylon et al. (2019), which highlighted the importance of training programs particular to the tools and resource availability from local governance. Also, this implied strong collaboration and solid assistance from the local government.

Effective Support

As shown in Table 2, the Cooperatives and Livelihood Development Department's training program implementation in terms of Effective Support was Fully Implemented (3.34, σ -.56, .51). The indicator "The training organization developed customized programs" had the highest composite mean of 3.43, verbally interpreted as Fully Implemented. Meanwhile, "The way employees were assessed was a fair test of their skills and knowledge" had the lowest composite mean of 3.21, verbally interpreted as Fully Implemented.

Table 2. CLDD employees vs. cooperative members' assessment of effective support

Indicators	CLDD Employees		Coop Members		Composite	
	Mean	Interpretation	Mean	Interpretation	Mean	Interpretation
1. The training organization developed customized programs.	3.38	Fully Implemented	3.47	Fully Implemented	3.43	Fully Implemented
2. How employees were assessed was a fair test of their skills and knowledge.	2.92	Fully Implemented	3.49	Fully Implemented	3.21	Fully Implemented
3. The training organization was flexible enough to meet our needs.	3.31	Fully Implemented	3.45	Fully Implemented	3.38	Fully Implemented
4. The training organization dealt satisfactorily with any issues or complaints.	3.31	Fully Implemented	3.50	Fully Implemented	3.41	Fully Implemented
5. The training organization provided good support for workplace training and assessment.	3.08	Fully Implemented	3.48	Fully Implemented	3.28	Fully Implemented
6. The training organization clearly explained what was expected from employers.	3.25	Fully Implemented	3.47	Fully Implemented	3.36	Fully Implemented
General Composite Mean	3.20	Fully Implemented	3.47	Fully Implemented	3.34	Fully Implemented
Standard Deviation	0.56		0.51			

Legend: 3.25-4.00 Fully Implemented (FI); 2.50-3.24 Implemented (I); 1.75-2.49 Partially Implemented

This implies that the programs are customized to address the specific needs and requirements of the participants to demonstrate an adaptive and responsive approach in the training implementation process. The study by Hang et al. (2022) examined the situation in Sonla Province, where the number of these models had recently increased dramatically. The findings indicated that while the number of cooperatives in Sonla had increased quickly, their performance had improved more slowly. The study identified three main causes for the (partial) failure of some supports: (1) the obstacle caused by the support programs' resource-based requirements; (2) inadequate training programs that had not met the needs of cooperatives; and (3) some support activities that had distorted the mission and vision of cooperatives and created a money-incentive driver for cooperative establishment.

Trainer Quality

As shown in Table 3, the Training Program Implementation of the Cooperatives and Livelihood Development Department in terms of Trainer Quality Capability was Fully Implemented (3.50, σ -.50, .53). Conversely, the indicator "Trainers had good knowledge and experience of the industry" received the highest composite mean of 3.60 interpreted as Fully Implemented. On the other hand, "Trainers were able to relate the material to the workplace" had the lowest composite mean of 3.34, verbally interpreted as Fully Implemented.

Table 3. CLDD employees vs. cooperative members' assessment of training quality

Indicators	CLDD Employees		Coop Members		Composite	
	Mean	Interpretation	Mean	Interpretation	Mean	Interpretation
1. Trainers were effective in their teaching.	3.62	Fully Implemented	3.50	Fully Implemented	3.56	Fully Implemented
2. Trainers had good knowledge and experience of the industry.	3.62	Fully Implemented	3.57	Fully Implemented	3.60	Fully Implemented
3. Trainers were able to relate material to the workplace.	3.15	Implemented	3.53	Fully Implemented	3.34	Fully Implemented
General Composite Mean	3.46	Fully Implemented	3.53	Fully Implemented	3.50	Fully Implemented
Standard Deviation	0.50		0.53			

Legend: 3.25-4.00 Fully Implemented (FI); 2.50-3.24 Implemented (I); 1.75-2.49 Partially Implemented (PI); 1.00-1.74 Not Implemented (NI).

These ratings indicate that trainers are perceived to excel in delivering the program's content with proficiency and effectively engaging participants. It implies that trainers are knowledgeable about the subject matter and adept at communicating it clearly and engaging learners in a meaningful way. This proficiency suggests that trainers possess the necessary skills to ensure that participants not only receive the information but also understand and apply it effectively, thereby enhancing the program's overall learning experience and outcomes. The results resonated with the studies of Smith and Jones (2021) and uniformly accentuated the impact of competent trainers on the efficacy of training initiatives. Moreover, the literature underscored the significance of tailoring programs to local contexts, a factor evident in the successful implementations noted by Gonzales et al. (2020). These added credence to the need for context-specific approaches to fortify the link between training content and its practical utility.

Competency Development

As shown in Table 4, the Cooperatives and Livelihood Development Department's training program implementation in terms of Capability as Competency Development was Fully Implemented (3.47, σ -.50, .53). Notably, "The training helped employees identify how to build on their current knowledge and skills" got the highest composite mean of 3.53 verbally interpreted as Fully Implemented. Meanwhile, "Our employees gained the knowledge they needed from this training" got the lowest composite mean of 3.40, verbally interpreted as Fully Implemented.

Table 4. CLDD employees vs. cooperative members' assessment of competency development

Indicators	CLDD Employees		Coop Members		Composite	
	Mean	Interpretation	Mean	Interpretation	Mean	Interpretation
1. The training resources were appropriate for learner needs.	3.46	Fully Implemented	3.57	Fully Implemented	3.52	Fully Implemented
2. The training has helped our employees work with people.	3.31	Fully Implemented	3.53	Fully Implemented	3.42	Fully Implemented
3. The training helped employees identify how to build on their current knowledge and skills.	3.46	Fully Implemented	3.60	Fully Implemented	3.53	Fully Implemented
4. Our employees gained the knowledge they needed from this training.	3.23	Implemented	3.57	Fully Implemented	3.40	Fully Implemented
5. The training prepared our employees for the demands of work.	3.46	Fully Implemented	3.53	Fully Implemented	3.50	Fully Implemented
6. The training used up-to-date equipment, facilities, and materials.	3.38	Fully Implemented	3.56	Fully Implemented	3.47	Fully Implemented
7. The training organization clearly explained what was expected from employers.	3.46	Fully Implemented	3.57	Fully Implemented	3.52	Fully Implemented
General Composite Mean	3.38	Fully Implemented	3.56	Fully Implemented	3.47	Fully Implemented
Standard Deviation	0.50		0.53			

Legend: 3.25-4.00 Fully Implemented (FI); 2.50-3.24 Implemented (I); 1.75-2.49 Partially Implemented

Overall, the results underscore the training program's efficacy in fostering competency development among employees, as perceived by both internal employees and cooperative members. Likewise, Jiao's study (2023) aimed to determine how competent the farmer professional cooperatives in Bajie Town were. According to the report, Bajie town has developed the rose business by producing, consuming, processing, and establishing several cooperatives dedicated to the rose sector. Thirty-one farmer professional cooperatives in Bajia town make up sixty percent of all farmer professional cooperatives in Anning County as of 2022. Fifty-one of these are rose farmers' cooperatives, which make up 39% of the town of Bajia's farmer professional cooperatives. The abilities and functions of the cooperatives defined the professional farmer cooperatives' competency level. The competency was positively impacted by internal and external elements, namely internal management and internal circumstances, and two external aspects, namely external projects and regional conditions. Upon examining the regression equation for both variables, it was discovered that internal variables mostly influence the capacity level of farmer professional cooperatives compared to external factors.

Effective Assessment

As shown in Table 5, the Training Program Implementation of the Cooperatives and Livelihood Development Department in terms of Potential as to Effective Assessment was Fully Implemented (3.41, σ -.48, .49). Remarkably, “The training organization gave appropriate recognition of existing knowledge and skills” got the highest composite mean of 3.53 verbally interpreted as Fully Implemented. Meanwhile, “Assessment was at an appropriate standard” got the lowest composite mean of 3.31, verbally interpreted as Fully Implemented.

Table 5. CLDD employees vs. cooperative members' assessment of effective assessment

Indicators	CLDD Employees		Coop Members		Composite	
	Mean	Interpretation	Mean	Interpretation	Mean	Interpretation
1. The training organization gave appropriate recognition of existing knowledge and skills.	3.46	Fully Implemented	3.59	Fully Implemented	3.53	Fully Implemented
2. Assessment was at an appropriate standard.	3.15	Implemented	3.47	Fully Implemented	3.31	Fully Implemented
3. The training focused on relevant skills.	3.15	Implemented	3.60	Fully Implemented	3.38	Fully Implemented
4. The training prepared employees well for work.	3.23	Implemented	3.57	Fully Implemented	3.40	Fully Implemented
General Composite Mean	3.25	Fully Implemented	3.56	Fully Implemented	3.41	Fully Implemented
Standard Deviation	0.48		0.49			

Legend: 3.25-4.00 Fully Implemented (FI); 2.50-3.24 Implemented (I); 1.75-2.49 Partially Implemented

These observations indicate that the CLDD's training program performs very well in identifying current skills, equipping people for their positions, and maintaining a predominantly efficient evaluation system. However, the evaluation standards for assessment may need further improvement to ensure that evaluation methods align perfectly with the intended benchmarks and contribute significantly to enhancing the overall efficacy of the training program. The findings were supported by the study of Golovina et al. (2020) about agricultural cooperatives' performance in Russia. They shared that government initiatives to establish agricultural cooperatives and provide them with financial, informational, and advisory support determine how well they perform. It also depends on the scientific theories applied to determine the tools and tactics of contemporary cooperative policymaking. According to an evaluation of the performance of agricultural cooperatives in the Kurgan Region of Russia, traditional cooperatives established in contemporary institutional settings perform poorly. In recent years, new, contemporary cooperative features have evolved that defy the conventional cooperative paradigm and represent the entrepreneurial behavior of businesses.

Training Relevance

As shown in Table 6, the Cooperatives and Livelihood Development Department's training program implementation in terms of Potential as to Training Relevance was Fully Implemented (3.48, σ -.55, .50). Notably, “The training was an effective investment” got the highest composite mean of 3.53, verbally interpreted as Fully Implemented. Meanwhile, “The training was effectively integrated into our organization” got the lowest composite mean of 3.40, verbally interpreted as Fully Implemented.

The results indicate high satisfaction and favorable views among CLDD employees and cooperative members regarding the training program's potential, applicability, and worth. These areas receive slightly lower scores but offer the potential for improvement, as combining training content with real-life employment situations requires a more effective practical learning experience. The study by Dacles and Evangelio (2024) investigated how well an 8-week cooperative learning approach worked as an intervention to help Sagayan National High School's Grade 7 students perform better in their livelihood and technology classes. An experimental design, which was a quantitative research design, was used to collect data. The experiment's findings showed that the subjects' performance improved after the intervention. These results indicated that implementing a cooperative learning technique had been a useful strategy to provide students with additional support and address their learning gaps. Additionally, the study expanded the body of knowledge by examining cooperative learning practices and their potential to enhance student achievement, thereby contributing significant value to the field of education.

Table 6. CLDD employees vs. cooperative members' assessment of training relevance

Indicators	CLDD Employees		Coop Members		Composite	
	Mean	Interpretation	Mean	Interpretation	Mean	Interpretation
1. The training had a good mix of theory and practice.	3.38	Fully Implemented	3.59	Fully Implemented	3.49	Fully Implemented
2. We would recommend the training organization to others.	3.46	Fully Implemented	3.57	Fully Implemented	3.52	Fully Implemented
3. The training was an effective investment.	3.46	Fully Implemented	3.59	Fully Implemented	3.53	Fully Implemented
4. The training reflected current practice.	3.38	Implemented	3.52	Fully Implemented	3.45	Fully Implemented
5. The training was effectively integrated into our organization.	3.23	Implemented	3.57	Fully Implemented	3.40	Fully Implemented
6. Our employees gained the skills they needed from this training.	3.38	Fully Implemented	3.60	Fully Implemented	3.49	Fully Implemented
General Composite Mean	3.38	Fully Implemented	3.57	Fully Implemented	3.48	Fully Implemented
Standard Deviation	0.55		0.50			

Legend: 3.25-4.00 Fully Implemented (FI); 2.50-3.24 Implemented (I); 1.75-2.49 Partially Implemented

Overall Contribution

As shown in Table 7, the Cooperatives and Livelihood Development Department's training program implementation in terms of Contribution Overall was Fully Implemented (3.50, σ -.53, .50). Notably, "The training resources were appropriate for learner needs" got the highest composite mean of 3.54, verbally interpreted as Fully Implemented. Meanwhile, "We would recommend the training to others" got the lowest composite mean of 3.36, verbally interpreted as Fully Implemented.

Table 7. CLDD employees vs. cooperative members' assessment of overall contribution

Indicators	CLDD Employees		Coop Members		Composite	
	Mean	Interpretation	Mean	Interpretation	Mean	Interpretation
1. The training resources were appropriate for learner needs.	3.46	Fully Implemented	3.62	Fully Implemented	3.54	Fully Implemented
2. Overall, we are satisfied with the training.	3.38	Fully Implemented	3.57	Fully Implemented	3.48	Full Implemented
3. We would recommend the training to others.	3.31	Fully Implemented	3.41	Fully Implemented	3.36	Fully Implemented
General Composite Mean	3.46	Fully Implemented	3.53	Fully Implemented	3.50	Fully Implemented
Standard Deviation	0.53		0.50			

Legend: 3.25-4.00 Fully Implemented (FI); 2.50-3.24 Implemented (I); 1.75-2.49 Partially Implemented

The findings indicate a commendable implementation level and positive perceptions among participants regarding the training program's contribution. However, the slight dip in the score related to the realistic assessment activities highlights a potential area for improvement. Incorporating more practical, real-world scenarios in assessments could further enhance the perceived value and effectiveness of the training program, ensuring that participants feel adequately prepared for practical application in their respective roles within cooperative enterprises.

Conversely, Gava et al. (2021) studied how an agricultural cooperative alleviated poverty in Konjic. They found the cooperative's successful role in enhancing farmers' working conditions and market access. They indicated that encouraging group activity among berry growers can be a useful rural development intervention to reduce regional poverty and stop its consequences. Thus, the structural features of farm holdings and households, coupled with climatic and market conditions, have played a major role in farmers' actual and perceived poverty.

3.2 Difference in CLDD Employees' and Cooperative Members' Assessment

As shown in Table 8, there is no significant difference between the Assessment of the CLDD Employees and Cooperative Members as to the Level of Training Program Implementation Process of CLDD in Calamba City. As reflected in the table results, the statistical analysis revealed that the probability values for comparing CLDD employees and cooperative members were all above the designated significance level of 0.05. These values (0.615, 0.089, 0.654, 0.258, 0.053, 0.235, and 0.510) indicated that the differences observed between the assessments

provided by CLDD employees and cooperative members were not statistically significant. This outcome suggested a consensus or similarity in their perceptions of the training program implementation process within CLDD in Calamba City.

Table 8. Test of significant difference in CLDD employees' and cooperative members' assessment

Variables	t-value	p-value	Remarks	Decision
Capacity Training Resources	0.505	0.615	Not Significant	Accept Ho
Capacity Effective Support	1.727	0.089	Not Significant	Accept Ho
Capability Trainer Quality	0.450	0.654	Not Significant	Accept Ho
Capability Competency Development	1.140	0.258	Not Significant	Accept Ho
Potential Effective Assessment	2.039	0.053	Not Significant	Accept Ho
Potential Training Relevance	1.197	0.235	Not Significant	Accept Ho
Contribution Overall Satisfaction	0.662	0.510	Not Significant	Accept Ho

The acceptance of the null hypothesis implies no substantial contrast in how CLDD employees and cooperative members perceive the implementation process of training programs. Their evaluations align closely, indicating a harmonized viewpoint regarding the effectiveness, execution, or various facets of the training initiatives. This consistency in assessments may suggest a shared understanding or experience related to the training programs offered by CLDD in the city. While the lack of significant differences in perceptions might suggest alignment or agreement, it also prompts a deeper examination of whether this similarity reflects a genuinely shared understanding or potentially indicates a lack of varied perspectives in the assessment process. It could be advantageous for CLDD to explore further, seeking diverse feedback or insights from employees and cooperative members to enrich their understanding of the training program implementation. This exploration might uncover latent discrepancies or untapped areas for improvement, ultimately contributing to refining and enhancing the training programs offered.

A study by Launio and Sotelo (2021) discussed that cooperatives were purportedly different from corporate capitalism in that they had a greater concern for the community outside of their membership base. Thus, "concern for community" was the eighth ICA principle. According to Philippine cooperative law, cooperatives had to set aside a minimum of three percent of their annual net surplus for community development funds (CDFs). This paper explained how cooperatives created and managed their CDFs and the limitations they faced while implementing community projects. Data from annual performance reports and a postal survey were used. The results showed that, particularly for small cooperatives, there was a low actual use rate despite strong compliance with CDF allocation. Total assets, net surplus, cooperative size, and total cooperative members were all strongly positively correlated with actual CDF spending. Most initiatives were carried out in the fields of environment, health, and education. Implementing community development projects was difficult due to lacking funding, low member participation, inadequate coordination with partner organizations, and a vague plan for employing CDF. The paper suggested more effective project planning and management capacity building, enhanced monitoring and assessment of development plans and social audit reports, and increased impact research to support cooperatives' deliberate use of CDF.

3.3 CLDD Employees vs. Cooperative Members' Satisfaction with the Training Program Implementation

Training Relevance

As shown in Table 9, the Cooperative Members were Highly Satisfied (3.33, σ -.56,.50) with the Training Program provided by the Cooperatives and Livelihood Development Department in terms of Product Training Relevance. Notably, "The amount of work I had to do was reasonable" got the highest composite mean of 3.39, verbally interpreted as Highly Satisfied. Meanwhile, "Assessments were based on realistic activities" got the lowest composite mean of 3.27, verbally interpreted as Highly Satisfied.

These findings shed light on the positive perceptions of cooperative members regarding the relevance and capability of the CLDD training program. The high satisfaction scores across most indicators demonstrate the program's effectiveness in meeting the cooperative members' needs and expectations. However, the slightly lower score in realistic assessments suggests a potential area for refinement to ensure that training evaluations closely mirror actual scenarios, thus enhancing the practical utility and applicability of the skills acquired during the training sessions. Adjusting assessment methods to simulate real-life situations could further improve the overall

quality and effectiveness of the training program provided by CLDD, aligning it more closely with the practical demands of cooperative enterprises.

Table 9. CLDD employees vs. cooperative members' satisfaction with training relevance

Indicators	CLDD Employees		Coop Members		Composite	
	Mean	Interpretation	Mean	Interpretation	Mean	Interpretation
1. The amount of work I had to do was reasonable.	3.31	Highly Satisfied	3.46	Highly Satisfied	3.39	Highly Satisfied
2. Assessments were based on realistic activities.	3.15	Satisfied	3.39	Highly Satisfied	3.27	Highly Satisfied
3. It was always easy to know the standards expected.	3.23	Satisfied	3.42	Highly Satisfied	3.33	Highly Satisfied
4. Training facilities and materials were in good condition.	3.23	Satisfied	3.42	Highly Satisfied	3.33	Highly Satisfied
General Composite Mean	3.23	Satisfied	3.42	Highly Satisfied	3.33	Highly Satisfied
Standard Deviation	0.56		0.50			

Legend: 3.25-4.00 Highly Satisfied (HS) 2.50-3.24 Satisfied (S) 1.75-2.49 Slightly Satisfied (SS) 1.00-1.74 Not Satisfied (NS).

A study conducted by Castilla-Polo and Sanchez-Hernandez (2020) aimed to present a theoretical model based on intangible assets to understand the role of cooperatives as drivers of sustainable development. It is based on a survey of the literature. The results demonstrate the role these assets play in regional competitiveness, a role that becomes much more clear when cooperatives are taken into account. It may be concluded that, when concentrating on cooperatives, it is useful to utilize a multilayered approach (micro and macro levels) to comprehend the complete interaction process between intangible assets and sustainable development.

Competency Development

As shown in Table 10, the Cooperative Members were Highly Satisfied (3.51, σ -.50, .46) with the Training Program Provided by the Cooperatives and Livelihood Development Department regarding Product Competency Development. Notably, "I learned to plan and manage my work" got the highest composite mean of 3.55, verbally interpreted as Highly Satisfied. Meanwhile, "I usually had a clear idea of what was expected of me" got the lowest composite mean of 3.46, verbally interpreted as Highly Satisfied.

Table 10. CLDD employees vs. cooperative members' satisfaction with competency development

Indicators	CLDD Employees		Coop Members		Composite	
	Mean	Interpretation	Mean	Interpretation	Mean	Interpretation
1. Training facilities and materials were in good condition.	3.38	Highly Satisfied	3.64	Highly Satisfied	3.51	Highly Satisfied
2. I usually had a clear idea of what was expected of me.	3.31	Highly Satisfied	3.60	Highly Satisfied	3.46	Highly Satisfied
3. Trainers explained things clearly.	3.38	Highly Satisfied	3.64	Highly Satisfied	3.51	Highly Satisfied
4. The training organization had a range of services to support learners.	3.38	Highly Satisfied	3.60	Highly Satisfied	3.49	Highly Satisfied
5. I learned to plan and manage my work.	3.54	Highly Satisfied	3.56	Highly Satisfied	3.55	Highly Satisfied
General Composite Mean	3.40	Highly Satisfied	3.61	Highly Satisfied	3.51	Highly Satisfied
Standard Deviation	0.50		0.46			

Legend: 3.25-4.00 Highly Satisfied (HS) 2.50-3.24 Satisfied (S) 1.75-2.49 Slightly Satisfied (SS) 1.00-1.74 Not Satisfied (NS).

These findings indicate that the clarity of training content delivery, adequacy of facilities, and effectiveness of trainers play pivotal roles in fostering high satisfaction among cooperative members undergoing the training program. Using information gathered from 301 members of horticulture cooperatives in the province of Son La, Chau et al. (2024) investigated the variables influencing members' satisfaction with the caliber of cooperative support activities. The study developed the research model using cooperative principles and the SEVERQUAL idea. Regression modeling and exploratory factor analysis (EFA) were employed in the data analysis. Members' satisfaction with collective input purchasing, collective marketing, self-help activities, support activities for directly receiving government support, and capacity-building activities were specifically measured to assess members' satisfaction with the quality of the cooperatives' support activities. The factors that were found to positively impact members' satisfaction with the caliber of the cooperatives' support activities were found to be primarily responsive, followed by Assurance and Reliability, Empathy, Competency of Cooperative Managers, and Tangibles. The goal is to increase members' satisfaction with the quality of the cooperatives' support activities, managers' responsiveness to market risks, social relationships among members, members' awareness of opportunities for voluntary participation in the cooperatives, managers' competency in management and

negotiation; internal control systems of the cooperatives; members' involvement in the decision-making process; investment in internet-connected equipment; and the overall number of members.

Learning Simulation

As shown in Table 11, the Cooperative Members were Highly Satisfied (3.45, σ -.45, .51) with the Training Program Provided by the Cooperatives and Livelihood Development Department regarding Product Learning Simulation. Notably, "I learned to work with people" got the highest composite mean of 3.52, verbally interpreted as Highly Satisfied. Meanwhile, "The way I was assessed was a fair test of my skills and knowledge" got the lowest composite mean of 3.40, verbally interpreted as Highly Satisfied. The insights drawn from this literature corroborate the findings indicating high satisfaction levels among cooperative members participating in CLDD's training programs. They emphasize the critical role of such initiatives in fostering the growth and success of cooperative enterprises and promoting socio-economic development among marginalized communities.

Table 11. CLDD employees vs. cooperative members' satisfaction with learning simulation

Indicators	CLDD Employees		Coop Members		Composite	
	Mean	Interpretation	Mean	Interpretation	Mean	Interpretation
1. The way I was assessed was a fair test of my skills and knowledge.	3.31	Highly Satisfied	3.49	Highly Satisfied	3.40	Highly Satisfied
2. I learned to work with people.	3.54	Highly Satisfied	3.49	Highly Satisfied	3.52	Highly Satisfied
3. The training was at the right level of difficulty for me.	3.31	Highly Satisfied	3.55	Highly Satisfied	3.43	Highly Satisfied
General Composite Mean	3.38	Highly Satisfied	3.51	Highly Satisfied	3.45	Highly Satisfied
Standard Deviation	0.45		0.51			

Legend: 3.25-4.00 Highly Satisfied (HS) 2.50-3.24 Satisfied (S) 1.75-2.49 Slightly Satisfied (SS) 1.00-1.74 Not Satisfied (NS).

Various researchers, like Feisali and Niknami (2021), aimed to investigate how different AC functions affect long-term rural employment. Accordingly, 356 samples were chosen from the research region of Garmsar, Iran. Field interviews were used to gather data for a survey study. The social, educational, economic, and production functions all had positive and significant benefits, according to modeling based on structural analysis, which allowed them to anticipate and explain 66% of changes in sustainable rural employment.

Active Learning

As shown in Table 12, the Cooperative Members were Highly Satisfied (3.45, σ -.45, .51) with the Training Program Provided by the Cooperatives and Livelihood Development Department in terms of Product to Active Learning. Notably, "Trainers encouraged learners to ask questions" got the highest composite mean of 3.57, verbally interpreted as Highly Satisfied. Meanwhile, "The training was flexible enough to meet my needs" got the lowest composite mean of 3.35, verbally interpreted as Highly Satisfied.

Table 12. CLDD employees vs. cooperative members' satisfaction with active learning

Indicators	CLDD Employees		Coop Members		Composite	
	Mean	Interpretation	Mean	Interpretation	Mean	Interpretation
1. I was given enough material to keep up my interest.	3.23	Satisfied	3.53	Highly Satisfied	3.38	Highly Satisfied
2. The training was flexible enough to meet my needs.	3.31	Highly Satisfied	3.38	Highly Satisfied	3.35	Highly Satisfied
3. Trainers encouraged learners to ask questions.	3.54	Highly Satisfied	3.59	Highly Satisfied	3.57	Highly Satisfied
4. Trainers made it clear right from the start what they expected from me.	3.23	Satisfied	3.53	Highly Satisfied	3.38	Highly Satisfied
General Composite Mean	3.33	Highly Satisfied	3.51	Highly Satisfied	3.45	Highly Satisfied
Standard Deviation	0.47		0.45			

Legend: 3.25-4.00 Highly Satisfied (HS) 2.50-3.24 Satisfied (S) 1.75-2.49 Slightly Satisfied (SS) 1.00-1.74 Not Satisfied (NS).

This result indicates a slight area for improvement in terms of flexibility tailored to individual participant needs. Enhancing the flexibility of the training to better accommodate diverse learning styles and preferences could further elevate the overall satisfaction levels among cooperative members. Likewise, the study by Akbari et al. (2023) focusing on members' satisfaction and training found that using efficient extension training (model-extension sites) was the most crucial element in raising rural cooperatives' performance from the perspective of their members. The outcomes also demonstrated that training cooperative members and member satisfaction can

significantly impact cooperatives' success. The findings of this study highlight the importance of education, particularly through extension programs, and can assist planners for rural development in raising the effectiveness of rural cooperatives in their areas.

Trainer Quality

As shown in Table 13, the Cooperative Members were Highly Satisfied (3.43, σ -.53, .47) with the Training Program Provided by the Cooperatives and Livelihood Development Department in Service as Trainer Quality. Notably, "I developed the knowledge expected from this training" got the highest composite mean of 3.50, verbally interpreted as Fully Implemented. Meanwhile, "I identified ways to build on my current knowledge and skills" got the lowest composite mean of 3.36, verbally interpreted as Fully Implemented.

Table 13. CLDD employees vs. cooperative members' satisfaction with trainer quality

Indicators	CLDD Employees		Coop Members		Composite	
	Mean	Interpretation	Mean	Interpretation	Mean	Interpretation
1. I developed the skills expected from this training.	3.38	Highly Satisfied	3.58	Highly Satisfied	3.48	Highly Satisfied
2. I identified ways to build on my current knowledge and skills.	3.23	Satisfied	3.48	Highly Satisfied	3.36	Highly Satisfied
3. The training focused on relevant skills.	3.23	Satisfied	3.53	Highly Satisfied	3.38	Highly Satisfied
4. I developed the knowledge expected from this training.	3.46	Highly Satisfied	3.53	Highly Satisfied	3.50	Highly Satisfied
General Composite Mean	3.33	Highly Satisfied	3.52	Highly Satisfied	3.43	Highly Satisfied
Standard Deviation	0.53		0.47			

Legend: 3.25-4.00 Highly Satisfied (HS) 2.50-3.24 Satisfied (S) 1.75-2.49 Slightly Satisfied (SS) 1.00-1.74 Not Satisfied (NS).

This finding implies a potential area for improvement in the training program to encourage continuous learning and development among participants beyond the initial scope of the training. It also suggests that the training program, as perceived by the cooperative members, effectively delivers the expected knowledge and skills, aligning with their anticipated outcomes. The effects of in-service training provided by the local government association on employees' assessments of their emotional commitment and job satisfaction were investigated in the study by Elban (2024). The study concluded that providing in-service training to employees enhances their emotional attachment to the organization. Additionally, it was seen that employees attained satisfactory job satisfaction as a result of in-service training.

Effective Support

As shown in Table 14, the Cooperative Members were Highly Satisfied (3.44, σ -.56, .47) with the Training Program Provided by the Cooperatives and Livelihood Development Department in terms of Service as to Effective Support. Notably, "I would recommend the training to others" got the highest composite mean of 3.48, verbally interpreted as Highly Satisfied. Meanwhile, "Training resources were available when I needed them" got the lowest composite mean of 3.38, verbally interpreted as Highly Satisfied.

Table 14. CLDD employees vs. cooperative members' satisfaction with effective support

Indicators	CLDD Employees		Coop Members		Composite	
	Mean	Interpretation	Mean	Interpretation	Mean	Interpretation
1. I would recommend the training to others.	3.31	Highly Satisfied	3.64	Highly Satisfied	3.48	Highly Satisfied
2. The training organization gave appropriate recognition of existing knowledge and skills.	3.31	Highly Satisfied	3.62	Highly Satisfied	3.47	Highly Satisfied
3. Training resources were available when I needed them.	3.23	Highly Satisfied	3.52	Highly Satisfied	3.38	Highly Satisfied
General Composite Mean	3.28	Highly Satisfied	3.59	Highly Satisfied	3.44	Highly Satisfied
Standard Deviation	0.56		0.47			

Legend: 3.25-4.00 Highly Satisfied (HS) 2.50-3.24 Satisfied (S) 1.75-2.49 Slightly Satisfied (SS) 1.00-1.74 Not Satisfied (NS).

While the satisfaction levels with the training program are generally high, there is a slightly lower score in recognizing existing knowledge and integrating participants' pre-existing expertise. This insight could guide improvements in training design and implementation to enhance participant satisfaction and capitalize on their existing knowledge within cooperative training programs.

Meanwhile, in the study conducted by Suarta et al. (2020) they aimed to improve the performance of livestock cooperatives in Bali Province, the goal of this study was to ascertain the process and intensity of communication,

examine the factors influencing the performance of livestock cooperatives, and develop an efficient communication model. The findings demonstrated that there was still room for improvement in Bali Province's livestock cooperatives' performance, level of communication, and intensity. The performance of livestock cooperatives in Bali Province is positively and significantly impacted by the variable responder characteristics, communication, and communication intensity when assessed from the perspective of the influencing factors. Based on the analysis, it can be concluded that the SM-R (Source-Message-Receiver) model is a useful tool for enhancing the performance of livestock cooperatives in Bali Province.

Effective Assessment

As shown in Table 15, the Cooperative Members were Highly Satisfied (3.42, σ -.49, .48) with the Training Program Provided by the Cooperatives and Livelihood Development Department in terms of Service as to Effective Assessment. Notably, "Overall, I am satisfied with the training" got the highest composite mean of 3.50, verbally interpreted as Highly Satisfied. Meanwhile, "I looked for my resources to help me learn" got the lowest composite mean of 3.25, verbally interpreted as Highly Satisfied.

Table 15. CLDD employees vs. cooperative members' satisfaction with effective assessment

Indicators	CLDD Employees		Coop Members		Composite	
	Mean	Interpretation	Mean	Interpretation	Mean	Interpretation
1. I looked for my resources to help me learn.	3.08	Satisfied	3.42	Highly Satisfied	3.25	Highly Satisfied
2. Overall, I am satisfied with the training.	3.38	Highly Satisfied	3.62	Highly Satisfied	3.50	Highly Satisfied
3. I would recommend the training organization to others.	3.38	Highly Satisfied	3.57	Highly Satisfied	3.48	Highly Satisfied
4. Training organization staff respected my background and needs.	3.31	Highly Satisfied	3.57	Highly Satisfied	3.44	Highly Satisfied
General Composite Mean	3.29	Highly Satisfied	3.54	Highly Satisfied	3.42	Highly Satisfied
Standard Deviation	0.49		0.48			

Legend: 3.25-4.00 Highly Satisfied (HS) 2.50-3.24 Satisfied (S) 1.75-2.49 Slightly Satisfied (SS) 1.00-1.74 Not Satisfied (NS).

These results signify cooperative members' inclination toward endorsing the training organization and recognizing the respect accorded to their diverse backgrounds and learning requirements. This indicates the importance of mutual respect and understanding between participants and the training organization for a positive training experience. It was evident in the studies by Aguilar et al. (2022) investigated the impact of social capital on the satisfaction of cooperative enterprises. They found that cooperatives with high levels of social capital, particularly trust, reciprocity, and social networks, reported higher satisfaction levels than those with low levels of social capital.

Clear Expectation

As shown in Table 16, the Cooperative Members were Highly Satisfied (3.44, σ -.48, .50) with the Training Program Provided by the Cooperatives and Livelihood Development Department regarding Service as to Clear Expectations. Notably, "Trainers had an excellent knowledge of the subject content" got the highest composite mean of 3.50, verbally interpreted as Highly Satisfied. Meanwhile, "I received useful feedback on my assessments" got the lowest composite mean of 3.41, verbally interpreted as Highly Satisfied.

Table 16. CLDD employees vs. cooperative members' satisfaction with clear expectation

Indicators	CLDD Employees		Coop Members		Composite	
	Mean	Interpretation	Mean	Interpretation	Mean	Interpretation
1. I pushed myself to understand things I found confusing.	3.31	Highly Satisfied	3.54	Highly Satisfied	3.43	Highly Satisfied
2. Trainers had an excellent knowledge of the subject content.	3.46	Highly Satisfied	3.53	Highly Satisfied	3.50	Highly Satisfied
3. I received useful feedback on my assessments.	3.31	Highly Satisfied	3.51	Highly Satisfied	3.41	Highly Satisfied
General Composite Mean	3.36	Highly Satisfied	3.52	Highly Satisfied	3.44	Highly Satisfied
Standard Deviation	0.48		0.50			

Legend: 3.25-4.00 Highly Satisfied (HS) 2.50-3.24 Satisfied (S) 1.75-2.49 Slightly Satisfied (SS) 1.00-1.74 Not Satisfied (NS)

This implies that the respondents exhibit a proactive approach in their learning process by actively engaging and challenging themselves to comprehend complex concepts, indicating a positive attitude toward learning and personal development during the training sessions. Equally, the article by Higuchi et al. (2020) focused on an

analysis of the factors related to farmer satisfaction and the identification of demographic and socioeconomic elements that could explain the varying levels of satisfaction among different cooperative members because farmer satisfaction was particularly important for the success and development of cooperatives. The findings supported the theory that a complex combination of pro-social feelings and cognitive and psycho-social components accounted for farmer satisfaction. Lastly, the findings showed that the various degrees of farmer satisfaction observed were related to certain socioeconomic characteristics, such as farm or household size.

Price of Training Resources

As shown in Table 17, the cooperative members were Highly Satisfied (3.43, σ -0.53, 0.45) with the Training Program Provided by the Cooperatives and Livelihood Development Department regarding the Price of Training Resources. Notably, "Trainers made the subject as interesting as possible" got the highest composite mean of 3.49, verbally interpreted as Highly Satisfied. Meanwhile, "I approached trainers if I needed help" got the lowest composite mean of 3.38, verbally interpreted as Highly Satisfied.

Table 17. CLDD employees vs. cooperative members' satisfaction with the price of training resources

Indicators	CLDD Employees		Coop Members		Composite	
	Mean	Interpretation	Mean	Interpretation	Mean	Interpretation
1. The training used up-to-date equipment, facilities, and materials.	3.31	Highly Satisfied	3.55	Highly Satisfied	3.43	Highly Satisfied
2. I approached trainers if I needed help.	3.15	Highly Satisfied	3.60	Highly Satisfied	3.38	Highly Satisfied
3. Trainers made the subject as interesting as possible.	3.31	Highly Satisfied	3.66	Highly Satisfied	3.49	Highly Satisfied
General Composite Mean	3.26	Highly Satisfied	3.60	Highly Satisfied	3.43	Highly Satisfied
Standard Deviation	0.53		0.45			

Legend: 3.25-4.00 Highly Satisfied (HS) 2.50-3.24 Satisfied (S) 1.75-2.49 Slightly Satisfied (SS) 1.00-1.74 Not Satisfied (NS).

This indicates the pivotal role of trainers in engaging participants by making the training content compelling and stimulating. It suggests that participants value using modern equipment and facilities during the training sessions, highlighting the significance of incorporating updated resources to ensure a high-quality learning environment. Conversely, the study by Anania and Rwekaza (2018) revealed that the assessment of cooperative education and training as a foundation for enhancing SACCOS operational performance is the main objective of this article. Its specific objectives are to analyze how education and training are provided about SACCOS' governing documents, identify the factors that affect this provision, assess how education and training affect SACCOS performance, and identify the difficulties that arise when providing education and training in SACCOS. The study discovered that staff and leaders (in boards and committees) frequently receive priority over members, indicating that education and training are not properly supplied per guiding instruments.

Overall Satisfaction

Table 18. CLDD employees vs. cooperative members' overall satisfaction

Indicators	CLDD Employees		Coop Members		Composite	
	Mean	Interpretation	Mean	Interpretation	Mean	Interpretation
1. The training prepared me well for work.	3.50	Highly Satisfied	3.54	Highly Satisfied	3.52	Highly Satisfied
2. I set high standards for myself in this training.	3.08	Satisfied	3.51	Highly Satisfied	3.30	Highly Satisfied
3. The training had a good mix of theory and practice.	3.46	Highly Satisfied	3.59	Highly Satisfied	3.53	Highly Satisfied
General Composite Mean	3.33	Highly Satisfied	3.54	Highly Satisfied	3.44	Highly Satisfied
Standard Deviation	0.47		0.47			

Legend: 3.25-4.00 Highly Satisfied (HS) 2.50-3.24 Satisfied (S) 1.75-2.49 Slightly Satisfied (SS) 1.00-1.74 Not Satisfied (NS).

As shown in Table 18, the cooperative members were Highly Satisfied (3.44, σ -0.47, 0.47) with the Training Program Provided by the Cooperatives and Livelihood Development Department regarding Person's Overall Satisfaction. Notably, "The training had a good mix of theory and practice" got the highest composite mean of 3.53, verbally interpreted as Highly Satisfied. Meanwhile, "I set high standards for myself in this training" got the lowest composite mean of 3.30, verbally interpreted as Highly Satisfied.

These findings resonate with various academic works in training and development that underscore the importance of practical application and relevance to the job as key elements in successful training programs. Equally, in their study, Alajid and Base (2021) aimed to assess how satisfied members of a multipurpose cooperative in Cagayan de Oro City, Philippines, felt with their lives. The personal characteristics of coop members and their perceived level of satisfaction with the services they received were analyzed to assess how coop members' characteristics affect how satisfied they are with the services they receive. Applying a theoretical lens to explain the predictive power of coop members' attributes as a factor in predicting perceived satisfaction, which has been the focus of few academic studies, particularly in cooperative studies, is the main contribution of this article.

3.4 Relationship Between the Training Program Implementation Level Satisfaction Level

Table 19. Test of the relationship between the training program implementation level and satisfaction level

Implementation of CLDD	Satisfaction	r value	p-value	Remarks	Decision
Capacity training resources	Product	.397**	.001	Significant	Reject Ho
	Service	.609**	.000	Significant	Reject Ho
	Price	.502**	.000	Significant	Reject Ho
	Person	.483**	.000	Significant	Reject Ho
Capacity Effective Support	Product	.376**	.001	Significant	Reject Ho
	Service	.630**	.000	Significant	Reject Ho
	Price	.497**	.000	Significant	Reject Ho
	Person	.535**	.000	Significant	Reject Ho
Capability Training Quality	Product	.431**	.000	Significant	Reject Ho
	Service	.668**	.000	Significant	Reject Ho
	Price	.544**	.000	Significant	Reject Ho
	Person	.551**	.000	Significant	Reject Ho
Capability Competence Development	Product	.499**	.000	Significant	Reject Ho
	Service	.770**	.000	Significant	Reject Ho
	Price	.616**	.000	Significant	Reject Ho
	Person	.643**	.000	Significant	Reject Ho
Potential Effective assessment	Product	.486**	.000	Significant	Reject Ho
	Service	.776**	.000	Significant	Reject Ho
	Price	.676**	.000	Significant	Reject Ho
	Person	.688**	.000	Significant	Reject Ho
Potential training relevance	Product	.508**	.000	Significant	Reject Ho
	Service	.773**	.000	Significant	Reject Ho
	Price	.694**	.000	Significant	Reject Ho
	Person	.662**	.000	Significant	Reject Ho
Product Training relevance	Product	.441**	.000	Significant	Reject Ho
	Service	.735**	.000	Significant	Reject Ho
	Price	.582**	.000	Significant	Reject Ho
	Person	.724**	.000	Significant	Reject Ho
Contribution Support	Product	.956**	.000	Significant	Reject Ho
	Service	.733**	.000	Significant	Reject Ho
	Price	.578**	.000	Significant	Reject Ho
	Person	.694**	.000	Significant	Reject Ho

*. Correlation is significant at the 0.05 level (2-tailed).

**. Correlation is significant at the 0.01 level (2-tailed).

As shown in Table 19, there was a significant relationship between the implementation level of CLDD's training programs and the satisfaction level of cooperative members in Calamba City. As shown in the probability values, both .000, which was less than the significance level at .05, thus rejected the null hypothesis. This indicates that there is a substantial link between the Implementation of CLDD's training programs and Cooperative Members' Satisfaction. It implies that the more training programs are implemented or enhanced, the higher the members' satisfaction.

Similarly, Lawrence et al.'s (2021) study examined the program's state at the time and the CET evaluation procedures used in the districts of Ukerewe and Sengerema. The results showed that several shortcomings persisted even with formative and summative CET evaluations. The findings validated the negative trend in the development of cooperative societies by demonstrating that CET was seasonal and that the evaluations of context, input, process, and product were inadequate.

3.5 Proposed Enhancement Program

Table 20. Proposed enhancement program

Key Areas	Objectives	Strategies/Activities	Frequency/ Time Frame	Persons Involved	Source Of Fund	Success Indicators
Additional Provision Capacity as to Training Resources	To improve provisions of Training Resources in the conduct of Training Program Implementation of the CLDD	Inclusion and incorporation of Training Resources on top Annual Investment Plan for Training Program implemented	Annually	CLDD- Promotions, Education, and Training Division Personnel	CLDD- Promotions, Education, and Training Division Operating Budget	100% Training Resources incorporated and updated annually
Improve Capability and Service as to Trainer Quality	To involve CLDD employees and Cooperative members in the conduct of the Training Program Implementation	Conduct of Training Program Orientation	Annually	CLDD Employees and Cooperative Members	CLDD Budget for Seminars, Training, and Orientation	90-100% attendance of participants per training orientation
Enhance Potential and Service as to Effective Assessment	To enhance the potential and service quality of the Training Program through the Effective Assessment	Update and upgrade the existing assessment form used in the current training program.	Annually	CLDD Steering Committee	CLDD Budget for Office Supplies and Renovations	90%-100% upgraded training assessment format
Enhance Product as to Training Relevance	To enhance the product of the training program through aligning training relevance	Seminars and training conducted	Quarterly	CLDD Regular Employees	CLDD Budget for Seminars and Training	90%-100% of personnel developed competency and work engagement

4.0 Conclusion

The assessment of the Training Program Implementation within the Cooperatives and Livelihood Development Department (CLDD) reveals a positive perception across various aspects such as capacity, capability, potential, and contribution. Training resources, support, trainer quality, competency development, assessment effectiveness, investment value, and program contribution are highly regarded. Comparisons between CLDD employees and cooperative members indicate a consensus on the training program's implementation, with cooperative members expressing high satisfaction across dimensions such as product quality, service, price adequacy, and personal satisfaction. The study underscores a strong link between the success of CLDD's training programs and cooperative members' satisfaction, demonstrating that improved training implementation enhances overall satisfaction. Additionally, the proposed enhancement to the training program incorporates a systematic, comprehensive approach with digitalization, emphasizing stakeholder involvement, continuous assessment, phased implementation, resource allocation, and measurable success.

5.0 Contributions of Authors

Debasa, A. D. Is the sole author of this manuscript.

6.0 Funding

No funding agency is utilized for this research.

7.0 Conflict of Interests

There is no conflict of interest.

8.0 Acknowledgment

The researcher extends heartfelt gratitude to Dean Alfredo G. Perez Jr., whose sympathetic support and professional guidance were crucial to successfully completing her paper and inspired her throughout graduate school. She thanks Dr. Marilyn L. Baysa for her unwavering support, expert guidance, and patience as her research adviser. Dr. Ma. Lorena M. Tagala is also acknowledged for her exceptional professional guidance and constructive suggestions that enhanced the study. Appreciation is given to Dr. Eulalia M. Javier for her invaluable technical input and patience with data analysis. Dr. Chester Alexis C. Buama's helpful feedback and professional expertise are recognized for improving the research quality. Gratitude is expressed

to Dr. Leonardo F. Oplencia, Sr., for his technical knowledge, wisdom, and moral support during the graduate journey. Prof. Richie Mendoza and Prof. Girlie Sonoron are thanked for their profound knowledge and editorial suggestions. She also appreciates her loans section staff, Sha and Chen, for their assistance with office tasks and her MMPA, CCC, and CLDD colleagues for their motivational support. Finally, she is deeply grateful to her family and close friends for their unwavering support and encouragement throughout her graduate studies and paper completion.

9.0 References

- Aguilar, R. M., Cervantes, C. R., & Valencia, D. P. (2022). Social Capital and Satisfaction among Cooperative Enterprises in the Philippines. *Journal of Development Entrepreneurship*, 27(2). <https://doi.org/10.1142/S1084946722500085>
- Akbari, M., Ebrahimi, Sadeq M., Amini, A. M., Shahzad, U., Janečková, K., Sklenička, P., Miceikienė, A., & Azadi, H. (2023). Performance of rural cooperatives' production in Iran: Implications for sustainable development. *Journal of Cleaner Production*, 405(15), 136836. <https://doi.org/10.1016/j.jclepro.2023.136836>
- Alajid, I. R. M. & Base, R. L. (2021). Towards a theory of coop-members satisfaction. *International Journal of Research Publications*, 69(1), 235-244. <https://doi.org/10.47119/IJRP100691120211663>
- Anania, P. & Rwekaza, G. C. (2018). Co-Operative Education and Training as A Means to Improve Performance in Co-Operative Societies. *Sumerianz Journal of Social Science*, 1(2), 39-50 <https://bit.ly/4ek6NP1>
- AQTF. (2021). AQF-The Australian Qualification Framework. Retrieved from <https://bit.ly/47G3jnG>
- Castilla-Polo, F. & Sánchez-Hernández, M. I. (2020). Cooperatives and Sustainable Development: A Multilevel Approach Based on Intangible Assets. *Sustainability*, 12(10), 4099. <https://doi.org/10.3390/su12104099>
- Chau, L., Hoc, N., Hang, N., & Trung, T. (2024). Factors affecting members' satisfaction with the quality of support activities of cooperatives: A case of horticultural cooperatives in Son La province, Vietnam. *Vietnam Journal of Agricultural Sciences*, 7(2), 2146–2159. <https://bit.ly/4eb3z0f>
- Dacles, J. B. & Evangelio, L. T. (2024). Cooperative learning: its efficacy in improving technology and livelihood education performance. *International Journal of Environmental Economics, Commerce and Educational Management*, 11(5), 253-259. <https://doi.org/10.36713/epra16986>
- Elban, S. (2021). The Mediating Role Of Emotional Commitment In The Impact Of The Perceived Quality Of In-Service Training On Job Satisfaction: An Application In Local Government Associations (Doctorate Thesis). Near East University
- Feisali, M. & Niknami, M. (2021). Towards sustainable rural employment in agricultural cooperatives: Evidence from Iran's desert area. *Journal of the Saudi Society of Agricultural Sciences*, 20(7), 425-432. <https://doi.org/10.1016/j.jssas.2021.05.004>
- Gava, O., Ardakani, Z., Delalić, A., Azzi, N., Bartolini, F. (2021). Agricultural cooperatives contributing to the alleviation of rural poverty. The case of Konjic (Bosnia and Herzegovina). *Journal of Rural Studies*, 82(0), 328-339. <https://doi.org/10.1016/j.jrurstud.2021.01.034>
- Golovina, S., Antonova, M., & Abilova, E. (2020). Assessment of Agricultural Cooperatives' Performance in Russia: The Case of the Kurgan Region. In *Advances in Social Science, Education and Humanities Research*. Atlantis Press.
- Hang, N. T. T., Chau, L. T. M., Trung, T. Q., Hai, V. T., & Hong, P. T. D. (2022). Why government support is not so effective to boost performance of cooperatives: a case study of Sonla Province, Vietnam. *J. ISSAAS*, 28(1), 107-119. <https://bit.ly/4gy95vv>
- Higuchi, A., Coq-Huelva, D., Arias-Gutierrez, R., & Alfalla-Luque, R. (2020). Farmer satisfaction and cocoa cooperative performance: evidence from Tocache, Peru. *International Food and Agribusiness Management Review*, 23(2), 217–234. <https://doi.org/10.22434/IFAMR2019.0166>
- Jiao, L. (2023). Organizational competency development for farmer professional cooperatives: A case study of Bajie Town, Anning, Yunnan, P.R. China (Thesis). Maejo University.
- Launio, C. C. & Sotelo, M. C. B. (2021). Concern for community": Case of cooperatives in the Cordillera region, Philippines. *Journal of Co-operative Organization and Management*, 9(1), 100130. <https://doi.org/10.1016/j.jcom.2021.100130>
- Lawrence, O. M., Komba, S., Iwata, J. J., & Rwekaza, G. (2021). Evaluation of co-operative education and training for sustainable agricultural marketing co-operative societies in Ukerewe and Sengerema districts, Tanzania (Thesis). MoCu Institutional Repository
- Smith, J., & Jones, R. (2021). *The Anthology of Healthcare Marketing Best Practices*. In S. & Jones, Under the Influence (Second Edition ed.). A Smith & Jones Publication.
- Suarta, G., Suparta, N., Gde Bidura, I. G. N., & Putri, B. R. T. (2020). Effective Communication Models to Improve the Animal Cooperatives Performance in Bali-Indonesia. *International Journal of Pharmaceutical Research*, 12(4), 3776. <https://doi.org/10.31838/ijpr/2020.12.04.513>

Employability of Mathematics Majors from a State University's Bachelor of Secondary Education Program

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Date received: August 29, 2024

Date revised: September 17, 2024

Date accepted: September 27, 2024

Originality: 88%

Grammarly Score: 99%

Similarity: 12%

Recommended citation:

Ubat, J., Villalon, G., Sapotalo, C., Sta. Ana, J.A. (2024). Employability of Mathematics majors from a state university's Bachelor of Secondary Education Program. *Journal of Interdisciplinary Perspectives*, 2(11), 88-94. <https://doi.org/10.69569/jip.2024.0454>

Abstract. This study traced the employability of Bachelor of Secondary Education, Major in Mathematics Graduates of a Philippine state university. One hundred respondents were surveyed using a questionnaire distributed via Google Forms, patterned after the Commission on Higher Education's (CHED) standardized form. The descriptive research design was employed to assess the employment status of the graduates. Among the respondents, 47% are currently employed in government, 34% in private organizations, and 42% are teachers. Additionally, 46% hold permanent positions with an average salary between 20,000 and 30,000 PHP. The study recommends enhancing students' skills in Mathematics, encouraging continuous education to improve their ranking, and seeking diverse job experiences to broaden career opportunities.

Keywords: Employment status; Tracer study; Mathematics major; State University; Employability.

1.0 Introduction

Training institutions commonly use tracer studies to gather feedback on courses, understand how training helps graduates develop competencies, and assess the impact of training on job opportunities and continued education for graduates. Such studies provide valuable information about the relationship between higher education and professional work, assess higher education's relevance, and offer stakeholders insights. They also help fulfill requirements for higher education accreditation and serve as a basis for assessing and enhancing educational programs (Balingbing, 2014).

In January 2019, the unemployment rate in the Philippines was estimated at 5.2%. Of the total unemployed, 43.7% were aged 15–24, and 30.6% were aged 25–34. By educational attainment, 20.9% of the unemployed were college graduates, 8.2% were college undergraduates, and 28.2% had completed junior high school (PSA, 2019). To address job mismatch in the country, the Commission on Higher Education (CHED), in collaboration with universities across the Philippines, mandated the conduct of Graduate Tracer Studies (GTS) to determine the employability of graduates based on their disciplines. Graduate employability is described as a person's capacity and desire to be and remain appealing in the global economy, involving the relative possibilities of obtaining and maintaining certain types of work. In the global economy, the employability of graduates is a crucial issue. Graduates must possess the necessary competencies and skills to be flexible in the changing labor market (CHED).

Higher Education Institutions (HEIs) play a vital role in imparting academic knowledge and helping students achieve their dreams of securing decent jobs after graduation and becoming socially recognized in society (Menez, 2014). HEIs are challenged to balance higher education's development and academic teachings' professional relevance (Melik & Pavlin, 2009). The success of learning is measured through the employability of graduates, the type of employment secured, and the time taken to land their first job (WordPress, 2011). Governments have encouraged educational institutions and employers to collaborate to address employability issues (Lowden et al., 2011). This study traced the employability of Bachelor of Secondary Education (BSED) Mathematics graduates from Negros Oriental State University Guihulngan City Campus between 2017 and 2022. It will enable the department to assess the current programs and provide the best enhancement programs possible.

2.0 Methodology

2.1 Research Design

The researchers employed a quantitative approach using a descriptive survey research design. This approach was deemed suitable as the objective was to track the employment status of graduates. In the survey method, respondents answered questionnaires, which were then retrieved and analyzed to describe and interpret the responses.

2.2 Research Respondents

This tracer study primarily focused on graduates of the Bachelor of Secondary Education Major in Mathematics program at Negros Oriental State University - Guihulngan Campus from the academic years 2017 to 2022. It employed a complete enumeration method since its main goal was to track and monitor the BSED-Math graduates regarding their employability status. There were 14 graduates in 2016, 15 from 2017, 31 graduates in 2019, 14 graduates in 2020, 6 in 2021, and 20 in 2022. The total of respondents in the study was 100.

2.3 Research Instrument

The researchers used a survey questionnaire. The questionnaire was patterned after the Commission on Higher Education (CHED) standardized form and approved for use by the Office of the College of Education. It was subsequently revised and piloted. The revised questionnaire was presented to the three experts in the field of education to identify the content validity. The questionnaire comprised the profile of respondents that included questions on age, gender, civil status, and year of graduation, and the employment profile that included questions on employment status, reasons for unemployment, type of organization, field of work, duration of job search, number of years in the company, job placement, and monthly income.

2.4 Data Gathering Procedure

The researchers administered the survey questionnaire to the respondents using Google Forms after the experts validated it. The researchers clearly explained each item to the respondents throughout the administration of the survey questionnaires, ensuring clarity and understanding to collect accurate answers. Also, the confidentiality of responses was strictly stressed. The researcher tallied and tabulated the data and was subjected to appropriate statistical treatments.

2.5. Data Analysis

To analyze the data, the researchers used frequency and percentage to determine the demographic profile of the respondents, which includes their age, gender, civil status, and year of graduation. They also determined their employment profile, which includes their employment status, reasons for unemployment, type of organizational affiliation, field of work, duration of job search, number of years in the company, job placement, and monthly income.

2.6 Ethical Considerations

The researchers took precautions to ensure the study was done ethically and responsibly. First, the researchers provided consent letters to the respondents, a critical ethical aspect of the study. The letters informed the respondents about the study's goal and its purpose. This guarantees that respondents were fully informed prior to taking part in the survey and had the opportunity to ask questions. Second, the researchers guaranteed the respondent's anonymity while processing and evaluating the data. This is significant because it preserves the participants' privacy and anonymity while encouraging honest and open replies. The researchers took precautions

to guarantee that the replies were processed with strict confidentiality, which would have contributed to the respondents' trust. Finally, the researchers exhibited a strong awareness of ethical concerns and made the required efforts to guarantee that the study was carried out ethically and responsibly.

3.0 Results and Discussion

3.1 Demographic Profile

As seen in Table 1, most BSED-MATH graduates from 2017-2022 are 24-25 years old, comprising 42%. This is followed by graduates aged 26-27 years, making up 21%, and those aged 22-23 years, totaling 17%. Additionally, respondents aged 28-29 accounted for 9%, both 30-31 and 32-33 years old gained a total of 4%, and 38-39 years old with an average rate of 2%. Moreover, respondents aged 34-35 averaged 1%. This implies that most respondents are between 22-27 years old. Age can affect employment opportunities for graduates because it plays a role in the hiring process. One study by Berry (2023) found that age discrimination was prevalent in hiring practices, with older graduates facing more difficulties securing employment. Another study by Lester & Mencl (2014) revealed that younger graduates were more likely to be favored by employers due to perceived greater potential for growth and adaptation to the workplace environment.

Table 1. Descriptive statistics of the demographic profile of the respondents (n= 100)

	Frequency	Percentage
Age		
22-23	17	17
24-25	42	42
26-27	21	21
28-29	9	9
30-31	4	4
32-33	4	4
34-35	1	1
38-39	2	2
Gender		
Male	39	39
Female	61	61
Civil Status		
Single	79	79
Married	21	21
Widowed	0	0
Year Graduated		
2016-2017	14	14
2017-2018	15	15
2018-2019	31	31
2019-2020	14	14
2020-2021	6	6
2021-2022	20	20

Table 1 also shows that most respondents were female, tallying over 61%, with males making up 39%. This implies that most of the BSED-Mathematics graduates surveyed were female. Research shows that females may be more likely than males to participate in online survey research. Further, Table 1 shows that most respondents were single, garnering 79%, compared to 21% of married respondents. As implied, most of the respondents surveyed were single. The researchers found that married men had a 75% lower chance of unemployment than single men, while married women had a 39% lower chance of unemployment than single women (Choi & Esteban, 2017). The study also found that being married increased job search intensity and decreased job dissatisfaction for unemployed men and women (Kim, 2017). However, the study found no significant relationship between being single and unemployment duration (Grossman et al., 2015).

Finally, Table 1 shows that the batch of 2018-2019 has the highest number of graduates, with over 31%, followed by 2021-2022, with 20%, and 2017-2018, with a total of 15%. Furthermore, in the years 2016-2017 and 2019-2020, 14% of total graduates were. The year 2020-2021 had the fewest graduates, with 6%. This implies that 2020-2021 has the least number of graduates. A study conducted by the National Association of Colleges and Employers (NACE) in 2020 found that the COVID-19 pandemic significantly impacted the job market for college graduates. The study reported that the job offer rate for the Class of 2020 dropped by 8.7% compared to the previous year, and the number of job postings decreased by 26.5% in April 2021 compared to April 2019.

3.2 Employment Profile

Employment Status

Table 2 illustrates the employment status of the respondents.

Table 2. Descriptive statistics of the employment status of the respondents (n=100)

Employment Status	Frequency	Percentage
Permanent	46	46
Contractual	15	15
Casual	3	3
Employee by job order	14	14
Temporary	4	4
Unemployed	18	18

The data shows that the majority of the respondents, 48%, were working as permanent or regular employees. This is followed by unemployed respondents, who made up 18%. Additionally, 14% worked as employees by job order, and 15% were contractual. Temporarily employed respondents totaled 44%, while the remaining 3% were casual employees. This implies that most of the graduates are employed. Being employed in a stable job contributes to higher overall life satisfaction and psychological well-being (Warr, 2010), while unemployment can lead to social unrest and increased inequality within society (ILO, 2020).

Reasons for Unemployment

The researchers gathered significant data, as shown in Table 3, to better understand the graduates' unemployment status.

Table 3. Descriptive statistics of the reasons for unemployment status

Reasons for Unemployment	Frequency	Percentage
Do not look for a job	1	1
Family concerns	5	5
Health-related reasons	0	0
No job opportunity	0	0
Lack of work experience	0	0
Advance for further studies	1	1
Employed	79	79
Still in the ranking process	7	7
Preparing for the board exam	7	7

Of the 100 respondents surveyed, 7% were unemployed because they were preparing for the board exam. Another 7% were still in the ranking process, and 5% were due to family concerns. Some graduates did not look for a job, while 1% pursued further studies. This implies that the unemployment of the graduates was due to personal reasons. Research has shown that unemployment is linked to decreased social participation and an increased risk of social exclusion (Ziersch et al., 2014). Furthermore, there is a correlation between unemployment and poor mental health outcomes (Paul & Moser, 2009).

Type of Organizational Affiliation

Table 4 illustrates the types of organizations where BSED-MATH graduates are employed.

Table 4. Descriptive statistics of the type of organizational affiliation

Type of Organization	Frequency	Percentage
Public	47	47
Private	34	34
NGO	1	1
None	18	18

It shows that 47% of the respondents currently work in public or government organizations, 34% are working for private organizations, and 18% are not working in any of the mentioned organizations. Additionally, 1% of the respondents work for NGOs (Non-Governmental Organizations). This implies that most respondents are employed in government or private organizations. Non-profit organizations are entities formed for a specific purpose and function without generating a profit (Herman and Renz, 2017). On the other hand, government

organizations are established by the state and funded by taxpayers to provide essential services to citizens (Shafritz et al., 2011).

Field of Work

As seen in Table 5, most of the respondents are teachers, accounting for 42%. This is followed by 17% working in BPO industries and 13% not working in any field. Out of 100 respondents, 7% are employed in the Local Government Unit (LGU), 3% in finance, and 2% as virtual assistants. Additionally, 2% work as assistant clerks or in clerical positions. Furthermore, 1% of the respondents work in construction, the Department of Labor and Employment (DOLE), artificial intelligence, real estate, video editing, and the Philippine National Police (PNP). It is implied that the graduates of BSED-Mathematics from Negros Oriental State University-Guihulngan Campus from 2017-2022 predominantly work in the field of teaching. "Teaching is a noble profession that requires a strong commitment to serving others and contributing to the betterment of society" (Acheampong et al., 2017). This explains why most respondents are teachers, as teaching is rewarding and challenging (Aquino & Punongbayan, 2015).

Table 5. Descriptive statistics of the field of work

Field of Work	Frequency	Percentage
Teaching	44	44
Business sector	5	5
Clerical	2	2
BPO	15	15
Construction	1	1
Virtual Assistant	2	2
Department of Labor and Employment -(GIP)	1	1
Video Editing	1	1
Assistant Clerk	2	2
LGU (Local Government Unit)	7	7
Artificial Intelligence	1	1
Real Estate	1	1
National Agency (Department of Justice)	1	1
PNP	1	1
Finance	3	3
None	13	13

Duration of Job Search

Table 6 shows when BSED-Mathematics graduates from 2017-2022 were looking for a job.

Table 6. Descriptive statistics of the duration of job search

Duration of Job Search	Frequency	Percentage
1 year and below	47	47
1 year - 2 years	15	15
2 years - 3 years	3	3
3 years - 4 years	5	5
4 years and above	6	6
None	24	24

It can be seen that the majority of the respondents were hired within a year or less, accounting for 47%. Respondents who did not look for a job totaled 24%. Some respondents did not look for a job because they were still preparing for the board exam and were in the ranking process. Additionally, 15% of respondents were hired within 1 to 2 years, 6% were hired within four years or more, and 5% were hired within 3 to 4 years. Moreover, 3% of the respondents were hired within 2 to 3 years. This implies that most graduates surveyed were hired within a year or more. Graduates may take longer to find employment, leading to long-term unemployment issues that could adversely affect their financial stability and mental well-being (Kassenboehmer & Sinning, 2014).

Number of Years in the Company

Table 7 shows that 37% have worked for 2-4 years. Respondents who have been working for one year or less total 24%, while 18% of the respondents are not employed. Additionally, 11% of respondents have been working for over one year, 7% for 5-7 years, and 3% for more than four years. This implies that the respondents surveyed have

been working for a significant time. Work experience and networking can significantly impact immediate employment for new graduates (Cooper & Brown, 2017).

Table 7. Descriptive statistics of the number of years in the company

Number of Years	Frequency	Percentage
1 year and below	24	24
1 year above	11	11
2 years - 4 years	37	37
5 years - 7 years	7	7
7 years and above	0	0
4 years and counting	3	3
None	18	18

Job Placement

Table 8 presents the job placement of the respondents. A total of 70% of BSED-Mathematics graduates worked in Negros Oriental as private and public school teachers, government employees (LGU), and business enthusiasts. Additionally, 10% worked in Cebu City as financial officers in BPO companies, assistant clerks, and construction workers. However, 16% of the respondents were not working and preferred staying in their hometowns. The remaining 4% of the total population was equally divided among Negros Occidental, Manila City, Iloilo City, and San Francisco, California.

Table 8. Descriptive statistics of the job placement

Job Placement	Frequency	Percentage
Negros Oriental	70	70
Negros Occidental	1	1
Cebu	10	10
Manila	1	1
Iloilo City	1	1
San Francisco, California	1	1
None	16	16

This implies that employed graduates were working in various locations, but most of them worked in Negros Oriental. "Workplace is increasingly being studied as a source of potentially meaningful experience." Rosso et al. (2010); Lysova et al. (2019).

Monthly Income

As seen in Table 9, most of the respondents' salaries range from 20,000 to 30,000, comprising 33% of the total. Respondents with salaries of 10,000-20,000 make up 23%, and 22% earn salaries of 10,000 and below. Furthermore, 2% of the surveyed respondents have salaries ranging from 40,000-50,000. Additionally, 1% preferred not to disclose their salary, and another 1% earned 50,000 or more. This implies that the average income of the graduates is 10,000 and above. "People who can derive meaning from their work enjoy many benefits, including enhanced motivation, productivity, and well-being". May et al. (2004; Steger et al. (2012). The desire to experience a sense of meaning in one's actions has been theorized as one of the primary sources of work motivation (Hackman, 1980); Barrick et al. (2013).

Table 9. Descriptive statistics of the monthly income

Monthly Income	Frequency	Percentage
10,000 and below	22	22
10,001-20,000	23	23
20,001-30,000	33	33
30,001-40,000	0	0
40,001-50,000	2	2
50,000 and above	1	1
None	18	18
Confidential	1	1

4.0 Conclusion

Based on the research findings, it can be concluded that most respondents aged 24-29 were female and employed, constituting 82% of the total sample. Among these respondents, 72% reported an average monthly salary of 10,000 PHP and above, sufficient to meet Filipino families' estimated poverty threshold. This suggests that higher-income individuals are more likely to secure stable employment opportunities. Furthermore, by providing opportunities for individuals to earn a monthly income of 10,000 PHP and above, government organizations and societies can help improve employment rates, contributing to overall economic growth and stability. The study concludes that a monthly income of 10,000 PHP and above significantly boosts employment opportunities and should be considered a crucial factor in addressing unemployment challenges and fostering economic prosperity. This implies that graduates of BSED Math majors should (1) enhance their skills in specializing in Mathematics and give them opportunities to be more innovative when it comes to students learning and teaching processes (2) focus on developing skills and knowledge pursuing graduate studies or undertaking preparations for the licensure examination, (3) not just depend on the lessons they have learned in college but also seek for further discoveries and information that is applicable in the chosen field of work, (4) the graduates may advance for further studies to have an edge, (5) take risks and apply for a position related to their profession to gain experience.

5.0 Contribution of Authors

The authors reviewed, wrote, and approved the final work.

6.0 Funding

This work did not receive funding from any specific grant agency

7.0 Conflict of Interest

There is no conflict of interest.

8.0 Acknowledgment

The author would like to express her genuine and deepest gratitude to the generous and helpful people who have supported her in achieving and completing this study.

9.0 References

- Acheampong, G., Odoom, R., & Anning-Dorson, T. (2017). Antecedents of Social Media Usage and Performance Benefits in Small- and Medium-Sized Enterprises (SMEs). *Journal of Enterprise Information Management*, 30(3), 383-399. <https://doi.org/10.1108/JEIM-04-2016-0088>
- Aquino, A., Punongbayan, E., Macalaguim, L., Bauyon, S., Rodriguez, R., & Quizon, G. (2015). College teacher education graduate tracer study from 2010 to 2014 in one state university in Batangas, Philippines. *Asia Pacific Journal of Multidisciplinary Research*, 3(5), 45-50. <https://bit.ly/3XTcu0s>
- Balingbing, A.B. (2014). Tracer study of BS in information technology (BSIT) graduates of camarines sur polytechnic colleges, nabua, camarines sur from 2004 to 2010. *Asia Pacific Journal of Multidisciplinary Research*, 2(4), 26-30. <https://bit.ly/3ZBUnh8>
- Barrick, M. R., Mount, M. K., & Li, N. (2013). The theory of purposeful work behavior: The role of personality, higher-order goals, and job characteristics. *The Academy of Management Review*, 38(1), 132-153. <https://doi.org/10.5465/amr.2010.0479>
- Berry J. W. (2023). Ecology, Culture, and Behavior: Role in Societal Development. *Journal of Cross-Cultural Psychology*, 54(2), 215-231. <https://doi.org/10.1177/00220221221105494>
- Choi, S. & Esteban, A. (2016). The Married Unemployment Gap. *The B.E. Journal of Macroeconomics*, 18(1), 2016-0060. <https://doi.org/10.1515/bejm-2016-0060>
- Cooper, C., & Leiter, M. (2017). *The Routledge Companion to Wellbeing at Work* (1st ed.). Routledge.
- Grossmann, V., Volker, A., & Osikomino, M. (20015). Are Sociocultural Factors Important for Studying a Science University Major? *Oxford Economic Papers*, 72 (2), 374-369 <https://doi.org/10.2139/ssrn.2693020>
- Hackman, J. R. (1980). Work redesign and motivation. *Professional Psychology*, 11(3), 445-455. <https://doi.org/10.1037/0735-7028.11.3.445>
- Herman, R. D., & Renz, D. O. (1999). Theses on Nonprofit Organizational Effectiveness. *Nonprofit and Voluntary Sector Quarterly*, 28(2), 107-126. <https://doi.org/10.1177/0899764099282001>
- Kassenboehmer, S. C., & Sinning, M. G. (2014). Distributional Changes in the Gender Wage Gap. *ILR Review*, 67(2), 335-361. <https://doi.org/10.1177/001979391406700203>
- Kim, E. (2017). Division of domestic labour and lowest-low fertility in South Korea. *Demographic Research*, 37(24), 743-768. <https://doi.org/10.4054/DemRes.2017.37.24>
- Lester, S. & Mend, J. (2014). More Alike Than Different: What Generations Value and How the Values Affect Employee Workplace Perceptions. *Journal of Leadership & Organizational Studies*, 21(3), 257-272. <https://doi.org/10.1177/1548051814529825>
- Lowden, K., Hall, S., Elliot, D., & Lewin, J. (2011). Employers' Perceptions of the Employability Skills of New Graduates. Retrieved from <https://bit.ly/47HcGU6>
- Lysova, E. I., Allan, B. A., Dik, B. J., Duffy, R. D., & Steger, M. F. (2019). Fostering meaningful work in organizations: A multi-level review and integration. *Journal of Vocational Behavior*, 110(2), 374-389. <https://doi.org/10.1016/j.jvb.2018.07.004>
- May, D. R., Gilson, R. L., & Harter, L. M. (2004). The psychological conditions of meaningfulness, safety and availability and the engagement of the human spirit at work. *Journal of Occupational and Organizational Psychology*, 77(1), 11-37. <https://doi.org/10.1348/096317904322915892>
- Melink, M., & Pavlin, S. (2012). Employability of Graduates and Higher Education Management Systems (pp.88-272). University of Ljubljana, Faculty of Social Sciences
- Menez, N. (2014). Tracer Study of the Masters in Business Administration (MBA) Graduates from 2008-2012. *Asia Pacific Journal of Education, Arts and Sciences*, 1(1), 14-18. <https://ejournals.ph/article.php?id=5666>
- Paul, K. I., & Moser, K. (2009). Unemployment impairs mental health: Meta-analyses. *Journal of Vocational Behavior*, 74(3), 264-282. <https://doi.org/10.1016/j.jvb.2009.01.001>
- Rosso, B., Wrzesniewski, A., & Dekas, K. (2010). On the Meaning of Work: A theoretical Integration and Review. *Research in Organization Behavior*, 30(5), 91-127. <https://doi.org/10.1016/j.riob.2010.09.001>
- Shafritz, J., Russell, E., & Borick, C. (2011) *Introducing Public Administration*, 10th ed. New York: Pearson Education, Inc.
- Steger, M., Dik, B., & Duffy, R. (2012). Measuring Meaningful Work as Meaning Inventory (WAMI). *Journal of Career Assessment*, 20(3), 322-337. <https://doi.org/10.1177/1069072711436160>
- Warr, P. (2008). Work values: Some demographic and cultural correlates. *Journal of Occupational and Organizational Psychology*, 81(4), 751-775. <https://doi.org/10.1348/096317907X263638>
- Ziersch, A., Baum, F., Woodman, R., Newman, L., & Jolley, G. (2014). A longitudinal study of the mental health impacts of job loss: the role of socioeconomic, socio-demographic, and social capital factors. *Journal of Occupational and Environmental Medicine*. 56(7), 714-720. <https://doi.org/10.1097/JOM.000000000000193.8>

Effects of a Self-Made Workbook in College Algebra on the Students' Academic Performance

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Date received: September 6, 2024

Date revised: September 17, 2024

Date accepted: September 28, 2024

Originality: 90%

Grammarly Score: 99%

Similarity: 10%

Recommended citation:

Ubat, J. (2024). Effects of a self-made workbook in College Algebra on the students' academic performance. *Journal of Interdisciplinary Perspectives*, 2(11), 95-100. <https://doi.org/10.69569/jip.2024.0481>

Abstract. This study aimed to determine the effects of a self-made workbook in College Algebra on students' academic performance. The findings showed that the experimental group, which used the workbook, scored higher than the control group in all evaluations. Both groups were at the "proficiency" level, but the experimental group exceeded the control group in all 12 evaluations, with an average difference of 3.62% in favor of the experimental group. Additionally, 82.22% of students in the experimental group reached the "Advanced" level (90% and above in final grading performance), compared to only 20% in the control group (85% to 89%). The data revealed a "very high" relationship between the experimental group's performance in the 12 evaluations and their final grading performance, significant at the 5% level. This indicates that the student's performance in the evaluations strongly predicts their final grading performance. The mean performance of the experimental group in the evaluations was 3.62% higher than that of the control group, and the t-test indicated a significant difference between the two groups' performances. Similarly, the final grade of the experimental group's mean performance was 4.05% higher than that of the control group, with a significant difference confirmed by the t-test. This study implies that using a self-made workbook in College Algebra can significantly enhance students' academic performance, suggesting that tailored educational materials can improve learning outcomes. Implementing such resources could lead to higher proficiency and advanced student performance levels.

Keywords: Academic performance; College algebra; Experimental group; Workbook evaluation.

1.0 Introduction

As an institution of higher education, the university plays a crucial role in students' academic development. Kadri et al. (2021) argue that this can start a virtuous cycle of increasing the quality of education for every citizen, focusing on enabling each child to reach their full potential. Consequently, educators must continually seek ways to enhance the learning experience, making it more effective and valuable for learners.

O'Keefe et al. (2013) emphasizes the importance of recognizing its practical applications and intrinsic beauty. He notes that Mathematics is filled with mysteries to explore, games to play, patterns to discover, and symmetries to admire. As one of humanity's great achievements, engaging with Mathematics requires only an open mind. Students' perceptions of Mathematics vary widely. While some students' academic achievements align with their intelligence, others struggle significantly with Mathematics despite having average or above-average intelligence. This discrepancy, often unnoticed because these students appear normal, poses a challenge in traditional educational settings.

Aligned with the university's vision to be a dynamic institution developing competitive, productive, and world-class human capital, the researcher aimed to contribute to this vision by addressing issues in Mathematics education. Mathematics is a critical subject in the curriculum, essential for decision-making during academic and daily life. College Algebra, in particular, is an engaging and versatile area of Mathematics, rich with practical applications and historical significance. However, negative perceptions and dissatisfaction with Mathematics programs are common. Critics argue that the selection and treatment of subject matter are often inadequate or inappropriate (Baig, 2015).

Uayan (2020) highlights that an effective Mathematics teacher uses varied instructional materials to promote quality education. However, the Philippine Educational System faces challenges such as the lack of instructional materials, especially in secondary public schools, affecting learners' preparedness for college. The Department of Education has been developing programs to update instructional materials and upgrade equipment. In response to these challenges, the researcher developed a self-made College Algebra workbook to enhance students' learning experiences and improve their performance. This study aimed to determine the effect of the said on students' academic performance.

2.0 Methodology

2.1 Research Design

The research design used in this study was the Static Group Comparison. This design involves two groups: one group receives the treatment while the other does not, serving as the control group. The treatment in this study was a self-made and validated workbook used by the experimental. It employed a complete enumeration method since its main goal was to track and monitor the BSED-Math graduates regarding their employability status. The control group did not receive the workbook. The results from both groups were compared and analyzed to determine the effects of the treatment.

2.2 Research Environment

The study took place at Negros Oriental State University – Guihulngan Campus in Guihulngan City, Negros Oriental. This university is one of the satellite campuses of NORSU. It consists of six colleges: College of Arts and Sciences (CAS), College of Business Administration (CBA), College of Criminal Justice Education (CCJE), College of Education (CED), College of Agriculture, Forestry and Fisheries (CAFF), and College of Industrial Technology (CIT). Various programs include Bachelor of Science in Computer Science, Mass Communication, Business Administration, Hospitality Management, Elementary Education, Secondary Education, Criminology, and Industrial Technology. The university is centrally located, near the Guihulngan City Hall and across from the Guihulngan City District Hospital.

2.3 Research Respondents and Sample

The respondents were two sections of College Algebra students from different colleges within NORSU-Guihulngan Campus. Each section consisted of 45 students. The names of the two sections were drawn from a lot to determine which section would be the experimental group and which would be the control group. The selected section became the experimental group, and the other served as the control group. The researcher employed a complete enumeration method since its main goal was to get the effects of a self-made workbook of the two sections of the course.

2.4 Research Instruments

The researcher used a self-made and validated workbook as additional instructional material for the experimental group. The workbook covered Sets and Number Systems, Polynomials, Special Products, Factoring, Simplification of Algebraic Fractions, Rational Exponents and Radicals, Linear Equations, Complex Numbers, and Word Problems. Three experts in Mathematics reviewed the workbook to ensure its validity. These experts included a Ph.D. in Mathematics from Silliman University, a Ph. D. in Mathematics Education from Foundation University, and a Ph.D. in Mathematics from NORSU Main Campus. Their feedback was incorporated to finalize the workbook.

2.5 Experimental Procedures

After the workbook was validated, permission was obtained from the Campus Administrator and the Dean of the College of Arts and Sciences. Both the experimental and control groups were evaluated after each topic was discussed. The experimental group received the workbook, while the control group did not. The experimental group could read and discuss the workbook's contents in advance, whereas the control group relied on classroom discussions and other resources. Both groups engaged in group discussions and completed exercises, but the experimental group had the advantage of the workbook.

2.6 Data Analysis

The following instruments were employed to analyze and interpret the data: (First) percentage, which was used to show the evaluation results for each workbook topic and the student's academic performance. (Second) The students' extent of perceptions of the various topics in the workbook they created and validated were obtained using the Arithmetic Mean. (Third) The degree of correlation between the two variables was determined using the Pearson Product Moment Coefficient of Correlation.

3.0 Results and Discussion

3.1 Performance of the Experimental and Control Group

Table 1 shows that the experimental group scored higher than the control group in all 12 evaluations. The experimental group reached an advanced level, indicating that students at this level exceed core requirements regarding knowledge, skills, and understanding and can apply them automatically and flexibly in authentic performance tasks. In contrast, the control group reached a proficiency level, meaning that students at this level had developed fundamental knowledge, skills, and core understandings. The average difference between the experimental and control groups was 3.62% in favor of the experimental group.

Table 1. Descriptive Comparison of the performance of the experimental and control group

Evaluation Number	Experimental Group		Control Group	
	Rating	Interpretation	Rating	Interpretation
1. Sets and Number System	95.02	Advanced	90.18	Advanced
2. Polynomials	94.11	Advanced	91.02	Advanced
3. Special Products	95.04	Advanced	92.02	Advanced
4. Factoring	90.42	Advanced	88.64	Proficient
5. Simplification of Algebraic Fractions	95.78	Advanced	92.02	Advanced
6. Multiplication and Division of Fractions	93.60	Advanced	91.40	Advanced
7. Addition and Subtraction of Fractions	94.16	Advanced	92.09	Advanced
8. Complex Fractions	88.64	Proficient	82.29	Approaching Proficiency
9. Rational Exponents and Radicals	85.02	Proficient	83.16	Approaching Proficiency
10. Linear Equations and Its Application	88.60	Proficient	84.02	Approaching Proficiency
11. Complex Numbers	89.11	Proficient	85.87	Proficient
12. Word Problems	86.16	Proficient	79.11	Developing
Average	91.27	Advanced	87.65	Proficient
Standard Deviation	2.41		2.00	

A study by Erdoğan and Baran (2009) revealed that their experimental research showed an increase in the test scores of Early Mathematics Ability at the end of the education process. The scores of students in the experimental group were higher than those in the control group. Futalan et al.'s (2020) findings also align with those of Erdoğan and Baran. Students with access to the solutions manual scored higher than those without it.

However, Brahm et al. (2017) contradict these findings. Their study shows that learners exhibit the same degree of improvement in Mathematics, whether they use a conventional textbook or a customized workbook designed to address specific problems South African learners face. From a policy perspective, no evidence supports the relative effectiveness of the specific workbooks considered in the study.

Table 2. T-test result comparing the performance of the experimental and the control groups in the 12 evaluations

Students	$\bar{x}$	n	S	Computed t	Tabular t	Decision/ Remark
Experimental Group	89.40	37	4.47	2.219	1.99	Reject H_0 (significant)
Control Group	87.20	37	4.04			

5% level of significance and 72 degrees of freedom

The data in Table 2 reveal that the mean performance of the experimental group in the 12 evaluations is 2.2% higher than that of the control group. A t-test was employed to test this difference statistically. The computed value of t (2.219) is greater than the tabular value of t (1.99). These findings provide sufficient evidence to reject the null hypothesis. This means that, at the 5% level, the difference in performance between the experimental and control groups is significant. This implies that the teaching methodology using the workbook positively impacts the experimental group's performance, resulting in higher scores than the control group. The workbook or instructional material serves as a channel between the teacher and the students in delivering instruction. It motivates the teaching-learning process, capturing students' attention and encouraging them to learn.

Table 3. T-test result comparing the performance of the experimental and the control groups in the first grading period

Students	$\bar{x}$	n	S	Computed t	Tabular t	Decision/ Remark
Experimental Group	90.97	37	3.13	2.889	1.99	Reject H_0 (significant)
Control Group	88.86	37	3.16			

5% level of significance and 72 degrees of freedom

The data in Table 3 illustrate that the mean performance of the experimental group in the final grade is 2.11% higher than that of the control group. The data also reveal that the computed value of t (2.889) is greater than the tabular value of t (1.99). These findings provide sufficient evidence to reject the null hypothesis, indicating that, at the 5% level, the difference in mean performance between the experimental and control groups is significant. This suggests that students in the experimental group learn better than those in the control group, likely due to the teacher's new instructional method using workbooks.

A study by Ali et al. (2010) notes a significant difference between the academic achievement of students taught through traditional methods and those taught through problem-solving methods. It also reveals that students taught using problem-solving methods achieve better academic results than those taught using traditional methods. Similarly, Oladejo et al. (2011) conclude that a teacher's ability to create "local" materials instead of "standard" ready-made materials makes lessons more effective and improves student achievement. Mbah's (2013) findings also reveal a statistically significant difference in the educational performance of students taught with instructional materials compared to those who did not.

3.2 Final Grade of the Students in College Algebra

Table 4. Final grading performance of the students in college algebra

Rating	Experimental Group		Control Group	
	Frequency	Percentage	Frequency	Percentage
90% and above (Advanced)	37	82.22	9	20.00
85%-89% (Proficient)	5	11.11	25	55.56
80%-84% (Approaching Proficiency)	3	06.67	11	24.44
Average Performance		92.07		88.02
Standard Deviation		1.69		1.99

Table 4 establishes that 82.22% of the 45 students in the experimental group are at the advanced level, while only 20% of the 45 students in the control group are at the same level. This indicates that most of the students in the experimental group achieve a final grade performance of 90% or above, compared to the control group, where most students achieve final grades ranging from 85% to 89%.

Oladejo et al. (2011) support this finding. Their research shows a difference in the achievement of students taught using standard instructional materials, those taught with improvised instructional materials, and those taught using conventional methods. Students taught with improvised instructional materials obtained the highest achievement scores, followed by those using standard instructional materials, while the control group scored the lowest.

Several studies show that teaching methods affect both academic performance and attitudes. Handy et al. (2010) cited that this is expected since attitude has a strong cognitive component. Omarbek et al. (2022) cited that while

there is no direct study on the effect of teaching methods on attitude, the influence is expected to mirror that of academic achievement. This inference is based on the positive correlation between attitude and academic achievement.

3.3 Relationship between the Performance of the Students in the Twelve Evaluations and Their Final Grade Performance

Table 5. Relationship between the performance of the students in the 12 evaluations and their final grade performance

Students	Computed r	Tabular R	Degree of Relationship	Decision/Remark
Experimental Group	0.9481	0.325	Very High	Reject H_0 (Significant)
Control Group	0.9460	0.325	Very High	Reject H_0 (Significant)

5% level of significance and 45 degrees of freedom

Table 5 reveals a "very high" relationship between the experimental group's performance in the 12 evaluations and their final grading performance. To test this statistically, the computed value "r" is compared to the tabular value "r." The null hypothesis is rejected since the computed value exceeds the tabular value. This rejection indicates that the relationship is significant at the 5% level. These findings suggest that the experimental group's performance in the 12 evaluations is a very strong predictor of their final grading performance.

The control group shows similar results. Their performance in the 12 evaluations also strongly determines their final grading performance. The data in Tables 1 and 4 support this result. Table 1 shows that both student groups performed better in the 12 evaluations. Likewise, Table 4 indicates that they also have higher final grading performance. The study by Sapuan (2012) supports these results, showing that evaluation performance predicts students' performance in the first grading period. Similarly, Mehmet's (2021) findings reveal a significant relationship between students' prior achievements and their current performance.

4.0 Conclusion

The research findings indicate that the experimental and control groups demonstrated proficiency in College Algebra across 12 evaluations, with the experimental group consistently achieving higher numerical ratings. Notably, while the experimental group attained an "advanced" level performance in their final grade, the control group remained at the "proficiency" level. This study found a significant correlation between the experimental group's performance in the 12 evaluations and their final grading performance, suggesting a strong and consistent improvement. Similarly, the control group also exhibited a very high correlation between their performance in the 12 evaluations and final grading, indicating consistent results within their group. Furthermore, there is a significant difference between the performance of the experimental and control groups in both the 12 evaluations and final grades, with the experimental group outperforming the control group. Overall, these results demonstrate that the self-made workbook used by the experimental group had a positive effect, contributing to their higher ratings than the control group, where it enhances students' understanding and performance in college algebra. Therefore, it is suggested that (1) teachers use, improvise, or develop instructional material that enhances the progress of learning of the learner so that time in facilitating is maximized (2) the school administrators motivate and support teachers in the preparation of more instructional materials like the workbook (3) the school administrators help the current researcher in reproducing the workbook so that all the students will benefit from it (4) the teachers make a parallel study in other mathematics subjects with other groups of students in different settings.

5.0 Contributions of Authors

There is only one author for this study.

6.0 Funding

The researchers personally shoulder the funding of the study.

7.0 Conflict of Interests

There is no conflict of interest in this study.

8.0 Acknowledgment

Thank you to all the people who supported this study.

9.0 References

- Ali, R., Hukamdad, Dr., Akhter, A., & Khan, A. (2010). Effect of using problem solving method in teaching mathematics on the achievement of mathematics students. *Asian Social Science*, 6(2), 67-72. <https://doi.org/10.5539/ass.v6n2p67>
- Baig, F. (2015). Application of Teaching Methods in Mathematics at Secondary Level in Pakistan. *Pakistan Journal of Social Sciences*, 35(2), 935-946. <https://bit.ly/3ZJ3zjs>
- Brahm et al. (2017). Failing to catch up in reading in the middle years: The findings of the impact evaluation of the Reading Catch-Up Programme in South Africa. *International Journal of Educational Development*, 53(1), 36-47. <https://doi.org/10.1016/j.ijedudev.2016.11.008>
- Erdogan, S., & Baran, G. (2009). A study on the effect of mathematics teaching provided through drama on the mathematics ability of six-year-old children. *EURASIA Journal of Mathematics, Science and Technology Education*, 5(1), 79-85. <https://doi.org/10.12973/ejmste/75259>
- Futalan, M. C., Canete, R., Calisang, C., Comighud, S., & Cordevilla, R. (2020). Effects of Social Interactions - Constructionist Approach in Teaching Mathematics. *Journal of Mathematics*, 6(5), 1-40. <https://doi.org/10.13140/RG.2.2.19608.21766>
- Handy, T. C., Smilek, D., Geiger, L., Liu, C., & Schooler, J. W. (2010). ERP evidence for rapid hedonic evaluation of logos. *Journal of Cognitive Neuroscience*, 22(1), 124-138. <https://doi.org/10.1162/jocn.2008.21180>
- Mbah, M. (2013). Use of Instructional Materials and Educational Performance of Students in Integral Science. *Journal of Research & Method in Education*, 3(4), 7-11. <https://bit.ly/4eBhmga>
- Kadri, K., Mansor, A. and Nor, M. (2021). Principal and Teacher Leadership Competencies and 21st Century Teacher Learning and Facilitating Practices: Instrument Development and Demographic Analysis. *Creative Education*, 12(9), 2196-2215. <https://doi.org/10.4236/ce.2021.129168>
- O'Keefe, P. A., Plass, J. L., Homer, B. D., Case, J., Hayward, E. O., Stein, M., & Perlin, K. (2013). The impact of individual, competitive, and collaborative mathematics game play on learning, performance, and motivation. *Journal of Educational Psychology*, 105(4), 1050-1066. <https://doi.org/10.1037/a00332688>
- Ozcan, M. (2021). Factors Affecting Students' Academic Achievement according to the Teachers' Opinion. *Education Reform Journal*, 6(1), 1-18. <https://dx.doi.org/10.22596/erj2021.06.01.1.18>
- Oladejo, M., Olosunde, G., Ojebisi, A., & Isola, O. (2011). Instructional Materials and Students' Academic Achievement in Physics: Some Policy Implication. *European Journal of Humanities and Social Sciences*, 2(1), 112-126. <https://bit.ly/3BdXykW>
- Omarbek, N., Kaymak, S., Sydykov, B. (2022). The Effect Of Active Learning Method On Students' Academic Success, Motivation And Attitude Towards Mathematics. *Journal of Language and Linguistic Studies*, 18(2), 701-713. <https://bit.ly/3BdXFci>
- Uayan, M. (2020). The Extent of Use of the MTB-MLE in Teaching Grade 3 Mathematics and Its Effect on the Performance of the Pupils. *Journal of Educational Research*, 5(8), 2456-2947. <https://doi.org/10.5281/zenodo.3978030>

Level up Learning: A Systematic Review of Gamification in Physical Education

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Date received: September 6, 2024
Date revised: September 17, 2024
Date accepted: September 28, 2024

Originality: 90%
Grammarly Score: 99%
Similarity: 10%

Recommended citation:

Marcaida, J.L., Tayag, D.M., Acebes, R., Perez, C.D.D., Dizon, R., Amaro, R., Viray, R., & Cabrera, S. (2024). Level up learning: A systematic review of gamification in physical education. *Journal of Interdisciplinary Perspectives*, 2(11), 101-110. <https://doi.org/10.69569/jip.2024.0480>

Abstract. Gamification is one of the emerging trends in the digital era, which is bound to apply game-based design to a non-game context for engagement, fun, and user enjoyment. Various disciplines and domains increasingly utilize gamification due to its popularity and promising effect. This study is oriented toward systematically analyzing the given literature and studies published in gamification. A systematic review of the literature approach was applied to circumnavigate the methods and techniques used in physical education and the positive and negative implications of the latter. Of 464 related studies, 42 were carefully assessed using the inclusion and exclusion criteria, quality assessment, and data extraction and synthesis. The trend in the use of gamification started in 2010-2020, and in 2019, gamification reached its highest peak. Most relevant studies come from European and American contexts, while few works have been published in Asian, African, and Oceanian contexts. The results of this study attested that in the field of physical education, four domains frequently used gamification, which included physical activity, sports, student engagement, and learning outcomes. Further exploring its beneficial effects could help maximize its usage and popularity.

Keywords: Gamification; Learning outcomes; Physical Education; Student engagement; Systematic Review.

1.0 Introduction

As the world transcends to the era of modernity and advancement, various innovations and interventions are done to satisfy and optimize humanity's quality of life. As one of man's greatest innovations, technology has been successfully transcended and embedded due to its practicality and usability – a multivariate of disciplines utilized technology due to its beneficial and promising aid. Leveraging and upscaling the efficiency of technology is significant in unleashing its potential fully. One of the sectors that has benefited from technology is education. Incorporating the latter has provided numerous beneficial attributes that elevate teaching and learning.

As one of the technologies used in education, gamification is a concrete example of technological advancement. Gamification has successfully been a growing trend over the past decades. The word "gamification" was first coined by Nick Pelling in 2002, but its growth soared during the second quarter of 2010. As Deterding et al. (2011) mentioned, many designers created new labels for their approach because the term "gamification" was hotly debated in the video game and digital media sectors, and they wanted to prevent misunderstandings about the

process from emerging. While many authors across the context have provided a wide range of definitions of "gamification." Subsequently, Staller and Koerner (2021) defined gamification as the incorporation of the application of game design components to enhanced outcomes (such as increased motivation or competence). This definition provided insight concerning gamification's efficiency in elevating student engagement and learning outcomes. Meanwhile, Fleming et al. (2020) defined the term "gamification" describes the use of gaming elements—like leaderboards, competition, and intermittent reinforcement to non-gaming contexts. However, the term above is connected to related ideas like playful interaction, serious games, and game-based technologies (Deterding et al., 2011). Since serious games are meant to be played for non-recreational purposes, they concentrate on subjects deemed "serious," such as politics, economics, education, health, industry, and the military. Unlike gamification, serious games existed long before computer technologies became widely used. They were defined as "games that do not have entertainment, enjoyment or fun as their primary purpose" or "games that are designed to entertain players as they educate, train, or change behavior." However, gamification is more of a rewards, point system, and merit to accomplish a task, while serious games are more on "serving its purpose." Competition is commonly done in both contexts as it elevates the sense of usability and strategic actions to win. To support this, Park et al. (2021) stated that task visibility and challenge setting are among the strategies employed to encourage competitiveness.

The use of gamification poses a multivariate beneficial context. Many industries use gamification to enhance their productivity, and education is one of those. Oliveira et al. (2023) stated that gamification has been widely applied to improve educational systems to enhance students' focus, motivation, engagement, flow, and other favorable experiences. The use of gamification has rapidly grown since the educational system has successfully transitioned from a traditional to a modern approach using the said technology. Meanwhile, in the words of Mohamad (2020), gamification may be incorporated into any platform and enhance student engagement with learning. To motivate students and boost learning, gamified e-learning platforms that accommodate various learning modalities would create engagement in learning.

In physical education settings, gamification has boosted student engagement and learning outcomes. As mentioned by Yien et al. (2011), numerous studies have revealed a strong relationship between students' motivation and performance in the classroom and physical education practices, particularly in game-based learning (GBL). Gamification significantly shapes the physical education landscape by incorporating additional activities to enhance students' understanding of the lesson. Meanwhile, primary and secondary schools can use gamification to create meaningful and inspiring physical education experiences (Sotos-Martínez et al., 2022). This claim shows that using gamification in physical education supports the holistic experiential learning of the students by giving them the necessary experiences they used to learn. Similarly, students' level of motivation, whether intrinsic or extrinsic, in learning physical education and other subjects is boosted when gamification is applied (Ferriz-Valero et al., 2020).

Significantly, in the statistics provided by Mambo IO (2024), they stated that the test scores of pupils who participate in gamified learning rise by an average of 34%. In North America, about 90% of educators think that gamified learning boosts students' enthusiasm and inventiveness. This clearly shows that gamification can significantly help boost students' learning outcomes. Mee Mee et al. (2020) research revealed that gamification enhanced students' critical, creative, and problem-solving abilities in Malaysia. The advantages of gamification for education are that games are engaging, inspiring, and amusing. The fact that 48.5% of participants "Agreed" with using gamification to increase student engagement and learning outcomes lends credence to this. Meanwhile, in China, Chen and Liang (2022) revealed a 40% increase in students' engagement, which results in good learning outcomes when gamification is applied as an intervention. The above-listed data shows the positive attributes gamification can be a potential catalyst in upscaling students' learning outcomes, engagement, and participation, which can result in better learning acquisition.

Contrast, alongside the beneficial attributes of technology and gamification, has brought to the field of education. There is a growing concern concerning its negative implications. As found by Almeida et al. (2023), the adverse effects that were most frequently cited were insignificance, lack of effect, reduced performance, and concerns with motivation. However, these negative implications may diminish the effectiveness of technology integration in education, specifically gamification. Some ways can be utilized to counterattack these consequences. Given that

the teacher can deviate from the usage of gamification, it means that the latter has direct control of the utilization of gamification to maximize its usage and the profound beneficial effects it could provide in sustaining the level of engagement and learning outcomes of the students.

This study presents results from a systematic review of several research that included gamified applications and serious games. To clearly define the game features used in the field of education, particularly in physical education, this study first attempted to evaluate and assess the previous research outputs. The chosen studies were categorized based on their study categories, application in physical education, research channels, and empirical research investigations. Furthermore, it investigated the perceived advantages and difficulties of integrating gamification approaches into education systems, particularly physical education.

2.0 Methodology

2.1 Systematic Review Methodology

The main intent of this systematic literature review is to provide a more synergistic and comprehensive generalization of the studies published regarding the context of this field of specialization. Considering Gamecho et al. (2015), systematic literature review is a type of secondary research that aims to locate, evaluate, and compile all of the papers that have been published that deal with a specific research subject. Moreover, the study of Wright et al. (2007) proposed seven key steps in doing a systematic review. The following are crucial steps in undertaking a systematic literature review: (1) defining the research questions; (2) creating a research protocol; (3) taking out the literature search; (4) extracting data; (5) evaluating its quality; (6) analyzing and interpreting the data; and (7) interpreting the results. Systematic literature review allows scholars and researchers across the globe to have a common understanding and comprehension of their research topic. Across the context of gamification, many studies have been successfully conducted, and their results show significant beneficial attributes in the field of education.

2.2 Research Question and Search Strategy

Formulating nine questions for this systematic literature review achieved the study's intent. The rationale of each question is provided and presented in the table below.

Table 1. Research questions

Research Questions	Rationale
Which publication sites are the main target for gamification in education, particularly in physical education?	To identify and locate different sites in search for related and relevant studies on gamification in physical education.
What are the studies focused on gamification in physical education based on their publication date?	To determine and explore the publication trends in gamification per physical education.
How manageable is it to locate published works in gamification?	To discover how relevant and appropriate the published work is.
Which domain of physical education has gamification been frequently used?	To recognize what domains in physical education utilized gamification.
What research types have been utilized in gamification in physical education?	To point out the types of research used in publishing papers about gamification.
What challenges have been encountered in utilizing gamification in physical education?	To understand and explore gamification's potential problems and limitations in physical education.
What are the benefits of the use of gamification in physical education?	To determine the potential benefits of the integration of gamification in physical education.

Search strategy significantly determines the latter in locating and exploring relevant studies about gamification in physical education. This is done to retrieve the completeness and relevancy of the related studies accurately. This systematic literature review searched relative studies using different e-libraries and search engines, including Scopus, Google Scholar, IEEE, ScienceDirect, Research Gate, and other relevant sites. The table presents the search strings for each variable to further expand the search strategy. The PICO criteria comprises Population, Intervention, Comparison, and Outcome (Stone, 2002).

As presented in Table 2, each part's alternating words were combined using the Boolean operator "OR," and the three main portions were joined using the Boolean operator "AND." The search string was applied to each digital source's title-keywords-abstract metadata to retrieve the returned papers. Additional modification was required to accommodate each library's search procedure.

Table 2. Search string

Scope	String
Physical Education	physical education* OR PE* OR physical activity* OR physical*
Gamification	gamified* OR games* OR gamified instruction* OR game elements*
Engagement	engage* OR student engagement* OR learners engagement*
Learning Outcomes	learning* OR outcomes* OR student's learning*

2.3 Inclusion and Exclusion Criteria

After a thorough analysis of the relative papers, the inclusion and exclusion criteria were conducted to ensure that there would be no duplicates among the published works. This is done to ensure the relevancy and appropriateness of the research. The author conducted the selection procedure, considering the metadata in the publications. Any discrepancies were resolved by screening the full manuscript. The following criteria were met by the studies that were included:

- IC1. The paper focuses on using gamification in education, specifically in physical education.
- IC2. The paper evaluates the use of gamification in terms of upscaling the learner's engagement.
- IC3. The paper assesses the effectiveness of gamification in student's learning outcomes.
- IC4. The study offers empirical data on the effects and results of gamifying physical education.

In terms of the exclusion, the papers that showed at least one of the criteria were discarded:

- EC1. The papers are not written in the English language.
- EC2. Papers published in 2013 below.
- EC3. Papers published in abstract and conference proceedings with at least 1-2 pages.
- EC4. Research works that exceed the domain of gamification in physical education.

2.4 Quality Assessment

To mitigate potential bias during the systematic literature review, a quality assessment was conducted on all selected publications using a series of closed-ended questions to gauge the relevance and caliber of the papers' contents. In assessing the quality of the papers, the author adapted the quality assessment (Sardi et al., 2017). The prior systematic literature review served as the basis for the formulation of the quality assessment questions and has the following description:

- QA1. Does the paper present a detailed description of the game elements employed? The possible answers were "Yes (+1)", No "(+0)" and "Partially (+0.5)".
- QA2. Does the study present empirical results?
The possible answers were "Yes (+1)" and No "(+0)".
- QA3. Are the limitations of gamification addressed explicitly? The possible answers were "Yes (+1)" and No "(+0)".
- QA4. Does the paper discuss the benefits of gamification? The possible answers were "Yes (+1)" and No "(+0)".
- QA5. Has the study been published in a relevant journal or conference proceedings?

The CORE 2014 and Journal Citation Reports 2014 (JCR) rankings of conferences and journals were considered when rating this quality evaluation question. The following were potential responses to this query:

- for conferences, workshops, and symposia:
 - (+1.5) if it is ranked CORE A
 - (+1) If it is ranked CORE B
 - (+0.5) If it is ranked CORE C
 - (+0) If it is not in the CORE ranking

For journals:

- (+2) If it is ranked Q1
- (+1.5) If it is ranked Q2
- (+1) If it is ranked Q3 or Q4

(+0) if it has no JCR ranking

For others: (+0).

When the paper does not provide specifics regarding the game elements used in the program, Question QA1 receives a partial score. The reason for the distinction in the score for question QA5 is that publishing in ranked journals typically entails more work than publishing at conferences or symposia. A paper could receive a maximum quality assessment score of 6, meaning that the overall score ranges from 0 to 6.

2.5 Data extraction strategy and synthesis method

In this systematic literature review, data extraction is one of the key things that needs to be considered. A structured sheet was utilized to synergistically assess and extract the accuracy and veracity of the related studies. Necessary information from the scholarly works about gamification in physical education is described below:

RQ1. The sites for publication and their sources should be extracted.

RQ2. To determine the significant development among the studies on gamification in physical education, the publication dates and the geographic segmentation of the papers need to be identified.

RQ3. To determine if the papers are still relevant, it is important to consider the publication sources' ranking.

RQ4. Specific domains of physical education should be identified to assess what specific gamification is used.

RQ5. This question refers to the type of research used. Organization of the nature of research can be categorized by the following:

- Basis for intervention – The paper on this category proposes a solution to an existing problem. The domain's needs can be sustained to aid the need for a new strategy or innovation.
- Evaluative study – A series of evaluations is done to assess the potency of the strategy used.
- Systematic Review – An array of research studies conducted to assess the domain critically.
- Others – This includes bio notes, personal experiences, and opinion papers.

RQ6. Studies portray the challenges and hurdles in integrating gamification and gamified instruction in physical education.

RQ7. The benefits of gamifying teaching and learning in physical education should be noted.

The synthesis of the gathered and extracted data aims to methodically synthesize the related studies to answer the questions formulated in this systematic literature review.

3.0 Results and Discussion

This portion aims to uncover the systematic literature review results to answer the research questions showcased in Table 1. The selection process among the related studies was conducted from June 2024 to July 2024. As listed in Figure 1, 464 papers were garnered from the database using the search string presented in Table 2.

After ensuring that three out of four exclusion criteria were identified, 432 research papers were retained and underwent a thorough screening and analysis based on their database (Title, abstract, and keywords). Meanwhile, out of 432 studies, 172 research were removed using the EC4 criteria. On the other hand, 78 studies were assessed considering their full-text nature. Forty-four studies were excluded from the array of literature, while the remaining 64 were retained based on the application of EC4. An additional eight studies were included after applying the snowball technique. Hence, 42 studies were included in the final array of included literature. This is because the latter met the target criteria when selecting the references.

RQ1. Which publication sites are the main target for gamification in education, particularly in physical education?

Papers identified by this systematic literature review come from a range of publication sites. Among the publication sites, five journals were replicated. Meanwhile, eight research papers were published in the Journal of Systems and Software. Ten research papers were published in the IEEE. Additionally, seven studies were published in the Journal of Game, Game Art, and Gamification. 5 papers were published in the International Conference on Advances in Computer Entertainment Technology. Based on the literature review, approximately 72% were published in journals, 24% were published in conferences, and 4% were presented in a symposium.

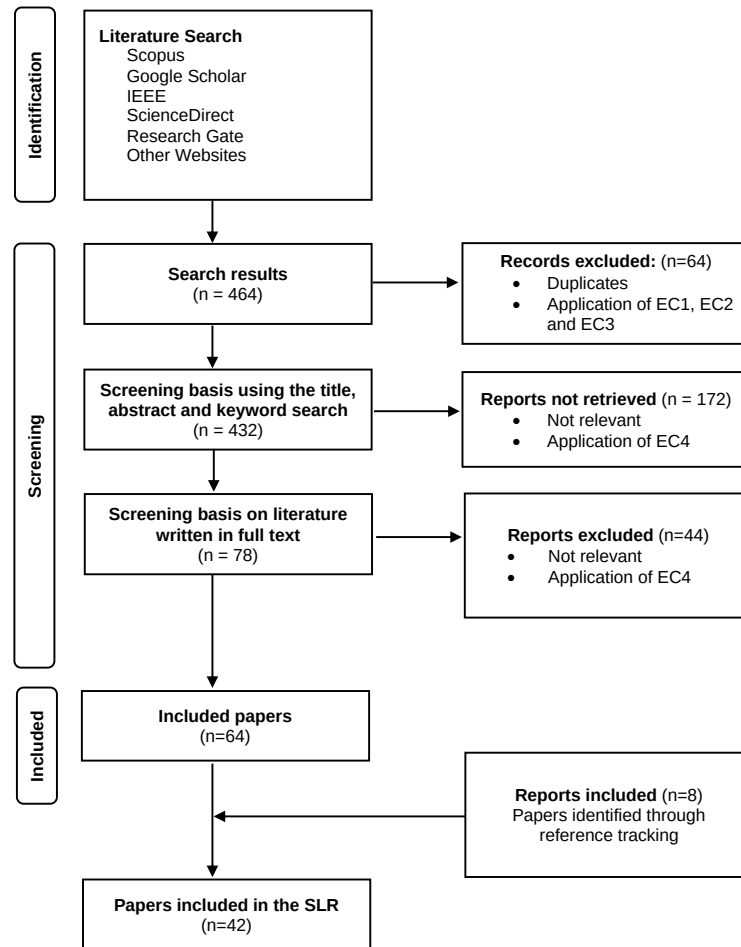


Figure 1. PRISMA flow diagram

RQ2. What are the studies focused on gamification in physical education based on their publication date?

As depicted in Fig. 2, the development of published works in gamification from 2010-2020 can be seen. There is a significant rise in 2019 as studied by Swacha (2021).

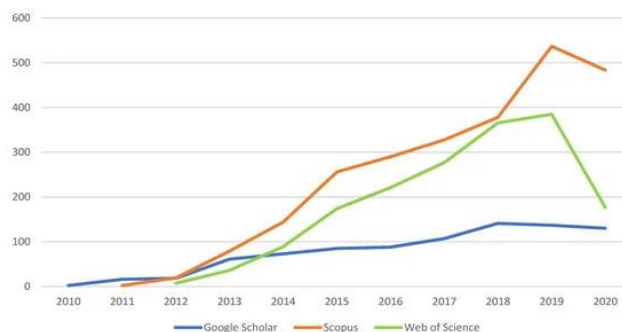


Figure 2. Publication evolution in gamification

RQ3. How manageable is it to locate published works in gamification?

Based on the results of this study, it can be identified that most of the research papers published come from 16 nationalities, where American researchers lead the number of published works, followed by Canadian and Portuguese researchers. Meanwhile, it can be suggested that different countries should craft research based on their continental context. In terms of locating these studies, most of the published works were easy to locate and identify but some are inaccessible. Few related studies exist in the Asian, African, and Oceanian contexts.

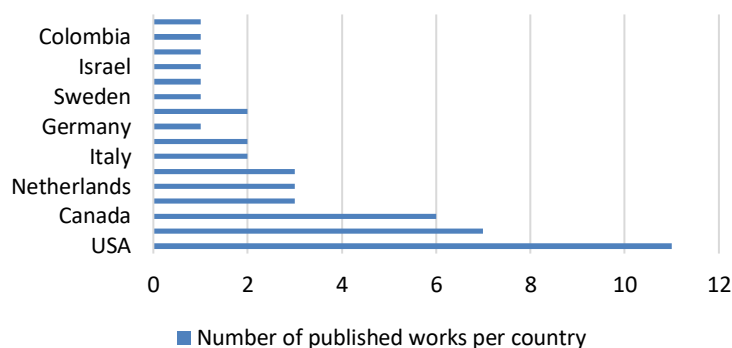


Figure 2. Number of published works per country

RQ4. Which domain of physical education has gamification been frequently used?

As shown in Figure 3, various domains in physical education utilize gamification. The domain that garnered the highest number of publications is teaching and learning. A vast range of literature and studies were conducted to assess the use of gamification in aiding physical education's teaching and learning domain. According to quantitative data, this is attested by the study of Fernandez-Rio et al. (2020), which found that the student's intrinsic motivation to learn significantly increased after experiencing gamification. Accordingly, the field of student engagement garnered 40 published research papers. According to Ferriz-Valero et al. (2020), the idea behind implementing a gamification intervention is that students who take part in this kind of program will be able to build a level of intrinsic and extrinsic motivation—or, on the other hand, student's engagement—more successfully. It can be seen that the use of gamification in physical education could potentially boost the level of motivation and engagement of the students to learn.

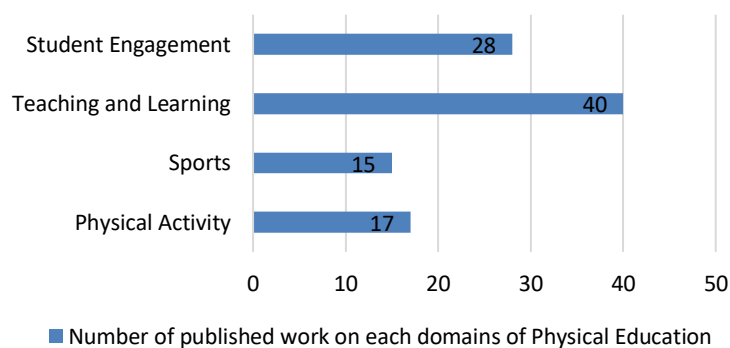


Figure 3. Number of published works on each domain of Physical Education

Consequently, 17 studies were conducted on sports and gamification. According to Tóth and Lógó's (2020) findings, gamification has the least impact on sports application selection. Conversely, game aspects connected to progression had the greatest beneficial effect on the frequency and intensity of workouts. On the other hand, the physical activity domain of physical education attained 17 published works. It can be seen that even though physical activity is more of a person's physical aspect, gamification still took its place in aiding the said domain.

Mazeas et al. (2020) confirmed that gamified methods show promise in encouraging physical activity among different populations. Further investigations showed that this benefit continues beyond the follow-up period, indicating that gamified goods appear more effective than comparable non-magnified PA interventions and that the effect is not merely a novelty effect brought on by the humorous aspect of gamification. RQ5. What research types have been utilized in gamification in physical education?

In conducting this systematic review of literature, the author found out that there is an array of research types published in the context of gamification in physical education. The basis for intervention studies garnered 54% of the published studies. At the same time, evaluative study types gained 23% of the published studies. On the other hand, the Systematic Review type of research got 20%, and other sources gained the remaining 3%.

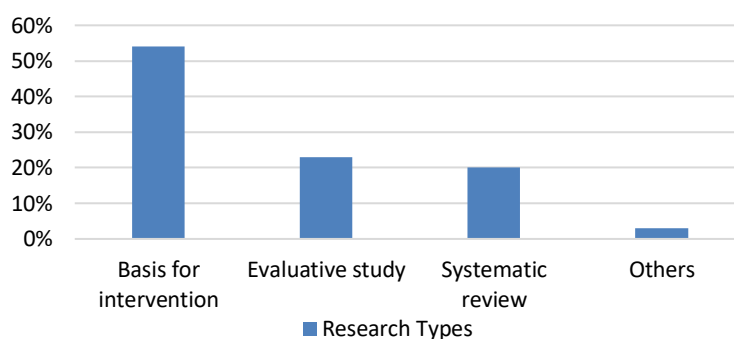


Figure 4. Types of Research published in the context of gamification

RQ6. What challenges have been encountered in utilizing gamification in physical education?

Apart from the beneficial attributes of gamification in education, it can be seen as a shady area of its usability. This claim is supported by various studies published. According to Yaşar et al. (2020), the main issue elementary school instructors have when implementing gamification components is the children's excessively competitive mentality. The issue of regression in kids with low levels is mentioned as the second. In resolving the issues, it has been shown that the best way to use gamification components is to consider other activities besides lesson success. Moreover, Toda et al. (2020) indicated that gamification can pose a serious competition for students. As well as addiction, the engaging game elements and display can alter the learners' attention. The game's length also seems to be a barrier to students' gamified experiences, performance, and engagement in class, as found by Marcaida et al. (2022). Students who initiate games using an application or software find that it does not always work properly on their devices, making class participation more difficult.

RQ7. What are the benefits of the use of gamification in physical education?

The use of gamification has brought numerous positive benefits to different disciplines. One of the aspects that certainly benefitted from the latter is education. Yildirim's (2017) study findings indicate that gamification-based instructional strategies improve student performance and attitudes toward learning. Gamification benefits the learning acquisition as well as the engagement of the students when applied. Many schools across the globe are utilizing gamification to aid their student's learning attainment. Task performance has improved with the help of gamification (Hosseini et al., 2022). Accordingly, Buckley and Doyle (2016), stated that A pre- and post-intervention survey is used to examine how gamification affects learning results. It was discovered that gamified learning interventions. The above-presented literature suggests that gamification in education, specifically physical education, poses various benefits to the discipline.

4.0 Conclusion

This systematic literature review synergistically synthesizes and analyzes existing research on gamification in education. A total of 464 research papers were garnered from different publication sites, and 42 were selected based on the inclusion and exclusion criteria set by the author. The mentioned research papers were explored

by setting eight research questions, which include the sites of publication, their sources, date of publication, the geographic and locality of the published works, domains of physical education that frequently use gamification, the types of research used, and barriers and benefits on the used of gamification in physical education. Regarding gamification trends, it all started in 2010 and reached a higher altitude in 2019. Most of the published works in gamification in physical education rely on intervention, evaluative study/research, systematic review, and other sources of information. In addendum, this systematic literature review also tackled the potential benefits and shady areas of gamification. One of those is that numerous studies have found that gamification is a catalyst that can be used to enhance the learners' learning, engagement, and motivation levels. In terms of the negative effects of it, it can be stated that the use of gamification can foster addiction and increase competition and game design problems. Thus, proper utilization is needed to maximize its potency and decrease its consequences. The utilization of gamification in education, primarily in physical education, shall be considered to maximize its potential beneficial attributes. Thus, future researchers should explore and delve into studying more about gamification.

4.1 Inputs for Future Research

The results and discussions of this study have practical and theoretical recommendations for the teaching and learning domain and future research. As resonated from the results of this study, it can be suggested that teachers should explore an array of gamified applications and instruction methods to foster a more collaborative and fun learning experience which can attained by the students. The localization and contextualization of the games can also be suggested to cater to the diverse needs of the students. In terms of future research, future researchers may explore and delve into research concerning the potency of gamification in education and other aspects and domains. Geographic segmentation shall also be considered. Hence, future research must explore the effects of gamification towards the betterment across disciplines.

4.2 Limitations of the Study

As with any literature review and studies, this study formulated several limitations that can be answered by future research. This study mainly focuses on the different studies about using gamification in education, primarily in physical education. Future studies may explore different subject areas that incorporate gamification. Secondly, this study focuses on the beneficial attributes of gamification in terms of student engagement and learning outcomes; thus, succeeding studies may navigate different domains like participation, knowledge acquisition, and the like. Consequently, in terms of the literature published in the Philippine and Asian context, studies are relatively scarce. Hence, these limitations can be addressed by succeeding studies that wish to expand the horizon of gamification further.

5.0 Contributions of Author

The main author of this study, John Louise Marcaida, formulated the research topic and conceptualized the study. Authors Rey Acebes, Carlo Don Daz, and Dexk Tayag work in the planning phase, where they think of the methodology that will suffice for the study. Meanwhile, Raymart Viray, Ryan Dizon, and Rene Amaro find this study's literature and studies suitable. Sergio Cabrera fixed the tables and graphs of this study. Regarding the results and discussion, the researchers work coordinatively to organize the ideas of this study.

6.0 Funding

This is a self-funded research.

7.0 Conflict of Interests

The author declares NO conflict of interest upon crafting this research work.

8.0 Acknowledgment

This study would not be possible without the help of the Almighty God, the supreme dispenser and provider of all knowledge. We thank the researchers' families for their unwavering support and understanding, and we thank our friends and colleagues in the academe for their insights. Special thanks are bestowed to the Graduate School of the Bataan Peninsula State University for this opportunity to learn, work, and contribute to the body of knowledge.

9.0 References

- Almeida, C., Kalinowski, M., Uchôa, A., & Feijó, B. (2023). Negative effects of gamification in education software: Systematic mapping and practitioner perceptions. *Information and Software Technology*, 156, 107142. <https://doi.org/10.1016/j.infsof.2022.107142>
- Buckley, P., & Doyle, E. (2016). Gamification and student motivation. *Interactive learning environments*, 24(6), 1162-1175. <https://doi.org/10.33774/apsa-2020-0cxhs>
- Chen, J., & Liang, M. (2022). Play hard, study hard? The influence of gamification on students' study engagement. *Frontiers in Psychology*, 13(0), 1-9. <https://doi.org/10.3389/fpsyg.2022.994700>
- Deterding, S., Dixon, D., Khaled, R., & Nacke, L. (2011). From game design elements to gratefulness: defining "gamification". *Proceedings of the 15th International Academic MindTrek Conference: Envisioning Future Media Environments*. <https://doi.org/10.1145/2181037.2181040>
- Ferriz-Valero, A., Østerlie, O., Martínez, S.G., García-Jaén, M. (2020). Gamification in Physical Education: Evaluation of Impact on Motivation and Academic Performance within Higher Education. *International Journal of Environmental Research and Public Health*, 17(2), 4465. <https://doi.org/10.3390/ijerph17124465>

- Fernandez-Rio, J., de las Heras, E., González, T., Trillo, V., & Palomares, J. (2020). Gamification and physical education. Viability and preliminary views from students and teachers. *Physical Education and Sport Pedagogy*, 25(5), 509–524. <https://doi.org/10.1080/17408989.2020.1743253>
- Fleming, T., Sutcliffe, K., Lucassen, M., Pine, R., & Donkin, L. (2020). Serious games and gamification in clinical psychology. *Comprehensive Clinical Psychology*, 7(0), 215. <https://doi.org/10.26686/wgtn.12696101>
- Gamecho, B., Silva, H., Guerreiro, J., Gardeazabal, L., & Abascal, J. (2015). A context-aware application to increase elderly users' compliance with physical rehabilitation exercises at home via animatronic biofeedback. *Journal of Medical Systems*, 39(0), 1–11. <https://doi.org/10.1007/s10916-015-0296-1>
- Hosseini, C., Humlung, O., Fagerström, A., & Haddara, M. (2022). An experimental study on the effects of gamification on task performance. *Procedia Computer Science*, 196(0), 999–1006. <https://doi.org/10.1016/j.procs.2021.12.102>
- Koivisto, J., & Hamari, J. (2019). Gamification of physical activity: A systematic literature review of comparison studies. In 3rd International GamiFIN Conference. <https://doi.org/10.4018/978-1-4666-8200-9.ch103>
- Mambo.io. (2024). Gamification Statistics and Trends. Retrieved from <https://bit.ly/4dmjgbM>
- Marcaida, J. L. M., Ortega, H. C. A., Castañeda, E. S., Cadelina, P. M. M., Garcia, R. R. I., Valenzuela, L. R., & Tolentino, J. C. (2022). Gamification in a Virtual Ecology (GIVE): Enhancing Classroom Engagement in Physical Education among Senior High School Students. *International Journal of Multidisciplinary: Applied Business and Education Research*, 3(11), 2278–2289. <https://doi.org/10.11594/ijmaber.03.11.14>
- Mee Mee, R. W., Shahdan, T. S. T., Ismail, M. R., Ghani, K. A., Pek, L. S., Von, W. Y., Rao, Y. S. (2020). Role of Gamification in Classroom Teaching: Pre-Service Teachers' View. *International Journal of Evaluation and Research in Education*, 9(3), 684–690. <https://doi.org/10.11591/ijere.v9i3.20622>
- Mohamad, S. N. M., Sazali, N. S. S., & Salleh, M. A. M. (2018). Gamification approach in education to increase learning engagement. *International Journal of Humanities, Arts and Social Sciences*, 4(1), 22–32. <https://doi.org/10.20469/ijhss.4.10003-1>
- Oliveira, W., Hamari, J., Shi, L., Toda, A. M., Rodrigues, L., Palomino, P. T., & Isotani, S. (2023). Tailored gamification in education: A literature review and future agenda. *Education and Information Technologies*, 28(1), 373–406. <https://doi.org/10.1007/s10639-022-11122-4>
- Park, S., Lee, Y., & In, J. (2021). A Development and Verification of the Online Gamification. *Proceedings of the 2nd International Workshop on Gamification in Software Development, Verification, and Validation* <https://doi.org/10.1145/3617553.3617889>
- Sardi, L., Idri, A., & Fernández-Alemán, J. L. (2017). A systematic review of gamification in e-Health. *Journal of Biomedical Informatics*, 71(0), 31–48. <https://doi.org/10.1016/j.jbi.2017.05.011>
- Sotos-Martínez, V. J., Ferriz-Valero, A., García-Martínez, S., Tortosa-Martínez, J. (2022). The Effects of Gamification on the Motivation and Basic Psychological Needs of Secondary School Physical Education Students. *Physical Education and Sports Pedagogy*, 29(2), 1–17. <https://doi.org/10.1080/17408989.2022.2039611>
- Staller, M.S., Koerner, S. (2021). Beyond Classical Definition: The Non-definition of Gamification. *SN Computer Science*, 2(88), 1–7. <https://doi.org/10.1007/s42979-021-00472-4>
- Stone, P. W. (2002). Popping the (PICO) question in research and evidence-based practice. *Applied Nursing Research*, 15(3), 197–198. <https://doi.org/10.1053/apnr.2002.34181>
- Swacha, J. (2021). State of research on gamification in education: A bibliometric survey. *Education Sciences*, 11(2), 69. <https://doi.org/10.3390/educsci11020069>
- Tóth, Á., & Lógó, E. (2018, August). The effect of gamification in sports applications. 9th IEEE International Conference on Cognitive Infocommunications. <https://doi.org/10.1109/coginfocom.2018.8639934>
- Wright, R. W., Brand, R. A., Dunn, W., & Spindler, K. P. (2007). How to write a systematic review. *Clinical Orthopaedics and Related Research*, 455(0), 23–29. <https://doi.org/10.1097/blo.0b013e31802c9098>
- Yaşar, H., Kırııcı, M., & Karatas, A. (2020). Primary school teachers' views and adoption levels on gamification, problems, and possible solutions. *Participatory Educational Research*, 7(3), 265–279. <http://dx.doi.org/10.17275/per.20.46.73>
- Yien, J.M.; Hung, C.M.; Hwang, G.J.; Lin, Y.C. (2011) A Game-Based Learning Approach to Improving Students' Learning Achievements in a Nutrition Course. *Turkish Online Journal of Educational Technology*, 10(0), 1–10. <http://files.eric.ed.gov/fulltext/EJ932220.pdf>
- Yildirim, I. (2017). The effects of gamification-based teaching practices on student achievement and students' attitudes toward lessons. *The Internet and Higher Education*, 33(0), 86–92. <https://doi.org/10.1016/j.iheduc.2017.02.002.4>

School Heads' Financial Management and Program Implementation: Basis for Policy Recommendations

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Date received: August 21, 2024

Date revised: September 17, 2024

Date accepted: September 29, 2024

Originality: 94%

Grammarly Score: 99%

Similarity: 6%

Recommended citation:

De Guzman, C.A. (2024). School heads' financial management and program implementation: Basis for policy recommendations. *Journal of Interdisciplinary Perspectives*, 2(11), 111-121. <https://doi.org/10.69569/jip.2024.0432>

Abstract. As stewards of schools, school heads play a critical role in creating an enabling and supportive environment for effective teaching and learning. They work on all aspects of school administration. They are the school leaders overseeing the development and implementation of all educational programs and projects. This study examines the competence of school heads in financial management in selected public schools across the National Capital Region, focusing on planning, prioritizing needs, budgeting, monitoring, and evaluation. Using a descriptive quantitative research design, data was gathered from 350 respondents. Results showed that school heads were assessed as Highly Competent in financial management, with significant differences noted among the assessments of the three respondent groups regarding planning, monitoring, and evaluation. Additionally, implementing programs, projects, and activities, particularly in identifying priority areas, involving stakeholders, and allocating and utilizing funds, was rated as Highly Implemented. These findings highlight the critical role of school heads in addressing financial management challenges and informing policy recommendations to enhance their competence and the effective execution of educational programs.

Keywords: Financial management; School heads; School leadership; School program.

1.0 Introduction

School heads are critical in creating an enabling and supportive environment for effective teaching and learning. They work on all aspects of school administration. They are the school leaders overseeing the development and implementation of all educational programs and projects. School heads are essential to the government's goal of providing high-quality basic education. According to Republic Act 9155, also known as the Governance of Basic Education Act of 2001, a school head oversees a school's administrative and instructional supervision or cluster of schools. This policy states that the school must be managed by a school head who has authority, responsibility, and accountability for achieving higher learning outcomes.

On the other hand, Macadatar (2020) emphasized the roles of school heads, including, but not limited to, leadership, management, teacher evaluation, and enforcing student discipline. In addition, leading and managing the school requires more than hard work and time. Therefore, an effective school head or principal must have the correct leadership qualities and mindset. The competence of a school leader is the most important factor in running the school smoothly despite the obstacles that may arise.

Furthermore, emphasizing the importance of being financially competent as a school head is central to managing a school (Wango, 2011). The study by Espinosa (2018) noted that school heads and relevant management bodies were entrusted with ensuring funds were well managed in the school. Lastly, being competent in financial management makes implementing programs, projects, and activities more possible. If properly utilized, it will benefit the school to realize all its undertakings and achieve educational goals and objectives. The success of every school will rely very much on whether the educational manager or leader efficiently and effectively utilizes the available resources and seeks to obtain funds from legal, authorized, and legitimate sources. The MOOE or Maintenance and Other Operating Expenses are a significant part of this.

In this light, the researcher decided to conduct this study to gain an in-depth understanding of the prevailing financial management-related issues, concerns, and challenges of public school heads across the National Capital Region to the implementation of programs, projects, and activities in the school. If this study can provide a concrete solution, it will enlighten the readers and other researchers on the importance and relevance of this research endeavor.

2.0 Methodology

2.1 Research Design

This study utilized a descriptive quantitative research design to identify the school heads' competence in financial management in selected public schools across the National Capital Region. Descriptive research design is a quantitative method that aims to collect measurable information for statistical analysis of the population sample. As Hassan (2024) explains, it is widely used to describe or document the characteristics, behaviors, attitudes, opinions, or perceptions of a group or population being studied. This design focuses on gathering numerical data that can be generalized across groups or used to explain specific phenomena.

2.2 Research Locale

This study employed random sampling to select the research locales. According to Noor, S. et al. (2015), random sampling ensures that each sample has an equal probability of being chosen, which leads to an unbiased, representative, and equal probability of the population. The specific Schools Division Offices chosen for this study were from Caloocan, Quezon City, and Manila, representing key areas within the National Capital Region.

2.3 Research Participants

A purposive sampling technique was employed to select the research participants. According to Robinson (2014), purposive sampling involves intentionally selecting participants based on specific criteria aligned with the research objectives. The participants included public elementary teachers, master teachers, and school heads affiliated with the selected Schools Division Offices. Three hundred fifty respondents participated in the study, comprising 295 public school teachers, 30 master teachers, and 25 school heads. This approach ensured that the data collected would accurately reflect the knowledge and experiences of individuals most relevant to the study.

2.4 Research Instrument

The researcher utilized a list of research instruments in data gathering throughout the study. Some items in the survey questionnaire were adapted from DO 60 s. 2016-Implementation of the financial Management Operations Manual and Orientation of DepEd financial Management Staff at the Regional, Division, and School Levels, as well as from the Philippine Professional Standards for School Heads (PPSSH) Domain 2, Managing School Operations and Resources, to align with the themes of this investigation, including self-constructed items. This research instrument was designed to assess the level of competence of school heads in financial management. The second part of the questionnaire consists of questions focusing on the level of implementation of programs, projects, and activities in their schools. The third part addresses the challenges and issues encountered by the respondents during the implementation of these programs, projects, and activities. Lastly, the fourth part explores how the respondents addressed the identified challenges in the implementation process.

The researcher's adviser reviewed the questionnaire, which then underwent content validation by an English expert to correct grammatical errors, a public school district supervisor (PSDS) for organizational review, and three panel members for alignment with the statement of the problem (SOP). The recommendations, suggestions, and inputs from the validators were incorporated into the instrument. The final draft was pilot-tested on at least

fifteen (15) selected samples who were not actual study respondents but shared similar characteristics with the intended respondents. The instrument reflected a Cronbach's Alpha of 0.96, interpreted as having excellent reliability. Following the pilot test, the adviser revised the instrument finally, and the hard copy was prepared for distribution and completion.

2.5 Data Gathering Procedure

Before the distribution and administration of the survey questionnaire, the researcher prepared a letter seeking permission and endorsement from the Regional Director of DepEd National Capital Region to the Schools Division Superintendents of Caloocan, Quezon City, and Manila, as well as to selected public elementary school principals. After obtaining approval from the regional office, the researcher secured letters requesting permission from the respective SDOs and schools to conduct the study. The researcher personally delivered the letters and the necessary attachments, including the survey questionnaire, to the respondents. Clear instructions on how to complete the questionnaire were provided. The researcher also sought assistance from a supervisor and adviser in distributing the questionnaires. The researcher's contact number was made available to address any questions. The data collected from the completed survey questionnaires were organized and categorized. The tallied results were then used to conduct a thorough analysis and interpretation, leading to appropriate findings, conclusions, and recommendations.

2.6 Ethical Considerations

The researcher maintained ethical standards by securing informed consent, ensuring participants' confidentiality, and carefully designing the study to prevent potential harm. Clear communication of the study's purpose and respect for participants' rights, including their right to withdraw at any point, were prioritized. Additionally, the researcher followed all required institutional and legal guidelines, obtained approvals, and adhered to proper protocols. Data integrity was preserved through accurate analysis and honest reporting, ensuring that the conclusions and recommendations were based only on the authentic responses provided by the participants.

3.0 Results and Discussion

3.1 Competence of School Heads in Financial Management

In terms of Planning

Table 1. Descriptive statistics of the assessment on the competence of school heads in financial management in terms of planning

Indicators	Teachers	Master Teachers	School Heads	Mean	Interpretation
1. Set goals and objectives for utilizing the school's resources.	3.82	3.50	3.84	3.72	Highly Competent
2. Formulate the right financial management strategies.	3.81	3.77	3.92	3.82	Highly Competent
3. Set timelines for submitting financial reports.	3.82	3.60	3.84	3.75	Highly Competent
4. Determine the risks and constraints of executing the financial strategies.	3.82	3.47	3.88	3.72	Highly Competent
5. Estimate the costs and expenses of improvement.	3.81	3.53	3.92	3.75	Highly Competent
6. Determines the savings and other resources available.	3.78	3.53	3.84	3.72	Highly Competent
7. Forms policies concerning the inflow and outflow of funds.	3.83	3.43	3.92	3.73	Highly Competent
8. Ensures contingency funds for the programs, projects, and activities.	3.80	3.57	3.88	3.75	Highly Competent
9. Organizes committee for school fund.	3.82	3.57	3.92	3.77	Highly Competent
10. Establishes the roles and responsibilities of personnel in charge of fund disbursement	3.87	3.67	3.96	3.83	Highly Competent
Mean	3.82	3.56	3.89	3.76	
Interpretation	Highly Competent	Highly Competent	Highly Competent	Highly Competent	

Legend: 0.01 – 1.75: Not Competent, 1.76 – 2.50: Slightly Competent, 2.51 – 3.25: Moderately Competent, 3.26 – 4.00: Highly Competent

The findings in Table 1 revealed that based on the responses of the teachers, master teachers, and school heads, establishing the roles and responsibilities of personnel in charge of fund disbursement received the highest combined average weighted mean of 3.83 with a descriptive value of Highly Competent. The data from the same respondents shows that setting goals and objectives in the utilization of the resources of the school, determining

risks and constraints of executing the financial strategies, and determining the savings and other resources available had the lowest combined average weighted mean at 3.72 and considered Highly Competent.

Based on the Philippine Professional Standards for School Heads, it is important to note that school heads set the school's direction, goals, and objectives and ensure that all stakeholders understand and embrace them. They identify and comprehend relevant sources of information, such as existing laws, policies, research, feedback, and contexts, and establish their connections and alignment. They manifest a complete understanding of the school's current and desired states and execute various collaborative strategies with stakeholders to respond appropriately to the school's dynamic and rapidly evolving needs.

In terms of Prioritizing Needs

The findings in Table 2 indicate that, among the indicators, the area of deciding which improvement areas should be prioritized and which can be deferred received the highest combined average weighted mean of 3.89, with a descriptive value of Highly Competent. In contrast, creating strategies and practices for each priority improvement area had the lowest combined average weighted mean of 3.69, although it was still classified as Highly Competent.

Table 2. Descriptive statistics of the assessment on the competence of school heads in financial management in terms of prioritizing needs

Indicators	Teachers	Master Teachers	School Heads	Mean	Interpretation
1. Organize the school-community planning team that will help identify the priority improvement areas	3.92	3.73	3.88	3.84	Highly Competent
2. Call for a meeting with the school-community planning team	3.77	3.80	3.96	3.84	Highly Competent
3. Create a list of priority improvement areas in the school to be supported by the available resources	3.76	3.80	3.88	3.81	Highly Competent
4. Identify the urgent and important needs to be met	3.72	3.63	3.88	3.72	Highly Competent
5. Rank the effort required for each priority improvement area	3.78	3.70	3.92	3.80	Highly Competent
6. Compare all the identified needs	3.79	3.63	3.88	3.77	Highly Competent
7. Create strategies and practices needed for each priority improvement area	3.73	3.37	3.96	3.69	Highly Competent
8. Allocate time requirements for each priority improvement area	3.69	3.60	3.92	3.74	Highly Competent
9. Decide what improvement areas need to be prioritized and what to let slide	3.92	3.80	3.96	3.89	Highly Competent
10. Disseminate the finalized improvement area to be prioritized.	3.71	3.77	3.92	3.80	Highly Competent
Mean	3.77	3.68	3.92	3.79	
Interpretation	Highly Competent	Highly Competent	Highly Competent	Highly Competent	

Legend: 0.01 – 1.75: Not Competent, 1.76 – 2.50: Slightly Competent, 2.51 – 3.25: Moderately Competent, 3.26 – 4.00: Highly Competent

In analyzing these results, prioritizing needs involves evaluating the impact of each improvement area on the overall goal. This approach aligns with Bensla's (2023) study, highlighting urgency, importance, and available resources. Urgency requires identifying which needs demand immediate attention and which can be addressed later. Importance involves determining which needs are crucial for achieving the desired outcomes versus those less critical. Resources pertain to assessing the availability of time, money, personnel, or equipment necessary to address the needs. Considering these factors allows for effective prioritization of improvement areas, deciding which to address first and which to postpone.

In terms of Budgeting Funds

The findings in Table 3 reveal that, among the indicators, forming financial objectives received the highest combined average weighted mean of 3.82, classified as Highly Competent, based on the responses of teachers, master teachers, and school heads. In contrast, revising the budget had the lowest combined average weighted mean of 3.65, though it was still considered Highly Competent.

These results align with Edeneld's (2013) study, Teacher Perception of the Impact of Reduced School Budget, which noted that differences in respondents' perspectives could stem from variations in their orientations and work responsibilities. However, despite these differing viewpoints, there was a consensus among all three groups that school efforts and financial resources should be focused on achieving educational goals.

Table 3. Descriptive statistics of the assessment on the competence of school heads in financial management in terms of budgeting funds

Indicators	Teachers	Master Teachers	School Heads	Mean	Interpretation
1. Schedules budgeting meetings	3.89	3.30	3.92	3.70	Highly Competent
2. Gathers past finances	3.75	3.77	3.92	3.81	Highly Competent
3. Forms financial objectives	3.77	3.80	3.88	3.82	Highly Competent
4. Creates budgeting strategy	3.68	3.50	3.92	3.70	Highly Competent
5. Create a preliminary budget	3.74	3.63	3.92	3.76	Highly Competent
6. Review the preliminary budget	3.73	3.63	3.92	3.76	Highly Competent
7. Find other possible sources of budget	3.73	3.67	3.92	3.77	Highly Competent
8. Revise the budget	3.70	3.57	3.68	3.65	Highly Competent
9. Approves the budget	3.92	3.67	3.80	3.80	Highly Competent
10. Produce a budgetary report	3.70	3.73	3.84	3.76	Highly Competent
Mean Interpretation	3.76 Highly Competent	3.63 Highly Competent	3.87 Highly Competent	3.75 Highly Competent	

In terms of Monitoring

The findings in Table 4 revealed that based on the responses of the teachers, master teachers, and school heads reporting to the SDO, the monitoring results for appropriate technical actions received the highest combined average weighted mean of 3.83 with a descriptive value of Highly Competent. The data from the same respondents shows that setting goals and expectations about why monitoring is needed had the lowest combined average weighted mean at 3.73 and considered Highly Competent.

Table 4. Descriptive statistics of the assessment on the competence of school heads in financial management in terms of monitoring

Indicators	Teachers	Master Teachers	School Heads	Mean	Interpretation
1. Designs an efficient plan for monitoring the school nances	3.89	3.50	3.85	3.75	Highly Competent
2. Create a plan or outline of how monitoring the school nances can be done	3.75	3.83	3.88	3.82	Highly Competent
3. Set goals and expectations about why monitoring is needed	3.66	3.67	3.88	3.73	Highly Competent
4. Decides how to monitor the school nances	3.67	3.67	3.88	3.74	Highly Competent
5. Ensures that there is periodic or timely conduct of monitoring the school finances	3.67	3.67	3.92	3.75	Highly Competent
6. Tracks operational bottlenecks and issues to update and calibrate the response	3.78	3.67	3.88	3.78	Highly Competent
7. Maintains records of monitoring results and integrates them into preparing SIP, OPCRF, and other school projects and programs.	3.79	3.60	3.92	3.77	Highly Competent
8. Evaluate the report to determine whether the nances are properly utilized or not	3.73	3.60	3.88	3.74	Highly Competent
9. Links monitoring results to the organization and individual performance	3.69	3.70	3.92	3.77	Highly Competent
10. Reports to the SDO the monitoring results for appropriate technical support	3.73	3.80	3.96	3.83	Highly Competent
Mean Interpretation	3.73 Highly Competent	3.67 Highly Competent	3.89 Highly Competent	3.76 Highly Competent	

A similar study by Amos et al. (2021) emphasized that regular monitoring and evaluation of financial resources facilitate smooth and proper financial reports prepared for any school. Preparing such statements at least every month would create measures for addressing and resolving the financial challenges beforehand. However, from a general perspective, setting goals and expectations is crucial as it helps to clarify what our desired outcomes are and provides a roadmap to achieve them. Monitoring these goals is essential as it helps us track our progress and identify areas we need to improve. Additionally, monitoring helps us to remain accountable and stay motivated toward achieving our goals. It also helps to establish a sense of discipline, focus, and commitment towards achieving our objectives. In summary, monitoring is important as it helps us make necessary adjustments, stay on track, and succeed in our endeavor.

In terms of Evaluation

The findings in Table 5 show that, based on responses from teachers, master teachers, and school heads, providing decisions and directions on school issues arising from various evaluation activities received the highest combined average weighted mean of 3.83, rated as Highly Competent. Conversely, leading the institutionalization of the school evaluation system had the lowest combined average weighted mean of 3.73, though it was also considered Highly Competent.

Table 5. Descriptive statistics of the assessment on the competence of school heads in financial management in terms of evaluation

Indicators	Teachers	Master Teachers	School Heads	Mean	Interpretation
1. Leads the institutionalization of the school evaluation system	3.82	3.50	3.88	3.73	Highly Competent
2. Identifies the source of evaluation and design an efficient plan	3.77	3.73	3.92	3.81	Highly Competent
3. Provides decisions and directions on school issues and matters arising from various evaluation activities such as school meetings, stakeholders' forums, inter-agency meetings, among others;	3.81	3.77	3.88	3.82	Highly Competent
4. Communicates school concerns to the school division office during meetings, fora, or conferences;	3.78	3.57	3.88	3.74	Highly Competent
5. Oversees the conduct of evaluation activities in the school and ensures that these are according to established standards;	3.79	3.63	3.92	3.78	Highly Competent
6. Engages different stakeholders, such as the members of the School Planning Team and School Governance Council, in the conduct of evaluation activities.	3.67	3.63	3.92	3.74	Highly Competent
7. Conducts Quarterly Program Implementation Reviews in the school to track physical and financial accomplishments and assess the progress of implementation of plans, programs, projects, and activities	3.77	3.57	3.92	3.75	Highly Competent
8. Maintains records of monitoring results and integrates such in the preparation of SIP, OPCRF, and other school projects and programs.	3.76	3.560	3.92	3.76	Highly Competent
9. Prepares school evaluation reports for dissemination to internal and external stakeholders, such as the School Report Card, Transparency Board, and Learning Action Cells.	3.76	3.57	3.92	3.75	Highly Competent
10. Determines additional performance indicators and other adjustments in the school evaluation plan as necessary.	3.77	3.67	3.96	3.80	Highly Competent
Mean	3.77	3.62	3.91	3.76	
Interpretation	Highly Competent	Highly Competent	Highly Competent	Highly Competent	

Amos et al. (2021) emphasize that school heads must be diligent in evaluating the school budget, which is crucial for effective resource management and prioritizing school needs. Proper financial management is vital for the sustainable growth of any organization, aiding in identifying improvement areas, mitigating risks, ensuring compliance, and making informed decisions. Given the results, the institutionalization of a school evaluation system is the lowest among the ten indicators. To address this, schools should implement a systematic and ongoing effort to foster a culture of evaluation and continuous improvement by setting clear standards, training stakeholders, analyzing data, and using it to guide decision-making and communicate results.

Table 6. Summary of the assessment of the competence of school heads in financial management

Area	Teachers	Master Teachers	School Heads	Mean	Interpretation
1. Planning	3.818	3.564	3.892	3.756	Highly Competent
2. Prioritizing Needs	3.779	3.683	3.916	3.790	Highly Competent
3. Budgeting Funds	3.761	3.627	3.872	3.750	Highly Competent
4. Monitoring	3.736	3.671	3.897	3.769	Highly Competent
5. Evaluation	3.770	3.624	3.912	3.768	Highly Competent
Mean	3.773	3.634	3.898	3.767	3.768
Interpretation	Highly Competent	Highly Competent	Highly Competent	Highly Competent	Highly Competent

The One-way ANOVA test was employed to evaluate whether there were significant differences in the assessments of teachers, master teachers, and school heads regarding school heads' competence in financial management across various areas.

For planning, the computed F-value was 76.093, which exceeded the tabular F-value, indicating a significant difference among the groups. The assessments of teachers and school heads were notably higher than those of master teachers, with the former two groups' ratings approaching perfect scores. In contrast, the master teachers' ratings were closer to the cut-off boundary. Regarding prioritizing needs, the computed F-value was 5.2471, below the tabular F-value, suggesting no significant difference among the groups. Although the verbal assessments were consistent across the groups, the numerical values revealed that teachers and school heads rated this area higher than master teachers.

Regarding budgeting funds, the computed F-value was 1.3922, lower than the tabular F-value, indicating no significant difference in assessments among the groups. Teachers and school heads provided notably higher ratings than master teachers, with the former two groups' evaluations nearing perfect scores. For monitoring, the computed F-value was 28.2083, surpassing the tabular F-value, demonstrating a significant difference among the groups. Teachers and school heads had significantly higher assessments than master teachers, with the ratings from the former two groups approaching perfect scores.

In the evaluation area, the computed F-value was 70.4737, which exceeded the tabular F-value, revealing a significant difference among the groups. The data indicated higher assessments from teachers and school heads compared to master teachers, with teachers and school heads' ratings nearing perfect scores. While the verbal assessments were relatively similar across the groups, the numerical data demonstrated variations, with teachers and school heads consistently providing higher ratings than master teachers.

3.2 School Program Implementation

In terms of Identification of Priority Improvement Areas

As shown in Table 7, the overall weighted mean for teacher respondents was 3.754, categorized as Highly Competent. Master teacher respondents had an overall mean of 3.552, also interpreted as Highly Competent. In contrast, school head respondents had a higher overall weighted mean of 3.920 and were rated Highly Competent. This variable's combined overall weighted mean was 3.742, with an interpretation of Highly Competent.

Table 7. Descriptive statistics of the assessment on the level of program implementation in terms of identification of priority improvement areas

Indicators	Teachers	Master Teachers	School Heads	Mean	Interpretation
1. Organizes the school-community planning team	3.79	3.50	3.92	3.74	Fully Implemented
2. Involve all the stakeholders in the school-community planning team	3.81	3.77	3.92	3.83	Fully Implemented
3. Posts the school's vision, mission, and goals	3.76	3.60	3.88	3.75	Fully Implemented
4. Utilizes the root-cause analysis in the identification of priority improvement areas	3.67	3.45	3.92	3.68	Fully Implemented
5. Crafts the three-year school improvement plan	3.78	3.43	3.92	3.71	Fully Implemented
6. Posts the audited financial statement	3.76	3.53	3.88	3.72	Fully Implemented
7. Displays the transparency board	3.67	3.43	3.96	3.69	Fully Implemented
8. Disseminates issuances	3.78	3.57	3.92	3.76	Fully Implemented
9. Conducts focal group discussions or meeting	3.79	3.57	3.96	3.77	Fully Implemented
10. Analyze data from the last three school years to identify the priority improvement areas	3.73	3.67	3.92	3.77	Fully Implemented
Mean	3.75	3.55	3.92	3.74	3.74
Interpretation	Fully Implemented	Fully Implemented	Fully Implemented	Fully Implemented	Fully Implemented

Legend: 0.01 – 1.75: Not Implemented; 1.76 – 2.50: Slightly Implemented; 2.51 – 3.25 Moderately Implemented; 3.26 – 4.00: Fully Implemented

According to DepEd Order No. 44, s. 2015, which outlines the Enhanced School Improvement Planning Process and the School Report Card, identifying priority improvement areas is crucial for school development. This involves conducting a root-cause analysis to uncover the underlying issues affecting the school's performance. The results suggest that school heads should analyze root causes to pinpoint and address the fundamental problems impeding school progress.

In terms of the Involvement of Internal And External Stakeholders

As shown in Table 8, the overall weighted mean of 3.916, reflecting the involvement of internal and external stakeholders, is categorized as Highly Competent, demonstrating effective collaboration and shared responsibility among various school personnel. This finding aligns with the principles outlined in Republic Act 9155, or the Governance of Basic Education Act, which underscores the importance of shared governance in the educational system. The high level of competence observed among respondents indicates that school heads are successfully implementing the principles of shared governance by organizing clear structures and promoting collaborative leadership within their schools.

Table 8. Descriptive statistics of the assessment on the level of program implementation in terms of the involvement of internal and external stakeholders

Indicators	Teachers	Master Teachers	School Heads	Mean	Interpretation
1. Organize a clear structure and work arrangements that promote shared leadership and governance	3.77	3.80	3.88	3.48	Fully Implemented
2. Facilitates communication between and among school, community leaders, and other stakeholders	3.68	3.31	3.96	3.55	Fully Implemented
3. Involve the stakeholders in decision-making	3.74	3.63	3.88	3.75	Fully Implemented
4. Formulate the methods and materials for developing creative thinking and problem-solving through a representative group of school and community stakeholders	3.77	3.57	3.88	3.76	Fully Implemented
5. Conduct regular meetings among stakeholders	3.77	3.57	3.92	3.75	Fully Implemented
6. Denes the roles and responsibilities of the stakeholders	3.68	3.57	3.88	3.71	Fully Implemented
7. Organizes sub-groups among stakeholders	3.67	3.73	3.96	3.79	Fully Implemented
8. Involve the stakeholders in solving school-community-wide learning problems	3.78	3.37	3.92	3.69	Fully Implemented
9. Utilizes different media platforms to involve various stakeholders	3.79	3.60	3.96	3.78	Fully Implemented
10. Shows commitment and support to the school	3.75	3.73	3.92	3.80	Fully Implemented
Mean	3.74	3.56	3.92	3.92	3.78
Interpretation	Fully Implemented	Fully Implemented	Fully Implemented	Fully Implemented	Fully Implemented

The study's results suggest that effective communication, role clarity, and shared decision-making are prioritized, as evidenced by the high ratings from teachers, master teachers, and school heads. This aligns with the study's objectives of assessing the competence of school heads in fostering an environment where all internal and external stakeholders are actively involved in school governance. By assigning tasks based on individual strengths and ensuring transparency and accountability in decision-making processes, school heads adhere to the governance principles critical for school improvement and performance. These findings highlight the importance of shared governance in achieving educational goals and suggest that the strategies implemented by school heads effectively promote a collaborative and accountable school environment.

In terms of Allocation and Utilization of Funds

As shown in Table 9, the overall weighted mean of the three groups of respondents regarding allocating and utilizing funds is 3.752, thereby categorized as Highly Competent. The findings that the allocation and utilization of funds by school heads, as assessed by teachers, master teachers, and school heads, are fully implemented with high competence align with studies emphasizing the critical role of effective financial management in schools.

As Ramirez and Amponin (2019) noted, the efficient allocation of funds in public schools is essential for providing quality education and fostering student success. The judicious use of financial resources is essential for the successful implementation of educational programs, projects, and activities. This efficient management of funds ensures that schools can achieve their objectives while maintaining accountability and transparency within the institution.

Table 9. Descriptive statistics of the assessment on the level of program implementation in terms of allocation and utilization of funds

Indicators	Teachers	Master Teachers	School Heads	Mean	Interpretation
1. Conducts collaborative and regular resource inventory as a basis for fund allocation mobilization	3.77	3.80	3.92	3.83	Fully Implemented
2. Holds a regular dialogue for planning and resource programming that is accessible and inclusive to stakeholders	3.81	3.63	3.92	3.79	Fully Implemented
3. Establishes a community-developed monetary resource management system that dries appropriate behaviors of the stakeholders to ensure judicious, appropriate, and effective use of funds	3.78	3.70	3.92	3.80	Fully Implemented
4. Allocates sufficient funds for intended programs, projects, and activities	3.81	3.53	3.76	3.70	Fully Implemented
5. Organize and present a yearly audited financial statement of stakeholders	3.66	3.43	3.76	3.62	Fully Implemented
6. Prepares a yearly budget for programs, projects, and activities	3.77	3.57	3.88	3.74	Fully Implemented
7. Posts updated financial statements on the transparency board	3.76	3.50	3.88	3.71	Fully Implemented
8. Designates personnel in charge of fund disbursement	3.76	3.63	3.92	3.76	Fully Implemented
9. Organizes committee for school fund	3.82	3.63	3.88	3.78	Fully Implemented
10. Has a check and balance mechanism in terms of allocation and utilization of funds	3.78	3.67	3.92	3.79	Fully Implemented
Mean	3.77	3.63	3.87	3.75	3.75
Interpretation	Fully Implemented	Fully Implemented	Fully Implemented	Fully Implemented	Fully Implemented

3.3 Financial Issues and Challenges Encountered in Program Implementation

The collected data were analyzed using frequency and rank to determine whether the three respondent groups encountered the mentioned issues (see Table 10).

Table 10. Descriptive statistics of the financial issues and challenges encountered in program implementation

Issues and Challenges	Teachers		Master Teachers		School Heads	
	Frequency	Rank	Frequency	Rank	Frequency	Rank
1. Emergency expenditures caused by unforeseen circumstances	35	4	1	9.5	6	1
2. Underestimation/ over-estimation of budgeted expenses	21	9	2	7	3	3.5
3. Communication gaps in budget utilization	26	7	4	3	3	3.5
4. Failure to identify priority projects or activities	25	8	2	7	2	7
5. Lack of transparency in reports	37	1	2	7	2	7
6. Budget insufficiency	36	2.5	5	2	3	3.5
7. Time-consuming preparation of the budget plan	19	10	1	9.5	1	9
8. Inconsistent cash flow issues	32	5	7	1	0	10
9. Delayed downloading of MOOE funds	28	6	3	4.5	3	3.5
10. Poor preparation of documentary requirements for financial reporting	36	2.5	3	4.5	2	7

The findings showed that 37 teacher respondents identified issue 5 (lack of transparency in reports) as the most pressing concern. Issue number 6 (budget insufficiency) and poor preparation of financial reporting documents were highlighted by 36 respondents, placing them in the same 2.5 rank. Emergency expenditures due to unforeseen circumstances ranked 4th with 35 responses, followed by inconsistent cash flow issues, which ranked 5th with 32 teachers. The delayed downloading of MOOE funds ranked 6th with 28 responses, and communication gaps in budget utilization ranked 7th with 26 responses. The failure to identify priority projects or activities ranked 8th with 25 responses, while underestimation/overestimation of budgeted expenses ranked 9th with 21 responses. The least pressing issue was the time-consuming budget plan preparation, cited by 19 teachers.

Among the 30 master teachers, the most significant issue was inconsistent cash flow, as reported by 7 respondents. Budget insufficiency ranked 2nd with 5 responses, while communication gaps in budget utilization ranked 3rd with 4 responses. The delayed downloading of MOOE funds and poor preparation of financial reporting documents shared the 4.5 rank, with 3 responses each. Several issues, including under/overestimation of budget expenses, failure to identify priority projects, and lack of transparency in reports, all ranked 7th with 2 responses each. The least pressing concerns, ranked 9.5, were emergency expenditures and the time-consuming budget preparation, each with 1 response.

For the 25 school heads, emergency expenditures ranked 1st with 6 responses. Several issues, including under/overestimation of budget expenses, communication gaps, time-consuming budget preparation, delayed downloading of MOOE funds, and budget insufficiency, tied for 3.5 rank with 3 responses each. The failure to identify priority projects, lack of transparency, and poor preparation of financial reports ranked 7th with 2 responses each. Inconsistent cash flow was the least concerning, with no responses from the school heads. To address financial management challenges, Chrisantous (2013) identified school fund shortages as a major concern, recommending capacity-building programs, in-service training, workshops, and seminars to enhance school heads' financial management skills.

3.4 Solutions to Financial Issues and Challenges Encountered in Program Implementation

The findings of the different ways to address the financial issues and challenges reveal that budgeting and budget planning is a collaborative effort between all members of the school which requires the active movement of everyone concerned to have a clear understanding of their needs. Therefore, a school's financial management is crucial to address the identified issues and challenges. These findings are similar to the findings obtained by Leigh (2019) in his study Managing School nance in Times of Budgetary Pressures and Uncertainty wherein he mentioned that managing school funds should be one of the priorities of a school leader and that mismanagement of school funds may lead to pressure and challenges.

Table 11. Solutions to identified financial issues and challenges encountered in program implementation

Indicators	Teachers	Master Teachers	School Heads	Verbal Interpretation
1. Has alternative budgeting contingency plans just in case an unfavorable financial-related problem arises	3.30	3.59	3.45	Very Effective
2. Keep budgeting and its allocation flexible to avoid instances of under-estimation and over-estimation when it comes to budgeting	3.08	3.12	3.03	Very Effective
3. Keeps an open line of communication with all departments to help minimize financial issues and ensure alignment between the school's operational and organizational strategies in addressing financial-related concerns	3.02	3.20	3.12	Very Effective
4. Conduct a need assessment to identify the budget priorities, which will be a great help in budget planning and utilization	3.02	3.04	3.11	Very Effective
5. Prepare a comprehensive and updated transparency board to visually represent the program implementation procedures, projects, and activities.	3.07	3.12	3.15	Very Effective
6. Maintains a clear priority-based evaluation framework as it helps in establishing concrete targets and priorities	3.21	3.08	3.21	Very Effective
7. Considers the amount of time being consumed in the development of the budget plan and promotes collaboration in preparing the documentary requirements	3.10	3.15	3.13	Very Effective
8. Keeps updated rolling forecasts and budgets based on the present results	3.10	3.12	3.09	Very Effective
9. Organize a flexible MOOE budget plan that will address various financial scenarios that may arise	3.04	3.11	3.21	Very Effective
10. Develop a clear understanding of what drives the budget plan so that the document for financial reporting is organized.	3.08	3.12	3.15	Very Effective

Legend: 0.01 – 1.75: Not Effective; 1.76 – 2.50: Slightly Effective; 2.51 – 3.25 Effective; 3.26 – 4.00: Very Effective

4.0 Conclusion

School leaders are responsible for managing financial resources effectively and efficiently. Budgeting skills and knowledge are essential to ensure effective allocation of funds based on assessed needs. To develop good budgeting skills, the first step is to understand the context and purpose of your budget. School heads should schedule budgeting meetings, gather past nances, form financial objectives, create budgeting strategies, create a preliminary budget, and review it. Then, look for other possible budget sources. Revise it if needed and approve it. Lastly, produce a budgetary report. As stated in the National Adoption and Implementation of the Professional Standards for School Heads, the school heads are expected to reflect on and assess their practice. Part of their role is to consistently display an in-depth knowledge and understanding of the authority, responsibility, and accountability expected of them. In the results presented, the most critical concern faced by public school heads is budget insufficiency. Therefore, it is recommended that the computation and calculation of MOOE components for allocation to each school be revised. One of the disadvantages of schools under the small school category is that their MOOE is not as competitive as other schools' progress and development at times left behind by big schools.

5.0 Contributions of Authors

The author contributed to the research through conceptualization, study design, data collection, and analysis. The author wrote and edited the manuscript, ensuring clarity and coherence. To uphold methodological rigor, the author consistently monitored the research process. Additionally, the author proposed policy recommendations based on the findings, aiming to enhance the competence of school heads in financial management.

6.0 Funding

This work received no specific grant from any funding agency.

7.0 Conflict of Interests

The author declares no conflicts of interest about the publication of this paper.

8.0 Acknowledgment

The researcher expresses profound gratitude to the Almighty God for the wisdom and strength bestowed, which were essential for completing this work. Appreciation is extended to Mayor Dale Malapitan, Chairman of the Board of Regents, for providing programs that support professionals in navigating challenges, new trends, and changes within their fields. The researcher acknowledges Dr. Melchor S. Julianes, Dean of the Graduate School, for his encouragement, suggestions, recommendations, and study approval. Special thanks are given to Dr. Soa D. Tumaming, the researcher's adviser, for her critical evaluation, insights, and recommendations that significantly contributed to redefining this work and her patience and sincere concern in reviewing the paper. The researcher also expresses sincere appreciation to the Panel of Examiners, including Dr. Melchor S. Julianes, Dr. Rodrigo M. Dantay Jr., Dr. Peter Young Jr., and Dr. Severino Jocson, for their expertise, which enriched the contents of the study. Gratitude is extended to the school principals in Caloocan, Quezon City, and Manila for permitting the research to be conducted in their schools and to the researcher's superiors for their support and trust, which were crucial to the study's success. Lastly, heartfelt thanks go to the researcher's husband, Joseph Jerico R. De Guzman, for his unwavering love, encouragement, assistance, inspiration, and moral support; to the researcher's children, Amber Jerrize J. De Guzman and Calix Hunter J. De Guzman, who always inspire the researcher to be the best mother; and to the researcher's parents, Mary Anne Q. Juane and Cesar L. Juane, and family for their continuous support and encouragement throughout the development of this paper, despite the challenges encountered along the way.

9.0 References

- Amos, O., Ephrahem, G., & Bhoke-Africanus, A. (2021). Effectiveness of school heads' financial management skills in provision of quality education in secondary school. *Journal of Education, Society and Behavioural Science*, 34(2), 20–28. <https://doi.org/10.9734/jesbs/2021/v34i230302>
- Bensla, A. (2023). The Ultimate Guide to Prioritization Principles: 5 Ways of Sorting Out What Matters Most. Retrieved from <https://bit.ly/3XJ35HA>
- Edeneld, B. (2023). Teacher Perceptions of the Impact of Reduced School Budgets on Their Ability to Meet Instructional Needs of Their Students (Dissertation). Georgia Southern University
- Espinosa, F. (2018). Financial Management Practices Of School Heads: Teachers' Perspectives. *Skyline Business Journal*, 3(1), 33–44. <https://bit.ly/4ehJc1g>
- Hassan M. (2024). Descriptive Research Design – Types, Methods, and Examples. Retrieved from <https://bit.ly/3zxw2Oj>
- Leigh, P. (2016). Managing School nance in Times of Budgetary Pressures and Uncertainty. Retrieved from <https://bit.ly/3XXxvXV>
- Macadatar A. (2020). Six leadership qualities to improve school management. Retrieved from <https://bit.ly/3ZFbGxv>
- Noor, S., Tajik, O., & Golzar, J. (2022). Simple Random Sampling. *International Journal of Education & Language Studies*, 1(2), 78–82. <https://doi.org/10.22034/ijels.2022.162982>
- Ramirez, M. E., & Amponin, M. L. (2019). Compliance of Public Elementary School on the financial Management Role in the School-Based Management in Taal District, Division of Batangas. *Ascendens Asia Journal of Multidisciplinary Research Abstracts*, 3(2), 1. <https://bit.ly/4gH19Sdo>
- Robinson, R.S. (2014). Purposive Sampling. In: Michalos, A.C. (eds) *Encyclopedia of Quality of Life and Well-Being Research*. Springer
- Wango, G. (2011). *School Finance Management: Fiscal Management to Enhance Governance and Accountability*. The Jomo Kenyatta Foundation

Student's Attitude and Semantic Knowledge Towards Learning Geometry: Basis for Learning Plan

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Date received: August 12, 2024

Date revised: September 17, 2024

Date accepted: September 29, 2024

Originality: 93%

Grammarly Score: 99%

Similarity: 7%

Recommended citation:

Gimotea, L.A. (2024). Student's attitude and semantic knowledge towards learning geometry: basis for learning plan. *Journal of Interdisciplinary Perspectives*, 2(11), 122-131. <https://doi.org/10.69569/jip.2024.0408>

Abstract. This research paper analyzes the difference and relationship between attitude and mathematical semantic knowledge of Grade Seven students, as a whole, and according to the profiles, namely, sex, educational attainment of the parents, family monthly income, and gadgets used for learning. The respondents of this study were restricted to seventh-grade students enrolled during the school year 2022-2023 and were selected using a random sampling technique. The study concentrates on the least mastered skills presented in the Most Essential Learning Competency of K-12 Curriculum to assess the learning gap in Geometry, where most studies need to consider a plan that could help educators teach their lessons to the varying needs and interests of the students. The data in this research were obtained using the researcher-made questionnaire that had been validated by the experts and had undergone a reliability test. The result of the study shows that female students have more positive attitudes in learning Geometry than their male counterparts. Other profiles in the study did not affect students' attitudes toward learning Geometry. Regarding mathematical semantic knowledge, it was found that all profiles did not affect the student's performance in the geometry assessment. Moreover, students must meet the required standards in understanding and performance, requiring effective learning plans and immediate interventions to address academic gaps. The result also revealed that males performed slightly higher than females in the Geometry assessment. The Grade Seven students' attitudes significantly affect their Mathematical Semantic Knowledge only slightly. It further shows that as they become more positive towards Mathematics, their Mathematical Semantic Knowledge is more likely to increase moderately.

Keywords: Attitudes; Geometry; Semantic knowledge; Students; Learning plan.

1.0 Introduction

In the 21st Century, the importance of tailored lesson plans and instructional methodologies in facilitating effective mathematics learning for all students cannot be overstated (Sumalinog, 2020). Other studies must consider and recommend ways for teachers to improve their teaching strategies. Mathematics proficiency is a benchmark for students' ability to make informed decisions and judgments, crucial for their engagement as productive citizens in society, as evidenced by the Philippine Program for International Student Assessment (PISA).

However, the Philippines faced a sobering reality in the 2019 PISA assessment, ranking second-to-last among 64 participating countries due to its low level of mathematical literacy (OECD Data, 2020). This deficiency encompasses critical problem-solving skills such as mathematical reasoning, modeling, and symbol interpretation. Despite the increasing awareness and efforts in recent years, there remains a pressing need to elevate the standards

of mathematics education and student achievement to align with global benchmarks such as PISA. Recognizing the significance of geometric symbols and their conceptual understanding, the researcher advocates for a deeper exploration of this domain, building upon prior research findings. Central to this endeavor is understanding students' attitudes towards mathematics and its correlation with their semantic understanding—an inquiry pivotal for effective pedagogical strategies.

This study assesses the level of attitudes and mathematical semantic knowledge of Grade 7 students at Bug-ang National High School. By unraveling students' perceptions and competencies, educators can tailor instruction through learning plans to suit their needs, fostering an environment conducive to mathematical learning. Through this exploration, the researcher aims to unveil potential correlations between students' attitudes and semantic understanding, paving the way for targeted interventions and curriculum enhancements.

2.0 Methodology

2.1 Research Design

The research design used in this study was descriptive-correlational. A descriptive-correlational research design explains the association between two or more variables. It includes collecting and analyzing data on at least two variables to see if a connection is emerging between variables (Baht, 2024). This design was used in this study since it aimed to determine the level of attitude towards learning Geometry and the level of mathematical semantic knowledge, the significant differences among variables, and the significant relationship between Attitude towards learning Geometry and Semantic Knowledge.

2.2 Research Participants

The study's respondents were the Grade Seven students in the District of Toboso and Division of Negros Occidental, participated in the study, both male and female, were enrolled and were taking Mathematics subject during S.Y. 2022-2023. The school offers regular classes and is considered a large school accommodating many populations. Eighty-three (83) male and eighty-five (85) female Grade Seven students who were formally enrolled during the School Year 2022-2023 made up the total of one hundred sixty-eight (168) respondents in the study. The random sampling technique was applied to the data.

2.3 Research Instrument

The researcher utilized the researcher-made mathematical attitude survey and a test compiled from the Department of Education-Region VI's standard Self-Learning Modules and Learning Activity Sheets. The research instrument elicited the participants' responses required to obtain potential solutions to the study's problems. The test created by the researcher was a questionnaire containing mathematical signs and symbols to be matched with their respective names, as well as situations about students' attitudes towards mathematics.

The questionnaire has three sections. The Personal Data Sheet, Part 1, was created to gather information about the participant's profile. This included their optional name, sex, parent's/guardian's highest educational attainment, parent's/guardian's monthly income, and devices readily available from them. Part 2 is a survey of mathematical attitudes crafted by the researcher to concentrate primarily on Geometry and include situations relating to a student's possible attitudes toward mathematics. A study of mathematical attitudes is not a test. This survey merely seeks to determine how students feel about learning Geometry. There are twenty attitudes regarding mathematics. Each statement has four alternatives. Part 3 is a 30-item test containing the semantic knowledge of the signs and symbols in Geometry. The mathematical signs and symbols included in the items covered the lessons of Grade 7 taken from the standardized Self-Learning Modules and Learning Activity Sheets of the Department of Education- Region 6. The participants must write a letter containing the correct answer to the question. Experts validated the researcher-made questionnaire used in this study and has undergone a reliability test.

2.4 Data Gathering Procedure

The researcher secured a letter to the school principal asking for permission to survey Grade Seven students. Upon receiving permission, the researcher went to the respective rooms of the chosen participants and distributed enough questionnaires to the study participants following strict safety protocols- strict observance of the wearing of masks and 2 meters of physical distancing away from each student as set by the Department of Health. After all the participants received the questionnaires, a short orientation was conducted. The participants were

instructed to either write their names or not, as it is optional, and to check the space provided for their sex, that is, male or female, likewise to the parent's/guardian's highest educational attainment, the monthly salary, and the gadgets available at their respective homes. During the questionnaire administration, the researcher monitors the participants and answers all their queries related to the research instrument, following strict observance of the safety protocols set by the Department of Health. The participants are given ample time to answer the questionnaire, and after that, the questionnaires are collected for data analysis.

2.5 Data Analysis

The researcher processed the data using the following descriptive and inferential statistics. The profile of Grade 7 students, when grouped in terms of sex, parent's highest education attainment, family monthly income, and gadgets used for learning, were assessed using frequency, mean, and standard deviation. The student attitude towards Geometry, when taken as a whole and grouped by profile in terms of sex, parent's highest education attainment, family monthly income, and gadgets used for learning were assessed using mean and standard deviation. The level of mathematical semantic knowledge, taken as a whole and when grouped in terms of sex, parent's highest education attainment, family monthly income, and gadgets used for learning, was assessed using mean and standard deviation. The researcher used the scale based on the DepEd Grading System. The significant difference between the attitudes of Grade Seven students towards geometry when grouped in terms of their profile characteristics was assessed using the T-T-test for sex and ANOVA for other profile characteristics. A T-test was used to determine whether there is a significant difference in students' mathematical semantic knowledge when grouped by sex, and ANOVA was used for other profile characteristics. The significant relationship between the attitude of Grade Seven students and their mathematical semantic knowledge was assessed using Pearson R Correlation.

2.6 Ethical Considerations

All respondents in this study were granted the right to privacy, and the researcher kept any information gathered strictly confidential.

3.0 Results and Discussion

3.1 Profile of the Respondents

Table 1 displays the distribution of the respondents' profiles based on the variables presented.

Table 1. Descriptive statistics of the profile of the respondents

Variables	Frequency	Percentage
Sex		
Male	83	49.4
Female	85	50.6
Parents' Educational Attainment		
No Formal Schooling	3	1.8
No formal schooling but able to read and write	5	3
Elementary Level	29	17.3
Elementary Graduate	37	22
High School Level	47	28
High School Graduate	34	20.2
After High School	13	7.7
Parents' Monthly Income		
below 5000	92	54.8
5000-10000	50	29.8
11000-15000	11	6.5
16000-20000	6	3.6
21000 above	9	5.4
Gadgets Used for Learning		
Cable TV	17	10.1
Non-Cable TV	19	11.3
Basic Cellphone	24	14.3
Smart Phone	16	9.5
Tablet	22	13.1
Radio	29	17.3
Desktop Computer	20	11.9
Laptop	21	12.5
Total	168	100

Most respondents were female, with 85 frequency count, and 83 were male students. 29 of the 168 respondents' parents had an elementary-level education, the lowest level available. It was apparent that 37 had completed elementary school, and 34 had completed high school. Also, 13 of the parents were either college or technical vocational graduates. It is also noted that three individuals and 5 participants did not attend formal schooling but could read and write. Regarding parents' monthly income, out of 168, 92 respondents were below 5000, while 50 were in the bracket of 5,000 – 10,000. Also, 11 were in the bracket of 11,000-15,000, 6 were in 16,000-20,000, and 9 were in the bracket of 21,000 and above. Regarding gadgets used for learning, of the 168 respondents, 17 have used cable T.V. for learning, 19 used non-cable T.V., and 24 used basic cell phones. On the other hand, 14 were using smartphones, 22 were using tablets, 29 were still using radio, and 20 of them were using desktop computers, while 21 of them were using laptops.

3.2 Student's Attitude towards Geometry

Table 2 demonstrates the degree of student attitude toward geometry when viewed as a whole and grouped by sex, the parents' highest educational attainment, the family's monthly income, and the use of learning aids. When taken as a whole, the respondents obtained a mean of 3.35 with an SD of 0.58, described as a Neutral level.

Variables	Mean	SD	Description
Sex			
Male	3.18	0.66	Neutral
Female	3.41	0.59	Positive
Total	3.35	0.58	Neutral
Parents' Educational Attainment			
No Formal Schooling	3.00	0.00	Neutral
No formal schooling but able to read and write	3.20	0.45	Neutral
Elementary Level	3.48	0.51	Positive
Elementary Graduate	3.46	0.51	Positive
High School Level	3.19	0.65	Neutral
High School Graduate	3.35	0.60	Neutral
After High School	3.38	0.65	Neutral
Total	3.35	0.58	Neutral
Parents' Monthly Income			
below 5000	3.33	0.58	Neutral
5000-10000	3.48	0.61	Positive
11000-15000	3.00	0.45	Neutral
16000-20000	3.17	0.41	Neutral
21000 above	3.33	0.50	Neutral
Total	3.35	0.58	Neutral
Gadgets Used for Learning			
Cable TV	3.35	0.61	Neutral
Non-Cable TV	3.37	0.50	Neutral
Basic Cellphone	3.25	0.74	Neutral
Smart Phone	3.38	0.50	Neutral
Tablet	3.45	0.51	Positive
Radio	3.41	0.63	Positive
Desktop Computer	3.25	0.64	Neutral
Laptop	3.29	0.46	Neutral
Total	3.35	0.58	Neutral

Note: 4.21-5.00 Highly Positive, 3.41-4.20 Positive, 2.61-3.40 Neutral, 1.81-2.60 Negative, 1.00-1.80 Highly Negative

When the respondents were grouped according to sex, females obtained a mean of 3.41 with a standard deviation of 0.59, described as a positive level, higher than men, who only obtained a mean of 3.18 with a standard deviation of 0.66, described as neutral. When grouped according to Parent's Educational Attainment, the elementary level graduated with the highest Mean score of 3.48 with an SD of 0.51. It was acknowledged for their positive attitude towards the subject. High school level was of neutral level (mean = 3.19, SD = 0.72), and high school graduates with mean scores of 3.35 and an SD of 0.60. When grouped according to the parent's monthly income bracket, 5,000 – 10,000 obtained the highest mean of 3.48 and had the only positive attitude. The rest were neutral, followed by below 5,000 and 21,000 and above with a mean of 3.33, 16,000 – 20,000 with a mean of 3.17, and the least obtained mean was the 11,000 – 5,000 bracket. When grouped according to gadgets used for learning, the use of a tablet came in first with a Mean score of 3.45 and an SD of 0.51, then the use of a radio with a Mean score of 3.41

and an SD of 0.63, which both were described as positive and the rest were neutral. It was followed using a smartphone with a Mean score of 3.38 and an SD of 0.50, non-cable T.V. (Mean = 3.37) then cable T.V. (Mean = 3.35), laptop (Mean = 3.29) and the least obtained mean score of basic cellphone and desktop computer (Mean = 3.25)

It implies that the Grade 7 students of Bug-ang National High School have a neutral attitude towards Geometry when taken as a whole. It further shows that students exhibit a neutral attitude towards Mathematics, with varying engagement levels that may benefit from occasional encouragement. When grouped according to sex, female students are more positive towards the subject than males. In other words, female students generally have a positive attitude towards mathematics, demonstrating interest in and practical application of concepts compared to their male counterparts. Also, when grouped according to parents' Educational Attainment, students with parents who were elementary school graduates have the most positive attitude toward Geometry. Still, those with no formal schooling and high school graduate ranges find it neutral. Thus, those learners with parents who were elementary school graduates generally have a positive attitude towards Mathematics, demonstrating interest and practical application of concepts than other groups in which they only exhibit a neutral attitude towards Mathematics, with varying engagement levels that may benefit from occasional encouragement.

When grouped according to parents' Monthly Income, students with Parents earning 5,000 – 10,000 per month have the most positive attitude, but those with other income brackets above find the subject neutral. Thus, those students with parents earning 5,000 – 10,000 per month demonstrate more interest and effective application of concepts than those with other income brackets in which they have varying engagement levels working only with occasional encouragement. When grouped according to gadgets used for learning, those with tablets and radio found the subject positive, and the rest were neutral, smartphone, non-cable T.V., cable T.V., laptop, basic cellphone, and basic computer. Thus, those with tablets and radio demonstrate more interest and effective application of concepts than other groups. This means that students with access to technology are more driven and eager to learn and study because of the wide range of knowledge available.

The results of this study were in concordance with the following research. When taken as a whole, the results were the same as Kroeun's (2023). This revealed that secondary Lower Students have a positive attitude towards Mathematics. Also, the variable sex results in concord with Anggoro (2020). He asserts that male students often do not love mathematics despite data demonstrating that male students perform at the highest levels and have excellent mathematical IQs. They viewed it as a complex and dull subject. About Parent Educational Attainment, the study by Lara (2019) states that because parental academic status is strongly related to how most pupils learn, failure in school mathematics is partially linked to parental interference with students' learning.

Additionally, according to Novriani (2020), children's ability to solve problems and respond to mathematical concepts is influenced by how their parents treat them at home. The assistance students need to comprehend concepts, connections between ideas, and connections between concepts and other topics influence how well they respond to their schooling. In this instance, the family's financial position directly affects parental attitudes toward encouraging learning; poor facilitating skills, on the other hand, are comparable to families with poor monthly incomes (Abel, 2019). This is done to ensure that students may learn to the best of their ability, even when doing so at home and without the aid of a teacher or a school (Dutton & Mohapatra, 2020).

The study results concurred with the following when grouped according to Gadgets used at home. Changing from the traditional classroom atmosphere to the home learning environment presents another challenge for students. Students who do not have access to a private physical study space online may become distracted by noise and other factors (Eviyanti & Surya, 2019). Additionally, pedagogical changes were implemented. Students must learn certain portions of the course material on their own. Due to the student's ability to understand and study the modules during asynchronous sessions, online learners experience difficulties. These challenges have been shown to make effective adoption of online learning challenging. These factors have a considerable impact on the students' perceptions of their capacity to study mathematics online, according to Beckman et al. (2019). The results affect how students react to math-related tasks and activities in the classroom. Their responses on learning mathematics indicated that keeping students on task and having them complete their tasks were the most

challenging aspects of teaching. Schools and teachers must also have clear guidelines and make sure that parental involvement is fostered if they are to encourage learning.

3.3 Student's Mathematical Semantic Knowledge

Table 3 explains the breadth of mathematics semantic knowledge when viewed collectively and grouped according to sex, parent's highest level of education, family monthly income, and learning aids used. When taken as a whole, the Grade 7 students' semantic knowledge is of Did Not Meet Expectations, with a mean of 29.76 (SD = 3.27). When grouped according to sex, males scored higher on mathematics semantic knowledge, as evidenced by their mean score of 30.08 with an SD of 3.08, than females, who had an average mean score of 29.45 with an SD of 3.27. When grouped according to Parent's Educational Attainment, all the students obtained a Did Not Meet Expectations rating. The highest obtained mean was 31.47 from high school graduates, but it was only slightly higher than the rest. It was followed by Elementary Graduate (Mean = 30.72), High School Level (Mean = 29.93), After High School (Mean = 28.97), Elementary Level (Mean = 28.16), No Formal Schooling (Mean = 25.56) and the lowest obtained mean of 23.33 was from No Formal Schooling but able to read and write.

Table 3. Descriptive statistics of the level of mathematical semantic knowledge

Variables	Mean	SD	Description
Sex			
Male	30.08	3.28	Did Not Meet Expectations
Female	29.45	3.27	Did Not Meet Expectations
Total	29.76	3.27	Did Not Meet Expectations
Parents' Educational Attainment			
No Formal Schooling	25.56	3.21	Did Not Meet Expectations
No formal schooling but able to read and write	23.33	4.53	Did Not Meet Expectations
Elementary Level	28.16	2.16	Did Not Meet Expectations
Elementary Graduate	30.72	2.93	Did Not Meet Expectations
High School Level	29.93	3.31	Did Not Meet Expectations
High School Graduate	31.47	3.78	Did Not Meet Expectations
After High School	28.97	4.27	Did Not Meet Expectations
Total	29.76	3.27	Did Not Meet Expectations
Parents' Monthly Income			
below 5000	28.95	2.73	Did Not Meet Expectations
5000-10000	30.67	3.73	Did Not Meet Expectations
11000-15000	29.09	3.77	Did Not Meet Expectations
16000-20000	25.56	5.28	Did Not Meet Expectations
21000 above	36.67	3.20	Did Not Meet Expectations
Total	29.76	3.27	Did Not Meet Expectations
Gadgets Used for Learning			
Cable TV	30.39	4.15	Did Not Meet Expectations
Non-Cable TV	30.35	2.75	Did Not Meet Expectations
Basic Cellphone	30.00	3.69	Did Not Meet Expectations
Smart Phone	30.83	2.49	Did Not Meet Expectations
Tablet	30.61	2.65	Did Not Meet Expectations
Radio	29.77	3.20	Do Not Meet Expectations
Desktop Computer	27.50	3.61	Did Not Meet Expectations
Laptop	28.89	3.65	Did Not Meet Expectations
Total	29.76	3.27	Did Not Meet Expectations

Note: 90 – 100 Outstandin, 85 – 89 Very Satisfactory, 80 – 84 Satisfactory, 75 – 79 Fairly Satisfactory, Below 75 Did Not Meet Expectations

When grouped according to Parent's Monthly Income, all students only reached the Did Not Meet Expectations rating. Moreover, Students with 21,000 above-income parents obtained the highest mean of 36.67, followed by 5,000 – 10,000 with a mean of 30.67, 11,000 – 15,000 with a mean of 29.09, below 5,000 with a mean of 28.95 and 16,000 – 20,000 obtained the lowest mean of 25.56. When grouped according to the Gadgets used at home, all students also obtained a Did Not Meet Expectations rating. The highest obtained mean was from Smart Phone (Mean = 30.83, followed by Table (Mean = 30.61), then Cable T.V. (Mean = 30.39), Non-cable TV (Mean = 30.35), Basic phones (Mean = 30.00), Radio (Mean = 29.77, Laptop (Mean = 28.89) and the least Desktop Computer (Mean = 27.50).

This implies that Grade 7 Students of Bug-ang National High School have a Did Not Meet Expectations academic performance rating in Geometry assessment in all profiles presented as a whole and in groups. Thus, the students

fall short of required standards and have significant challenges in understanding and performance, requiring immediate interventions to address academic gaps effectively. They struggle consistently with grasping essential concepts and completing tasks proficiently. The following research supported the results of this study. A study revealed that a large percentage of male students had a positive self-concept and, therefore, performed better in Mathematics than females. (Bong & Skaalvik, 2018).

Cohen's research (2021) negated the results of parents' educational attainment. It amplifies that parents with high educational attainment are more likely to help their children in Mathematics and thus increase their academic performance. However, those with lower educational attainment are more likely to neglect whatever performance their children will reach in Math, thus not helping them. This determines their academic performance in Mathematics (Pajares & Miler, 2019). Also, when the data were grouped according to Parent's Monthly Income, the results of Pajares & Miller (2019) were in support. While online learning adds additional financial strain for the family due to the connection to the internet and increased electricity use, distant learning reduces the family's spending priority in terms of the child's daily budget. The family's ability to spend money can help or hurt pupils' participation in learning activities and performance challenges (Cohen & Kupferschmidt, 2020).

Ginting and Surya (2019) supported this when grouped according to Gadgets at home. Their study examined the face-to-face learning environment, where students can ask teachers or their peers for instant learning interventions. Students faced difficulties abruptly switching from in-person instruction to online learning environments. Access to laptops, smartphones, televisions, the Internet, and physical learning spaces, wherein transitioning to an online learning environment requires a strong habit of learner autonomy. Device ownership is a recurring barrier to the successful deployment of online learning because of the digital divide (Eviyanti & Surya, 2019).

3.4 Difference in the Attitude of Grade Seven Students towards Geometry when Grouped According to Profile Characteristics

Table 4 shows the significant difference in the level of attitude of Grade 7 Seven students towards geometry when grouped in terms of their profile characteristics. The results showed a significant difference in the student's attitude level when grouped according to sex, with a t-value of 2.668 and a p-value of 0.008. However, there is no significant difference among parents' Educational Attainment, with a t-value of 7.300 and a p-value of 0.294, among those with different Monthly income Parents with an f-value of 6.950 and a p-value of 0.139. Also, those with different gadgets used for learning, with a t-value of 2.446 and a p-value of 0.931, all show a statistically insignificant result at the significance level at $\alpha = 0.05$.

Table 4. Analysis of the difference in the attitude of grade seven students toward geometry

Variables	t-value	p-value	Interpretation
Sex	2.668	0.008	Significant
Parent's Educational Attainment	7.300	0.294	Not Significant
Monthly Income	6.950	0.139	Not Significant
Gadgets Used for Learning	2.446	0.931	Not Significant

Note: Level of Significance at $\alpha = 0.05$

This implies that when the data were grouped according to sex, the difference in the scores was significant. Therefore, female students are more positive towards Geometry than their male counterparts. However, Parents' educational Attainment, Monthly Income, and the Gadgets used for learning have the same attitude towards Geometry. Various research, however, showed a different result. Therefore, other factors should be considered when determining the level of attitude of Grade 7 students. Research on the attitude towards mathematics among secondary students has consistently found significant gender differences. Bashir (2023) and Khan (2021) both reported that female students tend to have a more positive attitude towards mathematics, while male students experience more anxiety and fear. This trend is also observed in primary school students, with girls showing a more positive attitude towards mathematics as they grow older (Ayuso, 2021). Also, research consistently shows that parental involvement and attitudes significantly impact students' mathematical achievements and attitudes. Alreshidi (2021) found that students with parents with university degrees achieved higher scores in mathematics. Learning highlighted the correlation between students' attitudes and self-efficacy in mathematics, with parental education being a significant factor.

Additionally, the variable of the parent's monthly income was consistent with the following research. Aytekin (2018) found a significant effect of parental income on parents' expectations of mathematics education. Yaşar (2016) reported a meaningful difference in students' attitudes based on their fathers' education levels and income. Research on students' attitudes towards mathematics with different learning gadgets has shown mixed results. Lu'luilmaknun (2021) found that while students generally responded positively to technology learning media, there were concerns about its difficulty, impact on textbook use, and potential health risks. A significant improvement in primary school students' attitudes towards mathematics was reported when computer games were used as teaching tools. Hacıömeroğlu (2019) discovered a negative relationship between students' attitudes toward learning mathematics with technology and math anxiety. Marpa (2020) found that mathematics teachers generally had positive attitudes toward using technology in teaching, with male teachers exhibiting better attitudes than female teachers.

These studies suggest that the use of technology in mathematics education can positively and negatively affect students' attitudes and that individual and contextual factors may influence these effects.

3.5 Difference in the Mathematical Semantic Knowledge of Students when Grouped According to their Profile Characteristics

Table 5 shows the significant difference in the level of mathematical semantic knowledge of Grade 7 Seven students toward geometry when grouped in terms of their profile characteristics. The results showed that there is no significant difference in the level of mathematical semantic knowledge of the students when grouped according to Sex with a t-value of - 0.142 and a p-value of 0.887, also among Parent's Educational Attainment with a t-value of 1.915 and a p-value of 0.927, also among those with different Monthly income Parents with a t-value of 4.449 and a p-value of 0.349 and those with different gadgets used for learning with a t-value of 2.301 and a p-value of 0.941 all show a statistically insignificant result at a significance level at $\alpha = 0.05$.

Table 5. Analysis of the difference in the mathematical semantic knowledge of students

Variables	t/f-value	p-value	Interpretation
Sex	- 0.142	0.887	Not Significant
Parent's Educational Attainment	1.915	0.927	Not Significant
Monthly Income	4.449	0.349	Not Significant
Gadgets Used for Learning	2.301	0.941	Not Significant

Note: Level of Significance at $\alpha = 0.05$

This implies that when the data was grouped according to sex, male and female students performed equally in Mathematical Semantic Knowledge. Also, the parent's educational attainment, monthly income, and the gadgets used for learning have the same effect on students' mathematical semantic knowledge. However, various research shows otherwise. Therefore, other factors should be considered when dealing with students' mathematical semantic knowledge performance. The results of this study were found to be supported by the following research. Research on the mathematical semantic knowledge of high school students has shown some gender differences. Lanya (2020) found that female students demonstrated more vital cognitive skills and better problem-solving abilities in written math problems. Subrahmanyam (2021) also noted that females showed more interest in the subject and applied better cognitive strategies.

Moreover, research has consistently shown a significant difference in mathematical semantic knowledge among high school students based on their parents' educational attainment. The parent's education level, mainly the mother's, positively and statistically significantly influences reading comprehension and mathematics (Alejandro, 2019). This is further supported by Vowles (2022), who found that children with higher-educated parents have a significant advantage in math growth. Additionally, research has consistently shown a significant relationship between parents' monthly income and their children's mathematical semantic knowledge. Ibañez (2021) found that higher monthly family income was associated with better mathematical problem-solving abilities among potential elementary teachers. Moreover, research on the use of technology in high school mathematics education reveals mixed results. Dorner (2022) found no significant correlation between the frequency of technology use and procedural knowledge, while Albert (2021) reported positive effects of instructional videos on mathematical competence. Fitriani (2020) highlighted the need for learning devices that link to real-life problems and facilitate concept development. Skrodzki (2019) demonstrated the positive influence of gesture-based controllers on the perception of mathematical content.

3.6 Relationship between the Attitude of Grade Seven Students and their Mathematical Semantic Knowledge

Table 6 shows the significant relationship between the attitude of Grade Seven students towards Mathematics and their mathematical semantic knowledge.

Table 6. Analysis of the relationship between the attitude of grade seven students and their mathematical semantic knowledge

Variables	N	ρ	p-value	Interpretation
Attitudes Towards Mathematics - Semantic Knowledge	168	.171*	0.027	Significant

The result showed a significant relationship between the students' attitudes toward Mathematics and their Mathematical Semantic Knowledge with an R-value of 0.171 and a p-value of 0.027, a statistically significant level of significance $\alpha = 0.05$. Furthermore, the r-value of 0.171 indicates a negligible positive correlation between the two variables. This implies that the attitudes of the Grade Seven students towards mathematics significantly affect their mathematical semantic knowledge, but only slightly positively. It further shows that as they become more positive towards Mathematics, their Mathematical Semantic Knowledge is more likely to increase moderately. Research consistently shows a significant relationship between students' attitudes toward mathematics and their mathematical semantic knowledge (Kempa, 2020). Positive attitudes, such as interest, persistence, and motivation, are associated with higher levels of mathematical semantic knowledge (Mahajan, 2021). This relationship is further supported by the finding that students' mathematical bias strongly correlates with their preference for specific modes of presenting mathematical information (Kempa, 2020). Additionally, the beliefs and knowledge of future teachers play a crucial role in shaping students' mathematical literacy (Zeljić, 2020).

4.0 Conclusion

The result of the study shows that female students have a more positive attitude toward learning Geometry than their male counterparts. Other profiles in the study did not affect attitudes toward learning Geometry. Regarding mathematical semantic knowledge, it was found that all profiles did not affect students' performance in the Geometry assessment. Moreover, students fall short of the required standards in understanding and performance, requiring effective learning plans and immediate interventions to address academic gaps. The result revealed that males performed slightly higher than females in the assessment. Grade Seven's attitudes significantly affect their mathematical semantic knowledge, but only slightly. It further shows that as they become more positive towards Mathematics, their Mathematical Semantic Knowledge is more likely to increase moderately. This study highlights the need for further exploration into the factors influencing attitudes toward mathematics and their impact on mathematical performance. Understanding these dynamics is crucial for developing educational strategies and interventions to enhance learning outcomes.

5.0 Contributions of Authors

The author worked hard to finish the manuscript, seeking help, reviewing it, and finalizing it.

6.0 Funding

This manuscript receives no specific funding from any entity.

7.0 Conflict of Interests

The author declares no conflicts of interest regarding the publication of this paper.

8.0 Acknowledgment

My sincere appreciation and profound thanks to those who gave me assistance, encouragement, and other needs to finish this study. First, I am very grateful to The Almighty God for guiding me in completing this thesis, for the strength He gave me, and for making me realize that I can do all things with Him. Thank you to my family and loved ones for your patience, love, encouragement, and prayers for where I am today. To my Papa, Mama Lilia, my siblings, Andrea, GM, and Abby, and my love Mark Anthony for being my inspiration to finish this study. To our Supervisor, Ma'am Teresa A. Asido, the school principal of Bug-ang National High School, Ma'am Ma. Teresa A. Dañas, for letting me conduct my study. To my adviser, Sir Ivan A. Abarro, for being a chat away, regardless of the day and time; thank you for all the help, making me understand, and teaching me how to write and do research well. Sir Ivan was very understanding even though I am a student who does not update every time, and there are decisions that I made without his approval. Still, he was able to help me find solutions to the problems I encountered from these decisions. To my panelists, Dr. Manelyn L. Mananap, Sir Frank Anthony Y. Bullag, and Ma'am Jonalyn De La Cerna, thank you for helping me mold my study into a better version. I have learned a lot, and you could give your full support and knowledge even if we were kilometers away. To Sir Jovel Oberio and Ma'am Eliza Reyes, thank you for extending your hand and giving some of your time to answer some questions and clarify some confusion related to my study. Being a researcher, your replies to my messages are unexpected, and I appreciate your help. To the respondents' parents, thank you for allowing your children to participate in this study and giving us moral support to face this one-of-a-kind challenge of my life. Moreover, thank you very much to my respondents, who showed willingness and shared time to participate. To my old and new friends, thank you for encouraging me to finish my study. My appreciation and gratefulness for you all will last forever.

9.0 References

- Abel, A. (2020). The phenomenon of learning at a distance through emergency remote teaching amidst the pandemic crisis. *Asian Journal of Distance Education*, 15(1), 127–143. <https://doi.org/10.5281/zenodo.388152>
- Albert, M. J., Blázquez-Merino, M., López-Rey, Á., & Castro, M. (2021). Influence of technological resources on the development of mathematical competence in high school. *I.T. Professional*, 23(2), 19–25. <https://doi.org/10.1109/mitp.2021.3062685>
- Alreshidi, A.M., Alsharif, K.M., & Kandeel, R.A. (2021). Five Important Parental Involvement Variables that Affect Young Children's Mathematical Achievements: A Comparative Study. *Education and Urban Society*, 54(9), 1072 - 1096. <https://doi.org/10.1177/001312452110484>
- Aytekin, C., Baltaci, S., Yildiz, A. (2018). Investigation of Parent's Expectations from Mathematics Education in Turkey. *Acta Didacta Napocensia*, 11(3), 59-78. <https://eric.ed.gov/?id=EJ120295>
- Ayuso, N. (2021). Gender Gap in STEM: A Cross-Sectional Study of Primary School Students' Self-Perception and Test Anxiety in Mathematics. *IEEE Transactions on Education*, 64(1), 40–49. <https://doi.org/10.1109/TE.2020.3004075>
- Baht, A. (2024). Descriptive Correlational: Descriptive vs Correlational Research. Retrieved from <https://bit.ly/3XXSDNT>
- Bashir, N., Akram, K., & Bashir, R. (2023). Gender difference in students' attitudes towards mathematics and their academic achievements at the secondary level. *Pakistan Journal of Social Research*, 5(2), 77-84. <https://doi.org/10.52567/pjsr.v5i02.116>
- Beckman, K., Bennett, S., & Lockyer, L. (2019). Reproduction and transformation of students' technology practice: The tale of two distinctive secondary student cases. *British Journal of Educational Technology*, 50(6), 3315–3328. <https://doi.org/10.1111/bjet.12736>
- Cohen, A. (2021). Exploring Parental Expectations for Children's Educational Degree Attainment and its Relationship with a Child's Actual Educational Degree, Parental Involvement in the College Search Process and a Child's Overall Well-Being. The International Young Researchers' Conference.
- Cohen, J., & Kupferschmidt, K. (2020). Countries test tactics in 'war' against COVID-19. *Science*, 367(6484), 1287–1288. <https://doi.org/10.1126/science.367.6484.128>
- Dorner, C. (2022). Procedural Mathematical Knowledge and Use of Technology by Senior High School Students. *Eurasia Journal of Mathematics, Science and Technology Education*, 18(12), 1-14. <https://doi.org/10.29333/ejmste/12712>
- Eviyanti, Y., & Surya, E. (2019). Improving the Students' Mathematical Problem-Solving Ability by Applying the Problem-Based Learning Model in VII Grade at SMPN 1 Banda Aceh Indonesia. *International Journal of Novel Research in Education and Learning*, 4(2), 138-144. <https://bit.ly/3BkBu88>
- Ginting, H. & Surya, E. (2019). Development Learning Device Based for Measuring Contextual Critical Thinking Skills Elementary School Class VI Mathematical Students. *International Journal of Sciences: Basic and Applied Research*, 33(3), 301-310. <https://bit.ly/4ei705>
- Hacıömeroglu, G. (2019). Examining Elementary Students' Attitude towards Learning Mathematics with Technology and Anxiety. *Journal of Computer and Education Research*, 7(14), 356-382. <https://doi.org/10.18009/jcer.58162>
- Ibañez, E. D., Subia, G. S., Medrano-Allas, S., & Mendoza, J. I. (2021). Cognitive Abilities in Mathematical Problem Solving of Future Elementary Teachers: Causal-Comparative Research. *Revista GEINTEC*, 11(4), 3284–3295. <https://doi.org/10.47059/revistageintec.v11i4.237>
- Kempa, R. F. (2020). A Study of Attitudes Towards Mathematics about Selected Student Characteristics. *British Journal of Educational Psychology*, 47(3), 296–304. <https://doi.org/10.1111/j.2044-8279.1977.tb02358.x>
- Kroeun, K., & Sophea, P. (2023). Cambodian Lower Secondary Students' Attitudes towards Mathematics: A Case Study a Remote School in Kandal Province. *International Journal of Science and Research*, 12(10), 800–807. <https://doi.org/10.21275/sr23100922091>
- Lanya, H., Zayyadi, M., Aini, S. D., & Haris. (2020). Mathematic communication skills in senior high school based on gender differences. *Pi : Mathematics Education Journal*, 3(2), 15–21. <https://doi.org/10.21067/pmej.v3i2.4718>
- Lara, L., & Saracostti, M. (2019). Effect of Parental Involvement on Children's Academic Achievement in Chile. *Frontiers in psychology*, 10(0), 1464. <https://doi.org/10.3389/fpsyg.2019.01464>
- Lu'luilmaknun, U., Anwar, A., Triutami, T.W., Salsabila, N.H., & Gunawan, G. (2021). Students' Responses Toward the Use of Technology Learning Media in Mathematics. *Journal of Physics: Conference Series*, 0(0), 1-8. <https://doi.org/10.1088/1742-6596/1933/1/012076>
- Mahajan, R. (2021). Attitude and Perception towards Mathematics: A Study of School Students. 2nd International Conference on Multidisciplinary Industry and Academic Research 2021, Candelaria, Philippines
- Marpa, E. P. (2021). Technology in teaching mathematics: An analysis of teachers' attitudes during the COVID-19 pandemic. *International Journal on Studies in Education*, 3(2), 92–102. <https://doi.org/10.46328/ijonse.36>
- Skrodzki, M., Bath, U., Guo, K., & Polthier, K. (2019). A leap forward: a user study on gestural geometry exploration*. *Journal of Mathematics and the Arts*, 13(4), 369–382. <https://doi.org/10.1080/17513472.2019.1667209>
- Subrahmanyam, J. (2021). Does Gender Play a Part in High School Students' Interest and their Application of Cognitive Strategies in Learning Mathematics? *Shanlax International Journal of Education*, 9(3), 242–245. <https://doi.org/10.34293/education.v9i3.391>
- Sumalinog, G. (2020). Common Mathematical Errors of the High School Students: The Teachers' Perspective. *International Journal of Research Mathematics and Management*, 5(10), 69–74. <https://ijrsm.com/index.php/journal-ijrsm/article/view/37>
- Vowles, N. (2022). Parents with degrees give their children significant advantages in Maths. Retrieved from <https://bit.ly/47GwiHH>
- Yasar, M. (2016). High School Student's Attitude towards Mathematics. *Eurasia Journal of Mathematics, Science & Technology Education*, 12(4), 931-945. <https://doi.org/10.12973/eurasia.2016.1571a>
- Zeljić, M., Dabić Boričić, M., Ilić, S. (2022). The Understanding of Relational Terms in Compare-Combine Word Problems on Different Levels of Education. *Cactus Communications*.

Determinants of Demand for Photography Services

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Date received: August 13, 2024
Date revised: September 17, 2024
Date accepted: September 30, 2024

Originality: 93%
Grammarly Score: 99%
Similarity: 7%

Recommended citation:

Enema, R., & Quezon, M. (2024). Determinants of demand for photography services. *Journal of Interdisciplinary Perspectives*, 2(11), 132-140. <https://doi.org/10.69569/jip.2024.0410>

Abstract. This study delved into the dynamics of the photography services market, focusing on identifying key determinants influencing consumer demand. Amidst the growing recognition of photography as a blend of art and essential service, marked by projected market growth, this research aimed to bridge the knowledge gap between what photography businesses offer and consumer expectations. Utilizing a descriptive correlational design with regression analysis, the study explored the significant impact of marketing mix elements (product, price, place, promotion, people, process, physical evidence) influencing the decision-making process in choosing photography services. The investigation extended to determining the demand for specific photography services (weddings, debuts, birthdays) and scrutinizing the relationship between marketing strategies and service demand. Through comprehensive data gathering and statistical analysis, this study emphasizes the crucial role of marketing mix elements in shaping consumer decisions, particularly highlighting the 'people' aspect's significance in enhancing consumer satisfaction through superior service quality and customer interactions. It advocates for increased staff training and professional development investment to improve service quality. Place is the only significant determinant of demand among the marketing mix elements. This study tested the hypotheses on the non-significance of marketing mix elements in determining demand, offering insights into effective strategies for photographers and their businesses.

Keywords: Determinants of demand; Photography; Marketing mix elements; Service marketing; 7Ps of marketing.

1.0 Introduction

The modern era has witnessed the significant role of photographs and photo images in art, communication, and documentation, leading to the rise of the photography industry. This sector is projected to grow by an annual rate of 4.39%, reaching an expansion of \$9,611.08 million by 2027 (Photography Services Market by Application, Type, and Geography - Forecast and Analysis 2023-2027, 2023). This encompasses professional photographers, teams, and studios catering to increasing demands. The growth is fueled by the rising markets for international still photographs, sports events, and e-commerce, as highlighted by the 2018 Census of Philippine Business and Industry highlighted a modest growth in photography-related businesses. But like in any business, professional photographers can be considered entrepreneurs, for they also engage in the business side of their craft. Being considered a business, it follows a marketing concept of exchange: asking someone for something to be traded for the desired item. In its broadest sense, a marketer seeks to elicit a reaction from a product or service on the market. Kotler and Armstrong (2022) state that the marketing mix elements are integral to preparing an integrated marketing plan and program in a five-step marketing process. It leads to the delivery of the intended value to the

target customers. This ultimately would lead to building and managing profitable customer relationships and capturing value in return.

However, a gap exists between what photography services offer and customer expectations, a challenge that Professional Photographers of America (PPA) CEO David Trust underscored (Arnold, 2019). This has led to research into understanding customer desires and determining key marketing and information elements important to clients, aiming to bridge this gap and better align services with customer expectations. To accomplish this, a greater understanding of the factors influencing demand in the photography industry is required. The Philippines is particularly high for weddings, debuts, and birthdays due to the cultural significance of these events and the growing importance of visual content for personal and social media branding. By having a clearer grasp of the key determinants of demand for photography services, one can close the gap by being aware of these aspects and determining the marketing mix elements a client values in the decision-making process when choosing a photography service supplier.

2.0 Methodology

2.1 Research Design

This study employed a descriptive correlational approach with regression analysis to explore the factors influencing the demand for photography services. Focusing on the marketing mix elements of product, price, place, promotion, people, process, and physical evidence, the research aimed to quantify their impact on the demand for photography services across events such as weddings, debuts, and birthdays. Recognized for its relational design, the study investigated the significant relationships between marketing mix elements and service demand, highlighting the role of correlation studies in understanding the dynamics within the photography service market.

2.2 Research Locale

The study targeted individuals residing in Bacolod City, those within the age range of 18-45 years old. Bacolod City is a first-class urban city in the Negros Island Region of the Philippines. According to the Permits and Licensing Division, there are 26 registered businesses related to photography. That does not include events and freelance photographers who do not have physical stores or studios.

2.3 Research Participants

The participants in this study were individuals between the ages of 18 and 45 who had utilized photography services for weddings, debuts, or birthday events within the last five years. Priority was given to those directly involved in selecting the photography service, ensuring they had decision-making power and accountability. A sample size of 175 was determined using G*power. Participants were recruited through online advertisements and selected using purposive and snowball sampling methods.

2.4 Instrument

A researcher-made questionnaire with two sections to gather and evaluate how marketing mix elements impact clients' selection of photography services was used. The questionnaire underwent validity and reliability tests. Four experts, who are professors of business research and recognized professionals, validated the questionnaire using tools created by Good and Scates, and it achieved a score of 4.173, surpassing the required score. It was also tested on 30 individuals not included in the final results for reliability, resulting in a Cronbach Alpha score of 0.964, indicating high reliability and consistency.

2.5 Data Gathering Procedure

This study employed a mixed-methods data collection approach, utilizing face-to-face and online surveys to gather information from participants. Initially, participants were recruited through an online advertisement, screened based on specific eligibility criteria, and consequently provided informed consent before their inclusion in the survey. Participants should be between 18 and 45 and have utilized photography services for weddings, debuts, or birthday events within the last five years. Respondents should be directly involved in selecting the photography service, ensuring they have decision-making power and accountability. The face-to-face method was offered to those who were physically available and preferred this mode, with strict adherence to health and safety protocols, including wearing facemasks. For participants with restricted availability, an online survey facilitated

via Google Forms was utilized, ensuring no personal information was requested before obtaining consent. Both survey methods allowed participants the option to skip questions and ensured that the responses were handled with confidentiality.

The research aimed to ensure the inclusion of decision-makers to align the study outcomes with real-world decision-making processes. Following data collection, statistical tools were applied for analysis while maintaining stringent confidentiality measures for all gathered information. This methodological framework underlines the importance of flexibility in data collection methods and the ethical considerations vital in conducting research involving human participants.

2.6 Ethical Considerations

The study adhered to ethical standards throughout each phase, receiving prior approval from the University's Ethics Review Committee. Participants informed consent was secured before data collection, with assurances of confidentiality and the option to withdraw at any time. The research, designed to uphold participant safety and confidentiality, utilized consent forms and no-identification data collection methods, like Google Forms, for face-to-face and online surveys. Expenses incurred by participants were reimbursed, but no other payments were made. Study findings are to be shared with the community through academic publications or presentations, with strict measures adopted to ensure data privacy post-analysis, including secure storage and eventual data destruction.

3.0 Results and Discussion

This section presents the data, analysis, and interpretation of the survey conducted on the determinants of demand for photography services. It is divided into three topics: the extent of influence of marketing mix elements, the level of demand for photography services, and the relationship of the marketing mix elements to the level of demand for photography services.

3.1 Influence of Marketing Mix Elements

Product

The marketing mix elements, particularly the product component, have a significant influence on consumer purchasing decisions (see Table 1).

Table 1. Descriptive statistics of the influence of marketing mix elements in terms of product

Variables	Mean	SD	Interpretation
Quality of images	4.47	0.68	High extent
The colors of the images are vibrant	4.31	0.76	High extent
Availability of various styles	4.26	0.78	High extent
Different packages to choose from	4.36	0.75	High extent
Overall Impact	4.47	0.68	High extent
Grand mean	4.37	0.63	High extent

Note: 4.50 – 5.00 Very high extent; 3.50 – 4.49 High extent; 2.50 – 3.49 Moderate extent; 1.50 – 2.49 Low extent; 1.00 – 1.49 Very low extent

The key findings from the provided search results indicate that all photography services product-related variables have a great extent of influence on demand with emphasis specifically on the quality of images ($M=4.47$, $SD=0.68$), overall output impact ($M=4.47$, $SD=0.68$), and different package to choose from ($M=4.36$, $SD=0.75$). The grand mean for the product is $M=4.37$, $SD=0.63$. Images' quality significantly impacts consumer perception and satisfaction, contributing to a high extent of influence. This agrees with Nisha (2023), stating that the higher the quality of your product, the better traction it gets from the customers. Offering a range of package options caters to diverse customer preferences. The product's overall impact on consumer satisfaction is high, suggesting that a well-designed product can significantly influence purchasing decisions and, ultimately, demand. These findings highlight the critical role of the product element within the marketing mix. By focusing on product quality, variety, and overall impact, businesses can create a strong marketing strategy that effectively meets customer needs and drives purchasing decisions.

Price

The results demonstrate that price is a critical factor in the marketing mix. All the results have a high degree of directly influencing consumer behavior, purchase decisions, and a business's bottom line (Table 2).

Table 2. Descriptive statistics of the influence of marketing mix elements in terms of price

Variables	Mean	SD	Interpretation
Prices are affordable	4.30	0.81	High extent
There are different price ranges to suit one's budget	4.27	0.83	High extent
Value for money	4.38	0.77	High extent
Transparency of other charges & and fees	4.37	0.75	High extent
Grand mean	4.33	0.66	High extent

Careful pricing strategies that account for value for money ($M=4.38$, $SD=0.77$), transparency of other charges ($M=4.37$, $SD=0.75$), and affordable prices ($M=4.30$, $SD=0.81$) are essential for success. The grand mean for the price is $M=4.33$, $SD=0.66$. Consumers want to feel they are getting good value relative to their price. Pricing the photographer's services must align with the perceived quality and benefits of the said service. This is to the concept of customer perceived value and customer satisfaction by Kotler & Armstrong (2022). It is the extent to which a product's perceived performance matches a buyer's expectations. In addition, consumers want clarity on any additional costs. Lack of transparency can negatively impact purchase decisions. Lastly, consumers place a high emphasis on affordability when evaluating prices. Photography business owners need to ensure their prices are within an acceptable range for their target market.

Place

The results indicate that the studio's capacity to handle location shooting ($M=4.15$, $SD=0.99$), secured location ($M=3.66$, $SD=1.22$), and accessibility ($M=3.58$, $SD=1.29$) are the most influential factors in the place element of the marketing mix with a high extent of influence (see Table 3).

Table 3. Descriptive statistics of the influence of marketing mix elements in terms of place

Variables	Mean	SD	Interpretation
Has a physical studio for photo sessions	3.39	1.34	Moderate extent
The studio is conveniently accessible	3.58	1.29	High extent
Secured location of studio	3.66	1.22	High extent
Has the capacity to handle location shooting	4.15	0.99	High extent
Grand mean	3.70	1.09	High extent

The grand mean for the place is $M=3.70$, $SD=1.09$. However, this indicates varying degrees of influence for different aspects of a photography studio's location and capabilities. For instance, the availability of a physical studio for photo sessions suggests a moderate extent of influence, implying that while having a physical space is important, it might not be the most critical factor for clients. This could potentially be because clients also value flexibility and the ability to have photoshoots in various locations, not just in the studio. On the other hand, the convenience of accessing the studio and the security of the studio's location are rated to have a high extent of influence. These findings align with literature emphasizing the importance of location and accessibility for businesses offering physical products or services (Kotler & Keller, 2016). A secure and easily accessible location offers peace of mind and can enhance the customer experience, making it more likely for clients to return or recommend the studio to others (Berman & Evans, 2020). Furthermore, the studio's capacity to handle location shooting was rated to have a high extent of influence, receiving the highest mean score among the variables. This finding underscores clients' value of versatility and the ability to customize their experience according to their specific needs or preferences (Tuten & Solomon, 2017). Offering in-studio and location services can be a significant competitive advantage, allowing a studio to cater to a wider range of client needs and occasions.

Promotion

Examining the impact of different marketing mix elements, especially those associated with promotion, yields important information about successful marketing tactics (see Table 4). The data indicates that the degree of influence exerted by various promotional activities is high. Advertisements are recognized as a crucial element in marketing mix strategies ($M=4.02$, $SD=1.01$). Moreover, the online showcase of a portfolio ($M=4.29$, $SD=0.82$)

demonstrates an even higher extent of influence within the promotion category. Social media's role is similarly underscored ($M=4.26$, $SD=0.80$), indicating its significant influence on promotion strategies.

Table 4. Descriptive statistics of the influence of marketing mix elements in terms of promotion

Variables	Mean	SD	Interpretation
Advertisements are evident	4.02	1.01	High extent
Online showcase of portfolio	4.29	0.82	High extent
Strong presence in social media	4.26	0.80	High extent
Grand mean	4.19	0.80	High extent

The grand mean for promotion is $M=4.19$, $SD=0.80$. It emphasizes the pivotal role of advertising in enhancing brand visibility and consumer engagement. The high extent of influence underscores the effectiveness of advertisements in reaching a broad audience and conveying the brand's message. This suggests that digital platforms are increasingly becoming essential for showcasing products or services, supported by Kujur & Singh (2017), who argue that an online presence enhances visibility and facilitates direct interaction with the consumer base. This is consistent with the findings of Jibril et al. (2019), who noted the transformative impact of social media on marketing, highlighting its capabilities in fostering community engagement, brand loyalty, and personalized communication.

People

The findings delineate a strong positive perception among clients regarding the professionalism and engagement of staff and photographers and the competence and credibility of the business entity involved (Table 5).

Table 5. Descriptive statistics of the influence of marketing mix elements in terms of people

Variables	Mean	SD	Interpretation
Staff and photographers exhibit professionalism	4.49	0.75	High extent
The business entity is credible	4.71	3.90	Very high extent
Photographers & and staff are engaging	4.50	0.73	Very high extent
Competent & and highly skilled photographers	4.50	0.73	Very high extent
Grand mean	4.55	1.19	Very high extent

Specifically, staff and photographers are perceived to exhibit professionalism to a high extent ($M=4.49$, $SD=0.75$). Similarly, the business entity's credibility is rated to a very high extent ($M=4.71$, $SD=3.90$). Furthermore, the engagement level of photographers and staff, along with their competence and skills, is rated very high ($M=4.50$, $SD=0.73$), underscoring the critical role of human elements in the marketing mix. The grand mean for people is $M=4.55$, $SD=1.19$. The interaction between clients and service providers (in this case, photographers and staff) is crucial for customer satisfaction and the overall service delivery process. Engaging and skilled staff can enhance customer experiences, leading to positive word-of-mouth and increased business opportunities (Zeithaml et al., 2018). These findings are aligned with the marketing mix theory, which emphasizes the importance of 'People' in creating value and differentiating service offerings in competitive markets (Booms & Bitner, 1981; McCarthy, 1960). In service-based industries, where direct human interaction plays a pivotal role, staff and service providers' competence, credibility, professionalism, and engagement levels can significantly influence customer perceptions and decision-making (Lovelock & Wright, 2002).

Process

The analysis of the impact of marketing mix elements on process efficiency underscores the significance of clear and efficient processes in achieving high customer satisfaction and operational excellence (Table 6).

Table 6. Descriptive statistics of the influence of marketing mix elements in terms of process

Variables	Mean	SD	Interpretation
Clear process flow of transaction	4.38	0.77	High extent
Efficient service process/transaction	4.39	0.81	High extent
Ease of process flow	4.37	0.75	High extent
Timely delivery of service	4.23	0.96	High extent
Grand mean	4.34	0.72	High extent

The variables considered, namely, clear process flow of transaction ($M=4.38$, $SD=0.77$), efficient service process/transaction ($M=4.39$, $SD=0.81$), ease of process flow ($M=4.37$, $SD=0.75$), and timely delivery of service

(M=4.23, SD 0.96), uniformly scored within the high extent domain suggesting a pivotal role of streamlined processes in marketing efficacy. The grand mean for the process is M=4.34, SD=0.72. Efficiency pertains not just to speed but also to the overall smoothness of the transaction process. Levitt (1986) emphasized efficiency as a competitive advantage in service marketing. A transparent and clear process flow maintains customer trust and ensures repeat business. A clear process minimizes confusion and enhances customer experience, ultimately contributing to positive perceptions of service quality.

Physical Evidence

The data suggest that samples of previous work (M=4.53, SD=0.65) have the highest influence among the variables considered very high extent (Table 7).

Table 7. Descriptive statistics of the influence of marketing mix elements in terms of physical evidence

Variables	Mean	SD	Interpretation
Client/customer reviews	4.45	0.67	High extent
Sample of previous work	4.53	0.65	Very high extent
Legitimate and authentic outputs	4.38	0.81	High extent
Use of special equipment	4.17	0.86	High extent
Grand mean	4.38	0.61	High extent

Client or customer reviews (M=4.45, SD=0.67) also significantly have a high extent of impact. The legitimacy and authenticity of outputs (M=4.38, SD=0.81) and the use of special equipment (M=4.17, SD=0.86) were both found to influence to a high extent. The grand mean for physical evidence is M=4.38, SD 0.61. This underscores the critical role tangible demonstrations of a company's capabilities play in influencing potential customers. This finding aligns with the growing body of literature emphasizing the importance of social proof in shaping consumer perceptions and decisions (Cheung & Thadani, 2012). These findings also highlight the importance of maintaining high standards in product or service delivery and the positive effect of showcasing technical capabilities through specialized tools or equipment. These results contribute to understanding how physical evidence within the marketing mix can be leveraged to enhance customer perception and trust. Additionally, these results enrich the dialogue on marketing strategies by providing empirical evidence on the specific elements businesses should focus on to improve their market positioning and customer appeal.

Summary

When taken as a whole, external factors have a high extent of influence on photography services (Table 8). These factors include product (M=4.37, SD=0.63), price (M=4.33, SD=0.66), place (M=3.70, SD=1.09), promotion (M=4.19, SD=0.80), process (M=4.34, SD=0.72), and physical evidence (M=4.38, SD=0.61), with people having a very high extent of influence (M=4.55, SD=1.19).

Table 8. Summary of the Influence of marketing mix element

Variables	Mean	SD	Interpretation
Product	4.37	0.63	High extent
Price	4.33	0.66	High extent
Place	3.70	1.09	High extent
Promotion	4.19	0.80	High extent
People	4.55	1.19	Very high extent
Process	4.34	0.72	High extent
Grand mean	4.38	0.61	High extent

A successful marketing strategy combines marketing mix elements in a cohesive program to reach the organization's marketing goals by engaging with customers and providing them value (Kotler & Armstrong, 2022). Considering all the P's of marketing in a business is not uncommon as each P's would normally interact significantly with one another. As the name implies, a marketing mix means all the elements can be used to create a holistic approach to photography services' marketing. All aspects of the marketing mix are important and should never be neglected. The photography service provider may focus on a few marketing mix elements as their unique selling proposition to customers but never neglect the rest.

According to Kaur (2019), employees in customer service roles embody the organization for the consumer, playing a significant role in shaping perceptions of service quality. Their impact on the various attributes of service quality

is considerable. With a very high extent of influence ($M=4.55$, $SD=1.19$), it agrees with Kaur that photography, as a service, depends on the people to deliver and meet the needs and wants of the client. This usually falls under the photographer and their staff, who dedicate resources to mastering their craft. They would spend time, money, and effort upgrading and learning the gears used, learning through seminars and books, and much experiential learning. In exchange for the money paid, clients of photography services receive value from access to the photographer's labor, skills, and expertise acquired.

3.2 Demand for Photography Services

As shown in Table 9, when taken as a whole, among the 175 participants, 74, or 42.29%, availed of wedding pre-nup photography; 92, or 52.57%, availed of wedding on-the-date photo coverage; 38 or 21.71% availed of debut pre-event photography, 53 or 30.29% availed debut on-the date photo coverage, 60 or 34.29% availed birthday pre-event photography, and 83 or 47.43% availed birthday on-the date photo coverage.

Table 9. Descriptive statistics of the demand for photography services

Indicators	Frequency	Percentage
Wedding on-the-date photo coverage	92	52.57
Birthday on-the-date photo coverage	83	47.43
Wedding pre-nup photography	74	42.29
Birthday pre-event photography	60	34.29
Debut on-the-date photo coverage	53	30.29
Debut pre-event photography	38	21.71

Captured special moments, specifically weddings, debuts, and birthdays, are significant life events that people want to document and preserve through high-quality photography. Having a professional photographer ensures that the precious moments are captured in a way that the clients can look back on and cherish. Weddings and birthdays are events captured in the results.

3.3 Influence of Marketing Mix Elements in Determining the Level of Demand for Photography Services

The findings (Table 10) highlight a complex environment in which "Place" (p -value = 0.032) emerges as a statistically significant determinant of demand, suggesting that photography services' geographical and strategic positioning profoundly influences consumer interest.

Table 10. Regression analysis of the influence of marketing mix elements on demand for photography services

Variables	Regression coefficient (β)	R	p-value	Interpretation
Product	0.071	0.108	0.077	not significant
Price	-0.053	0.045	0.276	not significant
Place	0.100	0.140	0.032	significant
Promotion	0.084	0.123	0.052	not significant
People	-0.054	0.020	0.397	not significant
Process	0.061	0.096	0.103	not significant
Physical Evidence	-0.058	0.072	0.171	not significant

Note: $p < 0.05$ is significant; R = correlation coefficient

This finding resonates with the broader marketing literature, such as Kotler & Keller (2016), who articulate that "place" or distribution strategies are pivotal in making the service available and accessible to the target market, hence potentially escalating demand. However, it is intriguing to observe that other elements of the marketing mix (product (p -value = 0.077), price (p -value = 0.276), promotion (p -value = 0.052), people (p -value = 0.397), process (p -value = 0.103), and physical evidence (p -value = 0.171)) do not exhibit a significant direct impact on demand in the context of photography services. Given the comprehensive framework proposed by McCarthy (1960), this outcome might appear counterintuitive, which argues for the interrelated significance of product, price, place, and promotion (4Ps) in influencing consumer behavior and demand. The lack of significance for these factors might point to a peculiarity in the photography industry or nuances that the regression model misses. The negative coefficients associated with price, people, and physical evidence, albeit statistically nonsignificant, initiate a dialogue regarding the elasticity of demand and the potential adverse effects of overpricing (price), poor customer service (people), and less-than-optimal physical presentation and evidence of services (physical evidence).

The result shows that marketing mix elements do not significantly influence the demand for photography services. The p -value of 0.635 considerably exceeds the conventional significance threshold of 0.05. This result is intriguing

and somewhat counterintuitive, considering the established role of marketing mix factors in shaping consumer behaviors across various sectors. The F value of 0.743 suggests that the model is ineffective at explaining changes in the demand for photography services based on the variables it includes. With an R^2 value of 0.174, this indicates that approximately 17.4% of the variance in demand for photography services can be explained by the marketing mix elements within the model. This is relatively low, suggesting that other factors not included in the model might influence the demand. The negative change in R^2 ($\Delta R^2 = -0.010$) upon adding or removing variables suggests that adjustments to the model can decrease its explanatory power. Thus, the high p-value suggests that the observed relationship (or lack thereof) between the marketing mix elements and demand is insignificant, reinforcing the null hypothesis that the marketing mix elements do not significantly determine the demand for photography services.

4.0 Conclusion

The study investigates the burgeoning demand within the photography industry in Bacolod City, attributing the growth to factors such as increased disposable income, the value placed on professional photography, and the influence of visual-centric social media platforms. The study emphasizes the importance of understanding consumer perceptions to enhance the service delivery of photography professionals. The study highlights the significance of the marketing mix elements in influencing consumer decisions, with a special emphasis on the 'people' component, underscoring the impact of service quality and customer interactions on consumer satisfaction. Investing in staff training and professional development is recommended to improve service quality and marketability.

It also highlights the significant impact of product quality and price considerations and places accessibility at the heart of driving consumer demand for photography services. The results suggest that maintaining a high quality of images and offering a variety of packages are crucial in attracting and retaining customers. This is supported by the high ratings across all product-related variables, underscoring the critical role of the product element in the marketing strategy of photography services. Regarding price, the survey findings indicate affordability, value for money, and transparency in pricing. The capacity to handle location shooting, the security, and the accessibility of the studio location are highly influential factors among the results for place, which are also, as a whole, the only significant determinants of demand for photography services. It is recommended that these factors related to place be emphasized with clients as they are pivotal in influencing decision-making. Furthermore, the analysis recommends a holistic approach to marketing strategies that consider all marketing mix elements to enhance customer satisfaction and loyalty. The results also illustrate a significant trend in the demand for professional photography services during crucial life events such as weddings, debuts, and birthdays. This data underscores that clients hire professionals in the photography industry to preserve memories of these significant events.

5.0 Contributions of Authors

The authors reviewed and approved the final work. The primary author was instrumental in carrying out the comprehensive study, dedicating significant time and effort to its successful completion. This endeavor was not solitary, as it was greatly enhanced with the supervision, insightful review, and invaluable mentoring provided by the co-author.

6.0 Funding

This work received no specific grant from any grant funding agency.

7.0 Conflict Interests

The authors declare no conflicts of interest about the publication of this paper.

8.0 Acknowledgement

One of my passions has been studying "Determinants of Demand for Photography Services." Since I am considering a career as a photographer, I have a keen interest in the business side of the field, especially those aspects that can help close the gap between clients and photographers. In light of this, I would like to thank everyone who has given extra support in finishing this project. I want to thank my participants for their invaluable assistance and consent, which allowed this research to be conducted. I would not have taken such information that formed the basis of this study if they had not cooperated and taken the time to complete my survey. With deepest appreciation, I would like to extend my heartfelt gratitude to my esteemed adviser, Dr. Marissa S. Quezon. Her guidance and mentorship have been instrumental in shaping this project. I am particularly grateful for her patience and insightful feedback. I also thank my esteemed panel of evaluators: Dr. Jose Marie Bayona, Dr. Romeo Teruel, Dr. Teresa Ballados, and Dr. Jacqueline Felix. I am truly honored to have my work reviewed by such distinguished individuals. Your time and dedication in providing feedback have undoubtedly contributed to improving this study. To my fellow photographers, the camaraderie we shared over coffee has given me insights into the industry's business side. Words cannot express my gratitude to my family and friends for your unwavering love and encouragement. You have always believed in me, even during moments of doubt. Your support has been the fuel that kept me going. To my better half, Mira Fe Enema, my most profound appreciation goes to you. Your steadfast support and love have been my rock throughout this journey. You have been there for me through thick and thin, offering unrelenting encouragement, celebrating victories, and providing a shoulder to lean on during challenges. Moreover, lastly, to God Almighty, with whom I am eternally grateful for the blessings and strength you have bestowed upon me. Your guidance has led me through this project, and I am forever thankful for Your presence in my life.

9.0 References

- Arnold, A. (2019). Groundbreaking research reveals photography consumer needs. Retrieved from <https://tinyurl.com/yxthyu3t>
- Berman, B., & Evans, J. R. (2020). Retail management: A strategic approach. Pearson
- Booms, B.H., & Bitner, B.J. (1981). Marketing Strategies and Organization Structures for Service Firms. In: Donnelly, J.H. and George, W.R., Eds., Marketing of services. American Marketing Association, Chicago
- Cheung, C. M., & Thadani, D. R. (2012). The impact of electronic word-of-mouth communication: A literature analysis and integrative model. Decision Support Systems, 54(1), 461-470. <https://doi.org/10.1016/j.dss.2012.06.008>
- Kujur, F., & Singh, S. (2017). Engaging customers through online participation in social networking sites, Asia Pacific Management Review, 22(1). <https://doi.org/10.1016/j.dss.2012.06.008>
- Kaur, J. (2019). Services marketing, importance of people in services marketing. Retrieved from <https://tinyurl.com/34r5xdvf>
- Kotler, P.T., & Armstrong, G. (2022). Principles of Marketing Global Edition (18th Ed.). Pearson.
- Kotler, P., & Keller, K. L. (2016). Marketing Management (14th edition). Shanghai: Shanghai People's Publishing House.
- Lovelock, C., & Wright, L. (2002). Principles of service marketing and management. (2nd Ed.). Prentice Hall
- McCarthy, E. J. (1960). Basic Marketing: A Managerial Approach. Homewood (Illinois): R. D. Irwin.
- Nisha. (2023). Why is the product element of the marketing mix important in product marketing? Retrieved from <https://tinyurl.com/4459ezm7>
- Tuten, T. L., & Solomon, M. R. (2017). Social media marketing. Sage.
- Zeithaml, V. A., Bitner, M. J., & Gremler, D. D. (2018). Services marketing: Integrating customer focus across the firm. (7th Ed.). McGraw-Hill Education.

How Bullying Shapes Pupils' Attributes

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Date received: August 30, 2024
Date revised: September 17, 2024
Date accepted: September 30, 2024

Originality: 94%
Grammarly Score: 99%
Similarity: 6%

Recommended citation:

Sy, M.G., & Cruz, Y. (2024). How bullying shapes pupils' attributes. *Journal of Interdisciplinary Perspectives*, 2(11), 141-154. <https://doi.org/10.69569/jip.2024.0459>

Abstract. This study aimed to determine whether bullying affects the personal attributes of pupils. 197 Grade 5 and 6 pupils from the School District of Valencia for the School Year 2023–2024 served as respondents. The researcher used a descriptive–correlational research design and a validated questionnaire. The questionnaire underwent a dry run to ensure item content reliability. The researcher also used weighted mean, frequency, and percentage, Pearson product-moment coefficient of correlation, and Kruskal–Wallis H test to analyze the data. The study revealed several findings: (a) the pupils exhibited a very high level of confidence and were not significantly affected by bullying, and (b) the pupils demonstrated high personal attributes. It was found that bullying experiences do not significantly affect or influence the pupils' attributes. In addition, bullying experiences affect all pupils regardless of their age and sex. Since all the variables have correlation coefficients (r values) greater than the tabular value of 0.1946 at the 0.05 level of significance with 190 degrees of freedom, this demonstrates a significant relationship between the extent to which pupils experience bullying and the personal attributes they manifest, including self-confidence, socialization, school engagement, motivation, and emotional well-being. This implies that bullying can influence a child's characteristics and behavior. On the other hand, it is revealed that pupils manifest a low extent of the various negative effects of bullying in all personal attributes, particularly self-confidence, socialization, school engagement, emotional well-being, and motivation. The weighted mean of the five personal attributes ranges from 1.84 to 2.43, with a composite mean of 2.06. These results indicate that pupils have high personal attributes. This implies that the personal attributes of the respondents are manifested positively.

Keywords: Bullying; Personal attributes; Pupils' profile.

1.0 Introduction

Bullying is a form of violence that influences the well-being of a child (Markkanen et al., 2021). Approximately 32% of students reported their experiences of bullying from their peers at school at least once a month, according to (O'Higgins, 2020). In other countries like Kazakhstan, children experienced violence and discrimination, with 63% having perpetrated violence and 24% having discriminated against other children in school (Ilyassova & Zhamburbayeva, 2024). In China, highly bullied Chinese adolescents have a higher risk of possible suicide (Duan et al., 2020). In Nordic countries, contention and harshness in school are interpreted as bullying (Lunneblad et al., 2019). In North America, bullying is equated with sexual and domestic abuse. Updated data on the world panorama released by Saneleuterio et al. (2023) indicate that bullying situations have a serious impact not only on the academic execution and well-being of those affected but also on their mental and physical health.

On the other hand, research in the Philippines by Vargo and Chiu (2022) found that 47.7% of students experienced bullying. According to the Department of Education, bullying incidents in elementary and high schools increased

by 21%, rising to 6,363 incidents from 5,236 the previous year. Acido and Caballes (2024) referenced the Programme for International Student Assessment (PISA), reporting that 64.9% of Filipino students were bullied monthly. According to Duma (2022), gender-related issues continue to impact education. The Philippine Commission on Women (PCW) notes persistent gender biases and stereotypes in school curricula and learning materials, particularly in basic education. The Sexual Orientation and Gender Identity Expression (SOGIE) Bill, aimed at preventing discrimination, remains pending in the Senate (Gamalinda & Ofreneo, 2024). This bill seeks to protect individuals with diverse gender identities and sexual orientations.

There has been a surge in studies on bullying, such as Gong et al. (2022) examining risk factors and psychiatric comorbidities in school bullying, and Kim et al. (2022) investigating self-control and deviant peer association in bullying. While these studies have delved into specific aspects, they have not fully explored how bullying affects learners' academic performance and personal attributes comprehensively. Notably, the Philippines lacks extensive local research on the effects of bullying, with most studies and articles originating from other countries. It is clear that data from other countries do not accurately reflect our unique cultural, environmental, and lifestyle factors. Therefore, this research is crucial in determining the true impact of bullying on the personal attributes and academic achievement of students in the Philippines. Ultimately, this research aims to identify effective solutions to address bullying and mitigate its effects, particularly on academic achievement and personal attributes.

2.0 Methodology

2.1 Research Design

The study utilized the descriptive–correlational survey. It is descriptive because of the following: (a) it identifies the personal profile of the pupils, particularly age and gender; and (b) it evaluates the bullying experiences of the pupils toward personal attributes. On the other hand, it is also correlational because the mentioned variables were correlated.

2.2 Research Locale

The study was carried out in Valencia, Negros Oriental, also known as “The Little Baguio.” It is also popular being a “Geothermal Town” because of its inactive volcano that contributes renewable energy and produces electricity in Negros Oriental, Panay Island, and some parts of Cebu Province. The study included pupils from five elementary schools in the Valencia District, Schools Division of Negros Oriental. All the five schools above have good water supply. Classrooms are spacious and well-ventilated for both teachers and pupils. However, these schools have an insufficient number of computers or laptops in their libraries and computer laboratories. Furthermore, the internet connection is moderately strong and sometimes low in these schools.

2.3 Research Participants

The research respondents of this study are 197 Grade 5 and 6 pupils of the five schools in Valencia District, Division of Negros Oriental, who experienced bullying. The population's representative was selected using the systematic sampling technique (with random start), wherein pupils who experienced bullying were randomly chosen as respondents.

2.4 Research Instrument

The questionnaire consists of 4 parts. Part I displays the disclosure statement, where the teachers are granting consent to the researcher to gather information and data that must be kept confidential. It also specifies the purpose of conducting the study. Part II indicates the profile of the respondents including their age, sex, grade level, and general average. In Part III, a standardized questionnaire was utilized. Olweus Bully/Victim Questionnaire presents the experiences of the different types of bullying, and Part IV provides the respondents' manifestation of personal attributes. It is a research-made questionnaire; thus, it is subject to validation and reliability testing. The questionnaire was validated by at least 3 English teachers who are currently Master's degree holders and who are into research undertakings. A dry run was performed to ensure item reliability. A test-retest method was conducted to ensure coefficient stability. The questionnaires were administered twice to the respondents with a gap of two weeks between the initial and second administration. Results of the dry-run revealed a reliability coefficient of 0.94 (self-confidence), 0.96 (socialization), 0.98 (school engagement), 0.92 (emotional well-being), and 0.93 (motivation).

2.5 Data Gathering Procedure

This study used specific steps to gather the data efficiently. After the design hearing, the researcher consolidated all the corrections and suggestions from the panel members. Initially, the researcher sent a letter to the Dean of the Graduate School, requesting approval to conduct the study and seeking a recommendation to the Schools Division Superintendent of the Division of Negros Oriental. Subsequently, the researcher sent a letter of request to the Schools Division Superintendent of the Division of Negros Oriental to gather pertinent data and to conduct the study, endorsed by the Dean of the Graduate School of Foundation University. The signed and approved request was provided to the school principals and respective advisers of the pupils. At the moment of distributing the questionnaire, the researcher explained the purpose and significance of the research to the pupils, especially those who experienced bullying. The collection of the questionnaires was done right after the respondents had answered the questions on the questionnaire. The results were then tallied using Microsoft Excel and Megastat software, which were analyzed and interpreted.

2.6 Ethical Considerations

This research study followed ethical guidelines. In order to uphold the principles of thorough research, it is fundamental to consider ethical considerations. Thus, for this study, ethical clearance was sought from Foundation University and the Department of Education (DepEd) Negros Oriental Division, which allowed the study to be conducted in the target schools. Before their inclusion in the study, respondents were fully notified about the purpose and conditions of the study and their informed consent through the disclosure statement. It was highlighted that respondents have the right to withdraw from the study at any time without facing persuasion or intimidation. Additionally, strict confidentiality measures were implemented to ensure the privacy of shared information. Furthermore, the study prioritized minimizing potential risks to the respondents. The researcher carefully followed the necessary procedures to observe the ethical protocols established by the Ethics Committee of Foundation University. Consultation was conducted to establish that the research topic is thorough, significant, and ethically appropriate. Throughout the procedure, the researcher maintained a non-judgmental attitude, aiming to prevent any form of criticism.

3.0 Results and Discussion

3.1 Extent to Which Pupils Experienced Bullying

Physical Bullying

Table 1 shows the extent to which pupils experienced physical bullying. The data revealed that pupils experienced a “very low extent” when they were being threatened, cornered/pushed against a wall, pulled their hair, or scratched, snatched their money or belongings without their consent, forced to harm a classmate physically, and forced to hand over their money or belonging, receiving a weighted mean ranging between 1.71-1.80.

Table 1. The extent to which pupils experienced physical bullying (n = 197)

Indicators	w $\bar{x}$	VD	LoC
1. Somebody punched, kicked, or pushed me.	1.81	LE	H
2. I was threatened.	1.80	VLE	VH
3. I was cornered/pushed against a wall.	1.80	VLE	VH
4. Somebody pulled my hair or scratched me.	1.79	VLE	VH
5. Somebody snatched my money or belongings without my consent.	1.73	VLE	VH
6. I was forced to harm a classmate physically.	1.72	VLE	VH
7. I was forced to hand over my money or belongings	1.71	VLE	VH
Average w$\bar{x}$	1.76	VLE	VH

Note: 4.21 – 5.00 (Very High Extent, VHE), 3.41 – 4.20 (High Extent, HE), 2.61 – 3.40 (Moderate Extent, ME), 1.81 – 2.60 (Low Extent, LE), 1.00 – 1.80 (Very Low Extent, VLE)

On the contrary, pupils experienced a “low extent” of bullying in terms of being punched, kicked, or pushed, with a weighted mean of 1.81. Overall, the extent to which pupils experienced the effects of physical bullying is disclosed to be a “very low extent,” with an average weighted mean of 1.76. Thus, pupils’ confidence level is very high as it is not so affected by the effects of physical bullying. This indicates that pupils are indeed experiencing physical bullying, although it may not be severe.

Additionally, this led to an understanding that physical bullying exists in elementary schools and thus needs to implement proper guidelines for prevention before the situation worsens. Moreover, Brown et al. (2020) concluded that physical force, such as kicking, punching, hitting, attacking a person with intention, child abuse, intimate partner, and dating violence, occurs constantly among youth and young adults. These behaviors have negative effects on both physical and mental health.

This finding contradicts the study of Lestari et al. (2023), which revealed that a large percentage of 87.6% of the 1,026 surveyed children were physically or verbally bullied in school. Although the experience of physical bullying is very low for the pupils in this study, it is still evident and alarming and needs quick action to avoid more harm. Moreover, 31% of students reported bullying in the past month in the year 2019, and 33% of these incidents were physical (O'Higgins, 2020). Among the students who reported experiencing bullying, 5% were tripped, shoved, pushed, or spat on (Farina, 2019). These statistics highlight the pervasive nature of bullying and the urgent need for effective interventions to protect students and enhance their well-being.

Verbal Bullying

Table 2 shows the extent to which pupils experienced verbal bullying. The data revealed that pupils experienced a “low extent” of bullying when somebody yelled at them, gave them nicknames they did not like, said bad things about them or their family, falsely accused them of stealing things from their classmates, insulted them because of their physical characteristics, or made fun of their accent. The weighted mean for these experiences ranged between 1.90 and 2.20.

Table 2. The extent to which pupils experienced verbal bullying (n = 197)

Indicators	w $\bar{x}$	VD	LoC
1. Somebody yelled at me.	2.20	LE	H
2. Somebody gave me nicknames I do not like.	2.15	LE	H
3. Somebody said bad things about me or my family	2.11	LE	H
4. Somebody falsely accused me of snitching things from my classmates.	2.03	LE	H
5. I was insulted because of my physical characteristics.	1.95	LE	H
6. Somebody made fun of my accent.	1.90	LE	H
7. I was insulted because of my odor.	1.78	VLE	VH
Average w$\bar{x}$	2.02	LE	H

In addition, pupils experienced a “very low extent” of bullying when insulted because of their odor, with a weighted mean of 1.78. Summing up, the extent to which pupils experienced verbal bullying is revealed to be at a “low extent,” with an average weighted mean of 2.02. Consequently, pupils’ confidence level is high as it is slightly affected by the effects of verbal bullying.

These results led to an understanding that verbal bullying still exists in schools and that school policies are needed and should be implemented to address verbal attacks among pupils. These policies must include conducting activities, programs, seminars, and even workshop series intended to address verbal bullying behavior within schools. These activities should also explore the ideas of responding to verbal bullying behavior, understanding what verbal bullying is and is not, and giving more examples of it and its negative effects. Additionally, Fitriyah et al. (2023) outlined strategies, such as observational learning and conviction script, which can be useful and reliable strategies in addressing this type of bullying. These solutions benefit pupils, especially when pupils do not realize they are already practicing bullying. This is alarming since verbal bullying is the easiest way to harm victims.

This finding showed that verbal bullying is evident despite its low intensity among the respondents, and there could be various causes why this type of bullying occurs to the pupils. According to Kurniati (2023), verbal bullying happens because bullies feel that it is easy to use aggressive language; it may not create physical harm but can result in psychological damage. Additionally, many young individuals are subjected to nicknames or insults daily at school, college, or in other settings, which inevitably impacts their mental health (Potard et al., 2022). Data from the 2017 School Crime Supplement (SCS) to the National Crime Victimization Survey (NCVS) concluded that among learners who reported being bullied, 13% were mocked, teased, or ridiculed, and 13% were the subject of rumors. To diminish this bullying problem, we can initiate different approaches that will deteriorate and eradicate verbal bullying.

Cyber Bullying

Table 3 presents the extent to which pupils experienced cyberbullying. The results showed that pupils experienced bullying at a “very low extent” across all the indicators, as indicated by the weighted mean values ranging from 1.00 to 1.80. In general, the extent of cyberbullying experienced by pupils is at a “very low extent,” with an average weighted mean of 1.28. Therefore, their level of confidence is very high as it is not so affected by the effects of cyberbullying. These results led to the understanding that, due to being in a technologically advanced generation, pupils have experienced cyberbullying, but not seriously or critically.

Table 3. The extent to which pupils experienced cyberbullying (n = 197)

Indicators	w $\bar{x}$	VD	LoC
1. Somebody posted hurtful comments about my personal life on social media.	1.40	VLE	VH
2. I received mean, rude, or scary messages through texts, e-mails, chats, or phone calls.	1.36	VLE	VH
3. Somebody embarrassed me by editing my photos or videos and posting them online.	1.31	VLE	VH
4. Somebody makes a fake account pretending to be me and tries to make me look bad.	1.19	VLE	VH
5. Somebody hacked my social media accounts and used them to embarrass me.	1.15	VLE	VH
Average w$\bar{x}$	1.28	VLE	VH

The results are consistent with Fischer et al.'s (2020) findings, indicating that 4% of the learners have experienced cyberbullying. In fact, according to O'Higgins (2020), more than 30% of learners worldwide have been bullied, with one in every ten learners experiencing cyberbullying. Additionally, a global correlation study conducted in 19 European countries reported that 5% of children experience cyberbullying monthly (Smahel et al., 2020).

Cyberbullying, apparently caused by exposure to gadgets, is now very alarming, especially given that the percentage of children using smartphones and the number of hours they spend online has increased over the past decade (Smahel et al., 2020). In addition, it is reported that children are exposed daily to online platforms for an average of two to three hours. Given that learners can easily access online platforms, the risk of encountering cyberbullying knows no boundaries.

Regulating social media and censoring offensive or attacking statements must be upheld to ensure the safety of children. Given that individuals of various ages can easily access different technologies, it is essential to strengthen or revise the state's cyber laws to make them more comprehensive, realistic, and responsive to the needs of cyberbullying victims. When learners were asked which specific forms of cyberbullying they encountered, harsh and unpleasant comments (25%) and rumors spread online (22%) were most often stated (Hinduja & Patchin, 2022).

Relational Bullying

Table 4 displays the extent to which pupils experienced relational bullying. The results depicted that pupils experienced relational bullying at a “low extent” across all the indicators, as evident in the weighted mean with values ranging from 1.81 to 2.60. In general, the extent to which pupils experienced a “low extent” of relational bullying has an average weighted mean of 2.00. Hence, their level of confidence is high as it is slightly affected by the effects of relational bullying.

Table 4. The extent to which pupils experienced relational bullying (n = 197)

Indicators	w $\bar{x}$	VD	LoC
1. My classmates, schoolmates, and friends embarrassed me in front of everyone.	2.23	LE	H
2. I was left out or ignored by others.	2.14	LE	H
3. Somebody tried to make others dislike me.	2.09	LE	H
4. Others set me up to blame me.	1.92	LE	H
5. I was not allowed to join a group of classmates.	1.90	LE	H
6. Messing my personal life by someone pretending to be my friend.	1.89	LE	H
7. I was pressured by friends, classmates, or schoolmates who threatened to end our friendship if I did not comply with their demands.	1.83	LE	H
Average w$\bar{x}$	2.00	LE	H

Results led to an understanding that the respondents slightly manifest relational bullying. This contradicts the study of Kennedy et al. (2022), which suggests that relational and verbal bullying are widespread. Since this type of bullying is not too familiar to the public, it somewhat supports the findings of Endedijk et al. (2022) that learners' bullying experiences, such as relational bullying, could potentially increase or decrease in school. Social bullies

may act vindictively, are socially awkward, try to control others, and have difficulty with interpersonal relationships (Hanani, 2021). To cope with their social interaction difficulties, they have become reliant on the internet for all their everyday demands (Fazeli et al., 2020), which may exacerbate their dark personality features (Onyedire et al., 2021).

Summary

Table 5 displays a summary table showing the extent to which pupils experienced bullying. The data revealed that pupils experienced physical and cyberbullying at a “very low extent,” with a weighted mean of 1.76 and 1.28, respectively. This indicates that pupils’ level of confidence is high, as it is not so affected by the effects of physical and cyberbullying. On the other hand, pupils experienced verbal and relational bullying at a “low extent,” with a weighted mean of 2.02 and 2.00, respectively. As demonstrated, the pupils’ confidence level is “high” as it is slightly affected by verbal and relational bullying. Furthermore, the composite mean of the summary table is 1.76, with a “very low extent” of the four types of bullying. Generally, the pupils’ confidence level is “very high,” as it is not so affected by the effects of bullying.

Table 5. Summary table as to the extent to which pupils experienced bullying (n = 197)

Indicators	w $\bar{x}$	Verbal Description (VD)	Level of Confidence (LoC)
1. Physical Bullying	1.76	VLE	VHE
2. Verbal Bullying	2.02	LE	HE
3. Cyber Bullying	1.28	VLE	VHE
4. Relational Bullying	2.00	LE	HE
Composite mean	1.76	VLE	VHE

The reason pupils experienced a very low extent of bullying is that they did not fully understand what bullying is. They face different circumstances without realizing that bullying is already evident. This coincides with the idea of Arcadepani et al. (2021) that children often initiate bullying without recognizing it, while others are victims of bullying without being aware of it. Another reason for the low bullying among pupils is the learner-teacher relationship. According to Ten Bokkel et al. (2023), a good relationship between learners and teachers corresponds to a lesser incidence of bullying, while a poor learner-teacher relationship is interconnected with a greater incidence of bullying. The insights are contradictory to the findings of Spadafora et al. (2020), indicating that young people are fully aware of the advantages and consequences of intervening in bullying situations.

Since the data in the table does not illustrate an alarming bullying situation, various actions should be taken to solve the bullying problem before it worsens. In our local setting, the Philippine government passed the Republic Act No. 10627, also called the Anti-Bullying Act of 2023. Schools must implement policies and initiatives to minimize bullying, such as creating disciplinary committees, preparing educators, fostering positive work environments, and establishing processes and systems to address bullying quickly. This law is immensely helpful to society, and numerous parents are seeking a legal structure for various types of youth-related inappropriate conduct that have been mostly neglected in the past years.

The updated meta-analysis by Gaffney et al. (2021) is a recent advancement in this area, which includes a wide range of findings. The findings indicate the two efficient components in decreasing the incidence of bullying and victimization, particularly information provided for parents and informal peer involvement. Additionally, several components efficiently decrease bullying perpetration, such as counteractive bullying guidelines, an integral school approach, implementing rules inside the classroom, and coordinating with the victims.

Gaffney et al. (2021) also concluded that supplying instructions, knowledge, and tools needed to recognize, address, and prevent bullying behaviors in their children’s lives for parents is more practical than entailing parents to participate in assemblies and meetings. However, another recent meta-analysis by Huang et al. (2022) synthesized evidence about the outcomes of bullying prohibition initiatives involving parents into a parental component like information drives and workshops. The data concluded that these initiatives and activities were effective in diminishing bullying incidents. Thus, parents and the school environment did not easily influence their effects.

The components of addressing bullying identified by Gaffney et al. (2021) were divided into three categories. First is informal peer involvement, where a small group or one classroom symposium or activity is conducted. Second

is formal peer involvement, in which peer counseling, training learners, or companion-led activities are conducted. Lastly, encouraging and educating bullying witnesses to be active participants in eradicating bullying is done.

3.2 Frequency and Percentage Distribution of Pupils Experiencing Bullying

Table 6 displays the summary and percentage distribution of pupils experiencing bullying. Based on the data, 58.88% of pupils experience the effects of physical bullying at a “very low extent,” 36.04% at a “low extent,” 3.05% at a “moderate extent,” and 2.03% at a “great extent.” This implies that most pupils have a “very high level of confidence,” as physical bullying does not significantly affect them.

Table 6. Frequency and percentage distribution of pupils experiencing bullying (n = 197)

Bullying Experiences	Physical Bullying		Verbal Bullying		Cyber Bullying		Relational Bullying	
	f	%	f	%	f	%	f	%
High	4	2.03	7	3.55	1	.51	11	5.58
Moderate	6	3.05	29	14.72	2	1.02	34	17.26
Low	71	36.04	88	44.67	19	9.64	57	28.93
Very Low	116	58.88	73	37.06	175	88.83	95	48.23
Total:	197	100%	197	100%	197	100%	197	100%

Secondly, pupils experience the effects of verbal bullying to a “very low extent” (37.06%), a “low extent” (44.67%), a “moderate extent” (14.72%), and a “high extent” (3.55%). This indicates that most pupils have a “high level of confidence,” which is slightly affected by verbal bullying. Thirdly, pupils experience the effects of cyberbullying at a “very low extent” at 88.83%, a “low extent” at 9.64%, a “moderate extent” at 1.02%, and a “high extent” at .51%. This indicates that the majority of the pupils have a “very high level of confidence,” as it is not so affected by cyberbullying.

Lastly, pupils experience the effects of relational bullying to a “very low extent” (48.23%), a “low extent” (28.93%), a “moderate extent” (17.26%), and a “high extent” (5.58%). This implies that the majority of the pupils have a “very high level of confidence,” as it is not so affected by relational bullying. Bullying in schools is a common issue with serious consequences for both learners and the school (Huang, 2022; Gaffney et al., 2021). Furthermore, children and adults have different knowledge and understandings of the consequences of being bullied (Younan, 2019), complicating the process of determining how to solve bullying based on what individuals need or want.

3.3 Extent to Which Pupils Manifest Personal Attributes

In terms of Self-Confidence

Table 7 illustrates the extent to which pupils manifest personal attributes regarding self-confidence. The data revealed that pupils exhibit a “moderate extent” of the negative effects of self-confidence, such as easily getting upset about their mistakes, making it hard to accomplish tasks, and generating new ideas. In addition, they also exhibit poor decision-making, self-doubt, insecurities, and feelings of being small or unimportant, with a weighted mean ranging from 2.66 to 2.75. Thus, pupils have “average self-confidence” as they exhibit a “moderate extent” of the negative effects of self-confidence mentioned above.

Table 7. The extent to which pupils manifest the personal attributes in terms of self-confidence (n = 197)

Indicators	wx̄	VD	EoSC
1. Easily gets upset about my mistake	2.75	ME	A
2. It made it harder for me to get things done and come up with new ideas	2.73	ME	A
3. Poor decision making	2.71	ME	A
4. Self-doubt and insecurities	2.68	ME	A
5. Feeling small or unimportant makes it difficult for me to learn new skills and gain knowledge.	2.66	ME	A
6. Finding it tough to stand up for myself	2.02	LE	H
7. No clear understanding of my purpose in life	2.00	LE	H
8. Failing to notice my accomplishments	1.96	LE	H
Average wx̄	2.43	LE	H

Note: Verbal Description (VD); 4.21 – 5.00 (Very High Extent, VHE), 3.41 – 4.20 (High Extent, HE), 2.61 – 3.40 (Moderate Extent, ME), 1.81 – 2.60 (Low Extent, LE), 1.00 – 1.80 (Very Low Extent, VLE). The extent of Self-Confidence (EoSC); 4.21 – 5.00 (Very Low, VL), 3.41 – 4.20 (Low, L), 2.61 – 3.40 (Average, A), 1.81 – 2.60 (Low, L), 1.00 – 1.80 (Very High, VH).

Moreover, pupils manifest a “low extent” of the following negative effects of self-confidence, such as when they find it challenging to stand up for themselves, lack a clear understanding of their purpose in life, and fail to

acknowledge accomplishments, with a weighted mean of 2.02, 2.00, and 1.96, respectively. In general, the extent to which pupils manifest the negative effects of self-confidence is revealed to be at a "low extent," with an average mean score of 2.43. These results indicate that pupils have a "high level of self-confidence," one of the factors necessary for a child to be an effective, competent, and competitive individual in their daily life. In addition, the results imply that pupils can handle situations efficiently and independently without relying on others, and they can develop self-regulation.

Furthermore, based on the data, it is inevitable and evident that self-confidence in all learners contributes to growth, cooperation, and a sense of belonging in diverse environments (Theobald et al., 2021). Peer relationships are another important aspect of the well-being of children emotionally and psychologically. Consequently, a pleasant and good-quality peer relationship would boost children's self-assurance and life pleasure (Albarelo et al., 2021). This is crucial because self-confidence will affect several things in a student's life. Wafudu and Bin Kamin (2024) claimed that self-assurance is crucial to developing learning, successful academic outcomes, and overall performance.

In addition, when both parents and teachers support them, their self-worth and confidence are greatly boosted, which ultimately broadens the students' learning capabilities and academic achievement. Additionally, Hidayah (2023) found that self-confidence greatly develops the students' public speaking skills. These students controlled their behavior and attitude, spoke clearly, looked directly at the audience appropriately, and interacted with them. They demonstrated a high level of confidence. Furthermore, as explained by Raniere et al. (2021), teachers' behavior, instructional methods, and strategies can have a great influence on students' confidence and satisfaction. These findings strongly encourage promoting positive peer relationships and parent and teacher-family support, which can lead to self-confident children with good well-being.

In terms of Socialization

Table 8 shows the extent to which pupils manifest personal attributes regarding socialization. The data revealed that pupils exhibit a "low extent" of the various negative effects of socialization, like spending more on their gadgets than on their friends and family, not caring or understanding others' emotions, experiencing fluctuating feelings toward others, refusing to play with their classmates and friends, feeling alone and separated from their family and friends, and struggling with interactions and conversations with others. The respective weighted mean scores for these experiences ranged from 1.81 to 2.10. In addition, pupils manifest a "very low extent" when no one wants to befriend them, with a weighted mean of 1.80.

Table 8. The extent to which pupils manifest personal attributes in terms of socialization (n = 197)

Indicators		w $\bar{x}$	VD	EoS
1.	Spending more on my gadgets than my friends and family	2.10	LE	H
2.	Do not care and understand others' emotions	2.08	LE	H
3.	My feelings keep changing toward others.	2.01	LE	H
4.	Refuse to play with my classmates and friends	1.89	LE	H
5.	Feeling alone and separated from my family and friends	1.83	LE	H
6.	Struggling with my interactions and conversations with others	1.81	LE	H
7.	No one wants to be friends with me.	1.80	VLE	VH
Average w$\bar{x}$		1.93	LE	H

Overall, pupils exhibit "high socialization" as they manifest a "low extent" of the negative effects of socialization, with an average mean score of 1.93. These results lead to the understanding that respondents positively utilize socialization. They have good relationships with others, specifically mingling, bonding, and showing empathy. This personal attribute proves that the respondent is willing to listen to others and to share his or her thoughts or sentiments. Socialization improves communication skills as well as knowledge.

Furthermore, it just shows that pupils are socializing well with their fellow classmates or schoolmates and are open to exchanging ideas with others. Socialization is essential for being an effective and useful individual. This correlates to the study of Luminita et al. (2022), which suggests that learners utilize their days at school, which affects their socialization and develops interpersonal and intellectual learning. Through socialization, individuals learn behaviors, customs, virtues, and principles significant for a functional community (Berg, 2022). Good mental

well-being usually goes hand-in-hand with significant societal connections (Burke & Dempsey, 2022). Socialization agents are important in facilitating this process by supporting newcomers' learning through different means. According to Bargues and Valiorgue (2019), socialization agents can support newcomers by answering any questions they may have, offering verbal guidance, practical demonstrations (including modeling), and task adjustments (e.g., modifying the number and complexity of tasks, lowering performance expectations, and assigning tasks that encourage collaboration with colleagues and peers).

Moreover, the degree to which socialization agents have a sense of being accepted and incorporated into the group is determined by their experiences (Toth et al., 2022). This key points to the importance of supportive socialization processes in generating a sense of belonging and well-being among individuals within a community.

In terms of School Engagement

Table 9 illustrates how pupils manifest personal attributes regarding school engagement. The data revealed that pupils exhibit a “low extent” of the negative effects of school engagement. These effects include feeling discouraged from taking part in after-school activities and examinations, feeling unsure about joining class discussions or asking questions, feeling distant from their classmates and teachers, and often being absent, arriving late, and missing their lectures in school. The following received a weighted mean between 1.82 and 1.90.

Table 9. The extent to which pupils manifest the personal attributes in terms of school engagement (n = 197)

Indicators	w $\bar{x}$	VD	EoSE
1. Feeling discouraged from taking part in after-school activities and examination	1.90	LE	H
2. Feeling unsure about joining class discussions or asking questions	1.88	LE	H
3. Feeling distant from my classmates and teachers, which makes it hard for me to interact in the classroom	1.86	LE	H
4. Often absent, arriving late, and missing my lectures in school	1.82	LE	H
5. Poor performance in class, like group activities, oral recitation, and examinations	1.80	VLE	VH
6. Not making my assignments, outputs, and projects	1.78	VLE	VH
Average w$\bar{x}$	1.84	LE	H

In addition, pupils manifest a “very low extent” of the negative effects of school engagement when performing poorly in class, such as during group activities, oral recitations, and examinations, and when not completing their assignments, outputs, and projects, with mean scores of 1.80 and 1.78, respectively. Overall, the extent to which pupils manifest the negative effects of school engagement is disclosed to be at a “low extent,” indicating that pupils have “high school engagement,” with an average mean score of 1.84.

The results indicate that pupils excel in their various school activities and demonstrate consistent interest and engagement in their participation. Probably, teachers are very accommodating to the pupils, the school environment, particularly their classroom, is conducive to learning, and, most importantly, the pupils are friendly. This contradicts Willingham's (2021) idea that children disdain schooling because of the poor depiction of school, which is typical in popular media.

Furthermore, pupils are positive in their school engagement since they do not experience the negative effects revealed by Moeller et al. (2020). He stated that boredom, stress, and tiredness result in negative feelings toward school. Since pupils' school engagement is favorable, it refutes the idea that lesser school admiration is revealed to be complicated because of its connection to achievement and engagement (Bustamante & Hindman, 2019). Since school engagement has been associated with many positive outcomes and decreased risk behaviors, it is important to investigate how high levels of school engagement are maintained. School disengagement is linked with the occurrence of dropping out, behavior problems, substance use, violence, and delinquency. School engagement is also associated with students' good mental health, overall well-being, and healthy behavior; thus, it is a protective factor contributing to their academic achievement and success in general (Fredricks et al., 2019). Hence, young children who experienced positive relationships with appropriate support instructors show higher levels of social and intellectual competencies at school than those who have not (Saro et al., 2022).

In terms of Emotional Well-being

Table 10 shows how pupils manifest personal attributes regarding emotional well-being. The results depict that the extent to which pupils manifest the different negative effects of emotional well-being is at a “low extent”, as evident in the weighted mean with values ranging from 1.81 to 2.60. In general, the extent to which pupils manifest

the negative effects of emotional well-being has an average weighted mean of 2.19, indicating that pupils have “high emotional well-being.”

Table 10. The extent to which pupils manifest the personal attributes in terms of emotional well-being (n = 197)

Indicators	w $\bar{x}$	VD	EoEW
1. Being afraid of not succeeding or failing	2.25	L	H
2. Feeling unsure and jealous	2.21	L	H
3. Feeling depressed, anxious, and lonely	2.20	L	H
4. Having difficulty in sleeping and relaxing	2.15	L	H
5. Turning to harmful ways of coping, like hurting myself	2.13	L	H
Average w$\bar{x}$	2.19	L	H

The results lead to the understanding that pupils are emotionally stable, resilient, and persistent. This correlates with the findings of Courtwright et al. (2020) that positive feelings, such as self-esteem and flexibility, are associated with emotional well-being. Furthermore, emotional well-being resembles emotionally and socially capable learners who recognize and control their emotions, plan to attain goals, build and sustain healthy relationships, and internalize information to nurture their skills (Levin & Segev, 2021).

It is also evident that a person's emotional well-being and intellectual development increase due to social support (Burke & Dempsey, 2022). In a school setting, teachers serve as parental models who show compassion toward their pupils. Positive mental health is a key component of mental or psychological well-being, which includes psychological functioning, happiness, life satisfaction, and stress management (Defeyter et al., 2021). More educational institutions are realizing how closely academic success and socio-emotional development are related. At least two pupils in a class of thirty would benefit from positive reinforcement if they had behavioral obstacles, as behavioral issues are diagnosed in 7.4% of American children between the ages of three and seventeen (Banks, 2022). Numerous studies highlight the importance of mental health for total well-being; in addition to being valued for its own sake, mental health may also actively promote longevity and healthy aging (Kushlev et al., 2020).

In terms of Motivation

Table 11 illustrates the extent to which pupils manifest personal attributes regarding motivation. The data revealed that pupils exhibit a “low extent” in various negative effects of motivation, particularly when they do not put in extra effort to succeed in their work, find it hard to concentrate on their studies, do not have clear targets or ambitions to achieve goals, delay their assignments, projects, studies, and outputs, lack direction in their life, and lose interest in doing various activities. The respective weighted mean for these experiences ranged between 1.83 - 2.13. In addition, pupils manifest a “very low extent” of the negative effects of motivation, such as lacking willingness to solve problems, with a weighted mean of 1.80.

Table 11. The extent to which pupils manifest the personal attributes in terms of motivation (n = 197)

Indicators	w $\bar{x}$	VD	EoM
1. Not putting in extra effort to succeed in my work	2.13	LE	H
2. I am finding it hard to concentrate on my studies	2.09	LE	H
3. Do not have clear target or ambitions to achieve goals	2.05	LE	H
4. Delaying my assignments, projects, studies, and outputs	1.91	LE	H
5. Lack of direction in my life	1.85	LE	H
6. Losing interest in doing various activities	1.83	LE	H
7. Lacking the willingness to solve problems	1.80	VLE	VH
Average w$\bar{x}$	1.95	LE	H

Overall, the extent to which pupils manifest the negative effects of motivation is disclosed to be at a “low extent”, indicating that pupils have “high motivation,” with an average weighted mean of 1.95. The results lead to the understanding that pupils are motivated and not inattentive and directionless. Having good relationships with others and having objectives are the main factors why pupils are well-motivated. This agrees with the observation of Pedler et al. (2022) that learners with positive relationships with peers display a high motivation to learn.

Satisfaction determines an impact on learners’ attitudes, engagement, and participation (Nikou & Economides, 2021). Aspiration and ambition for the future, a positive learning nature, value learning, and eagerness to thrive

are the criteria for learners' motivation (Fauzi & Anindiati, 2021), which are evident from the respondents. Low levels of a sense of connection can impede motivation and involvement in learning, which is evident across various aspects (Fredricks et al., 2019). As per Katz and Sasson (2019), a deficiency in motivation is described as having inadequate enthusiasm and eagerness to perform a task.

Furthermore, according to Saro et al. (2022), the methods, strategies, and instruction patterns established the groundwork for learners' enthusiastic motivation that helped set expectations for learners and promoted a community in the classroom where students took more responsibility for their learning and valued their participation. Based on this broad understanding, fostering a sense of connection and enthusiastic motivation among learners promotes engagement and overall success.

Summary

Table 12 summarizes the extent to which pupils manifest personal attributes. The data revealed that all personal attributes, particularly self-confidence, socialization, school engagement, emotional well-being, and motivation, are at a "low extent" of the different negative effects of personal attributes. The weighted mean of the five personal attributes ranges from 1.84 to 2.43, with a composite mean of 2.06. These results indicate that pupils have "high personal attributes."

Table 12. Summary table as to the extent to which pupils manifest personal attributes

Indicators	w $\bar{x}$	VD	EoPA
1. Self-Confidence	2.43	LE	H
2. Socialization	1.93	LE	H
3. School Engagement	1.84	LE	H
4. Emotional Well-being	2.19	LE	H
5. Motivation	1.95	LE	H
Composite mean	2.06	LE	H

The respondents' personal attributes are manifested positively. This is supported by thorough research conducted among different schools, which indicates that learners' social interaction influences their learning process, psychological well-being, and overall educational performance (Tetzner & Becker, 2019). Moreover, the research of Tetzner and Becker (2019) implies that approval and support from other groups of individuals essentially contribute to transforming persons' positive attitudes.

Regarding indirect experiences, activities, including peer observation and peer modeling, can provide opportunities for pupils to increase their efficacy by observing others accomplish successful tasks (Waddington, 2019). There should be support, care, and monitoring by the teachers to mold a good personal attribute in an individual. Thus, it aligns with the study of Lin et al. (2022) that pupils with higher intellectual and emotional well-being are linked with a virtuous learner-teacher relationship.

3.4 Relationship Between the Extent to Which Pupils Experienced Bullying and the Personal Attributes Manifested

Table 13 shows the significant relationship between the extent to which pupils experienced bullying and their manifested personal attributes. Firstly, physical bullying has a "Moderate Relationship" with almost all the manifested personal attributes, with the following *r* values: 0.3819 for self-confidence, 0.3568 for socialization, 0.3468 for school engagement, and 0.3497 for motivation, except emotional well-being, which has a "Weak Relationship" with the *r* value of 0.2565.

Table 13. Analysis of the relationship between the extent to which pupils experienced bullying and the personal attributes manifested

Variables	Self-Confidence	Socialization	School Engagement	Emotional Well-being	Motivation
			R-values		
Physical Bullying	0.3819*	0.3568*	0.3468*	0.2565*	0.3497*
Verbal Bullying	0.4781*	0.4092*	0.3581*	0.3657*	0.3757*
Cyber Bullying	0.3514*	0.3528*	0.3269*	0.4639*	0.3294*
Relational Bullying	0.4519*	0.4474*	0.3264*	0.4700*	0.4248*

Secondly, verbal bullying has a “Strong Relationship” with manifested personal attributes, with the following r values of 0.4781 for self-confidence and 0.4092 for socialization. A “Moderate Relationship” is also observed for school engagement, emotional well-being, and motivation, with the r values of 0.3581, 0.3657, and 0.3757, respectively. Thirdly, cyberbullying has a “Moderate Relationship” with manifested personal attributes, with the following r values of 0.3514 for self-confidence, 0.3528 for socialization, 0.3269 for school engagement, and 0.3294 for motivation. However, a “Strong relationship” was observed in emotional well-being, with an R -value of 0.4639.

Lastly, relational bullying has a “Strong Relationship” with the manifested personal attributes, with the following r values of 0.4519 for self-confidence, 0.4474 for socialization, 0.4700 for emotional well-being, and 0.4248 for motivation. Additionally, a “Moderate Relationship” is observed in school engagement, with an R -value of 0.3264. Overall, since all the variables have correlation coefficients (r values) greater than the tabular value of 0.1946 at the 0.05 level of significance with 190 degrees of freedom, Table 4.1 demonstrates a significant relationship between the extent to which pupils experience bullying and the personal attributes they manifest, including self-confidence, socialization, school engagement, motivation, and emotional well-being. This implies that bullying can influence a child’s characteristics and behavior.

This is associated with the research of Aunampai et al. (2022) conducted on grade school learners in Thailand, which found a direct association between low satisfaction among victims and a strong occurrence of bullying. Similarly, in Indonesia, Rahmawati et al. (2021) observed an eventual decrease in learners’ motivation to learn, which affected their psychological well-being due to bullying experiences.

The definition of bullying itself describes its correlation with personal attributes, as based on the study of Markkanen et al. (2021), which states that bullying is a form of cruelty that impacts a child's well-being. Furthermore, bullying activity does affect different health problems, such as physical and mental aspects, as highlighted by Deryol and Wilcox (2020). When faced with academic challenges, adolescents with stronger self-compassion exhibit fewer depressive symptoms (Lahtinen et al., 2020). Research consistently shows a negative correlation between self-compassion and the likelihood of engaging as a victim or aggressor (Geng & Lei, 2021). In addition, a study by Beduna et al. (2019) discovered that individuals with low levels of self-empathy who were harassed are more likely to suffer from shame in adulthood.

To conclude, these results highlight the significance of advocating and supporting self-empathy among adolescents to reduce the adverse effects of bullying. Dealing with bullying and encouraging self-compassion can lead to better mental health and overall well-being, still stressing the need for comprehensive anti-bullying strategies in educational settings. By understanding the intricate relationship between bullying, self-empathy, and health outcomes, stakeholders can promote the development and resilience of present and future young individuals.

4.0 Conclusion

Bullying can negatively influence self-confidence, emotional well-being, school engagement, socialization, and motivation, which can further affect a child’s psychological and academic implications. Hence, it is very necessary to educate and safeguard children from it to break the cycle of bullying. Drawing on the resilience of children and the long-term effects experienced as a result of bullying, this study supports interventions geared towards an empathetic environment marked by respect and self-empowerment. It offers significant insights that can generate new policies and practices to create safer and more supportive learning environments. Such insights are key to developing strategies for educators, policymakers, and parents that allow all students to grow academically and emotionally. Implementing anti-bullying programs, promoting inclusive school cultures, and providing resources for mental health support are essential steps toward mitigating the adverse effects of bullying on all learners. Addressing bullying effectively benefits all stakeholders by enhancing individual growth and contributing to a more positive and productive school community. By promoting empathy, respect, and self-empowerment, students can develop the resilience to thrive academically and personally, ensuring a brighter future for all learners.

5.0 Contributions of Authors

The authors confirm contribution to the paper: Melbert Geneil F. Sy for the study conception, editing, writing, data collection, and encoding; Dr. Yvonne P. Cruz, the researcher's statistician and adviser, for the supervision, analysis, and interpretation of results. All authors reviewed the results and approved the final version of the manuscript.

6.0 Funding

This research did not receive funding from any funding agency.

7.0 Conflict of Interests

This study has no conflict of interest of any sort.

8.0 Acknowledgment

Unbounded appreciation and heartfelt gratitude are extended to the following individuals: Dr. Yvonne P. Cruz, the researcher's statistician, and adviser, for her guidance, patience, help, commitment, and motivation throughout this study; Dr. Maria Chona Z. Futralan, the researcher's supportive mentor, for her constructive suggestions and comments; Dr. Lorilyn N. Nudalo the researcher's editor; Dr. Romario P. Ybañez, Dr. Erlinda N. Calumpang, Dr. Modesta C. Cabiara, and Dr. Carmencita C. Tan, who have shown their eminent abilities and skills in their areas, as seen in their critiques, corrections, and shared ideas.

8.0 References

- Acido, J. V., & Caballes, D. G. (2024). Assessing educational progress: A comparative analysis of PISA results (2018 vs. 2022) and HDI correlation in the Philippines. *International Journal of Novel Research and Development*, 8(12), 840-848. <https://www.ijnrd.org/papers/IJNRD2312395.pdf>
- Albarello, F., Crocetti, E., & Rubini, M. (2021). Developing identification with humanity and social well-being through social identification with peer groups in adolescence. *Journal of Youth and Adolescence*, 50(6), 1157-1172. <https://doi.org/10.1007/s10964-020-01214-4>
- Arcadepani, F. B., Eskenazi, D. Y., Fidalgo, T. M., & Hong, J. S. (2021). An exploration of the link between bullying perpetration and substance use: A review of the literature. *Trauma, Violence, & Abuse*, 22(1), 207-214. <https://doi.org/10.1177/152483801983759>
- Aunumpai, A., Widyastari, D. A., Chuanwan, S., & Katewongsa, P. (2022). Association of bullying on happiness at school: evidence from Thailand's national school-based survey. *International Journal of Adolescence and Youth*, 27(1), 72-84. <https://doi.org/10.1080/02673843.2021.202511>
- Banks, E. (2022). Evaluating the Effect of Secondary School Seating Arrangements on On-Task Behaviors: An Analysis of Student Behavior and Teacher Movement (Doctoral dissertation). Oklahoma State University
- Bargues, E., & Valiorgue, B. (2019). Maintenance and creation of roles during socialization processes in entrepreneurial small firms: An institutional work perspective. *M@n@gement*, 22(1), 30-55. <https://doi.org/10.3917/mana.221.0030>
- Beduna, K. N., & Perrone-McGovern, K. M. (2019). Recalled childhood bullying victimization and shame in adulthood: The influence of attachment security, self-compassion, and emotion regulation. *Traumatology*, 25(1), 21. <https://doi.org/10.1037/trm000016>
- Berg, A. T., Kaat, A. J., Zelko, F., & Wilkening, G. (2022). Rare diseases-rare outcomes: Assessing communication abilities for the developmental and epileptic encephalopathies. *Epilepsy & Behavior*, 128, 108586. <https://doi.org/10.1016/j.yebeh.2022.108586>
- Brown, B., Myers, D., Casteel, C., & Rauscher, K. (2020). Exploring differences in the workplace violence experiences of young workers in middle and late adolescence in the United States. *Journal of Safety Research*, 74, 263-269. <https://doi.org/10.1016/j.jsr.2020.06.008>
- Burke, J., & Dempsey, M. (2022). Undertaking capstone and final year projects in psychology: practical guide for students. Routledge.
- Bustamante, A. S., & Hindman, A. H. (2019). Classroom quality and academic school readiness outcomes in Head Start: The indirect effect of approaches to learning. *Early Education and Development*, 30(1), 19-35. <https://doi.org/10.1080/10409289.2018.154024>
- Courtwright, S. E., Flynn Makic, M. B., & Jones, J. (2020). Emotional wellbeing in youth: A concept analysis. In *Nursing Forum*, 55(2), 106-117. <https://doi.org/10.1111/nuf.12404>
- Defeyter, M. A., Stretesky, P. B., Long, M. A., Furey, S., Reynolds, C., Porteous, D., & Gonçalves, L. (2021). Mental well-being in UK higher education during COVID-19: Do students trust universities and the government? *Frontiers in public health*, 9, 646916. <https://doi.org/10.3389/fpubh.2021.646916>
- Deryol, R., & Wilcox, P. (2020). Physical health risk factors across traditional bullying and cyberbullying victim and offender groups. *Victims & Offenders*, 15(4), 520-547. <https://doi.org/10.1080/15564886.2020.1732510>
- Duan, S., Duan, Z., Li, R., Wilson, A., Wang, Y., Jia, Q., & Chen, R. (2020). Bullying victimization, bullying witnessing, bullying perpetration and suicide risk among adolescents: A serial mediation analysis. *Journal of Affective Disorders*, 273, 274-279. <https://doi.org/10.1016/j.jad.2020.03.143>
- Duma, M. G. (2022). Gender Mainstreaming Plan for Gender-Responsive Public Schools. PUPIL: *International Journal of Teaching, Education and Learning*, 5(3), 144-161. <https://doi.org/10.20319/ijtel.2022.53.144161>
- Endedijk, H. M., Breeman, L. D., van Lissa, C. J., Hendrickx, M. M., den Boer, L., & Mainhard, T. (2022). The teacher's invisible hand: A meta-analysis of the relevance of teacher-student relationship quality for peer relationships and the contribution of student behavior. *Review of Educational Research*, 92(3), 370-412. <https://doi.org/10.3102/00346543211051428>
- Farina, K. A. (2019). Promoting a culture of bullying: Understanding the role of school climate and school sector. *Journal of School Choice*, 13(1), 94-120. <https://doi.org/10.1080/15582159.2018.1526615>
- Fauzi, M. F., & Anindiaty, I. (2021). Improving the Motivation of Students in Arabic Language Learning through Learning Management System. *Izdihar: Journal of Arabic Language Teaching, Linguistics, and Literature*, 4(3), 257-274. <https://doi.org/10.22219/ijz.v4i3.19110>
- Fazeli, S., Zeidi, I. M., Lin, C. Y., Namdar, P., Griffiths, M. D., Ahorsu, D. K., & Pakpour, A. H. (2020). Depression, anxiety, and stress mediate the associations between internet gaming disorder, insomnia, and quality of life during the COVID-19 outbreak. *Addictive Behaviors Reports*, 12, 100307. <https://doi.org/10.1016/j.abrep.2020.100307>
- Fischer, R., Bortolini, T., Karl, J. A., Zilberberg, M., Robinson, K., Rabelo, A., ... & Mattos, P. (2020). Rapid review and meta-meta-analysis of self-guided interventions to address anxiety, depression, and stress during COVID-19 social distancing. *Frontiers in psychology*, 11, 563876. <https://doi.org/10.3389/fpsyg.2020.563876>
- Fitriyati, F., Mustaji, M., & Bachri, B. S. (2023). The Influence Of Problem-Based Learning On The Ability To Work Together And Solve Problems Of Students In Class XII Ma Al Hidayah Bangkalan PPKN Subjects. *Jurnal Indonesia Sosial Teknologi*, 4(12), 2213-2228. <https://doi.org/10.59141/jist.v4i12.813>
- Fredricks, J. A., Parr, A. K., Amemiya, J. L., Wang, M. T., & Brauer, S. (2019). What matters for urban adolescents' engagement and disengagement in school: A mixed-methods study. *Journal of Adolescent Research*, 34(5), 491-527. <https://doi.org/10.1177/0743558419830638>
- Gaffney, H., Ttofi, M. M., & Farrington, D. P. (2021). What works in anti-bullying programs? Analysis of effective intervention components. *Journal of school psychology*, 85, 37-56. <https://doi.org/10.1016/j.jsp.2020.12.002>
- Gamalinda, T. B., & Ofreneo, M. A. P. (2024). "We're All Human, Right?": Social Representations of LGBT+ in Senate Hearings on the SOGIE Equality Bill in the Philippines. *Sexuality Research and Social Policy*, 21, 1-14. <https://doi.org/10.1007/s13178-024-00953-0>
- Geng, J., & Lei, L. (2021). Relationship between stressful life events and cyberbullying perpetration: Roles of fatalism and self-compassion. *Child Abuse & Neglect*, 120, 105176. <https://doi.org/10.1016/j.chiabu.2021.105176>
- Gong, Z., Reinhardt, J. D., Han, Z., Ba, Z., & Lei, S. (2022). Associations between school bullying and anxiety in children and adolescents from an ethnic autonomous county in China. *Psychiatry research*, 314, 114649. <https://doi.org/10.1016/j.psychres.2022.114649>
- Hanani, A. (2021). Bullying behaviors among university students in Palestine. *Public Health Open Access*, 5(000189), 10-23880. <https://doi.org/10.23880/phoa-16000189>
- Hinduja, S., & Patchin, J. W. (2022). Bullying and cyberbullying offending among US youth: The influence of six parenting dimensions. *Journal of Child and Family Studies*, 31(5), 1454-1473. <https://doi.org/10.1007/s10826-021-02208-7>
- Hidayah, N. (2023). A study on the self-confidence of English department students after taking public speaking course: a narrative study (Doctoral dissertation). UIN KH Abdurrahman Wahid Pekalongan
- Huang, H., Ding, Y., Wan, X., Liang, Y., Zhang, Y., Lu, G., & Chen, C. (2022). A meta-analysis of the relationship between bullying and non-suicidal self-injury among children and adolescents. *Scientific reports*, 12(1), 17285. <https://doi.org/10.1038/s41598-022-22122-2>
- Ilyassova, G. A., & Zhamburbayeva, S. (2024). Child welfare as the primary direction of improving the legislation of the Republic of Kazakhstan: prevention of bullying in everyday and educational life. *Bulletin of the Karaganda University "Law Series"*, 11329(1), 138-146. <https://doi.org/10.31489/20241/138-146>
- Kennedy, R. S., Font, S. A., Haag, A. C., & Noll, J. G. (2022). Childhood sexual abuse and exposure to peer bullying victimization. *Journal of interpersonal violence*, 37(19-20), 18589-18613. <https://doi.org/10.1177/08862605211037420>

- Katz, H., & Sasson, U. (2019). Beyond universalistic motivations: Towards an adolescent volunteer functions inventory. *Voluntary Sector Review*, 10(2), 189-211. <https://doi.org/10.1332/204080519X15629379320509>
- Kim, S. H., Choe, Y. H., Cho, Y. U., Park, S., & Lee, M. H. (2022). Effects of a partnership-based, needs-tailored self-management support intervention for post-treatment breast cancer survivors: A randomized controlled trial. *Psycho-Oncology*, 31(3), 460-469. <https://doi.org/10.1002/pon.5828>
- Kurniati, N., Purnamasari, I., & Rahmawati, I. (2023). Analysis of the Impact of Verbal Bullying on Elementary School Children. *Jurnal Ilmiah Wahana Pendidikan*, 9(20), 383-393. https://doi.org/10.2991/978-2-494069-21-3_14
- Lestari, N. E. (2023, September). Analysis of the Incidents of Bullying and Its Relation to Health-Related Quality of Life in Indonesian Adolescents. In *Proceedings of the International Conference on Nursing and Health Sciences*, 4(2), 551-558. <https://doi.org/10.37287/picnhs.v4i2.2267>
- Kushlev, K., Drummond, D. M., & Diener, E. (2020). Subjective well-being and Health behaviors in 2.5 million Americans. *Applied Psychology: Health and Well-Being*, 12(1), 166-187. <https://doi.org/10.1111/aphw.12178>
- Lahtinen, O., Järvinen, E., Kumlander, S., & Salmivalli, C. (2020). Does self-compassion protect adolescents who are victimized or suffer from academic difficulties from depression?. *European Journal of Developmental Psychology*, 17(3), 432-446. <https://doi.org/10.1080/17405629.2019.1662290>
- Levin, O., & Segev, Y. (2023). The missing piece in the CASEL model: The impact of social-emotional learning on online literature teaching and learning. *Education Sciences*, 13(11), 1123. <https://doi.org/10.3390/educsci13111123>
- Lin, S., Fabris, M. A., & Longobardi, C. (2022). Closeness in student-teacher relationships and students' psychological well-being: the mediating role of hope. *Journal of Emotional and Behavioral Disorders*, 30(1), 44-53. <https://doi.org/10.1177/10634266211013756>
- Luminita, S. M., Florica, C. M., & Georgiana, T. (2022). Development and optimization of social skills in children of preschool age who come from single-parent families vs. biparental. *Technium Soc. Sci.*, 30, 386. <https://doi.org/10.47577/tssj.v30i1.6332>
- Lunneblad, J., Johansson, T., & Odenbring, Y. (2019). Violence in urban schools: school professionals' categorizations and explanations of violence among students in two different demographic areas. *International studies in sociology of education*, 28(1), 63-80. <https://doi.org/10.1080/09620214.2018.1521298>
- Markkanen, L., Välimaa, R., & Kannas, L. (2021). Forms of bullying and associations between school perceptions and being bullied among Finnish secondary school students aged 13 and 15. *International journal of bullying prevention*, 3(1), 24-33. <https://doi.org/10.1007/s42380-019-00058-y>
- Moeller, J., Brackett, M. A., Ivcevic, Z., & White, A. E. (2020). High school students' feelings: Discoveries from a large national survey and an experience sampling study. *Learning and Instruction*, 66, 101301. <https://doi.org/10.1016/j.learninstruc.2019.101301>
- Nikou, S. A., & Economides, A. A. (2021). A framework for mobile-assisted formative assessment to promote students' self-determination. *Future Internet*, 13(5), 116. <https://doi.org/10.3390/fi13050116>
- O'Higgins Norman, J. (2020). Tackling bullying from the inside out: Shifting paradigms in bullying research and interventions: UNESCO Chair on Tackling Bullying in Schools and Cyberspace, Inaugural Lecture delivered on 7th October 2019 at Dublin City University. *International journal of bullying prevention*, 2(3), 161-169. <https://doi.org/10.1007/s42380-020-00076->
- Onyedire, N. G., Chukwuorji, J. C., Orjiakor, T. C., Onu, D. U., Aneke, C. I., & Ifeagwazi, C. M. (2021). Associations of Dark Triad traits and problem gambling: Moderating role of age among university students. *Current Psychology*, 40, 2083-2094. <https://doi.org/10.1007/s12144-018-0093-3>
- Pedler, M. L., Willis, R., & Nieuwoudt, J. E. (2022). A sense of belonging at university: Student retention, motivation and enjoyment. *Journal of Further and Higher Education*, 46(3), 397-408. <https://doi.org/10.1080/0309877X.2021.1955844>
- Potard, C., Kubiszewski, V., Combes, C., Henry, A., Pochon, R., & Roy, A. (2022). How adolescents cope with bullying at school: Exploring differences between pure victim and bully-victim roles. *International journal of bullying prevention*, 4(2), 144-159. <https://doi.org/10.1007/s42380-021-00095-6>
- Rahmawati, R., Titisari, K. H., & Pawenang, S. (2021). Learning interest, achievement motivation, learning style, and self-reliance of learning effect on student achievement at SMP Batik Surakarta. *International Journal of Economics, Business and Accounting Research*, 5(3), 1974-1984. <https://jurnal.stie-aas.ac.id/index.php/IJEBAR/article/view/3095>
- Ranieri, M., Rossi, P. G., & Panciroli, C. (2021). Active Learning in large size classes. A multiple case study on technology-enhanced feedback in academic contexts. In *EDULEARN21 Proceedings* (pp. 9154-9159)
- Saneleuterio, E., López-García-Torres, R., & Fernández-Ulloa, T. (2023). Forestalling Bullying in Primary and Secondary Schools in Spain. *Athens Journal of Education*, 10(1), 9-25. <https://doi.org/10.30958/aje-10-1-1>
- Saro, J., Silabay, A., Lumbanon, J., Pepugal, E., & Pareja, M. (2022). School-Based Management: Reevaluating and Innovating Learning Outcomes to Refine Schools' Performances and Practices. *Psychology and Education: A Multidisciplinary Journal*, 4(5), 439-448. <https://doi.org/10.5281/zenodo.7087798>
- Smahel, D., Machackova, H., Mascheroni, G., Dedkova, L., Staksrud, E., Ólafsson, K., & Hasebrink, U. (2020). EU Kids Online 2020: Survey results from 19 countries. Retrieved from <https://doi.org/10.21953/lse.47fdeqj01ofo>
- Spadafora, N., Marini, Z. A., & Volk, A. A. (2020). Should I defend or should I go? An adaptive, qualitative examination of the personal costs and benefits associated with bullying intervention. *Canadian Journal of School Psychology*, 35(1), 23-40. <https://doi.org/10.1177/0829573518793752>
- Ten Bokkel, I. M., Roorda, D. L., Maes, M., Verschueren, K., & Colpin, H. (2023). The role of affective teacher-student relationships in bullying and peer victimization: A multilevel meta-analysis. *School psychology review*, 52(2), 110-129. <https://doi.org/10.1080/2372966X.2022.2029218>
- Tetzner, J., & Becker, M. (2019). Why are you so optimistic? Effects of sociodemographic factors, individual experiences, and peer characteristics on optimism in early adolescents. *Journal of personality*, 87(3), 661-675. <https://doi.org/10.1111/jopy.12424>
- Theobald, K. A., Tuttici, N., Ramsbotham, J., & Johnston, S. (2021). Effectiveness of using simulation in the development of clinical reasoning in undergraduate nursing students: A systematic review. *Nurse Education in Practice*, 57, 103220. <https://doi.org/10.1016/j.nepr.2021.103220>
- Toth, A. A., Dunn, A. M., Shanock, L. R., Sargent, A. C., Kavanagh, K. A., & Leonard, S. (2022). You being new can be hard on me too: Considering the veteran employee during newcomer socialization. *Human Performance*, 35(3-4), 261-277. <https://doi.org/10.1080/08959285.2022.2111432>
- Vargo, E. J., & Chiu, H. (2022). Bullying and other risk factors related to adolescent suicidal behaviours in the Philippines: a look into the 2011 GSHS Survey. *BMC psychiatry*, 22(1), 445. <https://doi.org/10.1186/s12888-022-04085-w>
- Waddington, J. (2019). Developing primary school students' foreign language learner self-concept. *System*, 82, 39-49. <https://doi.org/10.1016/j.system.2019.02.012>
- Wafudu, S. J., & Bin Kamin, Y. (2024). Quality assurance: a conceptual framework for teaching and learning standards in vocational and technical education programs. *Quality Assurance in Education*.
- Willingham, D. T. (2021). Why don't students like school?: A cognitive scientist answers questions about how the mind works and what it means for the classroom. John Wiley & Sons.
- Younan, B. (2019). A systematic review of bullying definitions: How definition and format affect study outcome. *Journal of Aggression, Conflict and Peace Research*, 11(2), 109-115. <https://doi.org/10.1108/JACPR-02-2018-0347>

A Structural Model of an Exemplary Mathematics Teacher in Junior High School

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Date received: September 6, 2024

Date revised: September 18, 2024

Date accepted: October 3, 2024

Originality: 90%

Grammarly Score: 99%

Similarity: 10%

Recommended citation:

Gonzales, C. (2024). A structural model of an exemplary Mathematics teacher in junior high school. *Journal of Interdisciplinary Perspectives*, 2(11), 155-168. <https://doi.org/10.69569/jip.2024.0482>

Abstract. This study develops a structural model of an exemplary mathematics teacher featuring students' perspectives. This study used an exploratory sequential mixed method research (MMR) design. Focus Group Discussions (FGDs) and Key Informant Interviews (KIIs) were conducted to determine the attributes of an exemplary mathematics teacher. The participants of the FGD were the students from the chosen two secondary schools, with eight student representatives from each school. The KII was also done with ten mathematics teachers and one mathematics supervisor. Exploratory Factor Analysis (EFA) was conducted for the attributes of an exemplary mathematics teacher, and it yielded four factors, namely: (1) Expertise, (2) Effective Communication with Students, (3) Devolution, and (4) Teacher's Disposition. Confirmatory Factor Analysis (CFA) was performed on the hypothesized Model with four latent variables with their corresponding observed variables using Analysis of Moment Structure (AMOS) version 21. Using the Structural Equation Model (SEM) technique, the findings revealed a significant influence of the factors on exemplary mathematics teaching, thus providing a theoretical foundation for this study. Moreover, the findings also showed significant contributions of the observed variables (S.Q. items) to the latent variables (factors). Based on the SEM findings supported by the literature, the structural Model of an exemplary mathematics teacher was empirically founded. The developed model could serve as one of the platforms for lifting mathematics education. Also, the validated survey questionnaire could be a tool for assessing mathematics teachers.

Keywords: Confirmatory factor analysis; Exemplary Mathematics teaching; Structural equation model; Students' perspectives.

1.0 Introduction

Numerous studies have explored the integrity of mathematics teaching, but very few have sought the perspective of learners. Students' perspectives on mathematics teaching are deemed significant, given the current international trends of declining engagement and participation of students in this subject area. This academic matter has always been regarded as the primary concern of nations struggling to increase mathematics performance. Most of the studies that gathered students' responses about disengagement from mathematics have reported low confidence in the subject, poor content knowledge, lack of motivation in learning, and lastly, dissatisfaction with the skills and knowledge of the teacher (Aguilar, 2021).

In trying to look at situations worldwide, the quality of teaching makes up for significant Variance in students' mathematics performance (Toropova et al., 2019). According to Zhou et al. (2023), students in China who have exemplary teachers perform better than those whose inefficient teachers handle. Many countries such as Australia, the Netherlands, France, Finland, and the United States, which previously focused on just hiring the required number of teachers, are now inclined to ensure that quality of teaching should be the essential thing to consider in the educational policy (OECD, 2015).

Moreover, the quality of mathematics teaching has a concrete reflection on students' mathematics performance. Program for International Student Assessment [PISA] (2022) reported that Singapore was recognized as the topmost performing country in mathematics assessment while the Philippines is still one of the countries with low performance in mathematics, reading, and science. The Philippines took part in PISA 2018 and 2022 conducted by OECD. Filipino students are among the least proficient in arithmetic, reading, and science. Its performance has not considerably improved since the review in 2018 (Acido & Caballes, 2024). This is confirmed by the study of Kilag et al. (2024) that fundamental issues in mathematics education have not been sufficiently addressed. Filipino pupils' average PISA results have improved slightly, rising from 353 in 2018 to 355 in 2022. Despite efforts to improve, the marginal result still placed the Philippines among the lowest performers, ranking 75th out of 81 countries (OECD, 2023). This highlights a substantial gap in essential mathematics skills and critical thinking ability, with nearly 84% of students still below the basic competency level.

This inefficient performance in mathematics has been an alarming concern in recent years. Several factors contribute to the poor performance of Filipino students in mathematics. One concern is the quality of mathematics instruction. Research revealed that teachers' expertise in teaching mathematics is essential for filling in the hole in mathematics performance (Katz & Stupel, 2016). In the Philippines, however, many teachers lack professional development training in teaching lifelong mathematics skills (Tan, 2015). Roxas (2015) emphasized that the most significant factor in creating interest in mathematics is a systematic, well-rounded, competent, and expert teacher. This mathematics teaching gap requires a mathematics teacher's full potential and expertise.

In line with the idea of uplifting students' performance in mathematics to national and international standards, the need for an exemplary mathematics teacher should be given utmost attention. Several studies posited a definition of an exemplary teacher. The terms 'expert teachers', 'excellent teachers,' and 'lead teachers' were utilized to describe exemplary teachers and academic leaders who exemplify the establishment of a meaningful teaching-learning process in the classroom. Webb et al. (2019) deal with the idea that exemplary teachers are not only capable of teaching and facilitating students but are also able to collaborate with colleagues in order to widen their perspective on matters regarding instruction. Moreover, these teachers are considered fully equipped in their field of specialization (Bush et al., 2016). The main task of an exemplary mathematics teacher is to ensure that they deliver instruction with high standards.

Moreover, the expert teacher vouches for all components of excellent mathematics teaching, such as the possession of highly equipped content knowledge, mastery of content, mathematics instructional techniques, and overall teaching strategy so that the teacher can effectively interact with the students (Science Education Institute, Department of Science and Technology [SEI-DOST] and the Philippine Council of Mathematics Teacher Education [MATHTED] (2011). This type of teacher supremely dissolves theory in actual teaching. The exemplary teacher also manifests the dire need to transcend beyond the goals of mathematics education and is willing to continue the development of mathematics teaching and learning.

In line with advocating excellent mathematics teaching, the Department of Education recognizes teachers who go the extra mile to deliver quality mathematics education at par with other nations. Also, giving recognition to exemplary teachers and granting salary and vertical promotion are deemed necessary to increase their motivation to achieve local, national, and even international standards of performance among students (Ariffin et al., 2018). This is also confirmed by Symaco (2013) that ensuring adequate funding, providing incentives for teacher performance, and establishing closed monitoring and evaluation frameworks are essential measures in uplifting the mathematics proficiency of students.

However, minimal research exists on the roles and responsibilities of Excellent Mathematics Teachers that could contribute to developing a performance framework specifically for teaching mathematics, wherein students' perceptions will be valued and considered. Hence, this study aimed to develop a framework for Exemplary Mathematics Teachers' roles and responsibilities in response to the need to enhance the mathematics proficiency level holistically and, at the same time, construct and validate a students' evaluation tool for assessing their mathematics teachers' performance.

This study aimed to develop a structural model of an exemplary Mathematics teacher at the junior high school level. The findings of this study would serve as a foundation for developing an annual program to train mathematics teachers inclined to provide efficient teaching strategies. This would also help monitor the performance of mathematics teachers. The findings of this study would also encourage math teachers to continue filling in the gap between students and mathematics learning and eradicating the notion of difficulty of the subject in order to direct them to the required proficiency level in mathematics.

2.0 Methodology

2.1 Research Design

The study used an exploratory sequential mixed method research (MMR) design. The exploratory design of research involved qualitative data. The resulting themes were used to fabricate a quantitative instrument to further explore the research objectives (Creswell & Plano Clark, 2011; Teddlie & Tashakkori, 2008; Onwuegbuzie et al., 2010). The qualitative method was utilized to generate the attributes of an exemplary mathematics teacher through focus group discussions (FGDs) and Key Informant Interviews (KIIs). The output of the FGDs and KIIs was used to construct the framework of the study, which would also be the basis for the survey instrument.

2.2 Research Locale

This study was conducted in Davao del Sur. Nine municipalities existed in Davao del Sur, each with one private high school and one public high school. The sectarian private schools were managed by different Catholic religious organizations, while the public schools were managed by the Department of Education.

2.3 Research Participants

For the qualitative aspect of the study, focus group discussions (FGDs) and key informant interviews (KIIs) were conducted. The participants of the FGD were the students from the chosen two secondary schools in Davao del Sur, one private school and one public school with the highest population of students. Each school had eight representatives with equal participation of students based on their percentile rank in mathematics grades. The students with the highest rank, the middle, and the bottom were taken as participants in the FGD. This was to ensure that the three levels of performance were well-represented. The KII was also done with ten mathematics teachers and one mathematics supervisor. This was to enrich the gathering of attributes of an exemplary mathematics teacher. KIIs are qualitative. These were in-depth interviews with people who were knowledgeable about the subject. The purpose of conducting KII was to gather information from participants with different backgrounds to deepen the discussion and, in turn, ask follow-up questions.

A purposive sampling method was used to determine all the FGD members and key informants. For FGD, students at the top (three students), middle (three students), and bottom (two students) percentile ranks based on mathematics grades were the participants. Regarding the recommended sample size for the qualitative research, Subedi (2021) said that four to five participants are enough to have enough knowledge and expertise in the topic of inquiry. Mathematics teachers from two chosen schools for FGDs were randomly chosen as key informants so that the needed information to expedite the study would be the exact data necessary to answer the research questions. One mathematics supervisor was also interviewed to widen the data sources scope further.

For the quantitative aspect of the study, the respondents were Grades 7-10 junior high school students. The respondents were 416 students from private and public high schools in Davao del Sur. The results of the FGD served as the basis for crafting the survey questionnaire, which was validated and pilot-tested before its full implementation.

To select the student respondents, the researcher utilized an online-based sample size calculator to determine the sample size. Then, proportionate stratified random sampling was used to determine the specific number of respondents who would answer the questionnaires. This would ensure a fair selection of students.

2.4 Research Instrument

The researcher developed an FGD template and a KII semi-structured interview form. These instruments helped the researcher gather the participants' responses to questions about their perceptions of the attributes of an exemplary mathematics teacher. After gathering these data, a survey questionnaire was developed. There were 91 formulated meanings constructed from the responses of the participants in FGDs and KIIs. Thus, these 91 meanings became the items for the survey questionnaire. Three mathematics experts validated the instrument. After receiving experts' feedback, the researcher revised the questionnaire following their comments and suggestions to merge similar items; hence, the number of items was trimmed down to 65. The questionnaire was then administered to 42 junior high school students for pilot testing. The purpose of testing was to detect any problems with the items. A Cronbach's Alpha 0.943 made the survey questionnaire ready for implementation.

The researcher utilized a 7-point Likert Scale in the survey questionnaire. Students rated each item, one being the lowest and seven being the highest. Tarka (2017) suggested that a 7-point scale is comparable to analytical tools such as confirmatory factor analysis or structural equation models. Table 1 shows the selected examples from the survey questionnaire. Four items were selected as examples: 24, 62, 16, and 18. The first example pertains to the pedagogical knowledge a math teacher should have. The second one points to a teacher's motivating students to show their solutions in any method they know. The following example pertains to applying student-centered learning. The last example concerns the degree of patience a mathematics teacher should have.

Table 1. Example of items in the survey questionnaire

Item Number	Statements
24	<i>An exemplary mathematics teacher knows when to apply a particular strategy best and continues to search for more effective teaching techniques/strategies.</i>
62	<i>An exemplary mathematics teacher encourages students to use varied methods of solving as long as it is the easiest way for them to arrive at the correct answer.</i>
16	<i>An exemplary mathematics teacher involves students in experiential learning and provides them with direct experiences to help them better retain concepts and information.</i>
18	<i>An exemplary mathematics teacher has patience in handling students with varied attitudes toward learning mathematics.</i>

2.5 Data Gathering Procedure

Data were sourced through two stages. Table 2 shows a simplified presentation of the two phases of data gathering, together with the sources of data, number of respondents or participants, and sampling procedure.

Table 2. A summary of the procedures, data source, respondents, and sampling procedure of the study

Phase Number	Data Source	Respondents/Participants	Sampling Procedure
1	Focus Group Discussion (FGD)	16 students	Purposive
1	Key Informant Interview (KII)	Ten mathematics teachers and one mathematics supervisor	Purposive
2	Survey	416 students	Proportionate Stratified Random Sampling

Data were gathered through the FGDs and KIIs to generate the attributes of an exemplary mathematics teacher. An FGD was conducted in two secondary schools in Davao del Sur. Junior High School students participated in this study. The result of the discussion was the validated attributes of a mathematics teacher who portrays exemplary practices to help alleviate students' difficulty in the subject. The KIIs were done separately with mathematics teachers and mathematics supervisors. They were individually subjected to a semi-structured interview where they were free to express their answers. Semi-structured interviewing is best for establishing a connection with participants before proceeding to more formal interviews, and it is suited for people not used to formal interviews (Tudy, 2017).

Transcripts were created for both responses of FGDs and KIIs. The researcher carefully listened to the recordings and jotted down the verbatim responses and conversations. Each transcript was read several times to understand the whole content. After completing the transcripts, significant statements and phrases were extracted from each transcript. Significant statements in each transcript were organized in a table with its corresponding location. After that, the researcher contextualized the verbatim responses by having the formulated meanings (Tudy, 2017). The second part of data gathering involved implementing the validated and pilot-tested survey questionnaire, the items of which were based on the attributes identified through the FGDs.

2.6 Data Analysis

To analyze the qualitative data of this study, the researcher employed the first three steps of Colaizzi's (1978) strategy of phenomenological analysis. Colaizzi's process for phenomenological data analysis was used, as cited by Shosha (2012). Firstly, each transcript was carefully analyzed to formulate a meaningful gist of the procedure. Secondly, significant statements pointing to the study's phenomenon were extracted using each transcript. A document must stipulate these statements, and their pages and line numbers must be carefully noted. Thirdly, formulated meanings from these significant statements were constructed. The formulated meanings served as the items of the survey questionnaire (Tudy, 2017).

The results from the questionnaires were utilized to find the latent variables or factors among observed factors using Exploratory Factor Analysis (EFA) (Watkins, 2021). This deals with whether the covariance or correlations between a set of observed variables can be explained in a smaller number of observed constructs called latent variables or common factors. The aim of using this tool was the orderly simplification of the intercorrelated measures of the constructs of this study.

The contribution of EFA in this study was grouping the variables with similar characteristics. A correlation matrix was generated for all the variables. Then, factors were extracted from the correlation matrix based on the correlation coefficients of the variables. Lastly, factors were rotated to maximize the relationship between variables and some of the factors. Using the Structural Equation Model (SEM), Path Analysis evaluated the assumed causation among dependent and independent constructs (Owolabi et al., 2020). SEM estimated the shared measurement error for the constructs. The Chi-square value was used to determine the Model fit, supported by the Tucker-Lewis Index (TLI) and Comparative Fit Index (CFI) values.

After the Model's goodness of fit was satisfied, further analysis was done to evaluate the estimates and fit indices of the path diagram, which measured the contribution of the specified variables in the Model. Data obtained from EFA was inserted into AMOS to identify the best Model by examining the validity and reliability of the measures and several fit indices. Table 3 shows a summary of the data analysis utilized in the study.

Table 3. Data analysis used in the qualitative and quantitative phases of the study

Type of Phase	Statistical Tool/Analysis	Initial Output	Final Output
Qualitative	Colaizzi's strategy	Formulated Meanings	Survey Questionnaire
Quantitative	Exploratory Factor Analysis (EFA), Confirmatory Factor Analysis (CFA) and Sequential Equation Modeling	Factors/ Attributes of Exemplary Mathematics Teaching	Model/Framework

2.6 Ethical Considerations

The researcher highly considered the welfare of the participants. A permission letter was submitted to the school principals of all identified schools and to the teachers who were randomly chosen to be asked to participate voluntarily in this study. The purpose of the study will be explained to the participants. The participants were informed of the benefits and risks they could have while participating in the study. Participants were informed that they could be open with their responses, change or add answers whenever they felt the need to do so, and withdraw whenever they felt uncomfortable with the interview process.

The participants were informed of the confidentiality of their identities and responses to the interview questions. This was done by assigning each participant an identity code instead of using their actual names. Permission was requested from the participants to audiotape the interview. All information obtained during the interview was secured in a safe cabinet and can only be accessed by the researcher. After all relevant data were extracted, all the

audio recordings were deleted. After all the data had been displayed, the researcher performed a member validation method by informing the participant about the accuracy of the transcription so that the participant could make necessary corrections to make his final standpoint in all the questions asked to him or her.

3.0 Results and Discussion

3.1 Development of the Survey Instrument

Table 4 provides examples of the significant statements identified and extracted after the FGDs and KIIs were conducted. These statements were written on separate sheets and coded based on their "transcript, page, and line numbers." Meanings were formulated from the significant statements.

Table 4. Examples of significant statements from FGDs and KIIs

Significant Statements	Transcript No.	Page No.	Line No.
"He/she should be well-equipped with the skills (e.g., mathematical skills), have in-depth knowledge, and know what he/she is talking about. The teacher cannot give inputs he/she does not have."	1	1	6-9
"Observes consistency when teaching; will not proceed unless (students) have already grasped an understanding of the concepts."	12	2	52-53

Table 5 provides examples of how significant statements were converted into formulated meanings. An expert researcher then checked the statements and their meanings, finding the process correct and the meanings consistent. The formulated meanings were utilized as the items in the initial instrument developed by the researcher.

Table 5. Examples of formulated meanings from significant interview statements

Significant Statements	Formulated Meanings
"There were times that I should meet them (the students) where they are, especially that we should focus on our students in our school."	Makes adjustments to the student's level of thinking and understanding
"The teacher should know how to modify and simplify complex topics."	Knows how to modify and simplify complex topics
"He/she (the teacher) gave a technique to simplify the concept easily and quickly, which helped me understand. The teacher gave a name to that technique."	Teaches students shortcuts and techniques for solving

3.2 Underlying Attributes of an Exemplary Mathematics Teacher on the Perspective of Students

The data from the survey were subjected to data reduction to determine students' perspectives on the attributes of an exemplary Mathematics teacher at the junior high school level. First, an exploratory factor analysis (EFA) was conducted for the attributes of exemplary mathematics teachers, and it included 65 items. This analysis aimed to reduce data by removing highly correlated items and grouping uncorrelated items into underlying or latent relationships. Several tests were performed to identify the number of factors, including Kaiser-Meyer-Olkin (KMO) criterion, scree plot of eigenvalues, and other analyses. KMO is used to measure sampling adequacy. In the first run of EFA, the results yielded a KMO value of .971, which is within the acceptable value, as shown in Table 6. Kaiser (1974) recommended accepting values more significant than .5 as barely acceptable. It means that the sample size qualifies for factor analysis. Bartlett's Test of Sphericity with a p-value of .000 means at least one significant correlation between two items. Table 7 shows that there were eight factors and a 63.694% total Variance explained, higher than the 60% threshold (Hair et al., 2012). Initially, Oblimin Rotation was used to determine if the factors were orthogonal or oblique. The Component Correlation Matrix showed no coefficients greater than 0.5, meaning the factors were not strongly correlated. Hence, a Varimax Rotation was applied.

Table 6. KMO and Bartlett's test result

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy		0.971
Bartlett's Test of Sphericity	Approx. Chi-Square	20770.139
	Df	2080
	Sig.	0.000

After determining the factors and their corresponding items, a reliability test was conducted to determine the reliability of the new factors. Results revealed that Factor 1 got a Cronbach Alpha of .969, Factor 2 with .963, Factor 3 with .901, and Factor 4 with .883. Factors 5, 6, 7, and 8 have only one item loaded each, so these were not

considered final components. A single item will have issues in AMOS regarding validity checking. A minimum of three items is needed to check the validity of AMOS. Moreover, researchers have suggested varying items per factor ranging from three to five to represent each factor (MacCallum et al., 1999; Raubenheimer, 2004). The factor and related items are removed if a factor has less than three loadings (Barkley & Burns, 2000; Costello & Osborne, 2005).

Table 7 shows the analysis results, which yielded eight factors and explained the equivalent percentage of Variance.

Table 7. Principal components analysis summaries: eigenvalues and percent of Variance explained

Factor	Eigenvalue	% of Variance	Cumulative %
1	30.355	46.699	46.699
2	3.110	4.784	51.483
3	2.014	3.098	54.582
4	1.468	2.259	56.840
5	1.254	1.929	58.769
6	1.140	1.753	60.522
7	1.046	1.609	62.131
8	1.016	1.563	63.694

The first factor, including 23 items, was labeled "Expertise" with an eigenvalue of 30.355 and explained 46.70% of the total Variance. The second factor, including 19 items, was labeled "Effective Communication with Students" with an eigenvalue of 3.110 and explained 4.78% of the total Variance. The third factor, including nine items, was labeled "Devolution" with an eigenvalue of 2.014 and explained 3.10% of the total Variance. The last factor, including nine items, was labeled "Teacher's Disposition" with an eigenvalue of 1.468 and explained 2.26% of the total Variance. Each of these factors will be discussed in the succeeding section.

3.3 Underlying Attributes of an Exemplary Mathematics Teacher

Factor 1, which the researcher labeled "Expertise," pertained to teachers' content knowledge (e.g., Items 24, 42, 32, 31, 23, 37, 44, 27, and 33). Students in this study are expecting teachers to have mastered the content. But apparently, they should also know how to deliver this topic to students using various techniques (e.g., Items 28, 43, 36, 39, 38, 30, and 45) and the right pacing (e.g., Items 26 and 22). Factor 1 also pertained to understanding the student's level of thinking and developing into students the other side of mathematics, which is doing it with fun and motivation (e.g., Items 29, 46, 41, 40, and 35).

The second factor, which was labeled as "Effective Communication with Students," pertained to teachers' way of knowing the students' learning capability through interactions (e.g., Items 54, 58, 57, 50, 53, 64, 47, and 55). In a way, teachers should carefully know the students and the specific strategy to employ to meet their particular level of understanding (e.g., Items 56, 65, 51, 52, 48, 62, 60, and 61) and know how to boost students confidence in learning the subject (e.g., Items 49, 59, and 63). In this study, the students prefer teachers who always anticipate what students are thinking and what things are confusing for them. Teachers need to know the strategies they employ and whether these are fitted to the student's perspective of learning. Teachers cannot just have a group activity when learners are not ready. In short, any step to be taken should be patterned on the learning status of the students.

Some of the essential keys found in this study are integrating new ways of dealing with mathematical problems, imposing a positive learning environment for students, considering close interaction with students, not only pure transmission of content, adopting the attitude of learners, and making new techniques as part of the repertoire. In this study, students assessed an excellent mathematics teacher as someone who teaches well and initiates a positive teacher-student relationship through open Communication. Teachers are mandated to prioritize the students' level of understanding of the subject. It is not just firmly teaching them the learning competencies but also giving them the liberty of how they will learn the subject matter. Ultimately, it's always a reality that the students can directly vouch for whether a teacher is best in his field. Communicating with the students may be simple in words, but it is an intricate role for a teacher. Profiling cannot suffice the purpose of knowing the students well. Instead, knowing their engagement in the teaching-learning process may merit a good relationship between teacher and students. A teacher can extensively show mathematical competence in the class, but this

could become trash when students feel uneasy about staying in the class because of difficulty and boredom. Letting them know how to get x and y is something terrifying and tiring for them. Hence, creating meaning in every task for students is bound to be significant.

The third factor, labeled as "Devolution," pertained to making students realize and feel their full responsibility and liability for the learning imparted to them (e.g., Items 14, 15, 16, 17, 19, and 21). But apparently, students still need assistance and monitoring from the teacher (e.g., Items 20, 13, and 12) to achieve the expected learning outcome. Teachers no longer take lectures but provide students with tasks they can experience meaningfully. Teachers need to foresee the emerging and inchoate thinking of the students. Students might be unable to show the same attitudes toward the subject, but they mainly value contextual learning. Traditional lectures might be obscure for them. Writing the content and formula on the board might be too dull for the kind of students in a class. Talking all the time without asking students' opinions might be too dominating for them. These are the things that a teacher must consider. Entrusting the learning to students may greatly help, but the teacher facilitates the whole process.

The final factor is labeled as "Teacher's Disposition" since most of the items are about a teacher who provides enlightenment for students who are struggling the most (e.g., Items 3, 4, 10, and 8) and who is optimistic enough in making these students love the subject, a teacher who has passion and heart in motivating these type of students, and a teacher who can survive the daily struggles with good humor, a pleasant disposition, and staying power (e.g., Items 1, 2, and 18). Students in this study viewed good mathematics teachers as someone who can transcend beyond the four corners of the classroom. Hearing students' thoughts about the subject itself could help stretch standards. The students mostly want the warmth of teaching (e.g., Items 6 and 7). A teacher cannot comment on students' mistakes in solving but let them feel that their mistakes could be the springboard for a correct conception of the topic. Teachers must let students feel they are greatly appreciated in everything they do.

Other studies did not discuss the abovementioned factors, but having these factors in one framework could be different. The table in the review of related studies would be a good reference for a deeper discussion of each factor. Table 8 shows what factor/s are associated with the dimensions discussed in the various frameworks of good mathematics teaching. Also, this shows the connection of the four-factor model to the existing literature.

Table 8. Literature included frameworks of exemplary mathematics teaching

Researches	CPK	Lc	ID	WD	KoA
Kaur (2008, 2009)	F1			F4	F2
Murray (2011)	F1	F2		F4	
White, Barnes, Lawson, and Johnson (2009)	F1	F2	F3	F4	F2
MATHTED (2011)	F1	F2	F3	F4	
Latterel (2008)	F1	F2	F3		F2
Leong (2014)	F1	F2	F3	F4	
Schoenfeld and Kilpatrick (2008)	F1	F2	F3	F4	
Gonzales (2020)	F1	F2	F3	F4	

Note: Knowledge (CPK), Learner-centered (Lc), Instruction Differentiation (I.D.), Warmth Disposition, Knowledge of Assessment (KoA)
 ***F1 (Expertise), F2 (Effective Communication with Students, F3 (Devolution), F4 (Teacher's Disposition)

Based on the table above, three out of seven frameworks did not mention all the factors of this study. Kaur's (2008, 2009) study mentioned only Factors 1 and 4. Factor 3 was not consistent with the study of Murray (2011). Factor 4 was not discussed in Latterel's (2008) study. On the other hand, these factors not mentioned in the other studies were factors of the current Model of exemplary mathematics teaching. This implies that this four-factor model covers all dimensions of good mathematics teaching. The Knowledge on Assessment could be integrated with Factor 2, knowing that a teacher cannot give an appropriate assessment task if he/she doesn't know his/her students' learning capability and doesn't know how to communicate the level of performance to them. Factor 2 in Kaur's (2009) study was consistent only with Knowledge of Assessment but not with the Learner-Centered Approach.

Factor 1, labeled as "Expertise," was consistent with the component of the three frameworks (Murray, 2011; Kaur, 2009; and White et al., 2009) in terms of content knowledge of teachers. Murray's (2011) "explaining so that students understand" concurrently focused on the expertise of teachers in elaborating the content. But in this study, the capacity of the teacher to explain is just part and parcel of the first factor. In this aspect, Kaur (2009) also highlighted a good mathematics teacher as the best at explaining a topic. Deliberately, "explaining well" is the first attribute in the framework of White et al. (2009). The frameworks of the prior studies commonly considered Content and Pedagogical Knowledge (CPK) as a component, not just the "explaining component" but also the manner of delivery of instruction to students was given emphasis.

The second factor, "effective communication with students," was articulated in all prior studies except in the study of Kaur (2009). Kaur's (2009) framework focused on the teacher's mathematical competence in facilitating student learning rather than setting students at the center of every teaching detail. The current study highlights the importance of knowing students well through interactions to implement appropriate teaching strategies and interactive activities. Similarly, the same result is mirrored in the study of Murray (2011), which is the "one-on-one help and recognizing individual differences" component. A teacher's warmth in teaching should radiate to students to instill motivation and love for the subject.

Factor 3, labeled "Devolution," was consistent with five of seven prior studies. The concept of devolution in teaching mathematics was not mentioned in the frameworks of Kaur (2009) and Murray (2011). However, in this current framework, the students mostly favored a good mathematics teacher who can delegate time to craft differentiated activities wherein they can experience things in a natural context and feel responsible for their learning.

The fourth factor, "Teacher's Disposition," was consistent with all frameworks except for Latterel's (2008) model of mathematics teaching. Compared to the study of Leong (2014), the first teaching model, which implies the excellent personality of a mathematics teacher, can be associated with the attributes of this factor. The fourth factor can be viewed along with the study of Davis (2003), which exclaimed that a positive relationship with students is having emotional closeness, warmth, caring, support, acceptance, respect, fairness, and low levels of conflict and dependency as learning is being pushed through is a great help for students. The same result was expounded in the study of Alsaleh et al. (2019) that students must receive the utmost care intended for their learning and that an ideal mathematics teacher must support students with positive mathematical identities. To support this, Kaur (2008) has stressed in his study that the best mathematics teacher is patient, understanding, caring, good at the content, explains explicitly, ensures that all students clearly understand the lesson, assists when students encounter signs of difficulty and provides prompt feedbacks on their learning status. Perhaps students in this study view an excellent mathematics teacher as someone who can shift from firm to gentle and knows how to blend in with their attitudes towards the subject.

In a nutshell, this study's findings were supported by the cited literature. This implies that the four attributes of exemplary mathematics teaching (Expertise, Effective Communication with Students, Evolution, and Teacher's Disposition) can be fully explained using the established body of knowledge. Hence, these factors constitute high reliability in developing the structural Model of an exemplary mathematics teacher.

3.4 A Structural Model of an Exemplary Mathematics Teacher in Junior High School Level

Confirmatory Factor Analysis (CFA) was performed on the hypothesized Model containing 60 observed variables with four latent variables using Analysis of Moment Structure (AMOS) version 21. Data obtained from EFA was inserted into AMOS to identify the best Model by looking into the validity and reliability of the measures and several fit indices. The maximum likelihood was used for the estimation, including minimization history, standardized estimates, residual moments, and modification indices. After model specification, an acceptable level of fit was achieved.

Given the large sample size, the chi-square was very large at 364.580, which was understandable. Also, the other indices showed the following values- CMIN / df = 3.143, GFI = 0.889, RMSEA = 0.078, PCLOSE = 0.000, NFI = 0.902, CFI = 0.931, TLI = 0.919, CFI = 0.931, PCFI = 0.794 and PNFI = 0.769. These values suggested that the data

did not fit well with the hypothesized Model. Also, there were very high covariance values in the modification index between some of the observed variables.

With the goodness of fit not achieved, re-specification was needed for the hypothesized Model based on the criteria set by Hair *et al.* (2006):

1. Review the factor loading of each item, where it must exceed 0.50, and remove the items that do not meet this criterion.
2. Review of the standardized residual covariances where the items with a value of more than two will be dropped.
3. Review the modification index ($d \leq 20$) to improve the Model.

All factor loadings of the items were significant and varied between .59 and .90. No items (variables) were found to have less than .50 loadings. To obtain Model fit as well as sufficient discriminant and convergent validity, 18 problematic items with standardized residual covariances of more than two were removed (A2, A14, A56, A54, A57, A50, A48, A22, A33, A27, A30, A39, A43, A21, A52, A55, A23, and A40). Lastly, a look into the modification index suggested drawing covariances (double-headed arrow) for variables with high values. Hence, covariances were drawn as suggested by the modification index to improve the model.

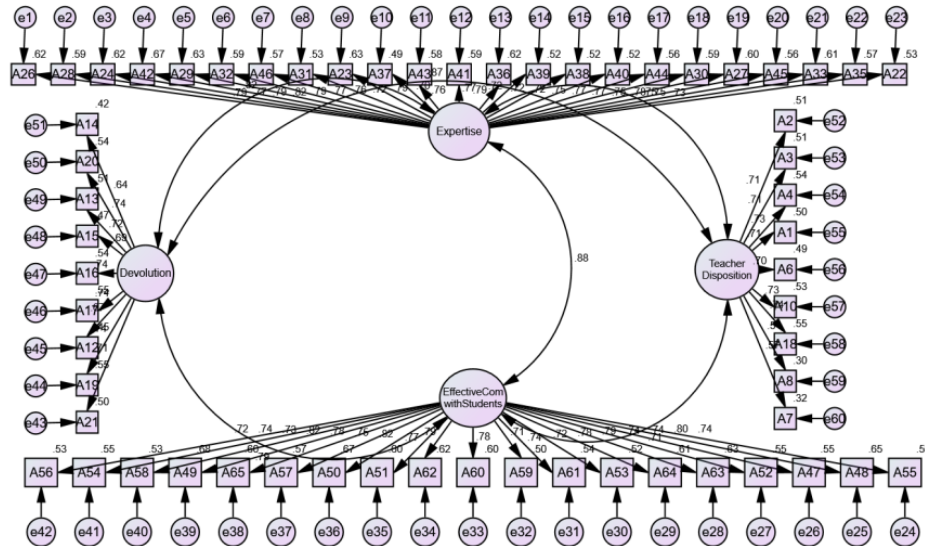


Figure 1. Hypothesized model

After the specification process, the modified Model was tested again, and the results showed the Model's goodness of fit. All the loading values were more than 0.5. Moreover, the goodness of fit indexes satisfied the threshold requirements- CMIN / df = 2.000, RMSEA = 0.049, CFI = 0.934, TLI = 0.928, PCFI = 0.866, and PNFI = 0.813. The GFI (0.848) and NFI (0.877) were slightly lower but still within acceptable values. With so many observed variables in the Model, it is almost impossible to satisfy perfection. These indices meant there was an excellent fit to the observed data. Also, the paths between latent variables were significant. Thus, this modified Model established the relationship among the factors (latent variables). Moreover, all the paths from the latent and observed variables (question items) were also significant. Hence, the measurement model (observed variables to latent variables) and the structure model (relationship among latent variables) were established.

3.5 Testing the Validity and Reliability

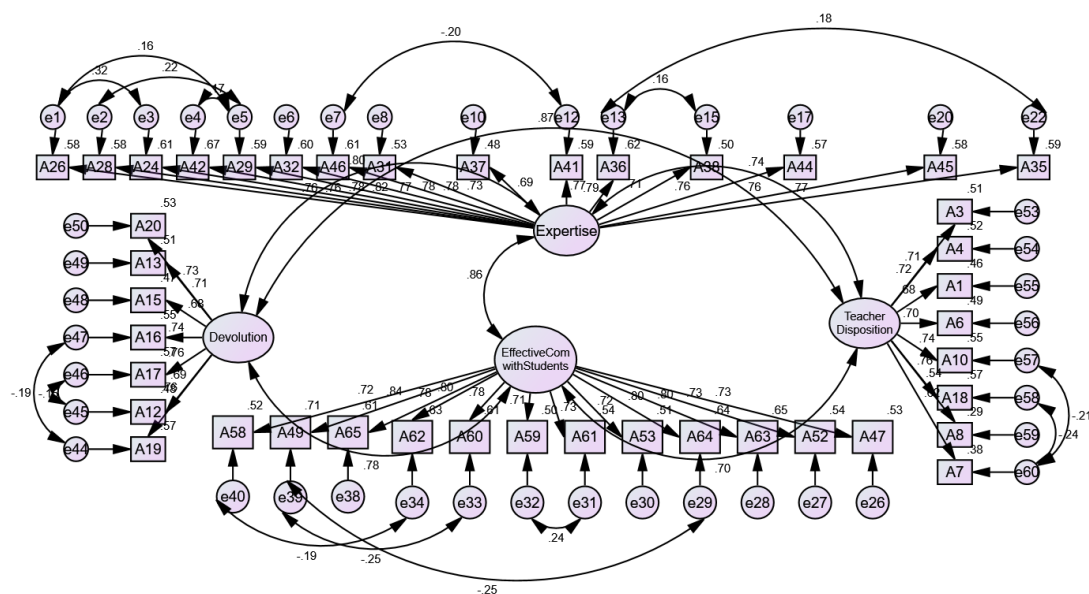


Figure 2. Modified Model (standardized Estimates)

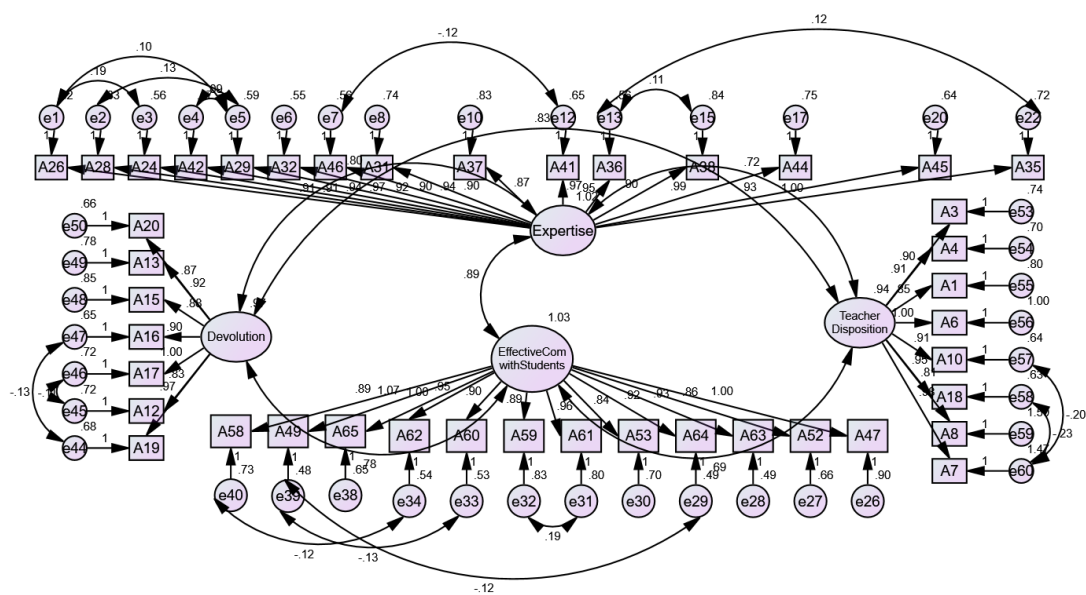


Figure 3. Modified Model (Unstandardized Estimates)

Tables 9a, 9b, 9c, and 9d show the unstandardized regression estimates, which suggested that all the paths of each factor (Expertise, Effective Communication with Students, Devolution, and Teacher's Disposition) were significant, as confirmed by the significant p-values. This means that all items significantly contribute to each factor, confirming the Model's validity.

Table 9a. Unstandardized regression estimates of the first factor

Items	Estimate	S.E.	C.R.	P
Expertise				
A26	0.914	0.055	16.667	***
A28	0.915	0.055	16.618	***
A24	0.935	0.054	17.241	***
A42	0.973	0.053	18.259	***
A29	0.917	0.054	16.867	***
A32	0.899	0.053	17.023	***
A46	0.936	0.054	17.211	***
A31	0.897	0.057	15.752	***
A37	0.869	0.058	14.915	***
A41	0.966	0.057	16.877	***
A36	0.950	0.049	19.259	***
A38	0.902	0.059	15.224	***
A44	0.992	0.060	16.545	***
A45	0.930	0.056	16.679	***
A35	1.000			

Table 9b. Unstandardized regression estimates of the second factor

Items	Estimate	S.E.	C.R.	P
Effective Communication with students				
A47	1.000			
A52	0.865	0.057	15.108	***
A63	0.932	0.056	16.714	***
A64	0.918	0.056	16.505	***
A53	0.844	0.057	14.733	***
A61	0.955	0.063	15.144	***
A59	0.892	0.062	14.509	***
A60	0.902	0.056	16.174	***
A62	0.949	0.058	16.483	***
A65	1.004	0.062	16.230	***
A49	1.070	0.061	17.501	***
A58	0.886	0.059	14.902	***

Table 9c. Unstandardized regression estimates of the third factor

Items	Estimate	S.E.	C.R.	P
Devolution				
A19	0.826	0.062	13.366	***
A12	1.000			
A17	0.900	0.059	15.333	***
A16	0.875	0.062	14.116	***
A15	0.917	0.062	14.848	***
A13	0.874	0.058	15.117	***
A20	0.826	0.062	13.366	***

Table 9d. Unstandardized regression estimates of the fourth factor

Items	Estimate	S.E.	C.R.	P
Teacher's Disposition				
A3	0.902	0.066	13.563	***
A4	0.910	0.066	13.791	***
A1	0.853	0.066	12.952	***
A6	1.000			
A10	0.910	0.065	14.000	***
A18	0.954	0.067	14.290	***
A8	0.809	0.078	10.374	***

For the covariances between latent variables, as shown in Table 10 below, each factor was significantly related to each other, meaning the four factors were internally consistent. This means these factors agree to measure a broader attribute: the attributes of an exemplary mathematics teacher in Junior High School.

Table 10. Covariances of the latent variables

			Estimate	S.E.	C.R.	P
Expertise	<-->	Devolution	0.799	0.080	9.935	***
Expertise	<-->	Teacher's Disposition	0.723	0.079	9.212	***
Effective Communication with Students	<-->	Devolution	0.779	0.081	9.616	***
Effective Communication with Students	<-->	Teacher's Disposition	0.693	0.078	8.873	***
Expertise	<-->	Effective Communication with Students	0.888	0.087	10.156	***
Devolution	<-->	Teacher's Disposition	0.832	0.086	9.725	***

4.0 Conclusions

Students' depictions of exemplary mathematics teachers in Junior High School circulate the four attributes (Expertise, Knowledge of Students, Devolution, and Mathematics Disposition). Students view success in learning mathematics when teachers are equipped with these four attributes. The participants of this study considered an excellent mathematics teacher to possess expertise in content and pedagogical knowledge. A good mathematics teacher understands everything about students in mathematics. A teacher who places students as the center of learning, giving them the whole opportunity to discover and learn things meaningfully, is considered exemplary in teaching. Lastly, a teacher who can devote passion and love to teaching the subject and make students feel comfortable learning by creating a positive learning environment is also labeled as an exemplary mathematics teacher.

5.0 Contributions of Authors

This is a sole authorship since this was a dissertation output.

6.0 Funding

Research is not funded since it is an academic requirement.

7.0 Conflict of Interests

No conflict of interest with any other person or institution.

8.0 Acknowledgment

Not applicable

9.0 References

- Acido, J. V., & Caballes, D. G. (2024). Assessing educational progress: A comparative analysis of PISA results (2018 vs. 2022) and HDI correlation in the Philippines. *World Journal of Advanced Research and Reviews*, 21(1), 462-474. <https://doi.org/10.30574/wjarr.2024.21.1.0020>
- Aguilar, J. J. (2021). High School Students' Reasons for disliking Mathematics: The Intersection Between Teacher's Role and Student's Emotions, Belief and Self-efficacy. *International Electronic Journal of Mathematics Education*, 16(3), em0658. <https://doi.org/10.29333/iejme/11294>
- Alsaleh, F., Anthony, G., & Hunter, J. (2019). Preparedness of female mathematics preservice teachers in Saudi Arabia. *Mathematics Teacher Education & Development*, 21(2), 24-41. <https://eric.ed.gov/?id=EJ123489>
- Ariffin, T., Bush, T., & Nordin, H. (2018). Framing the roles and responsibilities of excellent teachers: Evidence from Malaysia. *Teaching and Teacher Education*, 73, 14-23. <https://doi.org/10.1016/j.tate.2018.03.005>
- Bush, T., Glover, D., Ng, A. Y., & Romero, M. (2016). Master teachers as teacher leaders: Evidence from Malaysia and the Philippines. *International Studies in Educational Administration*, 43(2), 81-102. <https://nottingham-repository.worktribe.com/output/825070>

- Colaizzi, P. F. (1978). Phenomenologic research as the phenomenologist views it. In Ronald S. Valle & Mark King (eds.), *Existential-phenomenological alternatives for psychology*. New York: Oxford University Press
- Dowding, D. (2013). Best Practices for Mixed Methods Research in the Health Sciences John W. Creswell, Ann Carroll Klassen, Vicki L. Plano Clark, Katherine Clegg Smith for the Office of Behavioral and Social Sciences Research; Qualitative Methods Overview Jo Moriarty. *Qualitative Social Work*, 12(4), 541-545. <https://doi.org/10.1177/1473325013493540a>
- Kane, R. & Maw, N. (2005). Making sense of learning at secondary school: involving students to improve teaching practice. *Cambridge Journal of Education*, 35(3), 311-322. <https://doi.org/10.1080/03057640500319024>
- Kaur, B. (2008). Teaching and learning of mathematics: What really matters to teachers and students? *ZDM Mathematics Education*, 40(6), 951-962. <https://doi.org/10.1007/s11858-008-0128-6>
- Kaur, B. (2009). Characteristics of good mathematics teaching in Singapore grade 8 classrooms: A juxtaposition of teachers' practice and students' perception. *ZDM Mathematics Education*, 41(3), 333-347. <https://doi.org/10.1007/s11858-009-0170-z>
- Katz, S., & Stupel, M. (2016). Enhancing elementary-school mathematics teachers' efficacy beliefs: a qualitative action research. *International Journal of Mathematical Education In Science & Technology*, 47(3), 421-439. <https://doi.org/10.1080/0020739X.2015.1080314>
- Kilag, O. K., Porio, C., Abella, J., Ledesma, M. M., Cabaluna, M. F., & Baluyot, L. (2024). Bridging the Achievement Gap: Insights from PISA on Improving Mathematics Education in the Philippines. *International Multidisciplinary Journal of Research for Innovation, Sustainability, and Excellence*, 1(9), 53-62. <https://risejournals.org/index.php/imjrise>
- Latterell, C. (2008). What is good college mathematics teaching? *International Journal of Mathematics Teaching and Learning*, 9(7), 1-13. <https://www.cimt.org.uk/journal/latterell2.pdf>
- Leong, K. E. (2014). What are the Important Attributes of Good Mathematics Teaching? *The Asia-Pacific Education Researcher*, 24(1), 211-223. <https://doi.org/10.1007/s40299-014-0173-6>
- Lincoln, Y. S., & Guba, E. G. (1985). *Naturalistic inquiry* (vol. 75). SAGE Publications Ltd.
- Murray, S. (2011). Secondary Students' Descriptions of "Good" Mathematics Teachers. *Australian Mathematics Teacher*, 67(4), 14-21. <https://eric.ed.gov/?id=EJ956713>
- OECD (2019). *PISA 2018 Assessment and Analytical Framework*. OECD Publishing.
- OECD. (2023). *PISA 2022 Results*. OECD Publishing.
- Owolabi, H. O., Ayande, J. K., & Olaoye, D. D. (2020). A Systematic Review of Structural Equation Model (SEM). *Open Journal of Educational Development*, 1(2), 27-39. <https://doi.org/10.52417/ojed.v1i2.163>
- Roxas, A. V. (2015). Teaching Competencies of Mathematics Professors in Higher Education Institutions (HEIs) In the Province Of Capiz: Basicfor Instructional Enhancement Program. *Journal of Research in Humanities and Social Science*, 3(6), 25-32. <https://repository.capsu.edu.ph/handle/123456789/201>
- Subedi, K. R. (2021). Determining the Sample in Qualitative Research. Online Submission, 4, 1-13. <https://www.nepjol.info/index.php/scholars>
- Tarka, P. (2017). The comparison of estimation methods on the parameter estimates and fit indices in SEM model under 7-point Likert scale. *Archives of Data Science*, 2(1), 1-16. <https://doi.org/10.5445/KSP/1000058749/10>
- Toropova, A., Johansson, S., & Myrberg, E. (2019). The role of teacher characteristics for student achievement in mathematics and student perceptions of instructional quality. *Education Inquiry*, 10(4), 275-299. <https://doi.org/10.1080/20004508.2019.1591844>
- Tudy, R. A. (2017). Employers' Satisfaction on the Performance of New College Graduates. *SLONGAN*, 3(1), 22. <https://rpo.cjc.edu.ph/index.php/slongan/article/view/13>
- Watkins, M. W. (2021). *A step-by-step guide to exploratory factor analysis with SPSS*. Routledge.
- Webb, N. M., Franke, M. L., Ing, M., Turrou, A. C., Johnson, N. C., & Zimmerman, J. (2019). Teacher practices that promote productive dialogue and learning in mathematics classrooms. *International Journal of Educational Research*, 97, 176-186. <https://doi.org/10.1016/j.ijer.2017.07.009>
- White, B. (2009). Student perceptions of what makes good teaching. In the annual conference of the Australian Teacher Education Association
- Zhou, J., Bao, J., & He, R. (2023). Characteristics of good mathematics teaching in China: Findings from classroom observations. *International Journal of Science and Mathematics Education*, 21(4), 1177-1196. <https://doi.org/10.1007/s10763-022-10291-5>

Internal Control and Financial Performance of Accounting Firms in Calamba City

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Date received: July 10, 2024

Date revised: September 18, 2024

Date accepted: October 3, 2024

Originality: 95%

Grammarly Score: 99%

Similarity: 5%

Recommended citation:

Laroza, D.M. (2024). Internal control and financial performance of accounting firms in Calamba City. *Journal of Interdisciplinary Perspectives*, 2(11), 169-179. <https://doi.org/10.69569/jip.2024.0346>

Abstract. Internal control implementation in accounting firms ensures the integrity of financial information, safeguards assets, and mitigates risks, promoting operational efficiency and compliance with regulatory standards. The main thrust of this study was to describe and determine the relationship between the level of internal control implementation and the financial performance of accounting firms in Calamba City. This study employed a descriptive correlational design and utilized a simple random sampling technique to select the sample, enabling the researcher to obtain representatives from the population. With the aid of the G-power sample size computation application, this study came up with 80 respondents based on a 0.35 effect size and 95% degrees of confidence. As the primary data collection tool, a validated researcher-made questionnaire was utilized. The data gathered were collected, tallied, analyzed, and interpreted using four-point Likert scales, mean, and Pearson Product-Moment Correlation Coefficient. Based on the results of the study, the internal control of accounting firms in Calamba City was fully implemented, and their financial performance was very high, with a general assessment of 3.43 and it explained that these accounting firms have a definite process and procedures for assessing financial information of the customers to secure and to maintain good financial performance among other competitors in the market. As an output of the study, a proposed action plan based on the COSO framework was proposed to improve the quality of the control environment, risk assessment, information and communication, control activities and monitoring procedures, and improve the financial performance of accounting firms in Calamba City.

Keywords: Accounting firms; COSO framework; Financial performance; Internal control.

1.0 Introduction

Every organization adopts and follows many policies and procedures, especially those of different businesses that handle the confidentiality of information of clients, internal users, external users, and third-party providers. An organization's ability to exist depends on how well it uses the resources at its disposal. To maximize the use of resources allotted to each employee, the organization's management applies several controls, two of which are internal control and internal audit.

Internal control mechanisms could be used to encourage an individual or a group of people to achieve certain goals. However, they also needed to be able to achieve the objective of encouraging collaboration among people in an organization that had diverse aims. Joelle (2019) cited the Committee of Sponsoring Organizations of the Treadway Commission. She stated that internal controls could only give management and the board of an organization a reasonable amount of assurance, not total assurance. Businesses widely use internal control since it could assist them in achieving their goals and objectives. However, internal control also helped management perform its significant duties and obligations. It highlighted the organization's moral character and ethical principles to keep an efficient internal control system in place.

Meanwhile, Wood (2023) stated that there were many challenges that accounting firms were facing at that time. It was based on their practices that required changes in the workflow and how to integrate technology into the practices. Adaptability and flexibility were the key factors in improving accounting firms' processes and providing quality services to their clients and users. In a world where global interconnection and technological innovation created ever-changing opportunities and challenges, internal audit was crucial to a company's success. Auditors provided valuable insights into operational, business, and strategic risks arising more quickly than ever to organizations. These professionals could stay current by learning new techniques, fostering stronger bonds with others, and utilizing technology.

As the business world becomes more interconnected, entrepreneurs are attempting to increase profits while standing out from the competition. Nonetheless, corporate internal governance occupies a significant space in this context and, regrettably, has to be improved, especially at the legislative level. The internal control frameworks of closed and privatized businesses differ from one another. The lack of authority makes it more difficult for private companies to compete in the market since investors need to be assured that the companies are reliable and able to withstand intense competition.

In the Philippines, the performance of each internal control in the organization has advantages and disadvantages. Not all businesses exercise good internal controls because of the influences of different factors inside and outside the company. One factor is the separation of duties; in larger organizations, it is critical and assigned to different employees compared to small businesses with only limited resources, and it is not a good practice to handle the internal control procedures with one person as it can lead to a greater risk of errors and fraud. Another factor that might have caused a problem was the proper documentation of the process in the organization. An insufficient documentation process could indicate a company's weak internal control system. These internal control components enable the auditor and accountants to properly evaluate the various controls and processes, regardless of whether the firms have implemented them.

In addition, accounting firms had a lot of duties and responsibilities to their clients, whether for internal or external purposes. A group of accounting professionals provided financial management services such as tax preparation, auditing, bookkeeping, advisory services, payroll processing, etc. The International Federation of Accountants (2012, as cited in the study of Joelle 2019), explained that having an effective internal control system would potentially create a competitive advantage over other firms but would also entail taking additional risks. In line with this, many accounting firms offer different services to cater to clients and improve their financial performance. However, there were many problems occurring, especially regarding the proper implementation of internal controls, particularly with big clients who sought to avoid or manipulate financial information to evade responsibilities to the Bureau of Internal Revenue. Aside from this, many accounting firms struggled with financial performance, including profitability, due to the rapidly growing economic status, technological advancement, and firm's services. Measuring profitability was one of the barometers to determine whether these firms were generating profit and utilizing their resources. Many factors gave firms a hard time regarding profitability, such as size, aggressive billing rates, and the impact of audit practice.

Moreover, accounting firms provide reasonable assurance to their clients with the right conduct, especially to the auditors who evaluate this financial information. These firms can have had a lot of possible errors and frauds present in the creation of services for the users, which was a huge reason why this study aims to identify if the implementation of internal controls in accounting firms is being tested and properly used in evaluating the financial information of their clients. The proper implementation of internal control helps the auditors prevent and detect errors and possible frauds existing in financial information submitted by businesses or individuals. It also helps the auditors identify and assess those risks by testing through internal controls. The financial performance level is also a factor; if the services provided are of quality and provide good feedback to the clients, financial performance increases or determines the status of the firm's performance.

To sum up, many studies were conducted about internal control; however, they only focused on implementation in banks, manufacturing firms, local government, and small to medium enterprises. This study gave new information about internal control especially when it focused on accounting firms and whether these functions are being implemented properly and giving the firms good financial performance in the industry. This study also focused on accounting firms in Calamba, Laguna because there were no available studies or information, particularly in Calamba City. Aside from this, this study could also help accounting firms to exercise and implement proper controls and increase their integrity and confidence in serving the public.

2.0 Methodology

2.1 Research Design

The study employed a quantitative research approach and descriptive correlational research methodology. Bhandari (2022) discussed correlational research design, which examines the relationship between variables without necessitating any alteration or adaptation by the researcher. It was also noted that there exist three types of correlation: zero, negative, and positive.

Similarly, as per Creswell (2022), correlation is a statistical test that assesses the likelihood or pattern of regular fluctuations between two or more variables or datasets. The objective of correlational research was to ascertain whether there is a relationship between two or more variables. The goal of this study was to examine the relationship between the amount of internal control and the financial performance of accounting businesses in Calamba City, Laguna. In addressing these concerns, the correlational study design may assist in identifying if the independent factors were linked or correlated with the dependent variable.

2.2 Research Participants

The research participants were composed of auditors with at least 6 months of working experience in their respective current accounting firms. These respondents were selected from different active accounting firms in Calamba City. Regardless of age, gender, marital status, financial standing, and CPA or Non-CPA status, the responses were selected. Auditors were chosen as the primary respondents of the study due to their expertise and experience in the field of accounting within various firms in Calamba City, Laguna. The 80 auditors were selected from 30 accounting firms registered and located in Calamba City.

Auditors employed by accounting firms were tasked with various responsibilities within the accounting process, including verifying the outcomes of financial audits, validating the company's assets and liabilities by reviewing its records and transactions, and ensuring compliance of the company's financial reports with legal and regulatory standards. Additionally, auditors were responsible for monitoring, reviewing, and evaluating management practices, policies, and financial activities of the organization; conducting analytical procedures on the company's account balances and transactions; preparing objective assessments in the final audit report; updating and completing audit questionnaires; proposing new policies and procedures; and assessing whether the company's policies, rules, regulations, and systems were appropriately authorized, complete, valid, and accurately valued.

2.3 Research Instruments

This study utilized the researcher-made questionnaire as an instrument of the study. The facts and information utilized to assemble this questionnaire were collected from numerous readings and relevant research, with the primary purpose being to meet the study's questions. The research instrument had two sections focusing on internal control and financial performance, respectively, to which respondents offered answers based on their experiences in their current affiliations or organizations. The Likert Scale was applied to collect responses to the survey questions in an easy-to-use method for delivery, scoring, and assessment.

The validity of the questionnaire, as well as its structure and design, determined the reliability of the data acquired. To validate the self-made questionnaire, the researcher sought the help of specialists. The researcher engaged the school research expert (1), statistician (1), MBA professor (1), and specialists in the field of an accounting business (2) to ensure that the questions in the survey instrument were clear and legitimate. Based on the response of these experts, the researcher updated the initial instrument and integrated their ideas and suggestions in the improved one. The revision of the instruments was made till all corrections had been incorporated. Moreover, when the comments and recommendations of the experts were included, all of the research experts agreed that all elements in the instrument were essential, resulting in a Content Validity Index of 1, understood as extremely valid. After refining the study instrument, pilot testing was undertaken and administered to 20 individuals outside the target respondents in Calamba City. With the help of the statistician, the results acquired from the pilot testing were put under the reliability test utilizing Cronbach's Alpha Reliability Test. The first component of the instrument reporting internal control implementation level of accounting firms had a Cronbach's Alpha Coefficient of .786, while the second section regarding financial performance level had a Cronbach's Alpha of .771, both regarded reliable. The outcome of the Cronbach's Alpha Reliability Test was deemed satisfactory, which gave the signal to the researcher to administer the study instrument to the actual respondents.

2.4 Data Gathering Procedures

In this research, a letter of request was provided, signed by the researcher, thesis adviser, and the dean of Master in Business Administration, and sent to the accounting firms registered and located in Calamba City. During the conduct of the study, the letter requesting participation from each accounting firm was approved before distributing printed research questionnaires to the target respondents. Additionally, survey questionnaires via Google Forms were also cascaded to different accounting firms in Calamba City. The responses to the research questionnaire were collected, tallied, analyzed, and interpreted to derive conclusions and recommendations. Moreover, this study consulted a statistics expert for the treatment of the gathered information.

2.5 Data Analysis

Using the Statistical Package for Social Sciences (SPSS), the following statistical treatments were used to the study which comprises the mean and the four-point Likert scale were used to describe the Accounting Firms' level of internal control and financial performance level. Pearson product-moment correlation coefficient was utilized to determine the relationship between the internal control implementation and the financial performance of different accounting firms.

With the help of a statistician, all data was evaluated and tested. The responses were tallied, evaluated, and interpreted for conclusions and recommendations.

2.6 Ethical Considerations

This study adhered to ethical guidelines throughout the research procedure, particularly concerning auditors' participation. Key ethical considerations such as confidentiality and permission were observed. Formal consent was obtained from respondents before engaging in any discussions, and they were informed of their right to decline participation, with the assurance that any provided information would be kept confidential and used solely for academic purposes. The study conveyed all pertinent information and its purpose, aiming to obtain respondents' agreement and ensure their comprehension of their role in completing the study. Respondents' privacy was guaranteed by withholding their names and the names of their associated accounting firms, with only necessary data presented to address the research topics. After ensuring the security and privacy of the gathered data, these concerns were addressed per the Data Privacy Act of 2012.

3.0 Results and Discussion

3.1 Implementation of Internal Control of Accounting Firms as Assessed by Auditors in Calamba City

In terms of Control Environment

The Control Environment was Fully Implemented (3.54), which refers to the level of application of internal control of accounting firms as assessed by auditors in Calamba City (see Table 1). All indicators were verbally interpreted as Fully Implemented. Furthermore, the indicator "The organizational structure facilitates communication and coordination among different departments with regard to internal control" obtained the highest computed mean of 3.61. Meanwhile, the indicator "The management's leadership leads by example when it comes to ethical decision-making" had the lowest computed mean of 3.46.

Table 1. Descriptive statistics of the level of implementation of internal control of accounting firms as assessed by auditors in Calamba City in terms of control environment

Indicators	Mean	Interpretation
1. The organization's roles and responsibilities are clearly defined, especially regarding financial oversight and control.	3.60	Fully Implemented
2. The board or relevant committees meet to discuss and review key aspects of the organization's performance and control environment.	3.51	Fully Implemented
3. The firm ensures that oversight and governance activities are transparent and accountable.	3.58	Fully Implemented
4. Appropriate measures are taken to correct misfeasance in the operation of the internal control in the firm.	3.50	Fully Implemented
5. Ethical values and integrity are communicated throughout the organization.	3.56	Fully Implemented
6. The management's leadership leads by example regarding ethical decision-making.	3.46	Fully Implemented
7. The organizational structure facilitates internal control communication and coordination among departments.	3.61	Fully Implemented
8. Training and development programs are in place to enhance employees' skills and knowledge related to their roles in internal control.	3.50	Fully Implemented
General assessment	3.54	Fully Implemented

Legend: 3.25 – 4.00 Fully Implemented, 1.75 – 2.49 Partially Implemented, 2.50 – 3.24 Implemented, 1.00 – 1.74 Not Implemented

The findings show that there are areas for improvement in the ethical leadership demonstrated by the management in the specific aspects of ethical leadership that employees perceive as lacking or needing improvement. In this way, accounting firms can establish and maintain organizational systems and structures that promote efficiency, transparency, and accountability in financial management. These firms need to implement strong monitoring and refining of these aspects to ensure they remain effective and responsive to evolving needs and challenges. On the other hand, the management needed to take proactive steps to strengthen their ethical leadership practices, such as providing clearer guidance, fostering a culture of transparency and accountability, and ensuring consistency in decision-making processes.

Snell and Chan (2023) discussed the process or steps of transforming auditors into more engaged leaders and why this is crucial to the firm's success. It was mentioned that effective leadership entails more than merely establishing reliable procedures and systems and selecting the best candidates. It was about understanding how to cultivate leaders within an organization and defining what constitutes a successful top-down leadership style. Owners of accounting firms overworked or burdened with production chores could not step back, take a break, and recognize when their company needed redirection. Moreover, management had to prioritize practices in developing other leaders, reducing the workload, assisting in setting priorities, and providing more time to oversee the firm to ensure everything was operating.

Roessner (2023) also discussed the leadership style of CPA firms. The benefits of leadership training for employees at all levels went far beyond inspiring colleagues and managing tasks. Investing in leadership development offered significant returns. Ethical decision-making provided by management helped auditors offer opinions and insights on particular situations for

decision-making. On a larger corporate level, more than 80% of firms believed that leadership development was crucial for workers at all levels; however, only 5% of companies provided it. Leadership development went beyond positioning the company for success; it helped auditors recognize their strengths, work on their weaknesses, and share knowledge. This could boost accounting firms' control environment and provide ethical development to ensure that the culture from management to auditors adopts a positive environment that extends to all clients.

In terms of Risk Assessment

Risk Assessment was Fully Implemented (3.40) refers to the level of implementation of internal control of accounting firms as assessed by auditors in Calamba City (see Table 2). Furthermore, the indication "The firm anticipates and assesses the likelihood and severity of risks determined in the risk assessment process." had the highest computed mean of 3.50 verbally translated as Fully Implemented. Meanwhile, the indication "The firm has put in place mechanisms for the identification of critical risks that may result from fraud." had the lowest computed mean of 3.23 verbally translated as Implemented.

Table 2. Descriptive statistics of the level of implementation of internal control of accounting firms as assessed by auditors in Calamba City in terms of risk assessment

Indicators	Mean	Interpretation
1. The firm systematically identifies potential risks that may impact its objectives.	3.46	Fully Implemented
2. There are processes where employees are involved at various levels in identifying risks within their respective areas.	3.43	Fully Implemented
3. The firm has criteria for ascertainment to quantify or qualify the potential impact of identified risks.	3.38	Fully Implemented
4. The firm has established mechanisms for identifying critical risks that may result from fraud.	3.23	Implemented
5. The firm's commitment to installing risk management techniques is being administered.	3.39	Fully Implemented
6. The firm anticipates and assesses the likelihood and severity of risks determined in the risk assessment process.	3.50	Fully Implemented
7. The risk identification process is reviewed and updated to adapt to changes in the business environment.	3.31	Fully Implemented
8. The firm's mechanisms are in place to monitor the effectiveness of implemented risk response measures.	3.48	Fully Implemented
General assessment	3.40	Fully Implemented

This implies that accounting firms are generally diligent in their approach to risk management and that there may be areas for improvement in the mechanisms employed by accounting firms to identify critical risks related to fraud. It can be concluded that accounting firms prioritize the anticipation and assessment of risks, recognizing the importance of proactive risk management practices. By systematically evaluating the likelihood and severity of risks identified through the risk assessment, accounting firms demonstrate a commitment to identifying potential threats and implementing appropriate controls to mitigate them. On the other hand, while accounting firms have some mechanisms for fraud risk identification, there have been perceived shortcomings or gaps in their effectiveness or coverage.

Based on the above findings, Sawle (2024) mentioned the effective fraud risk assessment and how to conduct these steps, especially considering the numerous risks that could be detected within accounting firms. Fraud became a more serious issue that impacted every type of organization, sector, and geographic area. Organizations were estimated to lose 5% of their revenue to fraud annually, according to estimates from the Association of Certified Fraud Examiners (ACFE). Even worse, over half of the loss was entirely avoidable and could be linked to either a breakdown in internal controls or their circumvention. It also discussed how having a fraud risk assessment evaluated profitability. It helped firms implement more effective controls and other preventive measures by assessing the likelihood and impact of fraud risks and how dishonest individuals might try to circumvent current organizational controls. Businesses could improve their risk posture, detect fraud early, and better identify weaknesses by conducting thorough fraud assessments.

In terms of Control Activities

Control Activities was Fully Implemented (3.53), referring to the level of application of internal control of accounting firms as assessed by auditors in Calamba City (see Table 3). All indicators were verbally interpreted as Fully Implemented. Furthermore, the indicator "Policies and procedures are developed to address identified risks within the firm specifically." got the highest computed mean of 3.65. Meanwhile, the indicator "The firm establishes control activities over technology in line with the company's objectives." had the lowest computed mean of 3.44. It implies that accounting firms demonstrate a proactive approach to risk management and communicate well.

Table 3. Descriptive statistics of the level of implementation of internal control of accounting firms as assessed by auditors in Calamba City in terms of control activities

Indicators	Mean	Interpretation
1. The segregation duties are implemented to prevent conflicts of interest and to enhance internal controls.	3.46	Fully Implemented
2. authorization and approval processes are designed to ensure proper control over transactions and activities.	3.54	Fully Implemented
3. Policies and procedures are developed to address identified risks within the firm specifically.	3.65	Fully Implemented
4. The staff are trained to implement the internal control system.	3.48	Fully Implemented
5. The firm ensures that authorizations are granted based on defined criteria and within established limits.	3.56	Fully Implemented
6. The firm manages and communicates changes in roles and responsibilities to maintain effective segregation of duties.	3.55	Fully Implemented
7. The firm's security system identifies and updates information that is aligned with changing business environments and emerging risks.	3.56	Fully Implemented
8. The firm establishes control activities over technology per the company's objectives.	3.44	Fully Implemented
General assessment	3.53	Fully Implemented

It also shows that there are areas where accounting firms can improve in aligning control activities related to technology with the company's overall objectives. It can be concluded that accounting firms customize their risk management framework to the specific risks faced by the firm, demonstrating a commitment to mitigating potential threats and enhancing overall control effectiveness. On the other hand, there are gaps or inconsistencies in how these activities align with the firm's broader goals and objectives. Based on the above findings, Crowley and Balagtas (2020) discussed the design of an internal control system that IT professionals could create to ensure the detection probability of errors and the prevention of editing features. As previously noted, the key controls had to be implemented effectively. In line with this, technology played a major role, as the goal of this control was to provide proper protection and implementation based on the firm's objectives.

In terms of Information and Communication

Information and Communication were Fully Implemented (3.59) refers to the level of application of internal control of accounting firms as assessed by auditors in Calamba City (see Table 4). All indicators were verbally interpreted as Fully Implemented. Furthermore, the indicator "The reporting system consists of advanced technology and tools in place for capturing, storing, and retrieving relevant information." had the highest computed mean of 3.64. Meanwhile, the indicator "The firm ensures that relevant information is accessible to those who need it while maintaining appropriate confidentiality." had the lowest computed mean of 3.53. It implies that accounting firms are proficient in leveraging technology for reporting purposes and ensuring auditors understand internal controls. It also shows challenges or deficiencies in how accounting firms manage the accessibility and confidentiality of relevant information.

Table 4. Descriptive statistics of the level of implementation of internal control of accounting firms as assessed by auditors in Calamba City in terms of information and communication

Indicators	Mean	Interpretation
1. Internal communication is structured to facilitate the flow of information within the organization.	3.59	Fully Implemented
2. All auditors understand the concept and importance of internal controls, including the division of responsibility.	3.63	Fully Implemented
3. Communication within the firm helps to ensure the accuracy and completeness of information captured in its systems.	3.61	Fully Implemented
4. The reporting system comprises advanced technology and tools for capturing, storing, and retrieving relevant information.	3.64	Fully Implemented
5. The firm manages and responds to feedback received through internal communication channels.	3.55	Fully Implemented
6. The firm ensures that relevant information is accessible to those who need it while maintaining appropriate confidentiality.	3.53	Fully Implemented
7. The reporting system is effective and concise, ensuring that important information is communicated consistently and promptly to relevant stakeholders.	3.58	Fully Implemented
8. The firm implements internal control activities when communicating relevant information, objectives, assignments, accountability, and responsibilities.	3.61	Fully Implemented
General assessment	3.59	Fully Implemented

It can be concluded that accounting firms prioritize the use of advanced technology and tools to enhance their reporting systems, enabling efficient capture, storage, and retrieval of relevant information. On the other hand, there is still room for improvement in the processes or protocols employed by accounting firms to safeguard sensitive information while making it available to those who require it for their responsibilities. In line with this, Heller (2022) discussed how technology transformed accounting. New technologies, processes, and steps were renovated, precursors to the computer. This included adopting and

improving different accounting systems that revolutionized business processes. Similarly, accounting had been at the forefront of technological adaptation, frequently out of necessity. Business today is complicated, and the complexity of various transactions with the volume of customers and clients could not be easily handled with manual approaches for storing financial information.

In terms of Monitoring

Monitoring was Fully Implemented (3.52) refers to the level of implementation of internal control of accounting firms as assessed by auditors in Calamba City (see Table 5). All indicators were verbally interpreted as Fully Implemented. Furthermore, the indication “The firm continuously assesses the effectiveness of internal controls on an ongoing basis.” obtained the highest computed mean of 3.63. Meanwhile, the indication “There is overall regular monitoring of the firm's internal control measures.” had the lowest computed mean of 3.43.

Table 5. Descriptive statistics of the level of implementation of internal control of accounting firms as assessed by auditors in Calamba City in terms of monitoring

Indicators	Mean	Interpretation
1. The firm continuously assesses the effectiveness of internal controls.	3.63	Fully Implemented
2. The firm ensures objectivity and independence in conducting separate evaluations, such as external audits or third-party assessments.	3.59	Fully Implemented
3. Monitoring has helped assess the quality of the firm's internal control performance over time.	3.56	Fully Implemented
4. The firm coordinates with external entities during separate evaluations to gather valuable insights.	3.46	Fully Implemented
5. Overall, the firm's internal control measures are regularly monitored.	3.43	Fully Implemented
6. The firm prioritizes and addresses high-priority issues identified during monitoring activities.	3.51	Fully Implemented
7. The firm reports any internal control deficiencies to the accountable parties, including the Board of Directors and upper management.	3.45	Fully Implemented
8. A feedback loop has been established to ensure that lessons learned from corrective actions are integrated into ongoing improvement processes.	3.56	Fully Implemented
General assessment	3.52	Fully Implemented

It implies that accounting firms are diligent in maintaining and enhancing the effectiveness of internal control systems. It also shows that there are areas where accounting firms could improve in terms of consistently monitoring their internal control measures. It can be concluded that accounting firms prioritized the ongoing assessment and monitoring of internal controls to ensure their continued relevance and effectiveness in mitigating risks and achieving organizational objectives. By regularly evaluating the performance of internal controls, accounting firms demonstrate a commitment to proactive risk management and continuous improvement. On the other hand, it implies that accounting firms need to enhance their strategies for systematically and consistently monitoring internal control measures to ensure ongoing effectiveness in mitigating risks and achieving organizational objectives. Gu (2022) stated that financial fraud was present because of a lack of internal control. However, every firm or organization would increase its operations and effectiveness if there was an existing internal control. Inspection and monitoring also helped to better evaluate and test whether these internal controls were being implemented and could help achieve the firms' goals and objectives.

3.2 Financial Performance Level as to Profitability in the Accounting Firms of Calamba City as Assessed by Auditors

Table 6. Financial performance level as to profitability in the accounting firms of Calamba City as assessed by auditors

Indicators	Mean	Interpretation
1. Profit margin fluctuates because of rivalry and inadequate or weak internal control.	3.41	Very High
2. The firm's market share continuously increases and positively influences investor confidence and stock performance.	3.36	Very High
3. The firm's profits are realized regularly.	3.56	Very High
4. The firm's ability to make sales is expanding quickly.	3.50	Very High
5. The customer base is steadily increasing in the operations.	3.55	Very High
6. The firm's internal controls contribute to optimizing resource allocation, reducing waste, and achieving cost savings, which positively impacts profitability.	3.45	Very High
7. The firm's profitability evolved because of improvements or weaknesses in internal controls.	3.35	Very High
8. The firm's income is in great condition to maximize it in other growing investment opportunities contributing to long-term profitability.	3.28	Very High
General assessment	3.52	Very High

Legend: 3.25 – 4.00 Very High (VH), 1.75 – 2.49 Low (L), 2.50 – 3.24 High (H), 1.00 – 1.74 Very Low (VL)

Table 6 demonstrates consistent and regular profitability, which shows there may be perceived limitations or challenges in how accounting firms capitalize on their income to pursue additional investment opportunities for long-term profitability. It can be concluded that accounting firms generally maintained a stable and reliable stream of profits, suggesting effective financial management and operational performance. Regular realization of profits reflected positively on the firm's ability to generate revenue, manage expenses, and sustain profitability over time. On the other hand, there may have been perceived deficiencies in how effectively they leveraged this income to maximize growth and pursue investment opportunities that contributed to long-term profitability. It implies that there is still room for improvement in the firm's strategic planning, financial management, or investment decision-making processes.

Based on the above findings, it was also cited in the study of Ahmed and Ng'anga (2019) that all accountants and auditors evaluated complex transactions that offered good service and positively affected a firm's financial performance for any accounting firm to be successful in its operations. It was also reiterated that both internal and external factors, such as the firm's policy decisions, economic status, and governmental restrictions, impacted profitability. Financial performance was the extent to which a company achieved its financial objectives. A company's performance was evaluated based on its financial performance. The greatest financial and non-financial structures were put in place to gain an edge over rival institutions.

In addition, Leonard (2022) discussed that the firm's management was confident that creating new plans and putting in place stronger, stricter, and more effective internal control systems would boost the firm's ability to turn a profit. Strong internal control systems were assumed to increase a firm's profitability, supporting the growth and stability of the firm. In line with this, it was also mentioned that financial performance was how a business's operations and policy outcomes were valued monetarily. A vital step in enhancing an organization's success was evaluating its financial performance, especially in light of the intricate problems these organizations faced in delivering their services. One way to assess the financial performance of a business is by its profitability.

Moreover, Mohsin et al. (2020) added that financial performance gauged how successfully a company deployed its resources to produce gains and profits for its constituents. Factors such as labor productivity, organizational leadership, and resource utilization affect financial performance. The stability of an organization is influenced by its financial performance. How an organization's finances were handled and documented determined its stability. Management evaluated the pure financial results of its strategies and activities by evaluating the company's financial performance. An organization's financial stability was guaranteed, and it utilized money to direct actions and decisions. Organizations could not achieve their objectives if they did not pay attention to their financial performance. Consequently, they often focused on managing corporate resources in a demanding external environment.

3.3 Relationship Between the Level of Implementation of Internal Control and the Financial Performance Level of Accounting Firms in Calamba City

There was a significant relationship between internal control implementation regarding risk assessment, monitoring, and financial performance of accounting firms in Calamba City (see Table 7). The *r* values ranging from .294 to .467 were generated and interpreted with a low positive correlation to correlate the implementation of internal control and financial performance level. The computed probability values .000 and .008 were lesser than the level of significance ($P < 0.05$); thus, the null hypothesis was rejected.

Table 7. Test of significant relationship between the level of implementation of internal control and the financial performance level of accounting firms in Calamba City

Credit Management Implementation	Financial Performance level	r-value	p-value	Remarks	Decision
Control Environment		0.072	0.527	Not Significant	Accept H_0
Risk Assessment		0.467**	0.000	Significant	Reject H_0
Control Activities	Profitability	0.171	0.130	Not Significant	Accept H_0
Information and Communication		0.195	0.083	Not Significant	Accept H_0
Monitoring		0.294**	0.008	Significant	Reject H_0

**Correlational at the level 0.01, *Correlational at the level 0.05(Two-tailed)

This implies that as the internal control implementation of risk assessment and monitoring of the accounting firms increases, so does the financial performance. Conversely, as the internal control implementation of risk assessment and monitoring of the accounting firms decreases, the financial performance also decreases. In the study of Joelle (2019), it was discussed that both monitoring and risk assessment had a significant relationship with financial performance. In monitoring, since internal controls were procedures, it was generally acknowledged that sufficient monitoring was necessary to evaluate the efficacy and caliber of the system's operation over time. It was monitoring guaranteed that the results of audits and other evaluations were made quickly and that the company's financial performance was assessed. It concluded that monitoring affected audit reviews,

internal control system efficacy, and organizational quality and effectiveness. According to the study's findings, management authorization enabled monitoring, which improved events and transaction monitoring, governance, and resource use inside the company. Moreover, risk assessment was essential for identifying risks in the corporate setting. Risk assessments improved risk evaluation and risk mitigation inside the organization by taking risk factors into account. It also concluded that designing internal controls was important for enhancing the organization's efficiency, effectiveness, and profitability. It supported the findings of Kimotho (2015), Mwangi (2014), Oyoo (2014), Muthusi (2017), and Renox (2017) that risk assessment, as one of the components of internal control, was positively and significantly correlating with performance.

3.4 Proposed Action

An action plan was designed to address the specific areas identified in the study to improve the financial performance of Accounting Firms in Calamba City (see Table 8). Enhanced control environment, risk assessment, control activities, information and communication, and monitoring procedures would be crucial to ensure ongoing improvement of the firm's profitability. The proposed action plan involved the enhancement of existing internal control in giving services to internal and external users. These processes and actions aimed to give more quality and efficiency to the policies and procedures implemented in accounting firms. This action plan improved the overall effectiveness from top to down processes to boost confidence in giving services to clients. Lastly, it involved the knowledge and adaptation of important technological advancements including storage and securing data and information, and conversion of deliverables through system-generated reports. With this, every auditor was guided to the following internal controls implemented and improving the financial performance of accounting firms in Calamba City.

Table 8. Proposed action plan

Key Areas	Objectives	Strategies/Activities	Time Frame	Persons Involved	Source of Fund	Success Indicators
Control Environment	To strengthen the ethical leadership within the firm	Initiative attending different trainings and development	Semi-Annually	Management Stakeholders Auditors	Firms Operating Budget	90% lead by example throughout the firm
		Implement systems to hold leaders accountable for ethical behavior.				
		Provide access to ethics advisors or support networks for consultation when faced with complex ethical issues.				
Risk Assessment Procedures	To improve risk detection within the firm	Conduct a comprehensive evaluation of current risk assessment procedures	Quarterly	Management Stakeholders Auditors	Firms Operating Budget	90-95% implementation of risk assessment procedures
		Utilize innovative technologies such as artificial intelligence and audit risk systems.				
		Enhance collaboration of management and auditors within the firm.				
Control Activities	To leverage digital tools and systems to implement and enforce controls effectively	Utilize technology solutions that align with the identified control requirements such as software applications, cloud platforms, and security tools.	Quarterly	Management Stakeholders Auditors	Firms Operating Budget	85% productivity and security
		Implement continuous monitoring tools that scan networks, systems, and applications for vulnerabilities and				

		security threats in real time.				
		Conduct periodic audits of information access and security protocols to ensure compliance with regulations and industry standards.				
Information and Communication	To maintain a balance between accessibility and confidentiality of information	Prepare a comprehensive audit report documenting the findings, including observations, identified deficiencies, and recommendations.	Monthly	Management Stakeholders Auditors	Firms Operating Budget	85% compliance with security audits
		Learn from the audit process and incorporate lessons learned into future information security				
Monitoring	To enhance monitoring controls	Assess the regular evaluations of procedures to know the inefficiencies that can affect the services Review the firm's current income sources, cash flow, and profitability.	Monthly	Management Stakeholders Auditors	Firms Operating Budget	90% enhanced monitoring processes
Profitability	To widen the investment portfolio of the firm	Rank potential investment opportunities based on their strategic fit and impact on profitability.	Annually	Management Stakeholders Auditors	Retained Earnings	85% optimized revenue diversification

Implementing this proposed action plan could strengthen internal control implementation and enhance accounting firms' overall financial performance while promoting the five components of the COSO framework: control environment, risk assessment, information and communication, control activities, and monitoring sustainable development in Calamba City.

4.0 Conclusions

Based on the findings above of the study, the following conclusions may be derived:

- That the accounting firms in Calamba City prioritize internal control measures to enhance efficiency, transparency, and accountability in financial management by fostering communication and coordination among departments. These firms are vigilant in managing daily risks, emphasizing anticipation and proactive risk management strategies to mitigate potential threats to effectiveness.
- The accounting firms are typically steady and consistent, indicating strong financial performance. Consistent profit realization has a favorable impact on the company's capacity to bring in money, control costs, and maintain profitability over time. Internal control is associated or connected to the financial performance level in terms of profitability. The higher the Risk Assessment and Monitoring implementation, the higher the profitability of accounting firms in Calamba City.
- The proposed action plan is needed to enhance the implementation of internal controls in terms of control environment, risk assessment, information and communication, control activities, and monitoring. This will enhance the efficiency and effectiveness of the firm's operations, leading to good financial performance.
- Recommendations to management and stakeholders of the firm may include training and development programs focusing on ethical leadership aspects like accountability, transparency, and integrity. These programs should offer practical examples and ensure clear and accessible ethical guidelines and policies are regularly updated, led by example, and provide resources and support to promote ethical decision-making.
- Recommendations to firms may include a comprehensive evaluation of their existing investment portfolio and targeting different investing opportunities. Getting advice from qualified financial consultants or investment managers might yield insightful information specific to the objectives and risk tolerance of the company. Furthermore, long-term success depends on teaching stakeholders about the value of diversification and implementing a structured procedure for portfolio review and rebalancing.

- f) Further research may also examine how accounting firms can assess the internal controls located in different provinces or regions, for which there is limited information or studies about the internal controls of accounting firms. In line with this, future researchers may obtain deeper information about these internal controls from other businesses.

5.0 Contributions of Authors

This paper has a single author who confirms that the author reviewed this study.

6.0 Funding

This work received no specific grant from any funding agency.

7.0 Conflict of Interests

The authors declare no conflicts of interest about the publication of this paper.

8.0 Acknowledgment

This research extends heartfelt gratitude to all individuals who dedicated their time, expertise, and support, thereby enabling the fruition of this research endeavor. With deep appreciation, he acknowledged the invaluable contributions of those who extended their hands, hearts, and minds, underscoring their pivotal role in making this study possible. Ms. Marcelina DL. Perez, the esteemed adviser, for her unwavering support, guidance, and insightful feedback throughout the Master's Degree study and research. Her patience, motivation, and enthusiasm have been invaluable, along with her relevant comments, suggestions, and ideas, which significantly contributed to enhancing the quality and direction of the research study. Mr. Raniel C. Anido and Mr. John Andrae D. Brila, for sharing their expertise in validating the survey instrument that ensures its reliability and validity for data gathering; Mr. Melchor A. Villapando, the statistician, for his invaluable assistance and expertise in conducting the statistical analysis for this study. His meticulous attention to detail, insightful suggestions, and proficiency in data analysis have played a crucial role in ensuring the accuracy and reliability of the findings presented herein—accounting Firms in Calamba City for their invaluable cooperation and enthusiastic participation in this study. The unwavering support and assistance from both management and auditors played a pivotal role in the successful culmination of this research endeavor; He would also like to extend his sincerest appreciation and recognition to the panelists, Dr. Ma. Lorena M. Tagala, and Dr. Diosmar O. Fernandez, and to the Dean of Graduate Studies, Dean Alfredo G. Perez Jr., for the constructive criticisms and generous insights have greatly enhanced the credibility and significance of this study, enriching its academic value and scholarly impact; His friends and colleagues, Carl Darren C. Lacuata, Ms. Arlene A. Junio, Joel D. Meranio Jr., Lenie L. De Juan, and Maria Rizza R. Yong, for truly inspiring and supporting him throughout this study; His supporting loved ones, his aunt Delia P. Surabasz and his uncle Ferdinand A. Surabasz, for giving unending support to achieve this milestone in his career; Last but certainly not least, he wants to acknowledge and thank his dear family members: his mother, Vilma P. Laroza, his father Rommel E. Laroza, and his brothers John Ross P. Laroza and Jake Ivan P. Laroza. Their boundless love, unwavering support, and endless patience were the cornerstones of his strength and determination throughout this research endeavor. Foremost, his gratitude goes to the Almighty God for giving him the insight, courage, and motivation required to navigate the challenges and accomplish this study.

9.0 References

- Ahmed, S., & Ng'anga, P. (2019). Internal Control Practices and Financial Performance of County Governments in Kenya's Coastal Region. *International Journal of Current Aspects*, 3(5), 28-41. <https://doi.org/10.35942/ijcab.v3i5.59>
- Alisherovich, T.S., & Buron Ugli, N.B. (2023). Internal Control in Banks. *European Journal Of Business Startups And Open Society*, 3(3), 34-39. <https://www.inovatus.es/index.php/ejbsos/article/view/1513>
- Aljabi, J. (2024). The Auditor's Responsibility is to Apply the Concept of Materiality by the Standard (ISA.320) in Determining Analytical Audit Procedures to Reduce Audit Risks. *Technium Business and Management (TBM)*, 7, 98-110. <https://doi.org/10.47577/business.v7i.10787>
- Bhandari, P. (2023). Triangulation in Research. Retrieved from <https://www.scribbr.com/methodology/triangulation/>
- Castro, J., Vallejo, V., Gonzalez, R., Romero, M., Rodriguez, B. (2023). Risk Management in Audits. *Res Militaris. Social Science Journal*, 13(2), 3372-3383. <https://bit.ly/3ZQvHBg>
- Creswell, J. W., & Creswell, J. D. (2022). *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches* (5th ed.). SAGE Publications.
- Crowley, L., & Balagtas, R. (2020). The Critical Role of Internal Control Procedures. Retrieved from <https://bit.ly/4elyRle>
- Daengs, A., Istanti, E., Zuhro, D., Susanti, R., Sutini, Sanusi, R. Syafi, Sutopo, Muhdor, A., Kusumonegoro, B. (2022). The Effect of Return on Equity on Company Value with the Independent Board of Commissioners and the Audit Committee as Moderating Variables. *International Journal of Economics and Management Research. Politeknik Pratama Porwokerto*, 1(2), 175-193. <https://bit.ly/3ZDPQL0>
- Dwyer, K., Brennan, N., Kirwan, C. (2023). Disclosure of Auditor Risk Assessments in Expanded Audit Reports. *Journal of Applied Accounting Research*, 25(1), 1-23. <https://tinyurl.com/2p8wccx6>
- Eddine, B., & Nasreddine, A. (2023). Integrating Risk-Based Auditing Standards: Possible Reflection of NAAs in the Audit Process in Algeria. *Journal of Economic & Financial Research*, 10(1), 803-826. <https://tinyurl.com/35edrjbc>
- Furhmann, R., James, M., Li, T. (2023). How to Calculate Return on Equity (ROE). Retrieved from <https://tinyurl.com/58wa36s7>
- Gardeo, J. (2019). Why It's Important To Maintain Confidentiality In The Workplace. Retrieved from <https://tinyurl.com/3w3wav22>
- Gu, J. (2022). An Empirical Study on the Relationship between Corporate Internal Control and Financial Performance of Listed Companies. *SHS Web of Conferences* 151, 01036. <https://doi.org/10.1051/shsconf/202215101036>
- Gunn, J., Li, C., Liao, L., Zhou, S. (2022). Is it Better to Kill Two Birds with One Stone? Internal Control Audit Quality and Audit Cost for Integrated vs. Non-integrated Audits. Retrieved from <https://tinyurl.com/vcavmpw>
- Harasheh, M., & Provasi, R. (2022). A need for assurance: Do internal control systems integrate environmental, social, and governance factors? *Corporate Social Responsibility and Environment Management*, 30, 384-401. <https://onlinelibrary.wiley.com/doi/pdf/10.1002/csr.2361>
- Heller, I. (2022). How Technology Is Transforming Accounting. Retrieved from <https://tinyurl.com/44y9fxdm>
- Hevlych, L. (2023). Place of the Risk Assessment Procedure in the Audit Process in Ukraine. *International Scientific Conference on Accounting ISCA*.
- Joelle, A. (2019). Effect of Internal Controls on Financial Performance of Small and Medium Enterprises in Nairobi County (Thesis). United States International University-Afric
- Kamaruddin, M., & Auzair, S. (2022). The impact of financial management practices on accountability of Islamic social enterprise (ise). *International Journal of Islamic and Middle Eastern Finance and Management*, 16(4), 669-686. <https://doi.org/10.1108/imefm-05-2021-0184>
- Khalif, A. (2022). Internal Controls and Financial Performance of Selected Commercial Banks in Bosaso, Somalia (Thessi). Kampala International University.
- Kuusinnen, H., & Miettinen, V. (2023). The Role of Data Analytics in Audit Risk Assessment (Thesis). Abo Akademi University
- Leland, A. (2023). Fundamentals of COSO Framework: Building Blocks for Integrated Internal Controls. Retrieved from <https://tinyurl.com/25f9cz5>
- Leonard, K. (2022). Effect of Internal Control Systems on Financial Performance of Commercial Banks Branches in Bomet and Kericho Counties, Kenya (Thesis). University of Kbianga
- Lopez, J. (2008). Identifying and Assessing the Risks of Material Misstatement through Understanding the Entity and Its Environment. Retrieved from <https://tinyurl.com/y9mrka4w>
- Mohsin, H., Ahmed, S., Streimikiene, D. (2020). Evaluating the Financial Performance by Considering the Effect of External Factors on Organization Cash Flow. *Contemporary Economics*, 14(3) 406-414. <https://doi.org/10.5709/ce.1897-9254.413>
- Roessner, B. (2023). 3 leadership styles ideal for CPA firms. Retrieved from <https://tinyurl.com/mryjxd7h>
- Safriansah, S., Zuhri, N., Andriyansah, A. (2021). Analysis of financial performance using budget absorption indicators. *Budapest International Research and Critics Institute (Birci-Journal) Humanities and Social Sciences*, 4(1), 1467-1478. <https://doi.org/10.33258/birci.v4i1.1775>
- Snell, R., & Chan, E. (2023). How to help your staff become better leaders (and why this is crucial to your firm's success). Retrieved from <https://tinyurl.com/2p9ae23j>
- Starenka, O. (2023). Risk Assessment in the Internal Control System of an Enterprise. Baltija Publishing.
- Sawle, M. (2024). How to Conduct an Effective Fraud Risk Assessment. Retrieved from <http://surl.li/doecmg>
- Tircovnicu, G., & Hategan, C. (2023). The Audit Risk Assessment of European Small and Medium-Size Enterprises. *Journal of Risk and Financial Management*. 16(3), 158. <https://doi.org/10.3390/jrfm16030158>
- Verma, E. (2023). Financial Performance: Understanding the Concepts and Its Areas. Retrieved from <http://surl.li/hxdtmk>
- Werner, M., Wiese, M., & Maas, A. (2021). Embedding process mining into financial statement audits. *International Journal of Accounting Information Systems*, 41, 100514. <https://doi.org/10.1016/j.accinf.2021.100514>
- Wilamsari, F., Rahmadhany, U., Musriati, T. (2023). IT Capability, Audit Risk and the Role of Internal Control (Thesis). Department of Accounting, University Panca Marga.
- Wood, D. (2023). The 20 Biggest Problems for Firms in 2023. Retrieved from <http://surl.li/qanylw>

Success Stories of Top Performers in Teacher Education and Liberal Arts

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Date received: August 29, 2024

Date revised: September 18, 2024

Date accepted: October 4, 2024

Originality: 94%

Grammarly Score: 99%

Similarity: 6%

Recommended citation:

Manuel, K., Diaz, T.M., Burigay, F.A., Bangi, J., Luyun, C. (2024). Success stories of top performers in teacher education and liberal arts. *Journal of Interdisciplinary Perspectives*, 2(11), 180-195.

<https://doi.org/10.69569/jip.2024.0451>

Abstract. This study was conducted to describe the journey of topnotchers from a private Catholic higher education institution in Tuguegarao City. Employing a phenomenological study approach, this study explored the lived experiences of the four topnotchers from the School of Education, Criminology, Arts, and Psychology between 2013 and 2023. Using thematic analysis to analyze the answers of the top notchers to the validated semi-structured interview questionnaire, several key factors that contributed to their success in achieving top placements in the board examinations were revealed. These factors were strong institutional support, effective teacher mentorship, good personal characteristics, a supportive family, peer support, and strategic personal interventions. These emphasize how important it is to have a solid support system inside and outside the school setting. Based on these results, the study offers various recommendations for the institution to enhance further its support for those students who are determined to succeed. These include strengthening academic and emotional support strategies from the school, family members, and peers. Moreover, it is important to invest in faculty development, enrich library resources, and intensify board exam review courses to incorporate meaningful learning experiences and test the effectiveness of a certain practice. Additionally, assessing students' study routines to improve effective study habits and leveraging more top-notch testimonies for promotional purposes to attract more enrollees. These could serve as a source of inspiration for students and a means of enhancing the school's standing as a producer of high scorers on board exams. Therefore, this study encourages students to pass and ace the board examinations.

Keywords: Education; Exam preparation; Licensure examination; Topnotchers.

1.0 Introduction

Education is the journey through which individuals acquire knowledge, essential skills, values, and attitudes, equipping them to thrive as globally competitive professionals. It plays a crucial role in an individual's development as it helps hone career pursuit and all aspects of human being. Moreover, having quality education ensures that all learners have access to a safe, inclusive, and conducive environment that fosters holistic development. It is also necessary for societal progress and global development because it goes beyond transmitting knowledge, encompassing cultivating talents, critical thinking, and a love for lifelong learning. Thus, having quality education helps students succeed, as it is critical to passing and being on the board licensure examination.

With that, the licensure examination serves as a symbol of professionalism recognized by both the government and the public, setting high standards of excellence, ethical conduct, and criteria for selection (Alipante et al., 2017). It is crucial in ensuring professional competency across various fields (Abao et al., 2023). Thus, this is essential because examination outcomes not only indicate students' intellectual capabilities but also represent the overall efficacy of the educational institution (Ognayon & Afalla, 2022). Forty-five Professional Regulatory Boards (PRB) have jurisdiction over specific areas of professional expertise, all of which fall under the larger organization, the Professional Regulation Commission. The exam administered by PRB guarantees that it meets professional, legal, and technical standards (Abao et al., 2023). Also, they release many professionals every year and consistently produce top-notch professionals.

Meanwhile, the PRC administers board examinations in education and liberal arts. These include teacher education, criminology, psychology, and social work. The PRC and the Board for Professional Teachers (BPT) announced that 23,782 out of 50,593 (47.01%) elementary teachers and 53,995 out of 95,969 (56.26%) secondary teachers passed the September 2023 exams. There are 84 top scorers at the elementary level and 39 at the secondary level. Also, the PRC announced that 6,133 out of 8,370 people passed the Psychometricians Licensure Examination, 64 of whom scored highly. In August 2023, 5,743 out of 17,576 (32.68%) passed the criminologist licensure exam with 14 topnotchers. In the social worker licensure exam, 3,878 out of 6,833 (56.75%) passed, with 17 topnotchers. This data shows that more exam takers correlate with a lower pass rate. However, liberal arts colleges face particular difficulties in establishing meaningful global collaborations. This is primarily due to their significantly smaller size, limited resources, and emphasis on an intimate culture centered around undergraduate teaching and learning (Penprase & Schneider, 2023).

On the other hand, there are top notchers in every board examination. They are the ones who achieve the highest scores and often receive widespread admiration for their exceptional performance. They serve as role models, drawing upon their life experiences to inspire others and provide insights into their journey to success (Bayawa et al., 2022). Moreover, excelling in licensure examinations brings graduates pride and motivates future students to consider enrolling in higher education institutions (Ognayon & Afalla, 2022).

Given the significant impact of higher education institutions on program performance, as reflected in favorable licensure examination outcomes, there is a critical responsibility to gather and comprehend narratives from top-performing students. These narratives hold the potential to offer valuable insights beneficial for the institution's progress and development (Quitoras & Abuso, 2021). Through this, the researchers aimed to develop an esteemed name for their department, emphasizing that despite having a limited number of enrollees, they can still produce topnotchers in their respective fields and the Civil Service Examination.

Therefore, the researchers embark on a journey to uncover the lives and experiences of education and liberal arts topnotchers, offering invaluable lessons for future generations striving for excellence and to have a 100% rating in the board examination. Thus, their stories will inspire others, encourage more students to enroll in the institution and empower future generations to pass and secure the top spot in the examination.

2.0 Methodology

2.1 Research Design

This research used a qualitative method employing a phenomenological research design to describe the lived experiences of the top notchers in the licensure examination. This approach facilitated a comprehensive understanding of the multifaceted factors contributing to their success. It also enabled the exploration of patterns and causes of behavior, providing valuable insights into their journey toward achieving top rankings.

2.2 Research Participants

The participants in this study were four (4) topnotchers from one of the Catholic institutions in the northern Philippines. Total enumeration was used to select the informants, who were selected by the following criteria: (1) top notchers who took the licensure examination between 2013 and 2023 and (2) must have earned their bachelor's degree from the institution.

2.3 Research Instrument

The researchers formulated semi-structured interview questionnaires for the study and ensured the content experts validated it. The questions focused on the experiences and the journey of the topnotchers, including their strategies, challenges faced, motivations, and other factors contributing to their achievement. The researchers devised these questions to identify the influential factors and interconnectedness of the various elements influencing their top placement spot. Thus, the study provided a comprehensive view of the topnotchers' experiences as they reached the top.

2.4 Data Gathering Procedure

The researchers reached out to the top notchers through their messenger accounts. After they gave their consent to participate in the study, a schedule was set according to the top notchers' schedules. The semi-structured interview was conducted through Zoom or Google Meet. Each interview lasted about 15 to 20 minutes.

2.5 Ethical Considerations

Before the data collection, participants were given a consent letter and informed of the study's rationale. The interviews were conducted voluntarily, and participants could withdraw from the study at any time or refuse to answer questions that made them uncomfortable. The confidentiality of participants' responses was strictly observed. Moreover, participants were assured of the best benefits they could get from participating in the study and were informed they could access any information regarding the study's findings.

3.0 Results and Discussion

The influential factors in becoming topnotchers include Institutional Support, Teacher Mentorship, Personal Characteristics, Supportive Family, Peer Support, and Strategic Personal Intervention. These collectively contribute to the journey of Teacher Education and Liberal Arts Topnotchers.

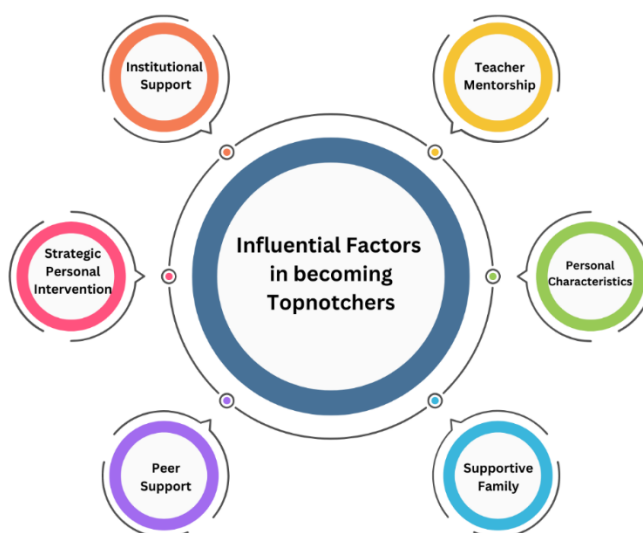


Figure 1. Factors in becoming topnotchers

3.1 Institutional Support

Institutional support encompasses a wide range of services and initiatives that promote student excellence and development. It provides a structured network of resources designed to address students' diverse needs, fostering academic and personal growth. In this theme, the top notchers highlighted the importance of their respective universities' programs and resources in preparing them for the board exam. These programs included course enrichment, prayer vigil, and good resources, highlighting their contribution to the top notchers' overall educational experiences and success.

Program Preparation

The informants of this study highlighted the significant impact of the institutions' programs on their ability to excel academically by providing them with essential knowledge, skills, and support. They emphasized that the university's course enrichment was instrumental in their preparation for board examinations, resulting in remarkable results. In particular, their success was significantly influenced by the six-unit course specifically designed to cover the examination content. Teachers provide comprehensive coverage of potential exam topics and discussion, which significantly aids their preparation for the teacher education program, which occurs every Saturday. Similarly, for the psychology program, different speakers are invited to discuss various topics for the board exam during the weekend. The informants' statements of how the course enrichment of the institution benefited them are as follows:

The institution equipped us with the things that we needed. There are many practices like Course Enrichment; we have discussed the topics, test questions, tips, and what to expect on the board. It prepares us really before entering the review center. TO1

Course enrichment is a great help before graduating. Its function was to help us get ready to enter the review center because, after four years of studying, you will study again. It was helpful in gradually refreshing what we learned in four years. TO2

Before we graduated, this program in the school, like course enrichment or something like that, served as a review. I think every Saturday, we have to attend that for at least three hours, and then some of our instructors in the department take time to review you, so it is like going back to the different subjects. I think it is a big help. TO4

The claims made above indicate that the course enrichment programs of the institution have proven to be essential and effective in preparing the informants before taking the board exam. By integrating regular discussions, tips, test questions, and test simulations tailored with guidance, the institution deeply reinforces academic learning and cultivates a supportive learning environment conducive to achieving success. Course enrichment programs are comprehensive and promote learning experiences for students by developing supportive activities that can enhance student learning and lead to positive outcomes (Carter, 2013). High-quality enrichment programs, activities, and experiences are also designed to support students' knowledge and development. It significantly benefits and positively affects students' well-being, creativity, critical thinking, self-esteem, and overall foundation for success (Blazer, 2016). Moreover, vigil for board takers was also highlighted as a great support from the university. One of the informants stated:

I also saw our organization's support, as they even organized a vigil for our board exams. TO2

Conducting prayer vigils for board takers at one of the Catholic Higher schools in the northern Philippines exemplifies a comprehensive support system, addressing academic needs and spiritual guidance. This initiative underscores its commitment to nurturing student well-being and personal development and recognizing the integral role of spirituality in their academic journey. In line with the study of Clayton (2021), spirituality plays an uplifting impact on students' academic environments. This is through prayers and a strong connection with Him. It fosters a sense of interpersonal closeness to God in individuals, particularly at trying times when they require guidance (Jeppsen, 2015).

In light of this, the findings underline the essential role of institutional support in facilitating students' success by offering vital resources, programs, and opportunities to prepare for board exams. This demonstrates the commitment of the institution to embedding its Core Values into the students, particularly Christian Living and Excellence. The dedication to these values extends beyond academic achievement to incorporate holistic development in all aspects of student life. The institution's emphasis on Excellence encourages students to strive for proficiency in diverse areas, creating continuous improvement and achievement. Moreover, Christian Values, cultivated through CFED subjects each semester, add to students' spiritual growth and well-being. With these ideals, the institution's program to establish these values contributes positively to the informants' success. Additionally, this allows the institution to display its unique technique in incorporating a beneficial impact for students who aim to be at the top or successful in their endeavors.

The result is supported by Aronson (2017), who emphasizes that institutional support enhances students' academic success and seeks to develop innovative programs that better meet their needs and make their learning experiences meaningful. These programs provide an environment for the students to be ready for their future undertakings (Hendawi & Nosair, 2020) as well as essential to the student's success in taking the board examination (Amanonce, 2020). Like the study of Micabalo & Cruspero (2022), school and administrative support positively impacts the graduates' readiness to take the licensure examination through constant review, refreshment, and reminders from the faculty and staff.

Resource Accessibility

Ensuring that students have access to suitable resources, particularly books relevant to their study, is valuable to their academic achievement. By guaranteeing equal access to educational resources, institutions motivate students to excel academically and foster lifelong learning. Just like the informants of this study who had positive comments on the resources of the institution's library. Their experiences are conveyed in these statements:

I did not have a hard time with resources because books were available in the library, which was enough. I remember I borrowed books back then. TO1

The books in the library are indeed good. TO2

Many books are available on the Main Campus, which interests many students. TO3

We have a very good library. I stayed there from my first year to my fourth year. You can borrow many books and get the sources there. TO4

This finding indicates an outstanding appreciation for the library's services, as the topnotchers have regularly accessed its resources throughout their academic journey. This emphasizes the institution's commitment to giving students access to an excellent library, enabling them to study different resources and books to enhance their intellectual capacities, especially in preparing for the board examination. This result is supported by the study of Crawford (2015), which states that an established library program with proper staffing, resources, and financing may result in better student academic achievement. It allows them to explore and deepen their understanding of different course materials (Chipana, 2018). With this being said, it is recommended that the institution continue providing the students with good resources from the library to create opportunities for academic growth because this also contributes to the success of the informants.

3.2 Teacher Mentorship

Mentorship from teachers has become a critical component in meeting students' academic and emotional needs. The informants of this study highlighted their teachers' invaluable assistance throughout their educational journey, which is essential in overcoming academic obstacles and achieving success. The informants also underlined teachers' importance in inspiring them to excel, helping them toward their goals, and nurturing their well-being. This support enabled them to improve their skills, attain academic success, and show their full potential. Here is how the influence of teachers was evident in the preparation of the informants:

Our teachers are our mentors. Our teachers have always been supportive during our preparation on the board. We entered the review center with preparations from our teachers. TO1

Our instructors would check on us while we were reviewing, asking if we were okay. It is a big deal that our instructors still check on us even though we have already graduated. TO2

The instructors at the institution are like our teachers there; they are confident. That is the first thing you must have: competent teachers. TO4

The result reveals that the institution has supportive and competent teachers who cater to the needs of its students. This was reflected by the topnotchers, whom the teachers helped throughout their journey in preparation for the board exams. This notably helps their performance as teachers guide and monitor their preparation, providing

support to optimize their readiness for the exam. This is supported by the theory of educational productivity, wherein instruction quantity, quality, and classroom climate contribute to students' success (Walberg, 1981). Similarly, the study of Pattaguan (2018) states that teachers are one of the contributors to the success of the topnotchers from CPALE. Also, the study by Owolabi and Oginni (2013) found that mentorship increases interaction between students and teachers, which leads to the transfer of skills that depend upon guidance and social support. It is done through supervision, support, and collaborative self-improvement (Yiga, 2016). Thus, the result acts as an excellent means to help meet the needs of the students.

On the other hand, teacher competence is positively related to teaching quality, which affects student outcomes (Baumert et al., 2013). As observed in the study of Gusmida et al. (2017), the teaching and learning process in schools will run well if the learning system or model is one of the factors that influence learning activities chosen and implemented with the right strategies and implemented by teachers who are competent in the field of teaching and education. This exemplifies that having a qualified teacher means that the students' learnings will be meaningful and relevant in their lives, especially when preparing for an exam.

3.3 Personal Characteristics

This theme explores the diverse personal qualities exhibited by top notchers that help them navigate challenges and attain success. They have shared the following personal characteristics: Consistency and Discipline, Academic achievement, Confidence and Perseverance, Goal-Orientedness and Determination, academic proficiency and Love for Learning, Faith, Time Management, and Self-Reliance. These characteristics collectively shaped their journey to top placements, reflecting their dedication and commitment to excellence.

Consistency and Discipline

Consistency is beneficial as it allows individuals to perform the same way each time and keep the same behavior. Discipline can be found in this characteristic, as it helps an individual to have the self-control to attain their goal. Thus, consistency and discipline were essential factors during the preparation of the informants. Relating this to the Theory of Productivity by Walberg, one of the nine key factors that lead to a student's success is their ability. The ability of the informants to stay constant and disciplined for their goals has been recognized as contributing to their success. As they said:

Every day I wake up, I try to become consistent. Consistency and discipline are my foundation and a significant factor in preparing for the board exam. It would be best if you had discipline in your time and your routines. TO1

It started at the review center, where they probably observed that my scores were becoming consistent. They suddenly started saying that Patrick had a chance, they would say. But I did not want my head to swell. I just wanted to stay level-headed; I just worked hard. TO2

This is very important self-discipline, okay? For example, you were asking me a while ago if I got distracted with social media, and that is where discipline comes in. TO4

The result shows that these two characteristics are essential in their routine while preparing for the board exam. Topnotchers laid a strong foundation supporting sustained effort and progress toward their academic goals by prioritizing discipline in time management and routines. Thus, this came along with focus and hard work, which, in turn, rely on consistency in forming discipline and creating habits. These qualities are seen as essential for maintaining focus and adhering to study schedules, which are crucial factors in the preparation for the board exam. In the study of Espiritu et al. (2022), discipline is one of the six factors that characterize the success of Filipino MTLE Topnotchers. This is aligned with the study of Mutakwa (2023), stating that consistent practice enhances discipline, which helps everyone overcome challenges, maintain attention, and withstand distractions. The study of Fadrigon et al. (2019) also showed that having this trait is important in preparing for the licensure examination. These two become an asset for the informants to reach their goals and get that top placement they aim for.

Consistent Academic Awardee

Personal achievements such as being an achiever and having a competitive disposition are pillars of the informants' success. Their innate drive for excellence compels them to set high standards and continuously strive

for excellence, exemplifying personal achievement's power in reaching success. They are inherently driven by a desire for individual achievement because, at an early age, they naturally aim for excellence, setting high standards for themselves. Here are their responses when asked about being an achiever:

Of course, that is my foundation, what I achieved throughout my academic life. That is my foundation in my professional life because I always say to myself and other people that if you work hard, that becomes your weapon later on when you are a professional. TO1

These achievements boost my confidence. I was a dean's lister and then achieved the President's lister. TO2

Being an achiever trained me to have a competitive disposition. TO3

Being an academic achiever and the competitiveness of the informants add up to the factor in their success. It is evident from the findings of this study that the informants were achievers, which is considered one of the foundations of why they became topnotchers. This becomes their foundation as they set high standards for themselves to achieve their desired achievements. Thus, students' academic performance has profound implications for their future endeavors. This is also evident from one of the topnotchers, who shared that educational achievement is an asset in future endeavors. This is supported by the study of Kutnick et al. (2022), who stated that it is a crucial determinant of career aspirations and future accomplishments. Additionally, the extent of a student's competitiveness and the overall competitive atmosphere within a school can profoundly influence student achievement (Nebel et al., 2016). Thus, this exemplifies that competitiveness and achievement result in better outcomes.

Confidence and Perseverance

The informants in this study display exceptional self-confidence and perseverance, maintaining a strong self-image, creating good attitudes, and demonstrating resilience on their journey to success. These defining characteristics enable them to overcome challenges and have a positive outlook throughout all their experiences. Fueled by a self-driven mindset, they approach their academic goals with an unwavering devotion to excellence. As the informants stated:

You should be optimistic that you should have a positive attitude towards the situation. Self-confidence, it must not be lost. Another quality is perseverance, wherein I did not give up that time, even though I was under pressure because I was rushing for my review. TO2

I am not that grade-conscious; it is like I am confident that I will ace the exam. TO3

I cannot afford to fail the LET, so you have to persevere. TO4

This shows that being confident and persistent enough with your aims will result in a good end since these two crucial attributes boost the informants toward their success. Thus, it was found that there is a strong relationship between academic success and confidence (Dinsmore & Parkinson, 2013). Thus, successfully overcoming challenges can lead students to experience a sense of accomplishment, thereby enhancing their self-confidence. It also demonstrated that perseverance is a crucial quality for success (Duckworth, 2016). Therefore, it is vital to encourage students to cultivate these attributes because they are good contributors to studying and striving for outstanding performance.

Goal-Oriented and Determination

Setting clear goals, working diligently, and remaining determined throughout the preparation are common traits among topnotchers. Individuals use goals to direct their actions, assess their progress, and drive their learning over time. According to the informants, their goal is what motivates them. Relating this to one of the nine critical variables in the Theory of Productivity by Walberg, motivation drives someone to success. In addition, setting goals is a motivation that helps these topnotchers achieve their success. They are determined to achieve the goals that they set for themselves. As they shared:

I always set goals, and as much as possible, by all means, I will find ways to reach my goals. TO1

You need to set your mind to take the board exam. It is important that once you have decided to take the board, push it. You have enrolled in a review center and reviewed for several months, so push through and keep going. There is no turning back. TO2

Despite the problem, your goal motivated me to review more. You set a goal already. You set the goal that, okay, I applied for this, I paid for this, and I registered for this exam. Therefore, even though I face these challenges, I have to make sure that I see the end of it because you are on the journey to pass, so you have to work on that. TO4

The informants of this study are renowned for their ability to set clear goals combined with perseverance throughout the process. These traits become fundamental before embarking on their academic journey because they serve as their guiding actions and driving force as they prepare for the examination. It can boost motivation and promote skill development and engagement in learning. Thus, students should establish realistic goals to manage their time effectively (Adams & Blair, 2019). On the other hand, informants are driven by the determination to achieve their goals. In Cherry's study (2021), it was stated that self-determination fosters success in many different domains of life goals.

Love for Learning

The informants of this study emphasize proficiency in critical subjects like Mathematics and Reading Comprehension, coupled with a love for learning and solid formation. In connection with the Theory of Productivity by Walberg, one key variable is ability. An individual's ability to solve problems in mathematics leads to academic success, and as Sudiarta and Widana (2019) state, this helps in the individual's analytical skills. On the other hand, one's ability to read and comprehend is also a factor in achieving academic success. The study by Bastug (2014) states that this is a crucial determinant of academic success. That is why being academically proficient is a major contributor to academic success. However, this is not enough to attain success because one needs to couple it with a love for learning and eagerness for excellence, as shown by the top notchers. These are the statements of the informants:

I am good at Math and love to read. I did not have a hard time with Math, and the same goes for paragraphs and vocabulary. My education upbringing, especially from a school that excelled in science and math, means that arithmetic has always been a challenge for me. I am happy when I excel. TO3

The second is solid formation. You need to have a solid foundation, for example, in theories like education, which are very important subjects. It is one solid foundation, and you need to have a very good understanding of those lessons. TO4

The result shows that the success of the informants is rooted in a combination of academic proficiency and love for learning. Thus, exceptional proficiency in academic subjects such as Mathematics and Reading comprehension enables them to comprehend easily. In the study of Ponkshe (2013), students who excel in English reading comprehension are likely to excel academically. With that, prioritizing developing reading comprehension skills is essential for enhancing academic achievement. Moreover, their love for learning and pursuit of excellence is also important for the informants. Instead of viewing education as a means to an end, they approach it with genuine curiosity and a thirst for knowledge.

Faith

Faith is keeping a strong relationship with God, which inspires the informants to face challenges and stay focused on their goals. Their faith is very important in their preparation for the board examination. When combined with hard work, prayer helps them believe and be confident that they will pass the exam. Their faith provides emotional, mental, and spiritual support, allowing the informants to deal with the pressure they feel for the examination. They claimed that:

I do not have to prove anything; I will do what I can. I did my part, and I leave the rest to God. TO2

First you need to have a strong faith in God. You need to pray, but you have to couple it with hard work. For example, you can pray on one, but if you are not going to prepare, then it is useless. That is the first one. TO4

This finding shows the value of the existence of God as a factor in reaching success. The informants shared how they are guided with faith and surrendering the outcome to His power. Also, one of the top notchers highlighted the power of prayer, which acknowledges the role of heavenly direction that provides strength while putting efforts to ensure that they will pass the board exam. The study of Albite (2019) shows that faith contributes to the success of BEED topnotchers. In fact, in the research conducted by Binayao & Dales (2020), participants emphasized that the most crucial aspect never to be overlooked by takers is seeking God's intervention. Their increased dedication to prayer fosters a more optimistic outlook on the licensure exam outcome. Thus, success and fulfillment come from effort and faith (Alsaraj, 2023). Therefore, having faith in God truly becomes a factor in success because nothing is impossible with Him.

Time Management

Balancing study time and other obligations, such as work or personal responsibilities, can be challenging. For candidates working while preparing for the exam, prioritizing duties and effectively managing study time is crucial for adequate preparation. Thus, time management skills are important to success. One of the informants revealed that she is working while preparing for the board exam. She stated it was challenging but not an issue because she knows how to maximize her time and prioritize things. This is how her statement goes by:

It was time management. Of course, it is challenging. For example, I go to work, and then I have to leave at 3:30, let us say 3:30, but after 3:30, you have to prepare for tomorrow's lesson, or maybe for the next week, you have to prepare materials so it is challenging because sometimes like I am already tired, I already work for how many hours and I have to prepare again so where will I squeeze this schedule of reviewing it is a challenge but it is not a problem just a matter of prioritizing. It is just a matter of priority. TO4

This finding aligns with the study by Goetz et al. (2017), which indicated that effective time management strategies are linked to academic success. Postgraduate students who work while studying recognize the necessity of wise time management to balance work and educational responsibilities. For this, students must adopt the personality applied by the informant, as effective time management impacts examination performance.

Self-Reliance

Self-reliance indicates trust in one's capabilities and skills despite the problems one may encounter. Two informants displayed this trait, wherein they still believed in themselves despite having uncertainties about their environment and themselves. One topnotcher said that she encountered technical concerns, such as her paper becoming smudged with the ink of her ballpen. Despite this, she believed she could pass the exam since she estimated her likely score. This exhibits her trust in herself with her statement:

My pen had a problem. I felt like the ink was put on the paper – the paper that you have to pass. Of course, I am thinking, what if that is stained on the barcode or it spreads, so my paper will not be accepted? That is my worry. Modesty aside, I think I am going to pass because I counted the number of items that I am confident in. I counted the number, I am sure. TO4

On the other hand, one of our informants also wondered about her ability to pass the exam. However, she overcame these fears by being self-reliant because she was secure in her knowledge and thought she had prepared for the exam. With her statement:

The number one challenge was having doubts during the preparations because you kept questioning, and I asked myself several times if it was worth it to review. So, it is me against myself. I think every day, as much as possible, as I am motivated to wake up every day, I have to condition myself that I do not doubt myself. That is why you are preparing; you have a goal to make sure you pass the board exam. TO1

This indicates that before, during, and after the exam, it is crucial to have trust in oneself. The self-reliance that whatever occurs, everything will be okay. Thus, encountering challenges and stress during examinations is common among takers preparing for exams. Whether it is the pressure to do well or the dread of failure, many individuals battle uncertainties about their abilities. Thus, students with high self-reliance are confident in themselves and can step out of their comfort zone and help themselves overcome and face challenges (Liang, 2013). Furthermore, having this skill allows the informants to conquer the challenges, and they are more adept at

facing these obstacles because they believe they can go through the problems with their skills and capacities. The study of Mishra et al. (2023) stated that one benefit of self-reliance is that it improves the decision-making competence of an individual, which shows that they are accountable and responsible for how they face challenges. In addition, being responsible for handling these challenges and relying on one's abilities helps the informants deal with their problems.

3.4 Supportive Family

Family support considerably improves the success of all the informants in this study. Family is a significant component of becoming a top achiever, motivating to reach goals. From delivering resources for preparation to providing emotional support, family support is a powerful motivator, pushing students to strive for success. A good relationship with family and a conducive home environment promote educational achievement and contribute to general well-being. Additionally, the urge to repay family sacrifices is a major motivator for top performers, driving them to thrive in their board examinations. These are their statements:

They have been very supportive ever since college like they are always there, and they make sure that all I need to do is to study. They have been supportive throughout; I do not know how I would have gotten through everything without them. Family is my source of motivation; as I said, the people in this house sacrificed a lot for me. I acknowledge their sacrifices and efforts to make it easier for me. I want to reach my goal to make sure no wasted efforts are coming from my family so that their sacrifices will be worth it. TO1

First is the family. Of course, my ever-supportive family truly believed in me during my board exam journey. My family is one of my motivations because I want to repay their support, especially the decision to go to another place to review. I will do this for them. TO2

They are always supportive of other endeavors. For example, if there are school events or competitions, they are the first ones to cheer. They are the first ones who will be proud that I got something. TO3

My parents and my siblings are very supportive. They are very supportive; they do not pressure me. TO4

These findings indicate that having a supportive family can greatly affect performance in different areas. This was reflected in the experience of the topnotchers, who emphasized their family roles during their preparation. Thus, this finding aligns with the study of Mardiana and Sugyaningsih (2018), where family motivation plays a crucial role in cultivating learning motivation. The encouragement, recognition, and commendation provided by parents and close associates are believed to elevate students' motivation levels and academic accomplishments (High & Scharp, 2015).

3.5 Peer Support

Support from friends is helpful for cognitive skills and emotional support, as mentioned by the topnotchers. They underlined that working together in study groups increases critical thinking and analytical skills. By sharing knowledge, discussing concepts, and asking questions, they helped each other properly understand exam matters. This collaborative method fosters a supportive learning setting where students learn from others and increase their understanding of numerous academic fields. Moreover, peer support also provides emotional assistance during stressful times. Thus, this encouragement pushes the top performers to try harder toward reaching their goals alongside their fellow takers. As the top notchers stated:

At the review center, when we are together, for example, one of my classmates has already studied, and my other classmate as well as I have also studied the other topics, so it is like sharing what you understood and where you are having trouble with, in which they can be able to explain to you. It is really all about helping one another because the goal is to pass. TO1

That is how group study helped us. We exchanged information on why this is the correct answer and why not that. If one does not understand, we share our insights to support one another. This helped us analyze. TO2

This exemplifies that peer support helps individuals develop essential skills required for board examinations. This is supported by the study of Chen and Yang (2019), who found that collaborative work and study groups have been proven to enhance students' performance and learning outcomes. With this aspect, students are propelled

by a robust internal drive to excel academically, with the notion that active participation in collaborative learning environments may yield greater cognitive advantages (Kirschner et al., 2018).

However, having peer support is not only for academics; they are present to give comfort when things seem not to be going well. One of the informants mentioned the value of having friends who accompanied him emotionally. Since then, he has had homesickness, which weakened his emotional well-being in part due to a long distance from his parents. This is how he expressed how his peers help him cope:

Because I get homesick quickly, I want to go home immediately. I cannot focus on reviewing. Instead of thinking about reviewing, I was thinking more about how many more days I have before I can go home to Cagayan. What seems to be the solution to that problem is the presence of my classmates and friends, who seem to distract me from the fact that I am away from my family and from the people I am always with. TO2

Coping strategies for those who suffer from homesickness and emotional distress should assert a sensation of connectedness and the experience of mattering or feeling cared about, accepted, respected, and valued by people, relaxation techniques, and seeking social support (Saigal, 2017). Thus, establishing a support network, staying connected with home, and creating a comfortable living space can effectively cope with homesickness and maintain emotional well-being. The findings of this study indicate that peer support significantly enhances both critical thinking skills and the emotional well-being of individuals. This contributed to the informants' success as this created a supportive environment where collaborative efforts, such as group discussions and mutual encouragement, were identified as components in building good relationships with peers, especially during their preparation for the board exam.

3.6 Strategic Personal Intervention

Another theme is the various methods that topnotchers utilize to prepare for board examinations. The study demonstrates that unique tactics and approaches contribute to their extraordinary success. In this section, the informants provided strategies that they found beneficial in approaching the exam quickly. These components are as follows: Questions Drills and Practice; Consistent Study Routine; Active Reading and Repetition; Test-Wise Strategies; Balancing Social Media Use; Preference for Individual Study; and Test-Taking Skills Development.

Question Drills and Practice

Engaging in regular question drills and practice sessions is an essential aspect of exam preparation for the informants, as it helps them familiarize themselves with the exam format, material, and timing limits. By answering a considerable number of questions daily, they gain essential skills and strategies that are crucial for success in board exams. Topnotchers added a goal scorer in every question drill to monitor their progress. In this case, these are their statements about this strategy:

I take drills, practice drills, and question drills. What I do there is answer 100 questions within 2 hours as much as possible. It is not really that you should get many correct answers, but more to familiarize yourself with taking the test. Every night, I answer 100 questions and practice drills for 2 hours. TO1

Testing skills are very important, and when I answer, for example, the review material, after I answer it, of course, I check. There is a target, there is a target score, and I will only stop once I get a high score. TO4

This shows that this strategy is a big factor in sharpening their knowledge as they review the examination. They practice incredibly hard by conducting exercises and establishing challenges for themselves in everyday preparation, achieving a positive end. In line with the study of Kurniawan and Mylsidayu (2017), question drills are very effective and have a good impact on easier understanding and application. Moreover, it develops proficiency and understanding of the subject matter more swiftly (Kani & Sa'ad, 2015). With that, engaging in regular question drills and practice sessions is essential to success in board exams.

Consistent Study Routine

The informants of this study found this technique beneficial for preparation for the examination. Maintaining a consistent study schedule, such as creating specified study hours, including frequent breaks, and allocating review

days, boosted their focus, productivity, and overall performance. These behaviors help them stay organized, manage their time correctly, and ensure complete preparation for their tests. Here is how they shared their experiences:

I wake up between 5:30 and 6:00 a.m., and by 8:00, I should have eaten. So after that, by 8:00 to 12:00 p.m., I will read, and after I read, I will have lunch by noon and a social break. TO1

I do have four board subjects. So, in a week, I read all of them. For example, on Monday (subject) and Tuesday (subject), I alternate them to maintain balance so I can review different subjects in a week. What is important to me is that I review something in a day. TO2

This finding occurs in the study of Tagud & Valle (2023), which states that effective study habits ensure academic success. This enhances productivity and efficiency as it becomes accustomed to dedicating specific periods to studying, thereby reducing procrastination and avoiding last-minute cramming (Rozhenkova et al., 2023). It becomes helpful for the informants as they easily track their goals for being consistent in their study routine.

Active Reading and Repetition

Active reading and repetition are significant strategies for academic performance to prepare the topnotchers for the board examination. They are fond of reading, which helps their comprehension, retention, understanding, and mastery of study topics. When the informants were asked about their techniques, they said:

For me, the most effective method since college was repetitive reading. Even after reviewing the lecture material multiple times, I still need to read it repeatedly. Once is not enough for me; a single reading does not retain me. TO2

I do have my rules that I always follow. Everything in the module I rewrite like I write everything, like I make my own version of the module. So, I have a reviewer. And because of extensive reading, I can comprehend easily. TO3

I remember that the Dean then told us that there was one topnotcher, and there was this national topnotcher from Nueva Vizcaya, and she said that we have to read read read, and I love reading. TO4

This shows that topnotchers perceived reading as an indispensable instrument to learn. Also, building their version of the module adds significantly to their active memory of various subjects. This is why the topnotchers deeply show that reading and repetition are essential for reaching success. In line with this finding, the study by Al-Din and Al-Afoun (2022) stated that reading strategies are crucial for developing comprehension skills and learning, as they enhance understanding, promote self-education, and engage students actively in the learning process. Also, it imparts wisdom and involves an interactive process of constructing meaning from knowledge (Sadiku, 2015). Alternatively, good note-taking practices lead to efficient learning, improved outcomes, and increased retention of the studied content (Friedman & Kern, 2014). Reviewing the notes created is crucial for transferring information from short-term to long-term memory.

Test-wise Strategies

By understanding and executing test-wise strategies such as item elimination, strategic pacing, and targeted studying of test formats, the informant increased her test-taking skills and improved her overall performance by knowing the proper movement on the test during the exam. She gave priority to this strategy because reading is not enough for the retention of knowledge. Hence, employing this method adds to an effective foundation of knowledge, positively impacting the result of her examination. This is her statement:

Actually, you need to test-wise. You need to be more than just reading and confident with the information. Sometimes, your skills in taking the test are a big factor. That is a strategy I like. Sometimes, you do not have any idea what the answer should be or what could be, but the thing is, you practice elimination. I like doing item elimination and then studying the stem like the stem. The test is time-bound, so you have to practice it; you have to practice like it is a strategy I admire. Test skills, test-wise, you have to be, this might be effective for you. TO4

This demonstrates the importance of being test-wise, suggesting that more than merely reading and having confidence in the information is required. Also, given that tests are time-bound, practicing these strategies is

crucial because this technique helps her and might also help everyone to know the exact answer on an examination. This is in line with the study of Parkes & Zimmario (2016), which revealed that students with test wiseness approach multiple-choice tests differently from essay or short-answer tests. They may utilize strategies such as eliminating distractors based on partial knowledge or gathering clues from other test items to arrive at correct answers. Thus, it involves mental strategies students employ to boost their test scores.

Balancing Social Media Use

Managing social media use is critical for the informants during their review period, as it can significantly affect their focus, productivity, and overall well-being. Additionally, this becomes their tool for stress relief and keeping them updated on important announcements. Wherein these are their statements when asked about how they balance using social media and reviewing:

For me, not really. Social media became important during that time because it helped relieve stress. When I got tired, I would chat, browse Facebook, or watch TikTok. No, I did not deactivate it. It was important because I needed to stay updated on the announcements from the PRC. TO2

I did not stop using social media because if you are reviewing, you put down your phone first and focus on what you are doing. But I do recommend that if it easily distracts you then deactivate, leave it. TO4

Their perspective illustrates a strategy for integrating social media into a balanced and productive routine. This finding can be seen with the nine variables in the theory of educational productivity; exposure to media is one of those. It represents the influence of different social media sources on the student's academic success, which became a good contributor for the informants because, through this, they got updated, released their stress, and so on. Moreover, using the internet to distract oneself from stress has been observed in studies by Khoo and Yang (2021). It opens ways for collaboration and discourse, providing ample opportunities for content posting, sharing, coping, and utilizing online search tools effortlessly (Boateng & Amankwaa, 2016). Although social media has transformed how we interact, students must balance their online engagement and academic obligations to succeed in their studies (Brunton & Farrell, 2020). This demonstrates that social media itself is not harmful to students; the problem lies in its usage and the need for more understanding about setting limits.

Preference for Individual Study

When preparing for any examination, students have their unique style of approaching their learning. This is due to all the individual characteristics that distinguish us from others. Whereas others benefit from group study sessions, one of the informants of this study likes to study alone to keep focus and adhere to their study methods and habits. She stated:

I want to study alone. It is more effective if I approach documents and review materials in a specific way. TO1

This finding underlines that individual study offers better control over one's learning process. The informant's preference towards studying alone shows a reliance on self-directed learning processes and a preference for independence in academic endeavors. Additionally, it understands that various individuals may have unique study preferences and approaches that best suit their learning styles. This is supported by the study of Butler et al. (2022), which stated that each student has a distinct learning style and strategies that work best for them. For instance, some may favor visual aids such as diagrams or charts, while others might prefer auditory or kinesthetic learning techniques. Moreover, self-study allows students to experiment with different approaches and identify the most effective methods. They can adapt their study techniques to align with their strengths and weaknesses, optimizing their learning experience and deepening their understanding of the subject matter (Korthagen et al., 2013).

Test-Taking Skills Development

The informants of this study emphasized the development of students' test-taking skills, which they felt was a good contributor to earning a top placement in the board examination. Thus, highlighting this method allows students to practice mock exams and drills to familiarize themselves with the exam structure and improve their performance under pressure. These are their insight into this development of skill:

It is also essential for students to practice their test-taking skills. Based on my experience, I would consider test-taking skills or strategies as a significant factor in topping the board exam because even if you review, you know a lot, you have read everything, you have memorized it, but if you lack test-taking skills, especially that if it is tricking questions, you will really struggle. Sometimes, you overthink when the answer is just actually simple. TO2

The mock test practice is also good because you will know what part to focus on. TO4

With this finding, it is evident that the topnotchers prioritize cultivating test-taking skills development. They emphasize the value of providing students with practice tasks, which enhances their comprehension of questions and responses. Additionally, mock exams proved advantageous in preparing learners for various assessments. In line with the continuous administration of comprehensive or mock exams to graduates before taking the exam, it has been recommended that they enhance their chances of passing the board examination (Xu & Ye, 2014). Similar to the study of Jocson and Vizconde (2019), it showed that taking practice exams significantly predicts success in board examinations. They can learn to examine questions, evaluate information, and make decisions during tests. With that, test-taking skills are beneficial in students' practical lives, helping them to manage their time properly and ensure clarity of thought because, as per the informants, this is a crucial skill for passing and topping the board examinations.

4.0 Conclusion

Success requires specific personal characteristics that can be nurtured through support from institutions, teachers, family, and friends. This study implies that institutions are essential in developing students and encouraging them to collaborate with families to create a supportive and friendly environment. Rather than students seeking these attributes and support outside the school, institutions can foster these qualities within their own environment. It can promote family and peer involvement during the learning process and help students with any examinations. Moreover, teachers should enhance their pedagogies to meet the needs of diverse individuals. The students' qualities also can be developed through targeted interventions to reach their full potential in their respective fields. By integrating these support networks, the chances of an individual's success are increased, making it an effective model for achieving excellence.

5.0 Contributions of Authors

Jennifer Bangi was responsible for thoroughly checking each input in the paper to ensure that the content met the standards of a quality research paper. Cecille Luyun took charge of reviewing and verifying the final output. Kyla Manuel, Frances Burigay, and Tricia Diaz worked together to conceptualize and write the research paper, conducted data collection, and performed data analysis and discussion, all under the guidance of Cecille Luyun and Jennifer Bangi.

6.0 Funding

This work received no specific grant from any funding agency.

7.0 Conflict of Interests

The authors declare no conflict of interest about the publication of this paper.

8.0 Acknowledgment

The researchers would like to acknowledge the University Research and Innovations Office of the University of Saint Louis for the countless assistance from the conceptualization to the completion of this research paper. Furthermore, the University of Saint Louis is acknowledged for the publication support granted to this research paper.

9.0 References

- Abao, E. L., Petancio, J. A. M., Sanchez, J. M. P., & Sumalinog, G. G. (2023). Performance of beginning teachers in the licensure examination for teachers: a national study. *Frontiers in Education*, 8, 1240658. <https://doi.org/10.3389/feduc.2023.1240658>
- Adams, R. V., & Blair, E. (2019). Impact of time management behaviors on undergraduate engineering students' performance. *Sage Open*, 9(1), 2158244018824506. <https://doi.org/10.1177/2158244018824506>
- Albite, R. (2019). A case study of topnotchers' preparations and contributory attributes in passing the licensure examination for teachers. *Southeastern Philippines Journal of Research and Development*, 24(2), 45-68. <https://doi.org/10.53899/spjrd.v24i2.19>
- Al-Din, R., & Al-Afoun, N. (2022). The Effect of the Active Reading Strategy for Teaching Biology to Second-Grade Intermediate Students in Their Imaginative Thinking Skills. *Special Education*, 1(43), 169-182. <https://www.ijlter.org/index.php/ijlter/article/view/8277>
- Alipante, A., Cortez, M. V., & Lajato, D.M. (2017). Binary logistic model on factors affecting the result of licensure examination for teachers (LET). *International Journal of Education and Research*, 5(5), 279- 288. <https://api.semanticscholar.org/CorpusID:221698031>
- Alsaraj, E. (2023). Unleashing the power of faith, positive thinking, and determination. Retrieved from <https://tinyurl.com/bddnacd7>
- Amanonce, T. (2020). Licensure Examination Performance and Academic Achievement of Teacher Education Graduates. *International Journal of Evaluation and Research in Education*, 9(3), 510-516. <https://doi.org/10.11591/ijere.v9i3.20614>
- Aronson, A. (2017). *The White Savior Industrial Complex: A Cultural Studies Analysis of a Teacher Educator, Savior Film, and Future Teachers* (Thesis). Iowa State University of Science and Technology

- Bastug, M. (2014). The structural relationship of reading attitude, reading comprehension, and academic achievement. *International J. Soc. Sci. & Education*, 4(4), 931-946. <https://tinyurl.com/4t5w77rb>
- Baumert, J., Hachfeld, A., Kunter, M., Klusmann, U., Richter, D., & Voss, T. (2013). Professional competence of teachers: Effects on instructional quality and student development. *Journal of Educational Psychology*, 105(3), 805-820. <https://doi.org/10.1037/a0032583>
- Bayawa, V. C., Degula, M. F. C., Derasin, L. M. C., & Echavez, F., (2022). Lived experiences of Cebuano LET Topnotchers: a phenomenological study. *International Journal of Science and Management Studies*, 5(4), 111-127. <https://doi.org/10.51386/25815946/ijms-v5i4p114>
- Binayao, B. S., & Dales, Z., I. (2020). A Phenomenological Study of the Passers and NonPassers in the Licensure Examination for Teachers. *International Journal of Innovative Science and Research Technology*, 5(8), 1704-1721. <https://doi.org/10.38124/ijst20aug828>
- Blazer, C. (2016). After-School Academic Enrichment Programs. *Information Capsule*, 1509, 1-16. <https://files.eric.ed.gov/fulltext/ED570131.pdf>
- Boateng, A., & Amankwaa, A. (2016). The Impact of Social Media on Student Academic Life in Higher Education The Impact of Social Media on Student Academic Life in Higher Education. *Global Journal of Human-Social Science*, 16(4), 1-8. <https://tinyurl.com/2kyjwsyr>
- Brunton, J., & Farrell, O. (2020). A balancing act: A window into online student engagement experiences. *International Journal of Educational Technology in Higher Education*, 17(1), 25. <https://doi.org/10.1186/s41239-020-00199-x>
- Butler, B. M., Diapoulos, M. M., Gregory, K. H., Branyon, A. (2022). Learning and Living Self-Study Research: Guidelines to the Self-Study Journey. *Studying Teacher Education*, 18(2), 175-196. <https://doi.org/10.1080/17425964.2021.1992859>
- Carter, W. (2013). After-School Enrichment Programs and Secondary Education Achievement among African American Males (Thesis). Walden University
- Chen, C. H., & Yang, Y. C. (2019). Revisiting the effects of project-based learning on students' academic achievement: A meta-analysis investigating moderators. *Educational Research Review*, 26(1), 71-81. <http://doi.org/10.1016/j.edurev.2018.11.001>
- Cherry, K. (2021). Self-Determination Theory and Motivation. Retrieved from <http://surli/eklfzw>
- Chipana, B. R. (2018). The influence of library resources utilization on students' academic performance: A Case Study of Public Secondary Schools in Dodoma Municipality (Doctoral dissertation). The Open University of Tanzania
- Clayton, K. (2021). Spiritual Involvement: How It Relates to Goal Complexes and Perception of Classroom Autonomy in College Students (Doctoral dissertation). Oklahoma State University
- Crawford, G. A. (2015). The Academic Library and Student Retention and Graduation: An Exploratory Study. *Portal Libraries and the Academy*, 15(1), 41-57. <https://doi.org/10.1353/pla.2015.0003>
- Crusper, C., & Micabalo, K. (2022). Factors Affecting Accountancy Graduates' Readiness for the Certified Public Accountant Licensure Examination. *International Journal of Research in Commerce and Management Studies*, 4(3), 116-135. <http://doi.org/10.38193/IJRCMS.2022.4307>
- Dinsmore, D. L., & Parkinson, M. M. (2013). What are confidence judgments made of? Students' explanations for their confidence ratings and what that means for calibration. *Learning and Instruction*, 24, 4-14. <https://doi.org/10.1016/j.learninstruc.2012.06.001>
- Duckworth, A. (2016). Grit: The power of passion and perseverance. Retrieved from <https://psycnet.apa.org/record/2016-30309-000>
- Espiritu J., Marigundon J., Osorio S., Tan A., Tizon J., Sanchez A. (2022). The Iceberg of Success: A Phenomenological Study of the Lived Experiences of Filipino Medical Technologist Licensure Examination Topnotchers. Retrieved from <http://surli/uuwhfh>
- Fadrigon, G. L. P., Parel, M. A. S., & Sumagit, M. T. S. (2019). Mindset, self-discipline, and readiness in licensure examination: A study of graduates of education programs. *Journal of Education and Practice*, 10(13), 33-39. <http://surli/zaxprq>
- Friedman, H. S., & Kern, M. L. (2014). Personality, Well-Being, and Health. *Annual Review of Psychology*, 65, 719-742. <https://doi.org/10.1146/annurev-psych-010213-115123>
- Goetz, T., Lichtenfeld, S., Marsh, H., Murayama, K., & Pekrun, R. (2017). Achievement Emotions and Academic Performance: Longitudinal Models of Reciprocal Effects. *Child Development*, 88(5). <https://doi.org/10.1111/cdev.12704>
- Gusmida, R., & Islami, N. (2017). The Development of Learning Media for the Kinetic Theory of Gases Using the ADDIE Model with Augmented Reality. *Journal of Educational Sciences*, 1(1), 1. <https://doi.org/10.31258/jes.1.1.p.1-10>
- Hendawi, M., & Nosair, M. R. (2020). Students' technological awareness at the College of Education, Qatar University. *Cypriot Journal of Educational Sciences*, 15(4), 749-765. <https://doi.org/10.18844/cjes.v15i4.5057>
- High, A. C., & Scharp, K. M. (2015). Examining family communication patterns and seeking social support direct and indirect effects through ability and motivation. *Human Communication Research*, 41(4), 459-479. <https://doi.org/10.1111/hcre.12061>
- Jeppsen, B. D. (2015). Relational processes in prayer: a reflection of the effects of culture on religious experience (Dissertations). University of Louisville
- Jocson, C. & Vizconde, R. (2019). Level of Preparedness and Confidence of Graduating Education Students to Licensure Examination. *Journal of Tertiary Education and Learning*, 1(1), 1-8. <https://doi.org/10.54536/jse.v1i1.1513>
- Kani, U. M., & Sa'ad, T. U. (2015). Drill as a Process of Education. *European Journal of Business and Management*, Al-Ishlah: Jurnal Pendidikan, 7(21), 175. <https://doi.org/10.2222-2839>
- Khoo, S., & Yang, H. (2021). Mental disengagement mediates the effect of rumination on smartphone use: a latent growth curve analysis. *Computers in Human Behavior*, 120, 1-11. <https://doi.org/10.1016/j.chb.2021.106757>
- Kirschner, F., Kirschner, P. A., Sweller, J., & Zambrano, R. J. (2018). From Cognitive Load Theory to Collaborative Cognitive Load Theory. *International journal of computer-supported collaborative learning*, 13, 213-233. <https://doi.org/10.1007/s11412-018-9277-y>
- Korthagen, F. A., Loughran, J., & Russell, T. (2013). Chapter 28 Teacher Education that Makes a Difference: Developing Foundational Principles of Practice. In *Advances in research on teaching* (pp. 597-613).
- Kurniawan, F., & Mylsidayu, A. (2017). Development of Futsal Basic Technique Training Model for Beginner Based on Playing Methods. *JIPES Journal of Indonesian Physical Education And Sport*, 3(1), 26-32. <https://doi.org/10.21009/JIPES.031.04>
- Kutnick, P., Gartland, C., & Good, D. (2022). Evaluating a programme for the continuing professional development of STEM teachers working within inclusive secondary schools in the UK. *International Journal of Educational Research*, 113, 101974. <https://doi.org/10.1016/j.ijer.2022.101974>
- Liang, H. (2013). An eye for an "i" – An insight into emerson's thought of self-reliance. *Journal of Language Teaching and Research*, 4(6), 1351-1355. <https://doi.org/10.4304/jltr.4.6.1351-1355>
- Mardiana, R. & Sugyaningsih, R. (2018). Do Family Support and Self-motivation Influence Students' result in Learning English. *International Journal of English Language Teaching*, 6. <https://doi.org/10.37745/ijelt.13>
- Mishra, U., & Mishra, S. (2023). Self-Reliance Paradigm: Innate or Conditioned. *International Journal of Social Science and Humanities Research*, 2(1), 50-53. <https://doi.org/10.54646/bijsshr.023>
- Mutakwa, T. (2023). The power of consistency: a key to success in everything. Retrieved from <http://surli/njnox>
- Nebel, S., Rey, G. D., & Schneider, S. (2016). From duels to classroom competition: Social competition and learning in educational videogames within different group sizes. *Computers in Human Behavior*, 55(A), 384-398. <https://doi.org/10.1016/j.chb.2015.09.035>
- Ognayon, G., & Afalla, B. (2022). Admission Criteria as Predictors of Licensure Performances among Graduates of a State University in the Philippine Cordillera Administrative Region. *Academic Journal of Interdisciplinary Studies*, 11(6), 147. <https://doi.org/10.36941/ajis-2022-0157>
- Owolabi, T. & Oginni, I. (2013). Effect of mother tongue and mathematical language on primary school pupils' performance in mathematics. *Journal of Emerging Trends in Educational Research and Policy Studies*, 4(3), 542-546. <https://hdl.handle.net/10520/EJC139099>
- Parkes, J., & Zimmaro, D. (2016). Learning and Assessing with Multiple-Choice Questions in College Classrooms. Routledge.
- Pattaguan, E. J. P. (2018). Factors that contribute to topping the board licensure examination for certified public accountant. *Pacific Business Review International*, 10(9). http://www.pbr.co.in/2018_month/March/23.pdf
- Penprase, B. E., & Schneider, T. (2023). Strengthening the Liberal Arts Along the Pacific Rim: The Pacific Alliance of Liberal Arts Colleges (PALAC). Retrieved from <https://escholarship.uc/item/1gp7h1j3>
- Ponkshe, S. (2013). English Reading Comprehension as a predictor for academic successes in first Year B. SC. Nursing Course in India. *IOSR Journal of Nursing and Health Science*, 2(4), 28-33. <https://doi.org/10.9790/1959-0242833>
- Quitoras, M., & Abuso, J. (2021). Best Practices of Higher Education Institutions (HEIs) for the Development of Research Culture in the Philippines. *Pedagogical Research*, 6(1), em0087. <https://doi.org/10.29333/pr/9355>
- Rozhenkova, V., Buswell, N. T., Lo, S. M., Snow, L., Sato, (2023). Limited or complete? Teaching and learning conceptions and instructional environments fostered by STEM teaching versus research faculty. *International Journal of STEM Education*, 10(1), 51. <https://doi.org/10.1186/s40594-023-00440-9>
- Sadiku, L. M. (2015). The importance of four skills reading, speaking, writing, listening in a lesson hour. *European Journal of Language and Literature*, 1(1), 29. <https://doi.org/10.26417/ejls.v1i1.p29-31>
- Saigal, S. (2017). Action and Resistance Mechanisms of Antibiotics: A Guide for Clinicians. *Journal of Anaesthesiology Clinical Pharmacology*, 33, 300-305. https://doi.org/10.4103/joacp.JOACP_349_15
- Sudiarta, I. G. P., & Widana, I. W. (2019). Increasing mathematical proficiency and students character: lesson from the implementation of blended learning in junior high school in Bali. *Journal of Physics Conference Series*, 1317, 012118. <https://doi.org/10.1088/1742-6596/1317/1/012118>
- Tagud, E., & Valle, A. (2023). Study Habits and Skills: Its Influence on Students Academic Performance. *International Journal of Research Publication*, 129(1). <https://doi.org/10.47119/IJRP1001291720235279>
- Walberg, H. (1981). Theory of Productivity. Retrieved from <http://surli/zgipni>

- Xu, A. & Ye, L. (2014). Predictors of board exam performance of the DHVTSU college of education graduates. *Journal of Business & Management Studies*, 1(1), 1-4.
<https://doi.org/10.56874/jee.v3i1.755>
- Yiga, J. C. (2016). Teacher induction and mentoring programs in Uganda. A Case Study of Wakiso District (Thesis). School of Education Humanities and Sciences.

A Service Learning Program Enhancing Learners' Early Literacy and Pre-Service Teachers' 21st-Century Skills

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Date received: August 29, 2024

Date revised: September 19, 2024

Date accepted: October 4, 2024

Originality: 93%

Grammarly Score: 99%

Similarity: 7%

Recommended citation:

Mateo, R., Monton, M.R., Quintos, L.R., Torres, A., Bangi, J. (2024). A service learning program enhancing learners' early literacy and pre-service teachers' 21st-century skills. *Journal of Interdisciplinary Perspectives*, 2(11), 196-207. <https://doi.org/10.69569/jip.2024.0452>

Abstract. Service Learning Program (SLP) is encouraged in all courses in the University of Saint Louis as a strategy in the teaching and learning process. In response to this, the Teacher-Education department developed a structured SLP named Project TEACHER (Tutorial for Engagement, Advancement, and Collaboration towards Holistic Educational Reform), which caters primarily to the needs of daycare learners. This study aimed to describe the effects of SLP on learners' early literacy. It focuses on the foundational skills of reading, writing, and phonemic awareness. Furthermore, the study also described the program's effect on the development of the 21st-century skills of the pre-service teachers. Coordinators of the program coordinated with the Early Child and Care and Development (ECCD) center at Linao East, and the Early Learning Observation and Rating Scale (ELORS) was used to identify learners needing additional early literacy assistance. It was the same tool used to monitor the progress of the learners. Data from 17 learners who completed the five tutorial sessions were included in this study. Using a paired-sample t-test, this study revealed that the project TEACHER significantly affects the learners' reading and phonemic awareness skills but not their writing skills. Meanwhile, the 26 pre-service teachers involved in the program were interviewed. Thematic analysis of their answers revealed that the program was effective for the following skills: communication, socio-emotional, collaboration, adaptability and flexibility, social responsibility, and classroom management. Hence, the project TEACHER is an effective SLP as it enhances the learners' early literacy skills and helps develop 21st-century skills among pre-service teachers. However, further planning must be done to make it effective for the learners' writing skills.

Keywords: 21st-century skills; Early literacy; Pre-service teachers; Service learning program.

1.0 Introduction

Children's formative years are crucial to their development in early childhood education. As this stage of a child's life plays an essential part in their development, Early Childhood Care and Development (ECCD) Centers were established. The Republic Act No. 6972, where ECCD Centers were established in each barangay, became an avenue for developing the learner's cognitive, emotional, social, and other domains as these are prerequisites for meeting the right to learn and develop. According to the Philippines Southeast Asia-Primary Learning Metrics (EA-PLM)(2019), early childhood education (ECE) provides a critical basis for lifelong learning by developing children's primary and transferable abilities, preparing them to participate in primary education and beyond while lowering the chance of school failure. As a result, investing in ECE provides long-term benefits for learner's

educational outcomes. Failure to provide adequate early childhood education may limit students' prospects by denying them the opportunity to realize their full potential. The early years of a child's life (3-6 years) are regarded as an essential stage in the process of the individual's lifetime of learning, as this period lays the groundwork for children to develop some of their abilities and professionals claim that if this opportunity is missed, it will be difficult to catch up (Wildová & Kropáková, 2015). This complies with the fourth UN Sustainable Development Goal (SDG) on education, which ensures that all children, regardless of gender, have access to high-quality early childhood development, care, and pre-primary education that prepares them for primary education.

Furthermore, early literacy is a critical building block for learners' academic progress and future opportunities. At its most fundamental, it refers to a talent and the ability to use it (for example, reading and writing—reading literacy; mathematical skills—mathematical literacy, and so on). Traditionally, literacy was referred to as an individual's capacity to read and write. However, in the present generation, it pertains to the knowledge and competence of a person in a particular discipline or area (Gatcho et al., 2020). Literacy is similar to a torchlight—the source of light that illuminates and brightens everything while improving visibility (Hunpegan, 2022).

Republic Act 101410, popularly known as the Early Years Act (EYA) of 2013, is the first essential stage of educational development between zero and eight. Children's literacy foundations begin in infancy and expand throughout early childhood when the brain is at its most malleable (Hutton et al., 2020). Literacy development is vital to a learner's overall development as it is the foundation for them to thrive in school and eventually become independent adults. A solid foundation in literacy skills can help children learn and prepare them for a brighter future (Luyee et al., 2015). If the learners have poor literacy skills, they might face future obstacles, both in and out of the classroom. Children who fall behind in these early years frequently do not catch up with their peers, sustaining a cycle of underachievement and high dropout rates that continue affecting vulnerable young people (UNICEF, 2019).

In the SEA-PLM for 2019, only 10% of children in the Philippines met the minimum reading standard, and 17% met the minimum math standard necessary at the end of primary school. According to Lina (2023), the UNICEF Philippines representative states that the findings of the first cycle of the SEA-PLM in the country indicate the presence of alarming patterns of low learning quality, as the Philippines' average scores in reading, math, and writing are all lower than the average scores of the other five participating countries. These findings should serve as a wake-up call to strengthen our early education system, emphasizing very young Filipino children ages three to five.

There are a lot of existing approaches that help improve learners' learning development. The Service-Learning Program, as one of these, defines a teaching approach that connects theory and practice by allowing students to participate in a service that meets community needs while also reflecting on the experience in class to gain a better understanding of course content, real-world issues, and a stronger sense of civic engagement. (Resch & Schrittmesser, 2023). Project TEACHER (Tutorial for Engagement, Advancement, and Collaboration towards Holistic Educational Reform), the official service-learning program designed for the teacher education students of the University of Saint Louis Tuguegarao, is a service-learning program that focuses more on transferring knowledge to learners through the process of tutorial and providing different activities aligned to the program learning outcomes of the teacher education program. The Project TEACHER allows fundamental educational development that is beneficial to the learners. The program also allows the pre-service teachers to widen and solidify their knowledge of subjects and pedagogy in the 21st-century classroom while providing learners with further opportunities for comprehensive development. Although there is existing literature on early childhood concerns, this study attempts to explore further the different activities that can be implemented through Project TEACHER to enhance the early literacy development of learners in Linao East and the pre-service teachers' 21st-century skills.

2.0 Methodology

2.1 Research Design

This study utilized a mixed-method research design, particularly the convergent parallel. The two sets of data were gathered concurrently. The data to describe the effects of the implemented activities on the early literacy development of the learners were gathered through a quasi-experimental research design from the learners. The

data to describe the effect of Project TEACHER in enhancing 21st-century skills were gathered through a basic qualitative research design from the pre-service teachers. The convergent parallel mixed method research design was used to describe the effects of Project TEACHER on the implementers and the recipients, particularly to triangulate the effect of Project TEACHER on different groups of participants.

2.2 Research Locale and Participants

This study was conducted at the Early Child Care and Development Center of Linao East Tuguegarao City. The participants consisted of 17 learners from Linao East. Using the purposive sampling technique, the participants were identified based on this criterion: The learner got a total mean score above 2 in the pre-test along the Early Literacy Domain using the Early Learning Observation & Rating Scale (ELORS) during the implementation of the pretest. Moreover, using the purposive sampling technique, 26 pre-service teachers were interviewed, as they were identified with the criterion that the pre-service teacher attended 5-6 sessions during the service-learning program.

2.3 Research Instrument

On the one hand, the Early Learning Observation & Rating Scale (ELORS), adapted from Coleman et al. (2010), measures the learners' early literacy skills before and after the implementation of the project TEACHER. It is divided into seven domains, but only the domain on Early Literacy consists of ten indicators, which is the focus of this study. This domain is further focusing on three skills-reading (items 1,3,4,7 and 9), writing (item 2), and phonemic awareness (items 1,4,5,6,7 and 8). The researchers developed learning materials and reading, writing, and phonemic awareness to address these foundational skills. These were validated by child development experts from the Teacher-Education department. On the other hand, an open-ended question about their learning from the SLP was asked from the pre-service teachers.

2.4 Data Gathering Procedure

This study underwent different phases of data collection. A pre-test was conducted among the learners using the Early Learning Observation & Rating Scale (ELORS), where the pre-service teachers evaluated the outputs of the learners. The results of the pre-test were used to identify the specific learning domain where the learners need additional focus and assistance (i.e., reading, writing, and phonemic awareness) and to identify the learners who need additional scaffolding in the said domain (i.e., with a total mean score of 2 and above).

A pre-service teacher mentored each identified learner throughout the implementation of the designed activities. The six sessions with the learners were coordinated with the barangay captain and the daycare center teachers. Furthermore, the USL teachers supervised and assisted the pre-service teachers in implementing the service-learning program.

The researchers administered a post-test after implementing the early literacy activities to determine whether there was a significant improvement in the learners' early literacy skills. Moreover, each pre-service teacher was asked an open-ended question about their significant learning in implementing the project.

2.5 Ethical Considerations

This research study followed ethical guidelines. Before performing the study, the parents or guardians of the participants were provided with an in-depth overview and crucial information regarding the study's objectives for ethical research considerations. They were given informed permission to notify them about the study's objectives, the nature of participation, confidentiality measures, and the right to withdraw at any time. The researchers also ensured that each participant's parents signed the consent form. Moreover, informed consent was also provided to the pre-service teachers before the interview so that they would be well-informed regarding participating in the study. In addition, all information gathered was kept and managed with strict confidentiality, ensuring anonymity and secrecy and avoiding potential harm.

3.0 Results and Discussion

3.1 Pre-test and Post-test Scores of Learners in the Early Literacy Domain

The Early Literacy domain was divided into three subdomains: Reading, Writing, and Phonemic Awareness, and was conducted through the service-learning program Project TEACHER. The Early Literacy activities prepared by the researchers were conducted for three sessions. Below are the mean scores of the pre-test and post-test.

Reading Skill

Table 1 shows the results of the learners' pre-test and post-test scores. Most of the learners were found to have a moderate concern about their reading skills, which resulted in creating activities that enhanced their reading skills.

Table 1. Pre-test and post-test scores of the participants in reading

Description	Pre-test		Post-test	
	Frequency	Percentage	Frequency	Percentage
Greatest Concern	3	23.50	2	11.80
Moderate Concern	10	58.50	3	17.60
Little Concern	4	17.60	11	64.70
No Concern	0	0	1	5.90
Mean Scores	3.02	Moderate Concern	2.17	Little Concern

The pre-test mean score of 3.02, indicating moderate concern, and the post-test mean score of 2.17, indicating little concern, implies that the early literacy interventions conducted through Project TEACHER affect the reading domain of the learners. This means that their reading skills - their interest in reading activities, identifying words, remembering letter names, determining whether two letters or words sound the same, clapping out the number of syllables in a word, demonstrating an understanding of which word rhymes, and reading from left to right - have all improved through the activities designed by the pre-service teachers. The activities implemented by the researchers made a significant difference, transforming the great concern of learners in the reading domain into little concern.

Even earlier, the Philippines had the lowest reading comprehension scores out of 79 nations (Juan, 2019). Based on their pre-K scores on the Developmental Indicators for the Assessment of Learning (DIAL-4), 22% of kindergarten-aged children in a local school district had a gap in their reading readiness skills (RRS). The average kindergarten beginning-year difference in Reading Baseline Inventory (RBI) scores between students with and without gaps was 15 out of 100 points (Wood, 2019). If learners' foundational reading skills are not honed in the early years, the Program for International Student Assessment (PISA) results will likely remain the same, and their reading development will not improve. Therefore, there is a need for early intervention to address this issue in learners' reading development.

It is important to customize activities based on the needs of the learners. It requires greater effort, especially for those who cannot read yet, emphasizing basic reading skills such as letter recognition, sound pronunciation, and phonemic awareness (Hamsah et al., 2023). The efforts of the researchers in coming up with customized activities were proven to have a positive effect on the early literacy skills of the learners. This is the result of assessing the needs of the learners, planning and designing activities for these needs, and implementing them.

Writing Skill

Table 2 shows the learners' writing domains' pre-test and post-test mean scores. The pretest mean score is 2.88, indicating moderate concern. The post-test mean score is 2.32, indicating little concern. These results suggest that the early literacy interventions in the writing domain conducted through Project TEACHER affect the learners' writing skills.

Table 2. Pre-test and post-test scores of the participants in writing

Description	Pre-test		Post-test	
	Frequency	Percentage	Frequency	Percentage
Greatest Concern	2	11.80	2	11.80
Moderate Concern	8	47.10	5	29.40
Little Concern	4	23.50	7	41.20
No Concern	3	17.60	3	17.60
Mean Scores	2.88	Moderate Concern	2.35	Little Concern

This can be because only a few writing activities were implemented, and additional practice and sessions should be made. Moreover, activities should be redesigned, and new activities should also be implemented. The following indicators were measured in the Writing domain: (E2) Interest in writing his or her name. The researchers implemented four activities under the writing domain, centered on writing their names, basic phrases, words, or letters, and tracing a word or letter.

Following Trasporte et al. (2023), subject instructors and school administrators worldwide share concerns about the interest of learners in and preparedness for writing. There have been recognized challenges when a youngster has difficulty with writing. One is how they behave; children refuse or will not do pencil work and other fine motor activities. Sometimes, rather than accomplishing fine motor skills, these learners who are not yet prepared to deal with writing would rather have others perform them under their supervision. Therefore, even when instructed by their teachers, Filipino kindergarten students in the identified environments needed help to write their given assignments. Regardless of the availability of required learning resource materials and regular monitoring of their work progress, some learners need more enthusiasm for participating in such scribbling drills in their respective classrooms.

Puranik et al.'s study (2018) states that service learning, peer assistance, or coaching effectively promote early writing skills, even among relatively young children. Service-learning programs are also an effective strategy for teaching writing, even for young beginning writers. Therefore, new and improved writing activities should be designed and implemented for the subsequent conduct of the service-learning program to ensure the improvements of learners in their writing domain.

Phonemic Awareness

Table 3 shows the mean scores for the pre-test and post-test in the Phonemic Awareness domain of the learners. The pretest mean score is 3.01, indicating moderate concern. The post-test mean scores are 2.17, indicating little concern. This implies that the early literacy interventions in the phonemic awareness domain conducted through Project TEACHER affect the learners' phonemic awareness.

Table 3. Pre-test and post-test scores of the participants in phonemic awareness

Description	Pre-test		Post-test	
	Frequency	Percentage	Frequency	Percentage
Greatest Concern	3	17.60	1	5.90
Moderate Concern	10	58.80	5	29.40
Little Concern	4	23.50	9	52.90
No Concern	0	0	2	11.80
Mean Scores	3.01	Moderate Concern	2.17	Little Concern

The following indicators were measured in this domain (E4). Remembering names of letters (E5). learning letter sounds; (E6). Determining if two letters or words sound the same (E7). Clapping out the number of syllables in a word; (E8) Showing an understanding of which word rhymes. The researchers implemented seven activities to enhance learners' phonemic awareness. This result further implies that learners' phonemic awareness improved due to the implementation of the early literacy activities made by the researchers. From a moderate concern, the learners' need for activities and phonemic awareness became their little concern with using the customized activities.

In Harris's (2016) study, consistent practice with the alphabet, pronunciation, and listening is necessary for this skill. Therefore, with the assistance of the pre-service teachers in improving this domain, the learners are likely to improve their phonemic awareness. Carruth and Bustos (2019) mentioned in their study that phonemic awareness is essential for reading and should be addressed. In addition, children must first understand how language works before moving to letter recognition and reading, and foundational skills are important for developing complex reading skills. Children with these basics are likelier to struggle with more advanced reading skills. The short-term reading abilities of at-risk learners, including poor performers, have been successfully improved by phonemic awareness and phonics interventions (Suggate, 2014). Phonemic awareness, as one of the basic literacy skills that every learner should develop, must be instilled in them at a young age as this is one of the contributing

factors in their reading development, which is also a basic skill they must develop. Failing to develop learners' phonemic awareness could impact their other literacy skills, as these skills are interconnected.

Early Literacy

Table 4 shows the Pre-test and Post-Test Scores of the learners in the Early Literacy Domain. In the pre-test, a frequency of 3 and a percentage of 17.60 were identified as the greatest concerns.

Table 4. Pre-test and post-test scores of the participants in early literacy

Description	Pre-test		Post-test	
	Frequency	Percentage	Frequency	Percentage
Greatest Concern	3	17.60	1	5.90
Moderate Concern	9	52.90	4	23.50
Little Concern	5	29.40	10	58.80
No Concern	0	0	2	11.80
Mean Scores	2.85	Moderate Concern	2.23	Little Concern

However, after the post-test, this concern decreased significantly, with a frequency of 1 and a percentage of 5.90%. While the pre-test revealed a moderate concern frequency of 9, accounting for 52.90% of the participants, the post-test decreased with a frequency of 4 and a percentage of 23.50%. In the little concern, the results showed a frequency of 5 and a percentage of 29.40 in the pre-test. However, after the post-test, the frequency changed to 10, with a percentage of 58.80%. While the pre-test showed no concern with a frequency of 0, accounting for .00% of the participants, the post-test showed changes in this concern, with a frequency of 2 and a percentage of 11.80%.

Overall, the 2.85 mean score on the pre-test, indicating a moderate concern among learners, had significant changes in the post-test, with a mean score of 2.23, indicating little concern. This suggests that the service-learning program implemented affected the learners, and the difference shows that the activities effectively enhanced learners' Early Literacy domain along with reading, Writing, and Phonemic Awareness.

3.2 Difference Between the Pre-test and Post-Test Scores of the Participants in Early Literacy

Table 5 shows significant differences in the pre-test and post-test scores in the reading and phonemic awareness domains of the Early Literacy Domain, which suggests that the prepared activities enhanced the learners' Early Literacy domain.

Table 5. T-test results for the difference between the pre-test and post-test scores of the participants in early literacy

Early Literacy	Test	Mean Scores	Df	t-value	p-value	Decision
Reading	Pre-Test	3.02	16	3.28	0.005	Significant
	Post-Test	2.17				
Writing	Pre-Test	2.88	16	-1.85	0.083	Not Significant
	Post-Test	2.35				
Phonemic Awareness	Pre-Test	3.01	16	-3.35	0.004	Significant
	Post-Test	2.17				
Overall Score	Pre-Test	2.85	16	-2.46	0.026	Significant
	Post-test	2.23				

On the other hand, it also shows no significant differences between the learners' mean scores in the pre-test and post-test administration in the writing domain; the pre-test and post-test means are almost equal, which means that the learners' performance and development in this domain are consistent. This result suggests that while the prepared activities were beneficial for reading and phonemic awareness, they did not have the same impact on writing skills. It could indicate that the learners need more sessions or practice in writing activities. It may be beneficial to introduce a variety of writing exercises and techniques to address different aspects of writing and enhance their writing skills.

In the study of Santi and Quemado (2017), they stated that parents and teachers must be patient, attentive, and nurturing of their children's literacy experiences because involving children in literacy through materials, activities, and interactions with knowledgeable individuals fosters the development of early literacy skills. Goodrich et al. (2017) described the Early Literacy Program as a well-established early literacy program and said that the assessment practice improves the child's literacy skills. This allows teachers in an early literacy program to monitor the teaching and learning process in a way consistent with the assessment intentions, ensuring that the

practices used match the expected outcome. Thus, teachers and other individuals can work together to ensure that the pedagogy used in early literacy education is consistent with the program's intentions and practices. According to Omar et al. (2022), service-learning allows students in educational institutions to have meaningful experiences that are thought to improve their overall learning experiences, encompassing academic performance, reading and writing skills, critical thinking abilities, values, self-efficacy, and leadership.

The essence of instruction, the integration of play and music, the significance of teaching phonemic awareness in preschool and how it influences a student's success in kindergarten, and the connection between phonemic awareness in early childhood classrooms and future success in reading and literacy are all examples of the importance of a program for young children prior kindergarten and the influence it has on behavior and relationships (Wehrhan, 2021). According to Brown (2014), preschool education is essential for raising literacy levels, lowering reading difficulties, and getting young pupils ready for kindergarten. Preschoolers go through several stages that involve basic ability development when it comes to the use of language, reading, and writing. As they age, their skills and behaviors become more sophisticated and proficient. Therefore, early literacy activities should be implemented, such as checking the alignment of the activities and execution, meeting the needs of the learners, and considering external factors that might affect the learners' early literacy development throughout the service-learning program, Project TEACHER.

3.3 21st-Century Skills Developed in Pre-Service Teachers

The project TEACHER, as an SLP, is also used as a strategy for the pre-service teachers to put into practice their theoretical learnings and further their learnings and skills. According to the participants, they develop a wide range of 21st-century skills during the service-learning program, which benefits their future profession. The following are the 21st-century skills developed in pre-service teachers on the Implementation of Project TEACHER: communication skills, socio-emotional skills, collaboration skills, adaptability and flexibility skills, social responsibility skills, and classroom management skills.

Communication Skills

Pre-service teachers consistently highlighted the role of the service-learning program in providing practical opportunities for pre-service teachers to develop effective communication skills essential for supporting learners in the 21st century to cultivate the communication proficiency necessary to the evolving needs of modern education to meet the evolving needs of modern education. Some pre-service teachers mentioned that their communication skills were developed when dealing with pupils.

P02: *"Service-learning program is effective for teacher training because it molded me and built my communication skills."*

P04: *"Like when we approach or talk to the pupils because that is where our communication skills are developed."*

Communication skills are necessary for pre-service teachers as they are expected to communicate much, whether written or oral. With this skill, they can organize their thoughts and decisions and effectively express ideas in speaking and writing. Practical communication skills are essential for teachers, especially when providing good classroom management and interacting with learners. During the teaching and learning process in the classroom, teachers and students should engage in two-way communication to exchange experiences and knowledge (Naibaho, 2022). Through these interactions, they can share their experiences and knowledge, which benefits them. Pre-service teachers and learners benefit from each other's experiences and knowledge during the service-learning program. They gain insight into the ideas of their learners and can adjust their teaching strategies as needed. At the same time, learners benefit from both the teacher's abilities and their peers' diverse perspectives.

Effective communication skills are critical, as specified by Khan et al. (2017). For a teacher to be able to transmit education, manage the classroom, and interact with students, the teacher must teach students diverse ways of thinking. Continuous communication with learners allows pre-service teachers to understand their unique needs and learning styles better, leading to enhanced instruction that can address specific challenges. Urbani et al. (2017) found that professional learning in communities is one common example of how communication skills are integrated into education. Other pre-service teachers usually share ideas and experiences throughout the program, as facilitated by a teacher-education supervisor. Pre-service teachers with strong communication skills are better

prepared to design successful classroom management strategies. Good oral communication skills are prerequisites for good teaching since they are the teacher's means of creating rapport with pupils, which serves various discipline-specific pedagogical purposes (Javines, 2020).

Socio-Emotional Skills

The program significantly contributed to pre-service teachers' personal and professional growth, shaping their socio-emotional skills and thus promoting empathy and patience as future educators. This growth will deepen their understanding of teaching and provide learners with a safe learning environment and experience. As mentioned by a pre-service teacher, the project TEACHER served as practical training for developing patience, which is a main ingredient in handling children of different personalities. Exposure to preschool learners is another factor in the readiness of the pre-service teacher to enter the real world of teaching. Some of the verbalizations are as follows:

P08: *"I believe that these experiences are effective because they will shape you as a person, teacher, and educator, and they will help you become better at handling kids and have more patience."*

P10: *"Being exposed to these pupils will test your patience and make you realize if you are already ready to teach."*

P18: *"As the dean has stated, this service-learning program is effective for training because it tests our patience – especially when dealing with very energetic children."*

According to Larvey and Sandri (2021), service-learning opportunities increased pre-service teachers' resilience, empathy, personal and professional qualities, and confidence in their abilities. This allows pre-service teachers to identify areas for improvement and try out and modify new strategies to meet their learners' diverse needs better. This dedication to lifelong learning and growth is essential for pre-service teachers to improve their learners' education and contribute to the continuous improvement of their professional growth.

Service-learning programs are particularly effective in shaping both personal and professional growth. Teacher empathy is necessary (Wilson, 2020), as it facilitates healthy relationships. It plays a large role in developing good classroom connections, including teacher-student and teacher-family relationships. It increases an educator's readiness to engage in learning experiences about people from diverse cultures. Teachers gain valuable insight into diverse learning environments and develop empathy, patience, and collaboration, which are crucial for effective teaching. Having patience enables pre-service teachers to give learners the time they need to grasp concepts and develop skills without feeling rushed or pressured. This creates a safe learning environment where learners can take risks and make mistakes.

Through service-learning programs, empathy increased pre-service teachers' willingness to deviate from societal norms to achieve better student outcomes (Wilson, 2020). Being able to see things from the perspective of a culturally diverse student allows teachers to understand their students better, which informs their teaching approaches. Empathy is important in whole-person development because it improves both the mind and the heart, suggesting holistic progress through experiences of self- and other-awareness. Effective service-learning programs frequently encourage pre-service teachers to think about each other and comprehend the context of caring for each other.

Collaboration Skills

As the participants mentioned, the service-learning program enables pre-service teachers to work efficiently and smoothly with others to achieve a common goal. Developing their collaboration skills encourages teamwork, improves problem-solving skills, and increases performance, benefiting them professionally and personally. By engaging them in realistic, community-based learning experiences, this program prepares them as future educators to teach effectively in diverse, collaborative classrooms that ultimately contribute to their success in teaching.

P05: *"Teachers gain valuable insight into diverse learning environments and develop empathy, patience, and collaboration, which are crucial when you are a teacher."*

P17: *"Service-learning experiences are highly effective for teacher training because they help future educators with their practical skills, encourage empathy, and foster collaboration with the community through engaging in real-world settings."*

Collaboration with the community through engagement in real-world settings is important, especially for the learner. Since the learner's activities are not confined to the four walls of the classroom, there is a need to collaborate with the other members of the learner's community for a more solid learning environment. On the part of the pre-service teacher, collaboration helps prepare their teacher personality (Somosot, 2020). They collaborate by sharing their ideas with their peers to learn from each other's experiences. This makes SLP a significant strategy for boosting classroom learning. The learnings from the community can even contribute to how schools should do things. Wallace et al. (2021) stated that service-learning programs and classroom teachers contribute diverse but beneficial skills to schools.

Based on the study of Häkkinen et al. (2016), to succeed in the knowledge society, learners and knowledge people must regularly and effectively combine their expertise and ideas in various kinds of collaborative situations to solve problems and provide new information and knowledge. The learning to collaborate aspect is emphasized as critical for pre-service teachers in developing collaboration skills and the ability to collaborate with their learners' learning community in the classroom.

Adaptability and Flexibility Skills

The project TEACHER provided the pre-service teachers the experience of interacting with people from different cultures, enabling them to see culturally diverse students from different cultural backgrounds and values. Regardless of the learners' different learning styles, abilities, and backgrounds, they should receive appropriate and effective educational instruction to address their needs. Thus, it required the skills of adaptability and flexibility from them. Their exposure to diverse learners helped them understand the importance of differentiated instruction and how to cater to various learning needs, making pre-service teachers adaptive and responsive. This skill is crucial in becoming an effective educator and providing an inclusive classroom atmosphere, as this skill allows pre-service teachers to modify their teaching pedagogies to meet the varying needs of the learners.

P07: *"The service learning program is effective for teachers since it is from here that we will know the diverse needs of your learners and how to cater to them."*

P09: *"This service-learning program allows us to experience the things that we need to prepare ourselves for in our teaching demo because it comprises various types of learners, including diverse learners, especially those who are still in daycare, which requires you to teach them in a way that will learn because it is harder to teach young learners than older students."*

P20: *"The activities during the SLP made me understand the children in the early stages of cognitive and social development, making me apply the lessons on how to handle children."*

Understanding the diverse needs of learners is crucial for effective teaching as this enables teachers to recognize and address the varied needs of their learners, thereby enhancing their teaching effectiveness. The service-learning program develops pre-service teachers' adaptability skills, making them skilled in assessing how the learners learn in various ways and adjusting instruction accordingly, ensuring that all learners are given sufficient opportunities and support. Pre-service teachers' involvement in service-learning programs with their young learners improved their capacity, as Arrington (2023) stated, to develop their teaching techniques that address the literacy needs of different learners. One classroom consisting of diverse learners with unique needs requires flexibility and even creativity on the part of the teacher to cater to each need.

It sounds inherent in teachers to find ways to adapt their teaching styles to fit their students' needs (Parrish, 2019). The SLP becomes a ground for the pre-service teachers to practice the necessary skills of adapting to the needs of the learners, starting with designing instructional materials applicable to the identified needs of the learners. Side by side with the needs of the learners is also their characteristics, which is part of the adjustment that the pre-service teacher must make. They are also willing to modify instruction based on what worked and what did not. Pre-service teachers could use service learning experiences to their advantage and to shape a more inclusive

approach to teaching (Carrington et al., 2014). Indeed, theoretical knowledge on teaching and learning styles, classroom management, and child development are important weapons in meeting the learner in the flesh, but more important is adapting to real situations.

Social Responsibility skills

The service-learning program developed the leadership skills of pre-service teachers, fostering a sense of social responsibility and community engagement among them. This involvement strengthened the connection and relationship between schools and communities, promoting a collaborative and inclusive learning environment.

P17: *"Service-learning experiences promote a sense of social responsibility by strengthening the connection between schools and communities and creating a practical learning environment."*

P22: *"Service-learning programs benefit teacher training, including developing and fostering a sense of social responsibility."*

As stated by Coelho and Menezes (2021), the successful implementation of service-learning at the University can help students achieve personal and interpersonal goals such as understanding and applying knowledge, engagement, curiosity, reflective practice, perspective transformation, citizenship, and social responsibility. They added that the goal was to develop students' personal, civic, and political competencies as critical agents of social responsibility, involving them in a more committed and profound way with their universities and, more broadly, with higher education, hoping that this experience may translate into an increase in their employability and commitment to service-learning, but also of the quality of the University experience itself.

Service-learning programs enhance the leadership skills of pre-service teachers and highlight the importance of community engagement in teaching as they are exposed to meeting the community's needs. People with individual social responsibilities prioritize the benefit of society over their interests (Körükçü & Tangülü, 2021). Socially responsible pre-service teachers recognize the value of connecting the classroom to the larger community. They seek to form meaningful partnerships with community organizations and other stakeholders to enrich their learners' learning experiences and foster a sense of civic engagement. Socially responsible pre-service teachers promote initiatives and programs that ensure equitable access to high-quality education for all learners, especially those in need or overlooked communities, as they address educational disparities and build more equitable and inclusive educational systems.

Classroom Management

Pre-service teachers consistently highlight the development of their classroom management skills during the service-learning program, which allows them to practice their strategies and skills in managing classrooms. Service-learning programs develop pre-service teachers' practical skills, confidence, and knowledge to manage the classroom successfully, including maintaining discipline, increasing student engagement, ensuring smooth transitions between activities, and promptly responding to behavioral issues.

P13: *".. because it is not only the classroom management (skills) that you will get from it, instead the general management in any activities like the initiatives you can develop in those kinds of activities..."*

P21: *".. it encourages us to have a wider perspective of what is happening inside the classroom.."*

P24: *"...to understand how to manage a class and handle different student behaviors.."*

Zulkifli et al. (2019) stated that classroom management is one of the most important aspects influencing the educational processes in the classroom. Pre-service teachers with strong classroom management skills can deal with difficult behavioral issues positively. Therefore, it is pivotal that pre-service teachers have a solid understanding of classroom management before beginning their careers in school. Thus, the service-learning provides an avenue for pre-service teachers to hone and develop their classroom management skills to prepare them for their future profession.

Teachers have a variety of responsibilities to create a proper classroom environment in which instructional goals can be effectively met, and achieving a comfortable and well-organized classroom environment is an important goal for teachers (Sivri & Balci, 2015). Additionally, teachers who possess the necessary understanding and competencies to oversee the processes of learning and instruction are less likely to encounter difficulties while creating educational opportunities that cater to the interests, requirements, and abilities of their students and by using appropriate methods related to the target behaviors and skills that they need to achieve. Therefore, pre-service teachers must be creative and innovative to create a conducive learning environment that encourages learners to learn. They must be prepared to face all possibilities with patience, efficiency, and optimism in dealing with uncertainties that may arise in the classroom. As suggested by Naibaho (2022), educators must take action to acquire, hone, develop, and master these talents to ensure that educational experiences are effective.

4.0 Conclusion

Project TEACHER is an effective strategy for developing the 21st-century skills of pre-service teachers. It is a means for them to practice what they have learned from the classroom discussions. It also means that they can develop the necessary soft skills for future classroom teaching – from planning for learning to assessing learning, including managerial and administrative tasks. While they are learning from their exposure, they have also caused the learnings of the early literacy learners. The project TEACHER also leads to a symbiotic relationship between the community and the school, that while the community benefits from the service that the school offers, the school also benefits from the actual situations, which could serve as a basis for a review of curriculum and pedagogies. Pre-service teachers may not only practice their intended profession upon reaching their senior years because the project TEACHER provides a real-life experience for their personal and professional development.

5.0 Contributions of Authors

The authors contributed significantly to the research study. Jeira Rose Mateo led the group in formulating the initial ideas, ensuring the incorporation of all suggestions from other researchers, and spearheaded the overall writing and revision process. Lorrea Rubi Quintos and Ronarine Monton provided additional insights to expand the concepts, formulated ideas in each section of the paper, and assisted in writing and revising the manuscript. Alvic Torres, MST, reviewed and enhanced the overall structure and content of the paper, offering guidance on the manuscript's organization and final revisions. Jennifer Bangi, MARS, evaluated the paper and suggested improvements throughout the process, ensuring alignment with the study's objectives. Each author played a critical role in the study's conception, design, analysis, writing, and revision stages, contributing to the overall quality and coherence of the research.

6.0 Funding

This work received no specific grant from any funding agency.

7.0 Conflict of Interests

The authors declare no conflicts of interest about the publication of this paper.

8.0 Acknowledgment

The researchers would like to acknowledge the parents of the learners for granting the request to have their children under the care of the pre-service teachers; the pre-service teachers for the inputs they shared on the effect of SLP on them; the Early Child Care and Development (ECCD) personnel, Child Development Workers (CDW) and City Social Welfare and Development Office (CSWDO) for allowing the researchers to implement the project. Furthermore, the University of Saint Louis Tuguegarao is also acknowledged for the publication support granted to this research paper.

9.0 References

- Afzal, A., & Hussain, N. (2020). The impact of community service-learning on the social skills of students. *Journal of Education and Educational Development*, 7(1), 55. <https://doi.org/10.22555/joeed.v7i1.2988>
- Alrajeh, T. S. (2021). Project-based Learning to Enhance Pre-service Teachers' Teaching Skills in Science Education. *Universal Journal of Educational Research*, 9(2), 271–279. <https://doi.org/10.13189/ujer.2021.090202>
- Aygun, H. E. (2018). The Relationship between Pre-Service Teachers' Cognitive Flexibility and Interpersonal Problem Solving Skills. *Eurasian Journal of Educational Research*, 18(77), 1–24. <https://doi.org/10.14689/ejer.2018.77.6>
- Brown, C. S. (2014). Language and Literacy Development in the Early Years: Foundational Skills that Support Emergent Readers. *The Language and Literacy Spectrum*, 24, 35–49. <http://files.eric.ed.gov/fulltext/EJ1034914.pdf>
- Carruth, L., & Bustos, C. (2019). Phonemic Awareness: It's All in the Sounds of Language. *Texas Association for Literacy Education Yearbook*, 6, 55–58. <https://files.eric.ed.gov/fulltext/EJ1291358.pdf>
- Chenarani, K. (2017). An Introduction to Service-Learning Pedagogy. Retrieved from <https://eric.ed.gov/?id=ED573436>
- Coelho, M., & Menezes, I. (2021). University Social Responsibility, Service Learning, and Students' Personal, Professional, and Civic Education. *Frontiers in Psychology*, 12. <https://doi.org/10.3389/fpsyg.2021.617300>
- Gatcho, A.R., & Gutierrez, M.R. (2020). Literacy education in the philippines: a survey on what's hot and what's not. *Luz y Saber*, 12(2), 37–45. <https://ejournals.ph/article.php?id=14298>
- Graham, S., Aitken, A. A., Hebert, M., Camping, A., Santangelo, T., Harris, K. R., Eustice, K., Sweet, J. D., & Ng, C. (2021). Do children with reading difficulties experience writing difficulties? A meta-analysis. *Journal of Educational Psychology*, 113(8), 1481–1506. <https://doi.org/10.1037/edu0000643>
- Goodrich, J. M., Lonigan, C. J., & Farver, J. A. M. (2017). Impacts of a literacy-focused preschool curriculum on the early literacy skills of language-minority children. *Early childhood research quarterly*, 40, 13–24. <https://doi.org/10.1016/j.jecresq.2017.02.001>
- Häkkinen, P., Järvelä, S., Mäkitalo-Siegl, K., Ahonen, A., Näykki, P., & Valtonen, T. (2016). Preparing teacher-students for twenty-first-century learning practices (PREP 21): a framework for enhancing collaborative problem-solving and strategic learning skills. *Teachers and Teaching*, 23(1), 25–41. <https://doi.org/10.1080/13540602.2016.1203772>
- Harris, D. (2016). Kindergarten teacher knowledge of phonemic awareness and instruction: Developing proficient early reader (Dissertation). Northwest Nazarene University
- Hamsah, H., Mesra, R., Jannah, M., Bagit, J., Kiwo, R., Swabra, M., & Manurung, L. (2023). Efforts to improve reading ability through literacy learning (Studies on students at the Catholic Elementary School of St. Vincentius Noongan). *Technium Social Sciences Journal*, 49(1), 30–35. <https://doi.org/10.47577/tssj.v49i1.9776>
- Hunpegan, H. (2022). A survey of early literacy practices at the basic level of education (Thesis). Lagos State University
- Klass, P., Hutton, J. S., & DeWitt, T. G. (2020). Literacy as a distinct developmental domain in children. *JAMA Pediatrics*, 174(5), 407. <https://doi.org/10.1001/jamapediatrics.2020.0059>
- Juan, R. S. (2019, December 3). Philippines lowest in reading comprehension among 79 countries. *Philstar.com*. Retrieved from <http://surl.li/cvovush>

- Kaynar, N., Sadik, O., & Boichuk, E. (2020). Technology in early childhood education: Electronic books for improving students' literacy skills. *TechTrends*, 64, 911-921. <https://link.springer.com/article/10.1007/s11528-020-00520-5>
- Körükçü, M., & Tangülü, Z. (2021). Individual and global social responsibility levels of social studies pre-service teachers in terms of different variables. *International Journal of Evaluation and Research in Education*, 10(3), 1008. <https://doi.org/10.11591/ijere.v10i3.20552>
- Khan, A., Khan, S., Zia-Ul-Islam, S., & Khan, M. (2017). Communication skills of a teacher and its role in the development of the students' academic success. *Journal of Education and Practice*, 8(1), 18-21. <https://eric.ed.gov/?id=EJ1131770>
- Krown, T., & Bui, N. D. T. (2019). *Creating a Meaningful Experience: On Service Learning and Teacher Preparedness* (Capstone Projects and Master's Theses). California State University, Monterey Bay, California State University, Monterey Bay
- Lavery, S., & Sandri, S. (2021). Pre-service primary and early childhood teachers' perceptions of a service-learning experience. *Issues in Educational Research*, 31(4), 1101-1120. <https://www.iier.org.au/iier31/lavery.pdf>
- Librea, N. K., Luciano, A. M., Sacamay, M. L., Libres, M. D., & Jr., A. C. (2023). Low Reading Literacy Skills of Elementary Pupils in the Philippines: Systematic Review. *International Journal for Research in Applied Science and Engineering Technology*, 11(4), 1978-1985. <https://doi.org/10.22214/ijraset.2023.49480>
- Lina, J. (2023, January 31). Why early childhood education is essential. *Manila Bulletin*. Retrieved from <https://tinyurl.com/c7bf3t4>
- Luyee, E. O., Roselan, A. F. I., Anwardeen, N. H. A., & Mustapa, F. H. M. (2018). Suitability of the Literacy and Numeracy Screening (LINUS) 2.0 programme in assessing children's early literacy. *Malaysian Online Journal of Educational Sciences*, 3(2), 36-44. <http://files.eric.ed.gov/fulltext/EJ1085912.pdf>
- Milankov, V., Golubović, S., Krstić, T., & Golubović, P. (2021, May 19). Phonological Awareness as the Foundation of Reading Acquisition in Students Reading in Transparent Orthography. *International Journal of Environmental Research and Public Health*, 18(10), 5440. <https://doi.org/10.3390/ijerph18105440>
- Mohamed, S. A. (2016). *Evaluating EFL students' reading comprehension skills with reference to the Department of English at Zawia University, Libya* (Doctoral thesis). Liverpool John Moores University.
- Naibaho, L. (2022). The pre-service teachers' communication ability analysis at teacher training and education faculty. *Indonesian EFL Journal*, 8(2), 237-246. <http://repository.uki.ac.id/id/eprint/9725>
- Omar, M. K., Khambari, M. N. M., Ma'arof, A. M., & Razali, A. B. (2022). Impact of service-learning on students' employability skills: A balanced approach to empower meaningful learning experience. *Open Journal of Social Sciences*, 10(2), 343-364. <https://doi.org/10.4236/jss.2022.102025>
- Puranik, C. S., Petscher, Y., Otaiba, S. A., & Lemons, C. J. (2018). Improving kindergarten students' writing outcomes using peer-assisted strategies. *The Elementary School Journal*, 118(4), 680-710. <https://doi.org/10.1086/697432>
- Philippines SEA-PLM. (2019). Harness the potential of early childhood education for long-term benefits on children's learning. Retrieved from <https://tinyurl.com/3kuzrw75>
- Resch, K., & Schritteser, I. (2023). Using the Service-Learning approach to bridge the gap between theory and practice in teacher education. *International Journal of Inclusive Education*, 27(10), 1118-1132. <https://doi.org/10.1080/13603116.2021.1882053>
- Rohde, L. (2015). The comprehensive emergent literacy model: Early literacy in context. *Sage Open*, 5(1), 2158244015577664. <https://doi.org/10.1177/2158244015577664>
- Santi, A., & Quemado, M. E. (2017). Extent of Home Promotion on Early Literacy of Emergent Learners in One Day Care Center in the Philippines. *Asia Pacific Journal of Education, Arts and Sciences*, 4(4), 75-81. <https://tinyurl.com/3vde6e6p>
- Sivri, H., & Balci, E. (2015). Pre-service teachers' classroom management self-efficacy beliefs. *International Online Journal of Education Sciences*, 7(4), 37-50. <https://doi.org/10.15345/iojes.2015.04.004>
- Somosot, I. S. (2020). 21st century skills and the readiness of preservice teachers toward practice teaching program. *Asia Pacific Journal of Multidisciplinary Research*, 8(2), 36-42. <https://tinyurl.com/u7fp43rz>
- Suhartini, L. (2019). The Effectiveness of Using Problem Based Learning Method in Enhancing Students' Reading Comprehension. *International Journal of Education and Curriculum Application*, 17. <https://doi.org/10.31764/ijeca.v0i0.1972>
- Suggate, S. P. (2014). A Meta-Analysis of the Long-Term effects of phonemic awareness, phonics, fluency, and reading Comprehension interventions. *Journal of Learning Disabilities*, 49(1), 77-96. <https://doi.org/10.1177/0022219414528540>
- Tok, Ş., & Kandemir, A. (2015). Effects of creative writing activities on students' achievement in writing, writing dispositions and attitude to english. *Procedia - Social and Behavioral Sciences*, 174, 1635-1642. <https://doi.org/10.1016/j.sbspro.2015.01.815>
- Trasporte, A., Borong, F., Mones, J., Padillo, G., Manguilimotan, R., Espina, R., Capuno, J. F., & Capuno, R. (2023). Examining The Interest and Readiness in Writing Among the Young Learners from Three Public Elementary Schools in The Philippines. *Journal of Positive Psychology*, 7(1), 1017-1029. <https://journalppw.com/index.php/jppsp/article/view/15346>
- Urbani, J. M., Roshandel, S., Michaels, R., & Truesdell, E. (2017). Developing and modeling 21st-Century skills with preservice teachers. *Teacher Education Quarterly*, 44(4), 27-50. <https://files.eric.ed.gov/fulltext/EJ1157317.pdf>
- Wehrhan, A. (2021). Teaching early literacy skills in preschool and future kindergarten success. Retrieved from https://nwcommons.nwciowa.edu/education_masters/307/
- Wildová, R., & Kropáková, J. (2015, June). Early Childhood Pre-reading Literacy Development. *Procedia - Social and Behavioral Sciences*, 191, 878-883. <https://doi.org/10.1016/j.sbspro.2015.04.418>
- Wood, T. L. (2019). *Kindergarten Reading Readiness and Developmental Indicators for the Assessment of Learning* (Dissertation). Walden University.
- Zulkifli, A.S., Sulaiman, N. F., & Mohamed, S. (2019). Pre-Service Teachers Knowledge of Classroom Management. *Creative Education*, 10(12), 2548-2554. <https://doi.org/10.4236/ce.2019.1012182>

Leadership, Innovation, and Stability in Bridging Agricultural Development Gaps: A Literature Review

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Date received: September 3, 2024

Date revised: September 19, 2024

Date accepted: October 5, 2024

Originality: 98%

Grammarly Score: 99%

Similarity: 2%

Recommended citation:

Guro, A.A. (2024). Leadership, innovation, and stability in bridging agricultural development gaps: A literature review. *Journal of Interdisciplinary Perspectives*, 2(11), 208-219. <https://doi.org/10.69569/jip.2024.0472>

Abstract. This study addresses the gap in understanding how leadership, innovation, and socio-political stability influence agricultural development. By conducting a literature review, this research aims to provide insights into improving regional agricultural policies. The review focuses on leadership in agriculture, socio-political dynamics, economic factors, and the role of innovation. Findings suggest that while global initiatives and local efforts emphasize agribusiness for economic growth, regions like BARMM in the Philippines face challenges such as weak data systems and structural barriers. The study concludes that technological advancements and cooperative efforts are essential for sustainable agricultural development in these regions, highlighting the need for targeted policies to enhance productivity and food security.

Keywords: Leadership; Agricultural innovation; Peace and order; Agricultural development; Farm production.

1.0 Introduction

Agriculture remains a fundamental pillar of economic stability and growth worldwide, particularly in developing countries where a substantial portion of the population depends on farming for both sustenance and income. Despite its critical role, the agricultural sector in these regions often faces significant challenges, with farmers frequently being among the most vulnerable to poverty and food insecurity. This paradox, where those who produce food struggle to meet their own nutritional needs, underscores the pressing need to identify pathways for agricultural development that can both alleviate poverty and enhance the well-being of farming communities. This necessity is particularly urgent in regions characterized by high levels of socio-economic deprivation, where agricultural development has the potential to drive significant and hopeful socio-economic change.

The relationship between agricultural development and economic growth has been extensively explored in the literature, revealing a complex and multifaceted connection. Dane (2022) underscores the importance of agriculture as the backbone of national economies, emphasizing its role in providing essential food supplies, raw materials, and employment opportunities. This perspective is further supported by Vespa (2021), who argues that agricultural development is crucial for reducing poverty, especially in rural areas where most people depend on farming for their livelihood. These studies collectively highlight the critical role of agriculture in promoting economic progress. However, they also expose significant disparities in how the benefits of agricultural development are distributed, particularly within developing regions. These disparities point to a gap in the current understanding of how to create more equitable and inclusive agricultural development strategies.

Sustainable agricultural development, as discussed by Udemezue and Osegbue (2018), involves increasing agricultural productivity and ensuring the long-term sustainability of environmental resources. This approach necessitates the enhancement of agricultural practices, the introduction of innovative technologies, and the equitable distribution of resources. The authors emphasize that sustainable agricultural development is about more than just boosting output; it also entails improving the quality of life in rural areas, ensuring food security, and providing a stable income for farmers. However, the challenge remains in achieving these goals without compromising environmental sustainability, which requires a delicate balance between economic growth and ecological preservation.

Despite the progress made in understanding the links between agriculture, economic growth, and sustainability, there remain significant gaps in how these factors interact with leadership, innovation, and socio-political stability—factors crucial in shaping the effectiveness of agricultural development strategies. This study seeks to address this gap by examining the roles of leadership, agricultural innovation, and the maintenance of peace and order in fostering agricultural growth. Through a comprehensive literature review, the research aims to provide insights that could inform the development of more effective regional agricultural policies and interventions. The significance of this study lies in its potential to contribute to the socio-economic upliftment of some of the most impoverished areas. By advancing the understanding of how targeted agricultural development strategies can foster sustainable economic growth and improve the quality of life for farmers, this research hopes to offer valuable contributions to the discourse on sustainable development and poverty alleviation.

2.0 Methodology

The literature review used a structured approach to identify, evaluate, and synthesize relevant academic studies, reports, and policy documents. Academic databases such as JSTOR, Scopus, and Google Scholar were searched using keywords such as "agricultural development," "leadership in agriculture," "agricultural innovation," and "peace and agriculture." Inclusion criteria focused on studies published in the last ten years, ensuring the review incorporates the most recent advancements in the field. Studies are selected based on their relevance to the research questions, methodological rigor, and the contexts in which they were conducted. Particular attention is given to studies focused on developing regions, as these are most pertinent to the research objectives. Key information from the selected studies is extracted and organized into themes related to leadership, innovation, and peace in agricultural contexts. Synthesizing this data helps to identify the current state of knowledge, gaps in the literature, and potential for new research contributions.

3.0 Findings and Discussion

This literature review begins with a general perspective of agricultural development. Subsequently, it focuses on the context of the province of Lanao del Sur, analyzing leadership impacts, examining affected agricultural innovations, and resolving conflict issues affecting agricultural sector development.

Leadership

Previous research shows that several countries have developed leadership programs for agricultural entrepreneurs. For example, Australia, Canada, the United States, and New Zealand have developed strategies for leadership development in the agricultural sector (Brosnan, 2014). A study by (Ulvenblad et al., 2019) mentioned that a greater focus is needed on leadership development for agricultural entrepreneurs to manage larger units better and identify and implement innovative ways to create, deliver, and capture value in this rapidly changing agricultural environment. Their study also addresses the deficiency in leadership education for practicing agricultural entrepreneurs, focusing on self-leadership practices in a leadership development program designed specifically for agricultural entrepreneurs.

However, in the Philippines, policymakers in the BARMM region experience difficulty in crafting evidence-based plans and strategies to increase agriculture productivity and improve the nutritional status of the communities due to the lack of robust information systems and databases on agricultural statistics and nutritional status at the village or barangay level that LGUs and decision-makers at the local level can use for targeting, planning, and implementing programs. BARMM was confronted with several issues and challenges that affected the growth in its agricultural production and poverty incidence. These include a need for more focus on existing government programs for the improved productivity of small-scale fisher folk and farmers, coupled with unsustainable

practices. (BARMM, 2020). On the other hand, RD Maria Lourdes Lim of NEDA Regional Office XI pushed for the advancement of agribusiness towards a *matatag, maginhawa at panatag na buhay* for Mindanaoans when she spoke to 300 delegates at the Philippine Financial Summit 2018 in Davao City on February 24, 2018 "Agriculture is still the most important sector in rural areas of almost all developing countries," said Regional Director Lim on her topic 'Money Does Grow on Trees' which focused on the potential of agribusiness in reducing poverty. "Developing the rural economy is key to achieving inclusive growth," she added.

The study made by Kolaj et al. (2017) in Albania concluded that the growth and strengthening of the role of leadership in the farming communities would also be helpful for the promotion and development of agriculture. It would also bring positive effects, such as raising awareness of the degree of competence and quality of decision-making concerning the use of resources and rural development. The scale and intensity of the use of resources, such as land, forests, and rivers for economic development and growth, implicates costs and requires the quality of agricultural products.

Political

Agriculture has always been affected by the activities of governments around the globe. However, many of the evolving countries have had food deficits, with little in the way of exportable goods to pay for food imports. Several countries and international groups have been established to deal with the issues of developing countries, and direct assistance has also been provided by the governments of progressive countries (Britannica, 2022). Efforts are continually made by countries worldwide to cite one is the establishment of the SDG. In an excerpt from PSA regarding Sustainable Development Goals (SDG), In September 2015, the United Nations Member States adopted a new global plan of action entitled "Transforming Our World: The 2030 Agenda for Sustainable Development." The 2030 Agenda, its 17 Goals, and 169 targets are a universal set of goals and targets that aim to stimulate people-centered and planet-sensitive change. The Sustainable Development Goals (SDGs) and targets are integrated and indivisible, common in nature, and universally acceptable, and consider different national realities, capacities, and levels of growth and respect national policies and precedence. Furthermore, each administration is expected to take ownership, establish national frameworks, and set nationally owned marks guided by the global level of desire but considering country-level situations for attaining the 17 goals. Countries will also decide how these aspirational and global targets should be incorporated into national planning processes, policies, and strategies. In line with the Philippines' agreement to achieve the SDGs, the PSA Board issued PSA Resolution No. 04 Series of 2016, allowing government agencies to deliver data support to the sustainable development goals (SDGs). In this resolution, all concerned government agencies are invited to provide the necessary data support to monitor the country's performance vis-à-vis the SDGs based on the indicator framework determined by NEDA, PSA, and other government agencies. Further, the Resolution designated the PSA as the official repository of SDG indicators in the Philippines.

Accordingly, Agriculture Secretary William Dar urged entrepreneurs and business leaders to continue investing in Mindanao as agribusiness remains a priority, providing opportunities for exporting agricultural products and establishing state-of-the-art production technologies and value-adding facilities. "Mindanao is a veritable food basket in the Philippines, considering its substantial contribution to the country's agri-fishery sector. We can attract investments to nurture local agribusiness," said Secretary Dar during the 30th Mindanao Business Conference on September 23, 2021 (DA Communications Group, 2021). "The government is fully prepared to continue investing in Mindanao's future, but the government alone cannot finance Mindanao's long-term progress. The island region's private sector – its entrepreneurs and business leaders – must continue to make significant investments in developing the regional islands, especially in those places where investments are most needed," Sec. Dar further said.

Economic

Despite the country's recent general economic success, the agricultural sector remains challenging, falling behind other Southeast Asian countries' output and productivity development (OECD-FAO, 2017). The 2012 Family Income and Expenditure Survey (FIES) showed that 68% of Philippine families derive some earnings from agriculture. However, only 22% of all families derive more than half of their earnings from it, and 10% derive more than three-quarters (FIES, 2012). On the one hand, an act (R.A. 8435) prescribing urgent related measures to modernize the agricultural and fisheries sectors of the country to enhance their profitability and prepare said

sectors for the challenges of globalization through an adequate, focused, and rationale delivery of necessary support services, appropriating funds therefore and other purposes, otherwise known as the "Agriculture and Fisheries Modernization of 1997" (AFMA) was created by the Third Congress on the Third Regular Session. Section 2 of the Organic Agriculture Act of 2010 (R.A. 10068) and its Implementing Rules and Regulations (IRR) stated the policy of the State to encourage, proliferate, develop further, and implement the practice of organic agriculture in the Philippines that will cumulatively condition and enrich the fertility of the soil, growth farm productivity; lessen pollution and devastation of the environment, prevent the depletion of natural resources, further protect the health of farmers, consumers, and the general public, and save program for the promotion of community-based organic agriculture systems which include, among others, the farmer produced purely organic fertilizers such as compost, pesticides, and other farm inputs, together with a nationwide informative and promotional campaign for their use and processing, as well as the implementation of the organic agricultural system as a feasible alternative shall be undertaken (Philippine Congress, 1997).

Collective action

A study by Rolaj et al. (2017) relates that an essential alternative for overcoming structural problems is cooperation among farmers based on principles of collective action. They further mentioned that because of the small farm size and land fragmentation, farmers encounter many difficulties while improving technology at the farm level, providing inputs, selling their farm products, and facing unfair competition from input suppliers and traders. Hence, there is no better alternative than cooperation among farmers (Skreli et al., 2011). In the study of Rolaj et al. (2017), they said that the asymmetry of information, limited sanctions, enforcement mechanisms, and lack of monitoring create conditions through which opportunistic behavior can dominate. Banaszak explained that the same forms of cooperation in collective action in a similar environment can bring different results (Banaszak, 2008). The question is why certain cooperation agreements on agricultural markets are successful while others are not. Some of the groups of producers are effective, while others are not. Banaszak states that variables such as the strength of leadership, previous knowledge in the field of business, the initial selection of members, and the number of members significantly impact the chances of success.

Furthermore, the study of Rolaj et al. (2017) concluded that the growth and strengthening of the role of leadership in the farming communities would also be helpful for the promotion and development of agriculture; it would bring positive effects, such as raising awareness for the degree of competence and quality of decision-making concerning the use of resources and rural development. The scale and intensity of the use of resources, such as land, forests, and rivers for economic development and growth, implicates costs and requires the quality of agricultural products.

Cooperative Agriculture

A study made by DeSalva (2012) stated that forming local and organic agricultural cooperatives is one way to eliminate the barriers currently preventing local and organic farmers from doing business with midlevel institutions and, therefore, to help realize the health, economic, and environmental benefits that come from local and organic farming. It also mentioned the following reasons, and I quote: First, by pooling the supply of produce, agricultural cooperatives can supply the amount of food demanded by mid-level institutions (USDA, 1990). Second, cooperatives give farmers more control over the price of their products and can, therefore, bargain for a price that satisfies both the farmer and the institution (Diamond & Barham, 2012). Third, cooperatives can allow members to invest in group insurance coverage to meet the insurance requirements of mid-level institutions. Fourth, cooperatives make it more feasible for farmers to pool resources and work together to purchase processing and distribution equipment (Hardesty, 2008; Markley, 2010).

Furthermore, in the Philippine setting of ARMM, a report from the Regional Agriculture and Fishery Information Division of DA-ARMM indicated that from January to February, 33 batches have already completed the short course. Nasrodin A. Saripada, a municipal agricultural officer of Piagapo, said the training sprang out of the success of the U.N. World Food and DA tie-up program on the Establishment of Participatory Vegetable Techno Demo Farms in Piagapo. The activity involved establishing a 1,000 sq. meter communal vegetable garden per site and the required 120 sq. meter individual home gardens (Government of the Philippines, 2016). This training covered six municipalities, and 1,671 farmers were trained. It was implemented under the agency's High-Value Crops Development Program and by the Lanao del Sur Provincial Agriculture Office. Most of the participants

were from the municipalities of Piagapo and Masiu, where at least 29 villages were covered. Piagapo and Masiu are pilot areas of the United Nations–World Food Program (UN-WFP) (Government of the Philippines, 2016).

Agricultural Innovations

Agriculture Secretary Dr. William Dollente Dar was the Agro-Industrial Development Program (AIDP) launching keynote speaker who represented President Rodrigo Roa Duterte last November 16, 2021, in Wao and Amai Manabilang. Dar discussed the current condition of Philippine agriculture before the Bangsamoro Autonomous Region in Muslim Mindanao (BARMM) Ministers, local officials, SPDA's private business partners, and local farmers, "The use of modern technology can spur or accelerate the development of agriculture in the country," Secretary Dar was quoted as saying during his speech.

The revised development concept for the 26,000-hectare-proclaimed property in the Municipalities of Wao and Amai Manabilang upon the reactivation of SPDA has been focused on establishing a special economic zone dubbed MinSEZ, or Mindanao Special Economic Zone. Another explanation on the subject was agricultural that evolution is the method whereby people or organizations bring new or existing products, operations, or ways of organization into use for the first time in a particular situation to boost its efficiency, competitiveness, flexibility to surprises or environmental sustainability and thereby provide to food security and nutrition, economic growth or sustainable natural resource management (FAO, 2018). Farmers have always looked to new technologies to reduce costs. In addition, higher incomes, more excellent knowledge, and improved communication channels are leading consumers to demand low-cost food of higher quality, increasingly produced through organic methods in many countries, with more variety, consistency, and year-round availability. At the same time, consumers are increasingly demanding that their food be produced using techniques that conserve natural resources, limit environmental pressures, and pay greater attention to rural viability and animal welfare (OECD, 2001).

Indeed, agricultural innovations frequently concern not so much the adoption of newly introduced technologies but the adaptation of existing ones. The term 'agricultural revolution' is used when several improvements in separate areas of the farming system co-occur as a complex. Although these may be introduced gradually, once they reach a critical mass, their impact on society may be of a magnitude deserving of the term 'revolution.' Moreover, an article (Praxis, 2018) stated that agricultural revolutions spanning different agricultural scales, from urban farms and aquaponics to food hubs, have been established worldwide. Innovative agriculture is safeguarding the new models of farming and agricultural production. It is also emerging and bringing fresh methods to growing and distributing food.

It is no surprise that it was mentioned in the Bangsamoro Food Security and Nutrition Roadmap 2020 that research and development play a huge potential in contributing to the improvement of this aspect. For instance, pest prevention can be strengthened with the help of a Crop Protection Center wherein in-depth research on pests and diseases is conducted, and further identify control mechanisms. With the meager budget allotted by the central government for agricultural research, these institutions must be strengthened or well supported in providing necessary modern and quality facilities and improving the technical capacities of the scant workforces and researchers. Stated further that there is also insufficient human resources to conduct research, laboratory testing, and other technical jobs as data from the Philippine Statistics Authority shows that only 0.43 percent, or 114 personnel out of the total 26,495 of the country's research and development workforce, is present in the region (BARMM, 2020).

It further mentioned that the region needs a regional crop protection center, soil testing centers, and other agriculture-related laboratories. Hence, several farming requirements are still done in areas outside the region. Moreover, farmers and other regional stakeholders are heavily dependent on interventions extended by the government and other development partners, which sometimes limit innovative initiatives that may improve their farming status. Furthermore, public ventures in agricultural R&D are vital for sustainable agricultural productivity development. By assuring that farmers have access to innovations that meet their diverse and complex needs, public spending on agricultural R&D is more helpful in raising sustainable agricultural productivity than other public expenditures in agriculture, such as irrigation and fertilizer assistance. Recent results suggest that countries in Southeast Asia have the potential to improve R&D and innovation systems more greatly to enhance productivity growth and achieve better future production and food security (OECD, 2017).

Technical advances in agriculture demand further scientific advances to refine the underlying scientific principles and resolve emerging problems. In agriculture, the performance of most technologies is sensitive to local climate, soils, and economic factors, so the potential for local adaptation is excellent, and the impact of new technologies varies widely across locations on a given farm (Huffman, 1998).

Farming methods

Farming methods are undergoing significant technological changes. New government regulations and the demand for more advanced, labor-saving technological solutions drive the change (OECD, 2001). The choice of farming technologies will continue to increase in the future. One problem, however, is the price of new technology, which is often high. Adopting new technologies can thus require making significant investments, and farmers are only willing to invest money when it is profitable for them to do so. The following Innovations as part of their global campaign to reach zero hunger of Food and Agriculture Organization of the United Nations in its Sustainable Development Goals (FAO – SDG) presented the "Innovation and the 2030 Agenda" (2018).

Technologies and practices for small agricultural producers (TECA) – TECA is a global, web-based platform for knowledge exchange, documenting, and sharing practical information on agricultural technologies and practices to help smallholder farmers in the field. It combines this knowledge base with a forum of exchange groups for interactions, identification of needs, and joint learning between various actors of the agricultural innovation systems. Aimed at making demand-driven information available on the production and protection of plants and animals (including fish) and managing natural resources better while adapting to climate change and reducing risks of natural disasters, TECA is also designed to improve nutrition from agriculture and to allow smallholders and other users to access markets better. Apart from small agricultural producers, users include professionals from rural extension and advisory services, producer organizations, NGOs, research organizations, universities, and the private sector.

Mechanization Sustainable agricultural mechanization covers all levels of farming and processing technologies, from simple and essential hand tools to more sophisticated and motorized equipment. It takes 60 days to cultivate a hectare of land using a hand hoe, compared to about three days with draught animal power or less than a day if using a powered direct seeder. In many farming-based communities, women provide up to 80 percent of the total farm labor. Mechanization can ease and reduce hard labor and relieve labor shortages. In Zambia, for example, labor savings from adopting animal-powered equipment have been estimated to be 25 to 35 percent. FAO aims to increase knowledge exchange on agricultural equipment and sustainable practices by fostering partnerships with public and private sector organizations that promote innovation and construct existing technology. FAO helps governments improve strategies that facilitate mechanization and works with small-scale industries, cooperatives, and local groups to ensure smallholder farmers can access and use mechanized services.

Farming practices

In its Sustainable Development Goals, the Food and Agriculture Organization of the United Nations presented the "Invention and the 2030 Agenda" (2018), which stipulated that family farmers play a significant role in feeding a growing entire population. The U.N. General Assembly recently declared 2019–2028 the United Nations Decade of Family Farming, realizing the success of its International Year, which heightened the profile of the role of family farming, pastoralism, and smallholder farming in providing the science, technology, innovation, and entrepreneurship play a vital role in supporting smallholders, including pastoralists and household farmers, in particular women and youth in rural areas attainment of food security and improved nutrition. In its Resolution, the U.N. General Assembly gave special attention to innovation, recognizing "the important role of science, technology, innovation, and entrepreneurship in supporting smallholders, including pastoralists and family farmers, particularly women and youth in rural areas."

The agenda presented further includes the following innovations as part of their global campaign to reach zero hunger. Over 12,000 members from 170 nations and territories comprise the FAO-led global Community of Practice on e-Agriculture. Members can utilize it as a forum to exchange knowledge, concepts, and materials about information and communication technology (ICT). It aims to enhance decision-making regarding the critical function of ICTs in strengthening rural communities, enhancing rural livelihoods, and establishing sustainable

agriculture and food security. The platform is focused on knowledge exchange between U.N. agencies, governments, universities, research organizations, NGOs, farmers' organizations, and private companies.

FAO encourages a change from interventions that concentrate on single agricultural innovation components to a system approach aimed at strengthening institutions and stakeholders' networks that better meet the needs of smallholder farmers. Agriculture innovation across all scopes of the harvest cycle along the entire importance chain - from crop, livestock, forestry, or fishery supervision to input and resource management, organization, and demand access FAO2c's work on agricultural innovation. 11 Senegal A fishing community has increased market access thanks to a growing network of trucks hauling the catch. Recognizing that information exchange requires constructive dialogue, one of the most popular activities is the e-Agriculture Forum Discussions, where themes are driven by demand and guided by partner institutions specializing in various aspects of e-agriculture.

Over 60% of Africa's projected 1.2 billion inhabitants are under 25; however, with limited job development in rural areas where most of the public lives, there is increasing doubt about the landmasses' eagerness to tap into this resource. Digital design and using ICTs will be critical in unlocking Africa's agribusiness, bridging the rural divide, and assisting smallholders and family farmers, fishers, pastoralists, and forest dwellers. Innovative technologies and approaches can boost productivity and profitability, increase consumption of healthy foods, provide access to information, technology, and markets for youth and women, and ensure that agricultural practices are environmentally sustainable for future generations. FAO and partners collaborate to create, promote, and implement digital inclusion projects and scale up innovative digital services. Bringing solutions closer to the requirements of poor households in Africa and other places contributes directly to poverty reduction and food security. ICTs contribute to the effectiveness of existing rural advising services, 12 financial services, and social protection programs. ICTs improve access to markets, information, and business prospects. Through infrastructure and legislation, cost, digital literacy, and the availability of local content, digital inclusion programs overcome the barriers to mobile internet usage.

Tropic Agriculture Platform: Agricultural Innovation Systems To bring capability progress up to speed with the struggles confronting agriculture in the twenty-first century, the Tropical Agriculture Platform (TAP) partners have adopted a new approach, the so-called Agricultural Innovation Systems (AIS) standpoint, which acknowledges that agricultural innovation is a process involving many different players and factors and that it can only take off if it meets the demands of its primary users. The AIS is a network of persons, organizations, and businesses in the agricultural and joined sectors, as well as helping institutions and policies, which bring current or new commodities, processes, and organizational forms into social and economic usage. Policies and institutions (both formal and informal) impact how these actors interact, generate, share, and use knowledge. It comprises four main components: research and education, business and enterprises, bridging institutions, and the enabling environment.

Blue Growth plans to promote ways to balance economic growth, social development, food security, and the long-term usage of marine and freshwater ecosystems. Sharing experiences and lessons learned is a crucial first step toward encouraging innovation and the advancement of strong "blue" economies. FAO's Blue Development Initiative aims to promote a more significant coalition and dialogue on successful agricultural innovation 13 practices that have sparked sustainable development and examine innovative industries and markets that can offer a competitive advantage. Using fish skin to make gorgeous fashion designs is one unique and inventive example. Traditional fisheries and fish farming generate massive volumes of fish skin, often regarded as a waste product. Seaweed cultivation is also increasing in the North Atlantic. The inventive and expanded use of aquatic resources in the fashion industry has the potential to boost the sustainability of both the fashion and fishing industries.

AgLab in China To stimulate innovation in all areas of work, FAO China has established AgLab Cx, an innovation lab integrating a diverse range of partners and expertise, including the Ministry of Agriculture of China, social innovators, academia, and consumer groups. The lab is dedicated to experimenting, prototyping, and developing new ideas in sustainable agricultural development and food security. It provides a platform for engaging the government, young people, technologists, the commercial sector, and civil society in issue resolution. AgLab Cx, which takes a people-centered approach, brings together actors in food and agricultural systems who must

address an issue with those with the technical and financial means for interdisciplinary collaboration and co-creation.

Neglected and underutilized crop species have been pushed aside in favor of those in higher demand. Only 30 of the 30,000 edible plant species available are employed to feed the world. However, these crop species can assist in diversifying food production by introducing new species into our diets, resulting in healthier eating and a higher supply of certain nutrients such as vital amino acids, fiber, and proteins. These neglected and underutilized crops bring economic and environmental benefits in addition to diversifying nutritional intake. Farmers can cultivate them independently, as part of crop rotation systems, or interplanted with other crops to protect and enhance agro-biodiversity. In a crop rotation system, having a more extensive range of species allows farmers to have a more sustainable production system.

Furthermore, shifting species in a crop rotation system disturbs the life cycle of several pests and diseases, lowering the likelihood of infestations. One-third of food produced for human consumption is lost or wasted globally, equivalent to around 1.3 billion tons each year. To put FAO's work on agricultural innovation into action, it is critical to fulfill the fruitful potential of family farmers, especially small and medium-sized family farms, which maintain a substantial percentage of parcels and provide much of the food in low and middle-income countries. The FAO-led Save Food program collaborates with international organizations, the commercial sector, and civil society to find new solutions to reduce food loss and waste along the food supply chain in developing and developed worlds. Because of the enormity and complexity of the problem, all parties - governments, research institutions, manufacturers, distributors, retailers, and consumers - must work together to find solutions, act, and effect positive change. Global Forum on Agricultural Research and Innovation, hosted by FAO, is a multi-stakeholder forum on agricultural study and innovation that allows stakeholders from researchers and organizations to farmers to engage in collaborative discussion and action on the current and future State of agriculture. GFAR promotes collaboration, partnerships, and the sharing of goals along the complicated routes from research to development outcomes.

Machineries & Equipment

A new technology introduced in the province is the system; the pilot area for halal rice cultivation is the first to be covered by the solar-powered irrigation systems in Taraka, which will fully function before the end of August with the commissioning of four more solar-powered systems. The solar-powered irrigation systems are the first in BARMM and were funded by a loan from the state-owned Development Bank of the Philippines (BIMP-EAGA, 2021). These would enable farmers to plant at least twice a year and provide residents with safe drinking water. Service fees would be charged to users to help the municipal government pay for the cost of these facilities. The following Innovations as part of their global campaign to reach zero hunger on Food and Agriculture Organization of the United Nations in its Sustainable Development Goals (FAO - SDG) presented the "Innovation and the 2030 Agenda" (2018).

System for earth observations, data access, processing, and analysis for land monitoring (SEPAL) SEPAL provides comprehensive image-processing capabilities. It enables the detection of small-scale changes in forests, such as those associated with illegal or unsustainable timber harvesting. Users can query and process satellite data quickly and efficiently, tailor their products for local needs, and produce sophisticated and relevant geospatial analyses. Harnessing cloud-based supercomputers and modern geospatial data infrastructures (such as Google Earth Engine), SEPAL allows users to access and process critical historical satellite data and newer data from Landsat and Europe's Copernicus programme. SEPAL helps countries pave the way for improved climate change mitigation plans and better-informed land-use policies. Kenya Farmers use a combined planting and fertilizing machine near Nyahururu.

Potential of drones for locust early warning and preventive control Vast areas of desert stretching from West Africa to India and including some of the world's poorest countries are regularly monitored for Desert Locust by national ground teams in vehicles. These areas have no mobile or internet coverage and may be several days' drive from the national locust center. Research and development are underway to provide a fixed-wing drone solution to speed things up. The drone could fly some 100 km while collecting data on the location of green vegetation and processing this imagery on board as a map. In turn, the map would guide ground survey teams to specific areas.

A control drone could safely and effectively spray significant infestations before the locusts form swarms. All the drones must be lightweight, portable, solar-powered, durable, and easy to use and maintain locally. The "dLocust family" would be integrated with eLocust3, the hand-held tablet used by survey and control teams for recording observations and transmitting them in real-time by satellite. National locust centers would be responsible for managing and using dLocust.

Farm-to-market roads (FMRs)

When only limited resources are available to build and maintain road networks, one should use the available resources most optimally. Regarding pavement design and construction, pavements should be designed and constructed to sustain large numbers of heavy traffic loads for a long time without showing significant damage. Overloading, for example, is a severe problem in almost all developing countries (Molenaar, 2013). It is necessary to disseminate the culture transforming how the roads are designed, constructed, maintained, and managed, including raising awareness of all those involved in the construction of roads and their impact on the quality of life of citizens to achieve road sustainability. (Corriere, et.al., 2012). Decent transportation infrastructure enables producers to obtain inputs, move their products over large distances, and increase the global market (Agricultural Infrastructures, n.d.). Numerous studies have illustrated the importance of paved highways on agricultural labor productivity. For example, Llanto has expressed that a one percentage point increase in the distance of paved roads as a ratio to the total length of roads is associated with an increase in agricultural labor productivity of PHP 285 000 per laborer. This differentiates from results for irrigation expansion, which has exhibited a positive but insignificant relationship with agricultural labor productivity (Llanto, 2013).

A study by Faiz A. et al. (2012) on Sustainable rural roads for livelihoods and livability concluded that the review of sustainability and livability suggests that a rural road must fulfill two conditions to be sustainable: first, it must contribute to and enhance rural livelihoods and livability, and secondly, its planning and design (as well as construction and maintenance) must be context sensitive to ensure a balance among economic, social and environmental objectives, that is reflective of community values, aspirations, and needs. The required increase in food production will require massive improvements in the agricultural supply and marketing systems, with the rural road providing the first value-enhancing link as agricultural produce moves up the value chain from the farm to the market and on to the consumer.

Rodriguez (2014) reported in an article that FMRs can increase local trade and productivity, reduce transportation costs of farm input and output, and minimize post-harvest losses. They connect farms and coastal areas to main roads, hence promoting agro-tourism. "Rural transport not only concerns the movement of farm produce, but also helps in household tasks such as procuring food, water, and fuel wood," the Food and Agriculture Organization (FAO) said. Ensuring physical access – transportation and infrastructure – to food is one of the dimensions of food security. When deliveries are delayed, the quality of crops drops, as well as their prices and sales – impacting farmers' income and their families' food security. Some farmers would just let their products rot rather than spend for transportation.

Insufficient and poor-quality farm-to-market roads remain an important issue. While the length of FMR roads has been improving, most are still gravel or red dirt roads, vulnerable to damage from flooding and extreme weather events, and often impenetrable during the wet season (ADB, 2012). In coalition with the Department of Public Works and Highways and LGUs, the DA seeks to address this issue through rising expenditure on FMRs and concrete rather than "all-weather" gravel roads (DA, 2015).

Agricultural Infrastructures

Like other public investments, rural infrastructure boosts agricultural production, which promotes growth in rural regions and results in higher agricultural incomes and more opportunities for non-farm workers. Urban and rural populations, net food consumers, gain from increased agricultural output that lowers food prices (Llanto, 2012). Consequently, agricultural production has considerable implications for reducing poverty and its benefits for growth. Roads and electricity are essential determinants of agricultural productivity. This is credible considering a related result regarding the growth restrictions imposed by insufficient infrastructure. Rural roads provide significant connectivity with growing markets adjacent to rural areas; they also lessen input costs and transaction costs of rural producers and consumers. Access to electricity generates various income-earning opportunities for

rural households (Llanto, 2012). Moreover, "the government is investing heavily in infrastructure to achieve high economic growth. This includes the improvement of farm-to-market roads in the rural areas to support agriculture", said DPWH Secretary Mark A. Villar (DPWH, 2020).

Peace and Order

A relatively small body of recent literature on conflict in Muslim Mindanao exists. This primarily consists of grey literature, although several academic journal articles have also been published. A recent initiative led by International Alert and the World Bank provides quantitative data on all the main drivers of conflict in the ARMM, disaggregated by province. This is called the Bangsamoro Conflict Monitoring System (Strachan, 2015). Indeed, peace order is the only significant factor that could either hamper or trigger farm productivity, as shown by the experiences of many farmers in Mindanao, Muslims and Christians alike (Pablico, 2007).

A brief overview of the Conflict situation in Lanao del Sur is multi-faceted, ranging from insurgency, election-related violence, land-related conflict, Rido, and conflict involving the shadow economy (emanating from pyramid scams or other illicit activities) (Province of Lanao del Sur, 2021). The absence of state services in the ARMM also contributes to fragility and instability in the region. Regional government spending on services is low, and the provision of healthcare and education in the region needs to be improved. International involvement in resolving conflict in the ARMM has been limited. Conflict resolution efforts have been led by, but not limited to, Muslim actors, such as Malaysia and the Organization of Islamic Conference. Beyond Malaysia's facilitation of the peace process, regional actors have shown little interest in the conflict in Mindanao in recent years (Strachan, 2015).

FAO (2015) has reported that most combatants from the Moro Islamic Liberation Front (MILF) belong to farming and fishing households and are predominantly farmers and fisher folks. Those wanting to return to a life of peace cannot do so due to a lack of land access and the capital assets to regain their livelihoods. Additionally, despite its rich natural resources, Mindanao could be faring better in harnessing its agricultural potential. While more than 60 percent of the ARMM's economic outputs comprise agriculture, fisheries, and forestry products, these are low value. There are virtually limited market opportunities for farmers, and agricultural labor productivity is significantly lower than in the other provinces in the country. When roads are blocked, and some areas become off-limits because of armed conflict, it becomes increasingly difficult and sometimes impossible to bring the produce to the markets to allow farmers to earn sufficient income and afford the purchase of inputs to sustain farming (FAO, 2015).

Despite some threats to peace and security in Lanao del Sur, the province sees agriculture to achieve peace and stability. The province supports the Ministry of Agriculture, Fisheries, and Agrarian Reform's "From Arms to Farms" program, which aims to "Foster peace through Agriculture and fishery Development in Conflict Areas of the Philippines" (Province of Lanao del Sur, 2020). Efforts are exerted to attain peace and stability in Mindanao, wherein one of the flagship programs of BDP (Bangsamoro Development Plan) is the Bangsamoro Sustainable Agriculture Program. In the report of FAO (2015), this program aims to increase farm productivity, income, and food security, focusing more on vulnerable groups. For the transition period, FAO intends to support smallholder farmers and fishers by enhancing their capacities to jumpstart the restoration and rehabilitation of their livelihoods, engage in microenterprises, especially for women, have access to markets, and sustain their gains by integrating climate-resilient agriculture principles in their production and processing.

Rido or Clan feuding

It is one of the primary drivers of conflict in the region. Moreover, it is interlinked with many other drivers of conflict discussed in this report, as conflict actors in the ARMM often belong to multiple groups and frequently shift alliances (Strachan, 2015). Rido is a constant source of vulnerability for the citizens of the province. The triggers of a Rido can be just anything from slander, misdemeanor, debt fault, damage to property, and theft to the more severe cases such as murder, land disputes, political rivalry, election-related conflicts, sex crimes, and accidents (Province of Lanao del Sur, 2020).

Most ridos start from simple disputes that can quickly be settled locally, employing traditional conflict-finding mechanisms and religious approaches. However, an overdue justice system coupled with inadequate governance

at the local level usually escalates a simple conflict into a complex one, resulting in heightened armed conflicts between and permanent displacement of the families involved (BARMM, 2020).

Lawlessness

Lawlessness in Mindanao is responsible for thriving shadow economies, such as the trade in illegal drugs and weapons. While the shadow economies in the ARMM are linked to violence and conflict, some of them, such as cross-border trade in the Sulu Sea, also have the potential to contribute to peace. This is because they provide livelihoods for fragile island communities (Strachan, 2015). Concepcion et al. (2003) report in the International Alert Organization stated that large areas of southwest Mindanao have been abandoned to lawlessness, so local communities and businesses are insecure. There is a proliferation of armed groups, in some cases 'lost commandos' who once fought for one or other of the warring parties but now operate outside any external control. Added to this are the civilian 'volunteers' armed by the military over the years to fight perceived supporters of the Moro armed groups and the NPA. Civilian volunteers can use their weapons in pursuit of gain or localized resource conflicts. They further mentioned in the report, and I quote: In Muslim areas, the failure of the government to provide for or protect Muslims in the past means that many people question its legitimacy, so there is little or no confidence in law enforcement agencies. In Muslim areas, the failure of the government to provide for or protect Muslims in the past means that many people question its legitimacy, so there is little or no confidence in law enforcement agencies. Rumors and reports – some quite well-founded – of the police, the military, and government officials colluding with criminal gangs, local politicians (many of whom have an extensive armed following), and illegal loggers erode this confidence even further.

Disagreements

The disagreement between the government and Moros showed that the root cause of armed fighting in Mindanao can be found in the history of Mindanao people's ongoing struggle for their right to self-determination. A fight includes claiming their identity and requesting meaningful governance in the face of the national government's negligence to realize genuine social growth, peace, and development in the southern Philippines (Batac et al., 2019). The fight is also a response to "historical injustices" and grave human rights violations committed against the people of Mindanao. With the urge to correct these historic discriminations and to recognize their inherent right to chart their own political and cultural direction, the Bangsamoro people – together with their non-Moro allies – have struggled to get their calls heard and worked upon by the central government (Batac et al., 2019).

The dispute between the Government of the Philippines and the armed groups in Mindanao, Especially the Moro Islamic Liberation Front (MILF), is not the only dispute affecting the whole region. The multi-faceted dispute in Mindanao affects numerous armed groups, clans, criminal gangs, and political elites. The leading players in this decades-old conflict are the Moro Islamic Liberation Front, Moro National Liberation Front, and other organizations such as the Bangsamoro Islamic Freedom Fighters, Abu Sayyaf, as well as other armed non-state actors who are always 'in conflict' with the central government. when a Muslim armed group (Moro National Liberation Front or MNLF) started to advocate for a "Moro homeland."

The Philippine government responded through military means, resulting in numerous deaths and displacement of the civilian population (Muslims and Christians). In the 1970s, the Philippine government initiated peace talks and obtained a peace agreement with the then-leading Muslim armed opposition group (MNLF) to stop the conflict and address the problems. However, armed confrontations broke out now and then between the Philippine military and the MNLF and also with another Muslim armed opposition group (Moro Islamic Liberation Front or MILF). For every breakout of armed hostilities, thousands of non-combatants are caught in the crossfire and suffer displacement and other human rights violations (Mindanao Conflict: in Search for Peace and Human Rights, 2008).

Consequently, the security forces and the LGU in Lanao del Sur monitor three insurgent groups: the Maute Group, the BIFF, and the NPA. The ISIS-affiliated Dawlah Islamiya also called the Maute Group, was seen as the most direct security threat in the province after they staged the bloody attacks in a few towns in Lanao del Sur, including Marawi City, in 2017. Their followers still operate in the municipalities to the south of Lake Lanao, such as Butig, Pagayawan, and Sultan Dimalundong, and areas to the north of the lake, like Balindong, Marantao, and Piagapo (Lanao del Sur, 2021).

The BIFF is a breakaway faction of the MILF led by Ameril Umbra Kato; the faction operates in Maguindanao Province with few fellows from Lanao del Sur. Some BIFF members fought during the Marawi City in 2017 (Lanao del Sur, 2021). The NPA is confined to the borders of Bukidnon, Lanao del Norte, Misamis Oriental, and Lanao del Sur, particularly in the mountainous or forested areas of Kapai, Tagoloan II, Bubong, Maguing and Lumba Bayabao. Because the communist group does not have a foothold in the province, the military does not perceive the NPA as an imminent security threat to the province. However, the insurgent group is on the watch list of the 103rd brigade (Province of LDS, 2022).

4.0 Conclusion

This literature review explores the multifaceted aspects of agricultural development, focusing on leadership, political, economic, and cooperative dynamics, agricultural innovations, farming methods, and peace and order. Leadership development in agriculture is critical, as seen in successful programs in countries like Australia and Canada. However, in the Philippines, particularly in BARMM, challenges such as inadequate data systems hinder effective policymaking. Politically, global initiatives like the SDGs influence agricultural policies, and Mindanao efforts emphasize agribusiness's role in economic growth. Economically, despite the broader success of the Philippine economy, agriculture lags, with policies like the Agriculture and Fisheries Modernization Act attempting to address these gaps. The review also highlights the importance of collective action among farmers to overcome structural challenges and the potential of cooperatives to improve agricultural productivity and market access. Innovations in agriculture, including modern technology and sustainable practices, are essential for improving productivity and ensuring food security. The review underscores the need for enhanced research and development in BARMM to address regional agricultural challenges, emphasizing the critical role of technological advancements and cooperative efforts in driving sustainable agricultural development.

5.0 Contributions of Authors

The sole author of this study completed the manuscript.

6.0 Funding

This research received no specific grant from any funding agency.

7.0 Conflict of Interests

Regarding this study, the author has no conflicts of interest.

8.0 Acknowledgment

The authors acknowledge everyone who helped him complete this study.

9.0 References

- Batac, M., & Bijnen, M.V. (2019, February 26). Interview: the Struggle for Peace in Mindanao, the Philippines. The Global Partnership for the Prevention of Armed Conflict. Retrieved from: <https://bit.ly/hytrinh>
- Concepcion, S., Digal, L., Guiam, R., De La Rosa, R., Stankovitch, M. (2003). Breaking the links between economics and conflict in Mindanao. Retrieved from <https://bit.ly/nhuyt>
- Corriere F., Rizzo, A. (2012). Sustainability in Road Design: A Methodological Proposal for Drafting of Guideline. *Procedia - Social and Behavioral Sciences*, 53(2012), 39 – 48. <https://doi.org/10.1016/j.sbspro.2012.09.858>
- Dane, K. (2022). Why is Agriculture Important and its Role in Everyday Life. Retrieved from <https://tinyurl.com/4tnvxa8x>
- DeSalva, C. (2012). Addressing the undersupply of local and organic food to mid-level institutions: A model for successful agricultural cooperatives (Thesis). Lehigh University
- Faiz, A., Faiz, A., Wang, W., & Bennett, C. (2012). Sustainable rural roads for livelihoods and livability. *Procedia - Social and Behavioral Sciences*, 53, 1–8. <https://doi.org/10.1016/j.sbspro.2012.09.854>
- Kolaj, R., Zahooliaj, D., Dashi, E., & Skunca, D. (2017). Leadership as important factor for agricultural development in albania. *European Journal of Interdisciplinary Studies Articles*, 3. <https://ideas.repec.org/a/eur/ejisr/136.html>
- Llanto, G. (2013). The Impact of Infrastructure on Agricultural Productivity. Retrieved from <https://bit.ly/adrfgr>
- OECD. (2001). Adoption of Technologies for Sustainable Farming Systems Wageningen workshop proceedings. Retrieved from <https://bit.ly/juytgknk>
- Pablico, M. (2007). Farm productivity needs peace. Retrieved from <https://bit.ly/yuigtcrj>
- Praxis, T. (2018). Innovations in agriculture: Ideas, Possibilities, Strategies. Retrieved from <https://bit.ly/mjiytr>
- Rodriguez, F. (2014, March 7). Farm-to-market roads: A farmer's journey. *Rappler*. Retrieved from <https://bit.ly/adgtyni>
- Skreli, E., Kola, R., Osmani, M. (2011): Factors determining collective action in Albanian agriculture: case of apple producers in Albania. *Albanian Journal of Agricultural Sciences*, 10(3), 35–41. <https://bit.ly/iutgyrp>
- Strachan, A.L. (2015). Conflict analysis of Muslim Mindanao. Birmingham, UK: GSDRC, University of Birmingham.
- Udemezue, J.C., & Osegbue, E.G. (2018). Theories and Models of Agricultural Development. *Annals of Reviews and Research*, 1(5), 134-137. <https://ideas.repec.org/p/oec/devaaa/248-en.html>
- Vespia, C. (2021). Why Agricultural Development Matters. Retrieved from <https://tinyurl.com/y5see7h2>

Face-to-Face Teaching Skills of Virtually Mentored Pre-Service Interns

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Date received: September 3, 2024

Date revised: September 19, 2024

Date accepted: October 5, 2024

Originality: 93%

Grammarly Score: 99%

Similarity: 7%

Recommended citation:

Baligod, J., Licupa, L., Molina, K.J., Auayang, K.M., & Bangi, J. (2024). Face-to-face teaching skills of virtually mentored pre-service interns. *Journal of Interdisciplinary Perspectives*, 2(11), 220-233.

<https://doi.org/10.69569/jip.2024.0467>

Abstract. During the COVID-19 pandemic, pre-service teachers found completing their online teaching practicum impossible. Their doubt extended to their thoughts about making it difficult for them to perform their obligations effectively as practicing teachers. This basic qualitative research aimed to explore the practices and experiences of graduates in their online teaching internships and their effect on their teaching experience. Fifteen Teacher Education alumni participated in this study and were selected through purposive sampling. Data was collected using semi-structured interview questions and gathered through Google Meet and face-to-face interviews. Thematic data analysis was used to identify essential themes. Based on the results and discussion of the study, Teacher Education graduates of a Catholic Institution were exposed to unforgettable experiences and practices with their supervising instructor, cooperating teacher, school culture, and peers, which they continue to utilize in their current teaching roles. Subsequently, the study revealed that their experiences led them to the following: (a) commitment to the ongoing development of soft skills, (b) enhanced technological skills, (c) strengthened cooperation among coworkers and supervisors, (d) improved classroom management strategies, (e) innovation of assessment strategies, (f) refined creativity in creating instructional resources and (g) improved sense of accountability and adaptability. This implies that the online environment did not deter the would-be teachers from developing the skills necessary in the contemporary world. Thus, this study recommends enhancing the implementation of hybrid teaching internships in the teacher-education program.

Keywords: Pre-service teachers; COVID-19 Pandemic; Internship experience; Online teaching internship.

1.0 Introduction

Teacher Education Institutions (TEIs) seek excellence in teacher preparation by pursuing continuous development and adhering to international quality education standards despite the accelerated changes in the education sector caused by the COVID-19 pandemic. With the advent of the pandemic, TEIs shifted to flexible learning. This mode of learning utilizes both synchronous and asynchronous teaching and learning methods and a student teaching internship to encourage experiential learning among student interns (Quinco-Cadosales, 2022).

Internship is called teaching apprenticeship in Teacher Education Institutions (TEIs). The fundamental goal of teaching practice is to introduce and prepare students for the teaching profession (Mokoena, 2017). Teaching internships offer prospective teachers a variety of learning opportunities to help them become effective educators (Abdullah & Mirza, 2020). Pre-service teachers in the study of Rogayan & Reusia (2021) regarded internship as a gratifying hurdle to overcome with remarkable journeys. Filipino pre-service teachers described the teaching internship as an endless learning adventure, a satisfying challenge to overcome, an opportunity to be a second

parent, an improvement in pedagogical competence, immersion in the workplace, and the ultimate path to becoming a teacher.

However, due to COVID-19, an actual workplace for internships was impossible, posing a difficult challenge for teacher education institutes (Cho & Clark-Gareca, 2020). Teacher preparation during the pandemic was also challenging, particularly in giving interns supervised chances to transfer knowledge, skills, and competencies from online internship experiences to actual classroom practice (Ugalingan et al., 2021). Hora et al. (2021) found that online interns report poorer satisfaction, developmental value, 21st-century skills, professional network development, and high-skill tasks compared to in-person interns. During the COVID-19 outbreak, pre-service teachers found completing their online teaching practicum impossible. They see obstacles that make it difficult to perform their obligations effectively as practicing teachers, consequently impacting their work performance (Reyes, 2023).

The University of Saint Louis, a Catholic Higher Education Institution of Learning in the Northern Philippines, is among the academic institutions that switched to flexible learning modalities recommended by the Commission on Higher Education (CHED) in response to the worldwide health crisis. The University used the Learning Management System (LMS) before the global crisis. It heightened its use during the pandemic as the primary platform for the teaching and learning process, which includes methods and tools for submitting learning tasks, activities, and assessments assigned by teachers (Turingan et al., 2023). In addition, the practicing instructors resorted to using the NEO-LMS, one of the basic academic platforms in the teacher education curriculum (Sarini, 2021; Ugalingan et al., 2021). During this field activity, Louisian pre-service teachers encounter desirable and undesirable experiences. The University provides ongoing assistance for the internship through weekly online feedback-giving. Pre-service teachers must receive the necessary assistance in their development into competent professionals (Paronjodi et al., 2017) to TEI's goal of providing support in the implementation of internships, developing pre-service teachers through authentic internship practices, and allowing teachers to see themselves as professionals despite the various challenges encountered (Ruohotie-Lyhty et al., 2018).

Given the diverse experiences gained by pre-service teachers throughout the pandemic, it is critical to investigate the effect of their online teaching experiences on their teaching performance. Only some studies look into school internship practices and how they affect a teacher's career development. As a result, it is proposed that a study be conducted to investigate the effect of teaching internships on education graduates' actual teaching careers (Rogayan & Reusia, 2021). In this study, the focus was on how online teaching internships affect graduates' performance in their actual teaching careers. Furthermore, identifying graduates' best practices from internships highlights what the institution ought to provide to ensure high-quality education despite the constraints posed by the pandemic.

2.0 Methodology

2.1 Research Design

This study utilized qualitative research employing the basic qualitative research design by Merriam and Tisdell (2015) in exploring the best practices and experiences of graduates in their online teaching internship and how they, employing the basic qualitative research design by Merriam and Tisdell (2015), to explore the best practices and experiences of graduates in their online teaching internship and how they give meaning to these practices and experiences in their role as professional teachers carrying out their mission in a face-to-face.

2.2 Research Informants

The study was conducted at the University of Saint Louis, where the participants earned their degrees in teacher education. The informants of this study were fifteen (15) Teacher Education Alumni of the University in the school year 2021-2022. Purposive sampling was used to select the study's informants, who were selected by the following criteria: (1) they must have completed an online teaching internship during the pandemic, and (2) they must be in-service teachers. The identified participants teach at (a) the University of Saint Louis and (b) Mater Ecclesiae School, Inc. San Pedro Laguna, (c) San Antonino National High School Burgos, Isabela, (d) Saint Michael Academy Rizal, Inc., and (e) Apayao Community Learning Center during this study.

2.3 Research Instrument

The researchers employed a semi-structured interview guide validated by research experts before collecting narrative data on the practices during the online internship and their effects on the graduates' teaching practices. The first part of the questionnaire is the profile of the respondents, and the second part contains four semi-structured interview questions.

2.4 Data Gathering Procedure

The researchers sought the study's approval from the SECAP Dean and Vice President for Academics. After this, the outreach to the intended participants started. Informed consent was handed out before the interview session to inform the participants of the purpose of the study and the importance of their voluntary participation. Those who consented to participate in the study were interviewed. Some chose to have the interview face-to-face, and some had it via Google Meet. The interview was conducted at a time convenient for the participants.

2.5 Data Analysis

Thematic data analysis was utilized to identify essential or recurring topics. The selected data was evaluated thematically using the Clarke and Braune (2017) technique. The six-step process for thematic analysis is as follows: familiarization, generating initial codes, looking for themes, reviewing themes, defining and labeling themes, and producing the report.

2.6 Ethical Considerations

The ethical considerations were rigorously followed during the conduct of this research. Respondents are allowed to withdraw their involvement at any moment without affecting their social position, as their responses to the questionnaire are kept confidential by the researchers and used for research purposes only. After this paper had been finalized and approved, all interview recordings and transcriptions were discarded to avoid identifying the participants. Given the researchers' student status, the study did not involve monetary compensation, financial incentives, or reimbursement for study expenses.

3.0 Results and Discussion

Figure 1 presents the major themes for the effects of online internships on the teaching practices of in-service teachers. At the heart of the framework is the online teaching internship of teacher education graduates, and the effects of the teaching internship are as follows: (a) commitment to the ongoing development of soft skills, (b) enhanced technological skills, (c) strengthened cooperation among coworkers and supervisors, (d) improved classroom management strategies, (e) innovation of assessment strategies, (f) refined creativity in creating instructional resources and (g) improved sense of accountability and adaptability. This implies that the effects are the product of the pre-service teachers' experiences during their online teaching internship. This implies that the online environment did not deter the would-be teachers from developing the skills necessary in the contemporary world. The following sections will present each of these effects.

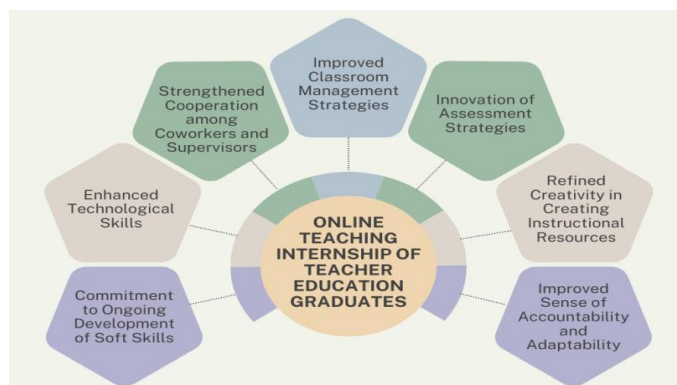


Figure 1. Major themes

3.1 Commitment to Ongoing Development of Soft Skills

Personal development is a cornerstone of effective teaching practice, empowering educators to strive for excellence and continuously positively impact students' lives. There were instances where the pre-service teachers were disheartened by the challenges they faced in their online internships. But, they could process their emotions through indulging in reflections and introspections. This step enabled them to understand their capabilities and interests better, resulting in increased confidence and a sense of purpose in their teaching career. They have shown personal characteristics like willingness to trust the process that led them to the realization about the help provided by their internship training: they became more convinced that teaching is their field of interest with the joy that they have experienced while helping the learners, and they became resourceful in seeking for help for the struggles they met particularly in lesson planning. Some of the verbalizations are as follows:

P06: *"These experiences led me to question myself and assess if I could compete with my fellow co-teachers. Ultimately, I realized that I am capable. I realized that the internship helped me grow a lot."*

P09: *"During my online teaching internship, I felt unsure if teaching was right for me as I faced many challenges and felt overwhelmed. It was disheartening at first, but with time, I discovered my passion for teaching and realized how much I enjoy helping students learn. Now, I am more confident and excited about a career in teaching."*

P12: *"I struggled with lesson planning due to a lack of knowledge but continuously sought help from my cooperating teacher and integrated technology to enhance assessments. My reflective practice demonstrated my commitment to improvement."*

These personal characteristics of the pre-service teachers, which were developed during their internship, were used when they were already in the actual field as in-service teachers. The graduates have displayed characteristics that arose as their response to the situations they were confronted with. It reflects their commitment to ongoing personal development. Their process of self-reflection and introspection could result in a transformative process in the teaching profession. Moreover, through introspection and perseverance, they develop enhanced communication skills and a deepened commitment to professionalism, which are integral to success in teaching (Dangara, 2018).

Educators' narratives of personal development underscore the transformative journey within the teaching profession. From initial struggles and uncertainties to eventual growth and confidence, these experiences highlight the importance of self-reflection, perseverance, and ongoing learning in shaping effective educators. Through seeking guidance, integrating innovative approaches, and embracing challenges, educators cultivate a dynamic skill set that enhances their teaching practice and positively impacts their personal development (Roger, 2020).

The journey of personal development not only empowers educators to overcome challenges and uncertainties but also enriches their teaching practice, enabling them to inspire and positively impact the lives of their students (Borja, 2018). As a result, these educators are better equipped to foster a supportive and inclusive classroom atmosphere that encourages student participation and collaboration. Their continuous self-improvement and adaptive teaching methods ensure that they remain responsive to their students' evolving educational needs.

Further skills beneficial to the present status of these teacher-education graduates include their step towards continuous learning and wide reading to stay knowledgeable and effective. Their online internship experience trained them in time management skills so that they could handle responsibilities efficiently. Some of the verbalizations are as follows:

P06: *"You need to be a wide reader because it also influences the students as you continue learning. You must impart the knowledge you want to share with them, so you must keep reading. Also, I developed communication skills because I am an introvert. Building good connections with students, cooperating teachers, and co-teachers is important. Lastly, time management is crucial; if I need to do something, I should do it right away and avoid procrastinating."*

P07: *"I developed my cognitive skills because the grade level I handled was science. They were bright, and it was a shame if they asked me and I did not know the answer. I need to do research and go beyond the box. My cognitive and communication skills must be prepared, especially when I teach at the college level. At almost the same age, you must avoid words like "uhm" and "ah" when you teach because they will laugh behind your back. My technological skills have also been honed since we are in the 21st century."*

P14: *"Well, I developed ICT skills, communication skills, and time management. For practice, it was my hobby to read books for my resources, give and receive feedback, implement house rules, and keep the student as my top priority in my plans. Lastly, my favorite practice or skill I developed is being patient enough to handle unfavorable things."*

During their internship, graduates demonstrated the impact of their experience by acquiring soft skills. According to Schutz et al. (2018), soft skills are acquired because a teacher involves learning from various experiences. During their online teaching internship, the informants encountered various experiences that served as examples and shaped their future as educators. The following narratives reveal that skills like communication, time management, understanding, patience, and a positive mindset significantly influenced their professional growth and personal development. These experiences aid students in improving and preparing them to assist communities. This represents a crucial milestone in initiating a prosperous professional journey that provides individuals with modern abilities and inventive adaptability, such as teamwork, critical thinking, and others, to address obstacles that may currently be beyond imagination (Roberts & Santulli, 2022).

Whitaker and Valtierra's (2018) study confirms that internship experiences significantly impacted the self-confidence of new teachers, their ability to implement culturally responsive teaching approaches, their appreciation for teaching in diverse environments, and their enthusiasm for teaching diverse learners. This exemplifies how a proficient teacher training program may mold the attitudes and talents of novice instructors, equipping them to confront the difficulties of instructing a diverse group of students. The practicum experience has also strengthened the pre-service teachers' capacity to handle everyday challenges and improved their proficiency in time management (Egeland, 2016; Pilonieta et al., 2017).

Adding to this, Ripamonti et al. (2018) show how internships help develop the abilities and potential of new teachers, turning them into highly capable and qualified educators. The positive impact of a well-organized internship is clear in how these educators are ready to handle the complex demands and opportunities of being teachers. The enriched experiences of the teachers contribute to their well-rounded skill set, enhancing their readiness for diverse academic, career, and social settings. Enabling students to apply their formal education in a practical setting through an internship program will help them develop essential work values and competencies. This is crucial for producing skilled and capable professionals in today's competitive world (Robinson, 2018).

3.2 Enhanced Technological Skills

Graduates reported that with their online internship, they explore technological tools and integrate them into the actual teaching profession. Their online experiences exposed them to varied uses and advantages of technology in teaching and learning. Their consciousness to keep the learners motivated and engaged pushed them to explore technological tools. The use of these technologies not only serves to motivate learners but also to assess their learning. Their resourcefulness worked when they blended face-to-face schemes (e.g., index cards blended with the number of likes with equivalent points in recitations). Some of the verbalizations are as follows:

P04: *"Skills acquired, such as effective lesson planning, diverse assessment strategies, and managing online classrooms, have equipped me to meet the demands of modern education effectively. Moreover, the experience has fostered adaptability and resilience, qualities essential for navigating the ever-evolving teaching and learning landscape."*

P07: *"I use Kahoot, Mentimeter, and other technological tools to instill enjoyment in my students. I always make sure not to repeat strategies to retain the amusement of my students. It is effective in getting their attention and assessing their knowledge gained in class."*

P11: *"Yes, I still use those technological tools in my class. I use different technological tools, such as Mentimeter and Word Cloud, to engage my students. I also used recitation schemes like index cards, vaccine cards, and the number of likes with*

equivalent points in every recitation. I can see the effectiveness of these activities if my students enjoy them. Online, there are limitations, whereas in face-to-face settings, once they are engaged, it may feel unnecessary to listen to the discussion. If I apply my strategies, I can also apply my communication skills. Being resourceful also helped me."

The graduates claimed their fear of technology in class was visible throughout their online internships; nevertheless, due to its impact and usage in the success of classroom strategies, they overcame it and subsequently utilized technology as the main bridge in education. The graduates, therefore, possess proficient knowledge and skills in advanced technology, enabling them to adapt to an online environment. However, their experiences contradict the results of Bansawan et al.'s (2022) study, which identified technical difficulties and lack of experience in technology as the primary challenges pre-service teachers face. Additionally, a significant number of individuals need more familiarity with technology and often encounter recurring technical issues, resulting in delays in the delivery of instruction. The research conducted by Turingan et al. (2023) supports the findings of Bansawan et al. (2022), which indicate that pre-service science instructors have negative experiences when incorporating technology into their teaching practices. Nevertheless, throughout the unfavorable encounters, they gradually acquired the ability to modify and conform until they mastered the virtual internship procedure and effectively presented their discussions.

Graduates' regular use of technology before their deployment and through preparatory courses at the University boosts their confidence and gives them the urge to integrate technology into instruction. During an online class internship, their experiences explain how they managed online classrooms and kept students engaged in virtual learning. According to the study's informants, it is inevitable not to apply their practices during their teaching internship due to their multiple benefits in increasing learning experiences, boosting access to knowledge, and preparing students for future issues. As these individuals step into teaching roles, they bring not just book knowledge but also a proactive approach to handling the always-changing needs of education, especially online education, which is likely to persist since many institutions are moving toward a comprehensive online or blended learning modality in instruction responsive to the demands of modern times (Flores & Swennen, 2020).

According to the study of Ghavifekr & Rosdy (2015), the findings indicate that teachers' well-equipped preparation with ICT tools and facilities is one of the main factors in the success of technology-based teaching and learning. Technological tools have emerged as the tool of choice for capturing and disseminating best practices, particularly in web-based and distance education contexts (Johnson et al., 2016). Different teaching tools and methods are important for making lessons interesting and easy to understand. Teachers use books, videos, and technology to help students learn better (Bekou et al., 2024). They become skilled at making engaging activities, ready to use new and creative methods that make the educational experience better for their students.

3.3 Strengthened Cooperation among Coworkers and Supervisors

The informants emphasize the role of building good relationships with their colleagues, especially in their actual teaching experience, because the challenges to connect with colleagues are inevitable, which makes them adopt their practice approach during their internship to communicate appreciation, care, and concern, trying to earn their coworker's trust. The effects of their internship strengthen their bonds with their coworkers and students as their internship trains them to be flexible and adaptable to cope immediately at work. They exchange ideas and concepts to build a bigger idea and foster teamwork, respect, and communication to have a healthy working environment. According to the graduates, their experiences train them to help the teachers in need and share their resources and strategies. They practice give-and-take methods with their coworkers, and when there is conflict, they choose to be professional in addressing the issue. Some of the verbalizations are as follows:

P02: *"My cooperating teacher influenced me by teaching me patience, which is crucial for teaching grade 7. I believe that she contributed to my development as a teacher. I found her easy to work with, with no rushing or pressure, and she is approachable. She is strict regarding deadlines and always taught me formulas and tips on how to teach the lesson, especially since I am teaching mathematics."*

P07: *"The teaching internship is a way to sharpen what is to be sharpened and improve what is to be improved. In my internship, I always kept in touch with my cooperating teacher because she needed my knowledge and expertise in technology,*

especially since she had not been exposed to using technology. You should share the things that you have known because if you do not share them, you are just the one progressing while others are not."

P15: "The most memorable experience I have encountered is when the sense of friendship or collaboration is magnified. After our final teaching demonstration, we always check on and comfort each other. We never let anyone from us feel unloved and unappreciated. We extended the undying support system."

According to the informants, collaboration with coworkers is easy to create since they maintain a sense of professionalism and collaboration at work despite connectivity issues. With their previous experiences and practices, they described their relationship with their cooperating teacher and peers and how they encourage each other in the workplace on an initiative, participate in committee work, and offer assistance. Furthermore, recent studies revealed that students' internship success could be seen if proper communication and regular feedback had been conducted to monitor students' development and progress (Wright et al., 2018). Similar to the findings of Sepulveda-Escobar and Morrison (2020), university instructors, cooperating teachers, and peers have an important role in assisting prospective teachers in developing positive relationships and empowering teaching and learning practices, allowing pre-service teachers to embody the value of collaboration between peers and instructors. Dangara (2018) also added that teachers' instructional supervision improved their performance in teaching and learning.

The graduates indulge in collaborative work and opportunities, making it easy to establish collaboration and teamwork in teaching. The study by Vehviläinen & Souto (2022) emphasizes the significance of displaying active involvement, attentive listening, and effective communication within a receptive environment to foster a positive relationship. This concept was also mentioned in the study of Cavendish et al. (2021), which states that pre-service teachers who actively participate in collaborative efforts with colleagues, mentors, and fellow educators will easily establish collaboration in actual teaching experience. These collaborative endeavors contribute to improving their teaching practices and expose them to diverse perspectives within the educational community. The results of this theme coincide with the study of Omar (2014), which claims that internships were the totality of educational and personal experiences that contributed toward an individual being more competent and satisfied in an assigned professional role.

Hands-on supervision and regular feedback during internships helped graduates develop and enrich important teaching abilities. This practice went on even during the online modality. The cooperating teachers even recommended speakers and seminars that the pre-service teachers could attend for further knowledge and training for their professional growth. Admittedly, the pre-service teachers identified challenges like reduced attention and engagement. Acknowledging the reality that such a challenge should be addressed, the pre-service teacher participated in training sessions focusing on using the Learning Management System (LMS) and was equipped with the skills to navigate virtual teaching environments effectively. Furthermore, the personal disposition of the cooperating teacher also influenced the pre-service teacher's approach to education. Their supervising instructor was taken as their guide during their internship experience. The following are sample verbalizations from the participants:

P02: "The hands-on supervision I received during my internship helped my career growth, with the instructor (supervisor) offering valuable feedback and support. However, transitioning to an online format presented challenges such as reduced attention and engagement. To address this, I participated in training sessions focused on utilizing Learning Management Systems (LMS), equipping me with the skills to navigate virtual teaching environments effectively."

P11: "Our supervising instructor is hands-on in monitoring us, and sometimes she is strict. She also recommended seminars with speakers from outside the school. Her dedication to fostering practical skills and a growth mindset significantly influenced my approach to education."

P13: "As I work with my cooperating teacher, I also embody professionalism; I consider them as my guiding path to execute my internship and also my helping hand to grow individually. Their constant support, guidance, and suggestions for my activities are highly appreciated. I also practiced accepting feedback and considered it a motivation to improve my skills. They pinpointed my strengths and weaknesses gently, which motivated me to finish my internship and apply them to my work."

The mentoring received by the pre-service teachers from their supervising instructor and their cooperating teachers was seen by them as influential in their professional growth. It is important to highlight that the pre-service teachers still need to settle for what their mentors can provide. It extends to their adherence to the advice of their mentors to upgrade themselves to address the problems they meet while having their online internship. This positive attitude is a manifestation of the problem-solving attitude of the pre-service teachers. The graduates highlighted that they continuously seek improvements to fulfill their responsibility in providing quality education. Through their experiences, they indulge in a continuous journey that requires commitment, curiosity, and willingness to embrace change and innovation. Behind these practices, some mentors introduced the importance of professional growth, just like in the study of Gorozidis & Papaioannou (2014). They highlighted that cooperating teachers inspire their student-teachers through their dedication to upholding quality instruction, made possible through relevant teacher education training and programs to improve their skills and become more proficient. Similar to the experiences of the graduates, their mentors greatly influenced them in their work. Despite their virtual interaction, they actively participated in their online teaching internship. Through this teacher education, graduates provide valuable insights into the effectiveness of their training programs that make them effective teachers.

The in-service teachers develop their competencies as professional instructors through continuous support, feedback, and effective mentorship. Training and support are essential in enhancing teachers' efficacy (Avargil, 2019). Uribe and Vaughan (2017) also emphasized the importance of professional growth activities such as seminars, InSeTs, and other training to get the best learning from the pre-service teachers. It also helped them enhance areas needing improvement in their teaching journey, contributing to their proficiency in the profession. Along with these opportunities, mentor feedback facilitates professional development because it improves teaching and helps future students (Ubogu, 2020). These experiences were designed to help students develop a strong personality and practical abilities necessary to comprehend what it means to be a teacher (Theelen et al., 2020).

Continuous guidance, support, and constructive feedback are essential in building the graduates' confidence. The study of Borja (2018) also highlighted that pre-service teachers should be well-monitored, supervised, and guided by their cooperating teachers to become prepared, as teaching internships offer prospective teachers a variety of learning opportunities to help them become effective educators. The gained experiences and practices shall be nurtured so that they can be well-prepared to handle the ever-changing learning environment and expectations of diverse stakeholders as the demands of our world continue to grow (Otara, 2014; Pustovoitov, 2014). The guidance they get during internships is essential for shaping how they become teachers, teaching them important classroom management skills, and always being ready to learn more (Genelza, 2022).

Even though they were in virtual interaction, the graduates sought advice, approached, and expressed their concerns to their supervising instructors. According to the study by Vehviläinen & Souto (2021), to achieve a good relationship, the supervising teacher needs to show engagement, listen carefully, and communicate in an accepting atmosphere. Dangara (2018) also added that teachers' instructional supervision improved their performance in teaching and learning. According to the graduates, having a supportive and communicative supervising instructor greatly impacted their online internships. The unwavering support, guidance, and feedback from their instructors helped them succeed in their internships.

The study conducted by Wisniewski et al. (2020) emphasized that feedback enhanced students' confidence, self-awareness, and passion, equipping them for a realistic work environment. Despite engaging in virtual connection, the graduates actively sought assistance, approached, and addressed their concerns to their supervising professors and cooperating teachers. Moreover, recent research has shown that the performance of students' internships may be observed by implementing appropriate and consistent feedback to track their growth and advancement (Wright et al., 2018). Graduates have developed valuable and significant learning experiences with their mentors, owing to their steadfast support, advice, and constructive feedback. This revealed that Internships offer aspiring educators valuable experience in navigating the challenges and fluctuations of teaching while also equipping them with the skills to effectively employ various methods and tactics that cater to the diverse needs of students.

3.4 Improved Classroom Management Strategies

Effective classroom management is essential for creating a conducive learning environment, as demonstrated by educators who have implemented various strategies. The graduates shared ways to maintain an organized classroom, such as setting clear goals and standards, developing strong connections among their students, planning and preparing engaging activities, organizing the physical classroom, and encouraging positive behavior. By establishing clear ethical guidelines and house rules and fostering respect and accountability, these educators laid a foundation for effective classroom management. Effective classroom management creates a structured and supportive learning environment, allowing students to focus on their studies and participate actively. It also enhances teachers' ability to maintain order and discipline, which is crucial for delivering lessons smoothly and fostering a positive classroom atmosphere. According to these graduates, they nurture classroom management because when they were in their internship, they proved that classroom management is very effective despite the restrictions of online setup. Some of the verbalizations are as follows:

P02: *"Students' needs must always come first; that is what I always tell myself. Promoting an environment where students can freely learn and enjoy studying gives them a high chance of succeeding in class. That is why I always give activities individually and group work so they can see their potential even more."*

P08: *"Actually, it is difficult to promote active participation and engagement in a virtual setup, but if you look at it, it helps a lot not only in reducing the child's stress but also in learning from the ideas of their classmates. Even though it was hard to establish, I tried my best so that they would mingle in my class. Especially in my final demonstration, I can say that it molded me to become who I am today because there are many challenges, not just online. It also made us resilient on how to be flexible with the resources that you have and how you would be able to pull off the available things."*

P14: *"I cannot control my students physically for classroom management. That is why I always set my house rules for them to know what I expect them to do. I also monitor my students' activities, such as how they respond if I call their names, and the value that I always bring on when I am teaching is being patient enough to understand my situation and the situation of my students."*

Effective classroom management is crucial for educators to create a conducive learning environment, as evidenced by the experiences of several teachers during their internships. Implementing clear ethical guidelines and house rules fosters a respectful and accountable learning environment, contributing significantly to effective classroom management (Robinson, 2018). Establishing clear rules and promoting real-time engagement is vital in managing online classrooms and encouraging ethical behavior among students (Roger, 2020). They also start discussions with online house rules to set expectations and address both technical guidelines and behavioral expectations. The challenges of managing online classes, especially without seeing students in person, require educators to be patient and adaptable, using strategies like recitations and asking for student takeaways to keep them engaged. These insights into effective classroom management not only contribute to students' academic success but also enhance educators' professional development by equipping them with essential skills for managing diverse learning environments. In their current roles, these educators leverage their classroom management expertise to create structured, supportive learning spaces that maximize student learning outcomes.

Moreover, the role of feedback in effective classroom management cannot be overstated. Regular, constructive feedback helps students understand the consequences of their actions and guides them toward desired behaviors. Graduates noted that timely and specific feedback, coupled with positive reinforcement, encourages students to reflect on their behavior and academic performance, promoting self-regulation and accountability. This approach addresses immediate issues and fosters long-term behavioral change and academic improvement. Additionally, involving students in setting rules and expectations can increase their sense of ownership and responsibility, leading to a more harmonious and cooperative classroom atmosphere. By actively engaging students in creating and maintaining their learning environment, educators can cultivate a sense of belonging and respect, further enhancing the overall effectiveness of classroom management strategies (Edison, 2020).

3.5 Innovation of Assessment Strategies

Graduates revealed that they used differentiated assessment strategies to suit the needs of the learners. The teachers have to develop new ways to test their students, making it easier to see how well students are learning,

considering different ways of learning, and keeping students interested in every aspect of the lesson. This practice resulted in a fair score distribution to the students, and the classroom environment became engaging. According to them, students like these assessment strategies rather than quizzes and seatwork. The graduates' experiences taught them to be innovative in teaching so that they do not settle for less and ineffective strategies. In addition, graduates set a high standard for themselves by displaying a deep understanding of the topic they teach, mastering various instructional styles, and knowing when to employ them correctly. In using their teaching experiences, they were able to establish strategies aligned with the lesson. Some of the verbalizations are as follows:

P01: *"I employed varied strategies, like video assessments and written assignments, to engage students and comprehensively assess learning. These innovative methods ensured fair evaluation and encouraged active participation."*

P03: *"I used interactive quizzes and games to enhance student participation and learning outcomes. These innovative digital tools facilitated real-time assessment and dynamic engagement with course content."*

P06: *"My cooperating teacher provided various assessment strategies focused on application-based evaluations. My classmates also gave me ideas; in other words, it was a give-and-take method. We always help each other and ask strategies if they are good or not."*

Innovative assessment strategies are essential for fostering student engagement and enhancing learning outcomes in contemporary education. Because of the switch to online education, pre-service teachers have had to develop new ways to test their students, making it easier to see how well students are learning, considering different ways of learning, and keeping students interested in a virtual setting. Using different assessments could help students stay interested and grasp the lessons better. According to the graduates, they utilized digital tools, including interactive apps, online platforms, and multimedia resources, to involve their students in dynamic and immersive learning environments that encourage active participation, stimulate creativity, and cater to various learning styles, ultimately resulting in more effective teaching and enhanced student outcomes.

According to Kalloo et al. (2020), using technology and various tools has many benefits, aiding student participation development and facilitating teacher effectiveness. Integrating these helps them to strive for the teaching challenges during their internship, such as lack of communication, cooperation from the student, and the quality of student learning in difficult subjects. Despite the challenges of remote teaching, access to online tools, especially in subjects like mathematics, has enriched teaching experiences (Thompson et al., 2022). The transition to online teaching necessitated that pre-service teachers be highly adaptable and well-prepared for the unique challenges of virtual classrooms. This requirement has driven them to develop new skills and strategies, emphasizing the importance of continuous improvement and flexibility in instructional delivery (Eman, 2021). These experiences prepared future teachers for the evolving educational landscape, where technology plays a significant role in assessment and instructional delivery (White & Forgasz, 2018). Overall, using various tested tools and technology-enhanced ones together was important for making learning experiences that were both interesting and useful. These methods not only made sure that students were evaluated fairly, but they also encouraged them to take part and understand more.

3.6 Refined Creativity in Creating Instructional Resources

Creating self-made resources by teacher education graduates displays their ability to facilitate learning. Creating videos, lectures, and presentations has helped them improve their technical and creative talents. Graduates remarked that their internship experience taught them how to creatively modify PowerPoint presentations and customize teaching tactics, allowing them to tailor their materials to meet the needs of their students better. Using technology and internet resources, such as YouTube videos, has increased their ingenuity and adaptability. Adopting this practice in their online teaching internship allowed them to create their materials and avoid being dependent on the materials of others. They also revealed that it makes their job fulfilling and satisfying. This hands-on experience with resource design has prepared them to face various educational issues. Some of the verbalizations are as follows:

P10: *"My resources before were books, online references, and curriculum guides. I also make my videos and lectures, and I am also sharing resources with my classmates. I also watched YouTube videos because my major is skill-based."*

P13: *"My experience teaching resources is that I perceived my self-made resources, and I collect resources from my cooperating teacher and classmates. I practiced editing my PowerPoint presentation, designing my teaching strategies, and utilizing technology to enhance students' learning. Luckily, I had my classmates back then who wanted us to excel and not foster a crab mentality; all we wanted was to graduate. That is why we helped each other and shared resources; that makes it a good practice to be professionals even though we were just students back then."*

P14: *"The resources my cooperating teacher contributed are just half what I need. That is why I find solutions to cope with the resources in teaching. I rely on watching YouTube lectures, asking the resources of my classmates, and creating a very good presentation. In short, I practiced to become resourceful to teach beyond the context of my lessons."*

The responses from the Teacher Education graduates highlighted the significant impact of creating and utilizing educational resources on teaching and student engagement. Utilizing self-made teaching resources allows teachers to cater to diverse learning styles, making lessons more engaging and effective for all students. Additionally, it enhances teachers' flexibility and creativity, enabling them to incorporate innovative tools and approaches to enrich the educational experience. According to Muico (2019), these resources are made by improvising and creating new learning materials. In this manner, the competencies of the subject are enhanced for the students when these resources are used in the classroom and serve as supplements to help them better understand abstract topics. In the study of Torrington & Bower (2021), they emphasized that videos can be a highly effective tool in the classroom, allowing students to gain a deeper understanding of subjects and accelerate knowledge acquisition. Through this, they make their videos, especially in PE subjects, to effectively influence students since it is skill-based.

Creativity and resourcefulness are crucial traits every teacher should have, just like in-service teachers developed these traits during their online teaching internship. Teachers with this trait can give their students an effective education, which includes making the classroom conducive to learning. According to Uçar (2022), since instructors place a high value on creativity, locations where it may be displayed and where creative ideas can be communicated should be made available wherever possible. Teachers are often highly resourceful, leveraging various strategies to enhance their teaching and support student learning. The in-service teachers use their resourcefulness to cater to the needs of the diverse students as they underscore the significance of collaboration and pooling resources to attain educational objectives.

3.7 Improved Sense of Accountability and Adaptability

Developing a sense of responsibility is crucial for effective personal development, highlighted by memorable experiences shared by pre-service teachers. The graduates emphasized their embrace of accountability, highlighting that it benefits them personally and contributes to a more positive and productive work environment. Also, by learning from their internship experiences and consistently meeting their commitments while taking responsibility for their career actions, they earn the trust of colleagues and students. One teacher recalls a power interruption that abruptly ended their class, teaching them the importance of having backup plans and being prepared for unexpected events. Another teacher exceeded their allotted demonstration time and learned the importance of time management from their cooperating teacher's reminder. Lastly, one teacher had to re-demo due to poor execution and took this as a positive experience, using constructive feedback to improve their teaching skills. These experiences illustrate how challenges and feedback can foster a stronger sense of responsibility and growth in educators. Developing a sense of responsibility equips educators to confidently handle unexpected classroom challenges, ensuring a smooth and productive learning environment. This sense of accountability also drives teachers to continuously improve their teaching methods and stay committed to their student's academic and personal growth. Some of the verbalizations are as follows:

P05: *"My memorable experience is when a power interruption ends my discussion in class. I cannot forget how nervous I am and do not know how to handle that situation. That was my first time, and I take it as a lesson to always have backups and be open to sudden interruptions."*

P07: *"I believe in my capabilities whenever I experience challenges because I confidently approach each task. During my online internship, this confidence helped me navigate challenges and uncertainties, knowing I had the skills to overcome them. While there were moments of doubt, my self-assurance ultimately allowed me to persevere and succeed in my teaching endeavors. I aim to continue building on this confidence, knowing it will be key to my growth and success as an educator."*

P12: *"I exceeded my teaching demonstration, which was supposed to be a 1hr and 30 minutes, but I exceeded 30 minutes, and my cooperating teacher reminded me to be mindful of my time. I take it as a positive one because I know it was my fault not to manage my time. That was my memorable experience."*

P14: *"My memorable yet turning point in my life is when I re-demo because I did not execute my demonstration well, and I take it positively because I know it happened for a reason. Because of the constructive feedback I received, I perceived it positively."*

Online internships introduce unique challenges, such as managing digital classrooms and engaging students remotely, which further enhance the adaptability and resilience of teacher education graduates. For instance, experiencing a problem during class highlighted the importance of backup plans and adaptability (Wang et al., 2021). These experiences shaped their teaching practices and enhanced their ability to handle unforeseen challenges and manage their time effectively, which are essential skills in their current profession.

As pre-service teachers, these learned competencies allow them to remain calm and resourceful during unexpected classroom disruptions, thereby maintaining a productive learning environment; the continuous cycle of feedback and improvement cultivates a growth mindset, encouraging pre-service teachers to view challenges as opportunities for development. Consequently, their proactive approach to professional growth enhances their teaching effectiveness and serves as a positive model for their students, promoting a classroom culture that values perseverance and lifelong learning (Stark, 2019).

Furthermore, having to re-demo due to poor execution and receiving constructive feedback underscored the value of continuous improvement (Lee et al., 2023). These challenges teach pre-service teachers the importance of preparedness, time management, and embracing feedback positively. As they navigate these experiences, they cultivate a deeper sense of accountability and professionalism, which is essential for their future educational roles. By incorporating these lessons, educators are better equipped to create effective, engaging, and resilient learning environments, benefiting their professional development and students' educational outcomes.

4.0 Conclusion

This study concludes that the training for pre-service teachers to become effective professional teachers may be done through more than just a face-to-face modality. The virtual training the pre-service teachers underwent made them more of a professional teacher. Their discovery of what they could do implies that any situation could be turned into a learning experience when one is willing to explore and learn. It further implies that those in charge of the training of the pre-service teachers could expose them to different uncommon or even uncomfortable situations to push them into becoming problem solvers and critical and innovative thinkers. Even further, this study implies that courses could be delivered online as long as the intended learning outcomes of the course are met.

5.0 Contributions of Authors

Janella C. Baligod organized and composed the literature by themes, gathering data, writing results and discussion, and fixing the RRLs. At the same time, Loverlen D. Licupa is also responsible for writing the literature by themes, interpreting the data, writing results and discussion, and arranging the literature matrix. Karen Joy Molina managed the entire research process, which included writing the introduction, research methods, results and discussion, conclusion, recommendation, revision of the manuscript, and overseeing each phase. In addition, Kristine Mae R. Auayang is accountable for thoroughly reviewing and assessing the entire research process. Lastly, Jennifer C. Bangi is responsible for checking, reviewing, and revising the final output to ensure that the paper meets the standard of a quality paper.

6.0 Funding

This work received no specific grant from any funding agency.

7.0 Conflict of Interests

The authors declare no conflicts of interest about the publication of this paper.

8.0 Acknowledgment

The researchers would like to acknowledge Ms. Joan Dulin for assisting the researchers in locating the participants, and the Teacher Education graduates Batch 2021-2022, who shared their knowledge, experience, and insights and helped in the realization of this study in one way or another. Furthermore, University of Saint Louis, is also acknowledged for the publication support granted to this research paper.

9.0 References

- Abdullah, N., & Mirza, M. (2020). Evaluating Pre-Service Teaching Practice for Online and Distance Education Students in Pakistan: Evaluation of Teaching Practice. *International Review of Research in Open and Distributed Learning*, 21(2), 81–97. <https://doi.org/10.19173/irrodl.v21i2.4606>
- Avargil, S. (2019). Learning chemistry: self-efficacy, chemical understanding, and graphing skills. *Journal of Science Education and Technology*, 28(4), 285–298. <https://doi.org/10.1007/s10956-018-9765-x>
- Bansawan, R., Benaning, PM., Calunsag, A., Castillo, MA., & Ehimplar, MA. (2022). The Experiences of NDMU Pre-Service Teachers during their Online Teaching Internship. *International Journal of Arts, Sciences and Education*, 3, 116–134. <https://www.mail.iijase.org/10.35631/IJEPSC.5370016>
- Bekou, A., Mhamed, M. B., & Assissou, K. (2024). Exploring opportunities and challenges of using ChatGPT in English language teaching (ELT) in Morocco. *Focus on ELT Journal*, 6(1), 87–106. <https://api.semanticscholar.org/CorpusID:260938837>
- Borja, S. (2018). *The Child Welfare Challenge: Policy, Practice and Research*. 4th Edition. Routledge.
- Cavendish, W., Perez, X., & Mahotiere, M. (2021). Pre-service teacher supports in urban schools. *Action in Teacher Education*, 43(1), 54–66. <https://doi.org/10.1080/01626620.2020.1776175>
- Cho, S., & Clark-Gareca, B. (2020). Approximating and innovating field experiences of ESOL preservice teachers: The effects of COVID-19 and school closures. *TESOL Journal*, 11(3), 1–6. <https://doi.org/10.1002/tesj.548>
- Dangara, U. (2018). Evaluation of the Effect of Learning Environment on Student's Academic Performance in Nigeria. *Psychology Teaching Review*, 20(1), 42–55. <https://files.eric.ed.gov/fulltext/ED602386>
- Alieto, E., Abequibel-Encarnacion, B., Estigoy, E., Balasa, K., Eijansantos, A., & Torres-Toukoudidis, A. (2024). Teaching inside a digital classroom: A quantitative analysis of attitude, technological competence and access among teachers across subject disciplines. *Heliyon*, 10(2), e24282. <https://doi.org/10.1016/j.heliyon.2024.e24282>
- Egeland, P. C. (2016). How does international student teaching shape the participants? Professional and personal perspective and decisions. *The International Education: Comparative Perspectives*, 15(2), 23–37. <https://api.semanticscholar.org/CorpusID:148205074>
- Eman, S. (2021). Shifting from Face-to-Face Learning to Zoom Online Teaching, Research, and Internship Supervision in a Technologically Developing Female Students University in Pakistan: A Psychology Teacher's and Students' Perspective. *Psychology Teaching Review*, 27(1), 42–55. <https://eric.ed.gov/?id=EJ1304621>
- Flores, M.A., & Swennen, A. (2020). 'The COVID-19 pandemic and its effects on teacher education', *European Journal of Teacher Education*, 43(4), 453–456. <https://doi.org/10.1080/02619768.2020.1824253>
- Genelza, G. G. (2022). Internship program and skills development of fourth-year bachelor of secondary education major in English. *Galaxy International Interdisciplinary Research Journal*, 10(2), 496–507. <https://giirj.com/index.php/giirj/article/view/1305>
- Ghavifekr, S., & Rosdy, W. A. W. (2015). Teaching and learning with technology: Effectiveness of ICT integration in schools. *International Journal of Research in Education and Science*, 1(2), 175–191. <https://files.eric.ed.gov/10.21890/ijres.23596>
- Gorozidis, G., & Papaioannou, A. G. (2014). Teachers' motivation to participate in training and to implement innovations. *Teaching and Teacher Education*, 39, 1–11. <https://doi.org/10.1016/j.tate.2013.12.001>
- Hora, M. T., Lee, C., Chen, Z., & Hernandez, A. (2021). Exploring Online Internships amidst the COVID-19 Pandemic in 2020-2021: Results from a Multi-Site Case Study (Working Paper). University of Wisconsin-Madison
- Roger, E. (2020). Diffusion of Innovations. An Integrated Approach to Communication Theory and Research. 7(2), 181–186. <https://doi.org/10.4324/9780203710753-35>
- Johnson, J. A., Wesley, W. M., & Yerrick, R. (2016). Exploring the use of tablets for student teaching supervision. *IManager's Journal on School Educational Technology*, 12(1), 8–17. <https://eric.ed.gov/?id=EJ1131828>
- Kalloo, R. C., Mitchell, B., & Kamaldeen, V. J. (2020). Responding to the COVID-19 pandemic in Trinidad and Tobago: challenges and opportunities for teacher education. *Journal of Education for Teaching*, 46(4), 452–462. <https://doi.org/10.1080/02607476.2020.1800407>
- Lee, J., Joswick, C., & Pole, K. (2023). Classroom play and activities to support computational thinking development in early childhood. *Early Childhood Education Journal*, 51(3), 457–468. <https://doi.org/10.1007/s10643-022-01319-0>
- Mokoena, S. (2017). Student teachers' experiences of teaching practice at open and distance learning institutions in South Africa. *Turkish Online Journal of Distance Education*, 18(2), 122–133. <https://doi.org/10.17718/TOJDE.306564>
- Muico, E.J. (2019). A quintessential tool in teaching: A case study on teachers using Youtube videos. *International Journal for Innovation Education and Research*, 7(8), 40–46. <https://doi.org/10.31686/ijer.Vol7.Iss8.1647>
- Omar, C. (2014). Need for In-Service Training for Teachers and It's Effectiveness In School. *International Journal for Innovation Education and Research*, 2(11), 1–9. <https://doi.org/10.31686/ijer.vol2.iss11.261>
- Otara, A. (2014). Students' Perceptions on Education Internship Program Inyarrwanda: Effectiveness and Challenges. *European Journal of Educational Sciences*, 1(2), 181–193. <https://files.eric.ed.gov/fulltext/EJ1236774.pdf>
- Paronjodi, G., Jusoh, A., & Abdullah, M. (2017). A comparative study of beginning teacher induction in Malaysia and Victoria (Australia): A review of the literature. *Journal of Research, Policy & Practice of Teachers & Teacher Education*, 7(1), 36–48. <https://doi.org/10.37134/prppte.vol7.no1.5.2017>
- Quinco-Cadosales, M.N. (2022). Exploring the Student Teaching Interns' Journey in an Online Mode of Teaching Delivery. *International Journal of Scientific Research and Management*, 10(5). <https://doi.org/10.18535/ijerm/v10i5.e01>
- Reyes, C.D. (2023). Lived Experiences of Pre-Service English Teachers in Online Teaching Internship during COVID 19 Pandemic. *Journal for Educators, Teachers and Trainers*, 14(2). 438–447. <https://doi.org/10.47750/jett.2023.14.02.041>
- Ripamonti, S., Galuppo, L., Bruno, A., Ivaldi, S., & Scaratti, G. (2018). Reconstructing the internship program as a critical reflexive practice: The role of tutorship. *Teaching in Higher Education*, 23(6), 751–768. <https://doi.org/10.1080/13562517.2017.1421627>
- Roberts, C. & Santulli, D. (2022). Five Benefits of a Global Virtual Internship. *Journal Research*, 33(2), 46–51. <https://tinyurl.com/4sarweke>
- Robinson, R. (2018). Teaching outside of the box: A short-term international internship for pre-service and in-service physical education teachers. *Intercultural Education*, 28(3), 304–321. <https://doi.org/10.1080/14675986.2017.13333475>, 966–974
- Rogayan, D. V., & Reusia, D. H. R. (2021). Teaching Internship from the Metaphorical Lens of Filipino Prospective Teachers. *International Journal of Evaluation and Research in Education*, 10(3), 798–806. <https://eric.ed.gov/?id=EJ1313123>
- Ruohotie-Lyhty, M., Korppi, A., Moate, J., & Nyman, T. (2018). Seeking understanding of foreign language teachers' shifting emotions in relation to pupils. *Scandinavian Journal of Educational Research*, 62(2), 272–286. <https://doi.org/10.1080/00313831.2016.1258659>
- Sarini Dewi, N.K. (2021). 'EFL pre-service teachers' perception of their readiness in teaching online during COVID-19 pandemic', *The Art of Teaching English as a Foreign Language*, 2(1), 83–88. <https://doi.org/10.36663/tatefl.v2i1.172>
- Schutz, P. A., Francis, D. C., & Hong, J. (2018). *Research on Teacher Identity: Introduction to Mapping Challenges and Innovations*. Springer eBooks, 45(4), 572–575. https://doi.org/10.1007/978-3-319-93836-3_1
- Sepulveda-Escobar, P., & Morrison, A. (2020). Online teaching placement during the Covid-19 pandemic in Chile: Challenges and opportunities. *Journal of Teacher Education*, 43(4), 587–607. <https://doi.org/10.10480/02619768.2020.1820981>
- Stark, E. (2019). Examining the Role of Motivation and Learning Strategies in the Success of Online vs. Face-to-Face Students. *Online Learning*. 23. <https://doi.org/10.24059/olj.v23i3.1556>
- Theelen, H., Willems, M. C., Van den Beemt, A., Conijn, R., & Den - Brok, P. (2020). Virtual internships in blended environments to prepare preservice teachers for the professional teaching context. *British Journal of Educational Technology*, 51(1), 194–210. <https://doi.org/10.1111/bjet.12760>
- Torrington, J., & Bower, M. (2021). Teacher-created video instruction in the elementary classroom – Its impact on students and teachers. *Journal of Computer Assisted Learning*, 37(4), 1107–1126. <https://doi.org/10.1111/jcal.12549>
- Turingan, A., Silva, E, Formoso, C., Tindowen, D. J., Batulan, A. (2023). Pre-service Science Teachers' Experiences in their Virtual Internship, *Jurnal Penelitian dan Pembelajaran IPA*, 9(2), 214–237. <https://doi.org/10.30870/jppi.v9i2.18937>
- Ubogu, R. (2024). Supervision of instruction: A strategy for strengthening teacher quality in secondary school education. *International Journal of Leadership in Education*, 27(1), 99–116. <https://doi.org/10.1080/13603124.2020.1829711>
- Uçar, R. (2022). The relationship between secondary school teachers' creativity and job satisfaction. *International Journal of Progressive Education*, 18(4), 31–42. <https://doi.org/10.29329/ijpe.2022.459.3>
- Ugalingan, G., Edjan, D., & Valdez, P. N. (2021). Online Internship Experiences among pre-service ESL teachers in the Philippines: Challenges and Opportunities. *TESL-EJ*, 25(3), 1–13. <https://eric.ed.gov/?id=EJ1332291>
- Uribe, S. N., & Vaughan, M. (2017). Facilitating student learning in distance education: A case study on the development and implementation of a multifaceted feedback system. *Distance Education*, 38(3), 288–301. <https://doi.org/10.1080/01587919.2017.1369005>
- Vehviläinen, S., & Souto, A. (2022). How does career guidance at schools encounter migrant young people? Interactional practices that hinder socially just guidance. *International Journal for Educational and Vocational Guidance*, 22, 449–466. <https://doi.org/10.1007/s10775-021-09467-2>

- Wang, S., Bajwa, N. P., Tong, R., & Kelly, H. (2021). Transitioning to online teaching. In D. Burgos, A. Tlili, & A. Tabacco (Eds.), *Radical Solutions for Education in a Crisis Context* (pp. 177–188). Springer Singapore. [=](#)
- Whitaker, M. C., & Valtierra, K. M. (2018). Enhancing preservice teachers' motivation to teach diverse learners. *Teaching and Teacher Education*, 73, 171-182.
<https://doi.org/10.1016/j.tate.2018.04.004>
- White, S., & Forgasz, R. (2016). The practicum: The place of experience? In J. Loughran & M. L. Hamilton (Eds.), *International Handbook of Teacher Education* (pp. 231–266). Springer Singapore.
- Wisniewski, B., Zierer, K., & Hattie, J. (2020). The power of feedback revisited: A meta-analysis of educational feedback research. *Frontiers in Psychology*, 10, 3087.
<https://doi.org/10.3389/fpsyg.2019.03087>
- Wright, E., Mainzer, A., Masiero, J., Grav, T., Cutri, R., & Bauer, J. (2018). Response to “An empirical examination of WISE/NEOWISE asteroid analysis and results.” arXiv.
<https://doi.org/10.48550/ARXIV.1811.01454>

Anti-Angiogenesis Effects of Citrus and Flaxseed Extracts in a Chorioallantoic Membrane Assay

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Date received: August 11, 2024

Date revised: September 19, 2024

Date accepted: October 6, 2024

Originality: 94%

Grammarly Score: 99%

Similarity: 6%

Recommended citation:

Capagas, R., Callueng, M.J., Diega, D.A., Gonzales, A.D., Isleta, B., San Agustin, D. (2024). Anti-angiogenesis effects of Citrus and Flaxseed extracts in a chorioallantoic membrane assay. *Journal of Interdisciplinary Perspectives*, 2(11), 234-245. <https://doi.org/10.69569/jip.2024.0406>

Abstract. Both *Citrus aurantium* (Dalandan) peels and *Linum flavum* (Golden Flaxseed) are rich sources of bioactive compounds with potential health benefits, including anti-cancer properties. This study assessed and compared the overall anti-angiogenesis activity of *Citrus aurantium* (Dalandan) peels and *Linum flavum* (Golden Flaxseed). Specifically, this study aimed to determine the minimum concentration of both *Citrus aurantium* (Dalandan) peels and *Linum flavum* (Golden Flaxseed) that exhibits anti-angiogenesis activity. It also aimed to determine the most potent concentration that is effective as an anti-angiogenesis agent. This study investigated the anti-angiogenic activity of *Citrus aurantium* (Dalandan) peels and *Linum flavum* (Golden Flaxseed) ethanolic extract using the fertilized duck embryo chorioallantoic membrane (CAM) assay, a widely accepted method for studying angiogenesis. Several concentrations of *Citrus aurantium* (Dalandan) peels and *Linum flavum* (Golden Flaxseed) ethanolic extracts were applied to the CAM of duck embryos, while control groups received saline and ascorbic acid. Preliminary findings suggest that *Citrus aurantium* (Dalandan) peels and *Linum flavum* (Golden Flaxseed) ethanolic extracts exhibit anti-angiogenesis activity. Further analysis, including quantifying blood vessel density and branching, provided insights into the comparative efficacy of the two extracts. Statistical analysis revealed that the most effective ethanolic concentration for *Citrus aurantium* (Dalandan) is 10%, while for *Linum flavum* (Golden Flaxseed) is 30%. The study concluded that *Citrus aurantium* (Dalandan) has the most effective anti-angiogenic activity compared to *Linum flavum* (Golden Flaxseed). This study contributes to understanding the potential use of *Citrus aurantium* (Dalandan) peels and *Linum flavum* (Golden Flaxseed) for therapeutic applications in cancer treatment through their anti-angiogenic properties. Moreover, this study underscores the importance of utilizing alternative models, such as the CAM assay, for rapid and cost-effective screening of anti-angiogenic agents.

Keywords: Anti-angiogenesis, *Citrus aurantium*; Duck embryo CAM assay; *Linum flavum*.

1.0 Introduction

Angiogenesis is the physiological process through which new blood vessels form from pre-existing vessels. This process involves the migration, growth, and differentiation of endothelial cells, which line the inside wall of blood vessels (Cleveland Clinic, 2022). Angiogenesis is the process of blood vessel formation from pre-existing ones, mainly observable during the development of embryos and fetuses. However, it can also be observed in adults during wound healing and other physiological mechanisms (Teleanu et al., 2019). Angiogenesis plays a crucial role in the growth and spread of cancer. Tumors require a blood supply to receive nutrients and oxygen, and

angiogenesis provides the means. Angiogenesis is essential for tumors to get oxygen and nutrients and help them spread (Teleanu et al., 2019).

In an article published by the World Health Organization, studies identified that cancer was responsible for nearly 10 million deaths in 2020, and studies projected that the number of new cancer cases will increase by about 70% over the next two decades. In 2020 alone, there were an estimated 19.3 million new cancer cases worldwide, with several types, such as breast, lung, colorectal, and prostate cancer, ranking among the most diagnosed forms of the disease (Ferlay, 2021). That said, plants contain various active chemical compounds, which can synergistically affect the body. It means it simultaneously influences the different aspects of a disease's pathology. For instance, plant extracts rich in biologically active compounds can slow down the growth of cancer cells and induce apoptosis in them simultaneously, leading to tumor eradication by hindering angiogenesis and, consequently, metastasis (Khan et al., 2022).

In a 2018 study by Mannucci et al., *Citrus aurantium* was known for its unique phytochemical profile and extensive health benefits, with high concentrations of flavonoids, limonoids, and alkaloids (Mannucci et al., 2018). Flavonoids, especially rutin, constitute a substantial portion, and limonoids and alkaloids in the plant have demonstrated anti-cancer, antiproliferative, cardioprotective effects, and hypolipidemic. On the other hand, oil extracted from Golden Flaxseed (*Linum flavum*) contains flavonoids, which show its potential to inhibit the formation of new blood vessels, showing its anti-cancerous and antioxidant activities (Al-Zubaidy & Sahib, 2022). Moreover, a study by (Chera, 2022) identified that *Linum flavum* (Golden Flaxseed) can undergo ethanolic extract. The discovery of the plant's anti-tumor, antioxidant, and anti-inflammatory potential was possible through the ethanolic extraction of the derivatives of *Linum flavum* (Golden Flaxseed). The study's findings showed the antitumoral, antioxidant, and anti-inflammatory qualities of Golden Flaxseed-derived ethanol extract.

Due to the promising potential of both *Citrus aurantium* (Dalandan) and the *Linum flavum* (Golden Flaxseed) for anti-angiogenesis activity and because there is a need to conduct more research about the natural alternative to help fight cancer, this study aims to assess further the efficacy and potency of both peels of *Citrus aurantium* (Dalandan) and the *Linum flavum* (Golden Flaxseed) ethanolic extract as anti-angiogenesis agent. This study also aims to compare which among the two test plants exhibits high potential to be an anti-angiogenesis agent using a C.A.M. Assay. In conducting the C.A.M. assay, four ethanolic concentrations per plant were prepared, including positive and negative controls. To monitor morphological changes and inhibit blood vessel growth, fertilized duck eggs were precisely selected and thoroughly cleansed. The study purchased duck eggs from a licensed duck embryonic egg (fertilized native duck egg) raiser near the country. This study assessed the anti-angiogenic activity of *Citrus aurantium* and *Linum flavum* ethanolic extracts using the Duck Embryo Chorioallantoic Membrane (C.A.M.) Assay. The analysis of the antioxidant properties and the anti-angiogenic activity aided the assessment of the two plants (Barluado et al., 2013).

Further, this study extracted peels of *Citrus aurantium* (Dalandan) and *Linum flavum* (Golden Flaxseed) using ethanolic extractions. The study used duck eggs to assess the anti-angiogenic properties of the plants through the administration of a series of extract concentrations from 10%, 30%, 50%, and 70%, in which the study determined the effectiveness of the respective concentrations through the number of newly formed blood vessels exposure to the extract concentrations. Anticipating the study's outcomes, the study expected that *Citrus aurantium* and *Linum flavum* ethanolic extracts exhibited anti-angiogenic activity, substantiated by inhibiting blood vessel growth in the C.A.M. assay. The comparison of their efficacy at different concentrations revealed valuable insights into which plant extract demonstrates a superior anti-angiogenic activity. This study hypothesized that the phytochemical composition of *Citrus aurantium*, containing phenolic acids and flavonoids (Teleanu et al., 2019), and *Linum flavum*, with flavonoids (Al-Zubaidy & Sahib, 2022), contributed to their observed anti-angiogenic activities. The studies expected the results to provide quantitative data on the concentration at which each plant extract effectively inhibits angiogenesis, offering crucial information that can contribute to the scientific understanding of plant-derived compounds as potential agents in anti-angiogenic therapies for cancer and possible therapeutic applications.

2.0 Methodology

2.1 Research Design

The chosen research design for this study is an experimental comparative design, explicitly employing the Duck Embryo Chorioallantoic Membrane (C.A.M.) assay to investigate the comparative anti-angiogenesis activity of *Citrus aurantium* (Dalandan) and *Linum flavum* (Golden Flaxseed) extracts. Since the study extensively elaborated on both plants' phytochemical components, phytochemical analysis was not conducted in this study. The research involved methodically preparing the extracts, exposing duck embryos to different concentrations, and measuring the blockage of blood vessels at specific intervals. Based on formulated hypotheses, the study aimed to compare the anti-angiogenic effects of *Citrus aurantium* (Dalandan) and *Linum flavum* (Golden Flaxseed) extracts to determine their varying abilities to inhibit blood vessel formation. The examination of ethical concerns supported the utilization of duck embryos while applying statistical techniques to facilitate data analysis. The anticipated outcomes of this study are necessary to improve our understanding of comparative anti-angiogenic activities while considering limitations such as specific test settings and variability in extracts. The samples needed, specifically the *Citrus aurantium* (Dalandan) and *Linum flavum* (Golden Flaxseed), were acquired from a direct-to-farm market known as Dizon Farms, a farm located in Sitio Zambal, Daranak Falls Rd. Tanay, Rizal. The researchers purchased the plants from Dizon Farms, a well-known local organic farm in various provinces in the Philippines, including Davao and Pampanga. Moreover, the subject for the C.A.M. Assay, the fertilized duck egg, was acquired from a licensed fertilized duck egg raiser located in Pateros, Metro Manila. The researchers acquired a fertilized egg on the first day of its incubation period, and then the researchers continued the incubation until the fourteenth day of the incubation period.

2.2 Research Locale

The researchers conducted the study at the National University Mall of Asia, where the researchers utilized the fully equipped laboratory to carry out biological assays, including the Duck Embryo Chorioallantoic Membrane (C.A.M.) assay, which is central to this study, to assess the anti-angiogenic activity of *Citrus aurantium* (Dalandan) and *Linum flavum* (Golden Flaxseed). While the laboratory setting offered controlled conditions for conducting experiments, it is essential to acknowledge certain limitations. These include the inability to fully replicate the complex microenvironment of in vivo angiogenesis within the laboratory setting and potential variations in experimental outcomes due to biological factors inherent to the duck embryo model.

2.3 Statistical Analysis

The study utilized ImageJ Software to quantify the blood vessels of the duck embryo found on its chorioallantoic membrane (C.A.M.). In data analysis, descriptive statistics was used to present the mean of the formed blood vessels per study concentrations and positive control. A multiple regression analysis was utilized to compare the anti-angiogenic activity of both plants.

2.4 Data Gathering Procedure

The researchers used fertilized duck embryos to assess the anti-angiogenic activities of *Citrus aurantium* (Dalandan) and *Linum flavum* (Golden Flaxseed) ethanolic extracts. The acquired fertilized duck eggs are one-day-old eggs. After obtaining the fertilized ducks from a licensed fertilized duck egg raiser, the researchers incubated them for up to 13 days more since most duck eggs require approximately 28 days to hatch. (Hatching Duck Eggs, n.d.). The fertilized duck eggs were incubated for at least 37C (Anglo-Ojeda, 2022).

The researchers acquired *Citrus aurantium* (Dalandan) from a direct-to-farm market known as Dizon Farms. The first step includes the removal of the fruit's skin to isolate what was only needed. The researchers gathered the peels of *Citrus aurantium* (Dalandan) into a tray and then dehydrated them for approximately 1 hour at 150c using a standard microwave oven. The researchers used a mortar and pestle to pulverize the dried *Citrus aurantium* (Dalandan). Upon dehydration, the peels were prepared in the next step using a 1000ml beaker. The researchers used ethanol to subject the pulverized form of the *Citrus aurantium* (Dalandan) peels to ethanolic extractions. To prepare the ethanolic extraction of *Citrus aurantium* (Dalandan) peels, a 1:10 ratio was applied. Next, the researchers transferred 180 ml of 70% ethanol to the beaker containing 20g of pulverized peels. This step marks the beginning of the maceration. The ethanolic solution was then magnetically stirred. A magnetic stirrer ensured the ethanolic solvent was even when mixing with the sample material. The magnetic stirrer helps maintain a constant interaction between the ethanol and the sample through continuous stirring of the mixture. This process

can enhance the target compounds' solubilization and increase the extraction process's overall yield. The solution underwent magnetic stirring for 5 minutes at 90c. The solution was left to soak for 24 hours for the flavonoids to yield accordingly, wherein the substance was stored in a dark and dry area to ensure the quality of the solution.

After 24 hours of soaking, a stirring rod was utilized in the experiment to mix the solution to avoid clumping of sediments. Then, the researchers transferred the solution to multiple test tubes in preparation for the ethanolic water bath extraction. The solution's test tubes underwent water bath treatment for 30 minutes at 90c. After ethanolic water bath treatment, a viscous extract remained at the bottom of the test tubes. This viscous extract contains the targeted compounds that will exhibit anti-angiogenic activity. After ethanolic-water bath extraction, the test tubes were centrifuged for 3 minutes at 30 rpm to ensure that the viscous extract would be sedimented and isolated. The researchers then transferred viscous extract into a 1000ml beaker to prepare the stock solution. Implementing a 1:10 ratio, 20g of the extract was diluted with distilled water to derive the *Citrus aurantium* (Dalandan) stock solution. The next step included pouring the stock solution into smaller-sized 200ml beakers to prepare the respective dilutions.

Then, the researchers prepared a series of ethanolic extract concentrations varying from 10%, 30%, 50%, and 70%. Both plants undergo ethanolic extraction to have equal footing using a 70% ethanolic extraction. (Barluado et al., 2013), Ethanol extract for *Citrus macrocarpa* peels uses a ratio of 1:10, and per 0.10 g/ ml of extract, 70% ethanol was used in the study to macerate the peels. Thus, the study implemented a 1:10 solvent ratio for *Citrus aurantium* (Dalandan).

The researchers utilized 20g of *Citrus aurantium* (Dalandan) peels and 180 ml of 70% ethanol as a solvent. Thus, the researchers yielded a total of 200 plant extracts. The stock solution was further diluted into four different concentrations to contextualize the concentration to the study's objectives. Below is the computation for each concentration:

Let,

V_s = Volume of stock solution

V_w = Volume of distilled water

V_t = Total Volume after dilution

$v/v\%$ = Volume Percent

The formula for the total Volume (V_t) can be expressed as the sum of the Volume of the stock solution (V_s) and the Volume of distilled water (V_w):

$$V_t = V_s + V_w$$

Table 1. Computation of dilution of the stock solution of *Citrus aurantium*

$v/v\%$	$V_s + V_w$	V_t
For a 10% concentration	$10\% = \left(\frac{10}{100}\right)$ 200ml V_s +180mL of distilled water	200mL of 10% diluted stock solution
For a 30% concentration	$30\% = \left(\frac{30}{100}\right)$ 200ml V_s +140mL of distilled water	200mL of 30% diluted stock solution
For a 50% concentration	$50\% = \left(\frac{50}{100}\right)$ 200ml V_s +100mL of distilled water	200mL of 50% diluted stock solution
For a 70% concentration	$70\% = \left(\frac{70}{100}\right)$ 200ml V_s +60mL of distilled water	200mL of 70% diluted stock solution

Table 2 Dilution of the stock solution *Citrus aurantium*

$v/v\%$	Stock Solution	Distilled Water (Diluent)
10% concentration	20ml	180ml
30% concentration	60ml	140ml
50% concentration	100ml	100ml
70% concentration	140ml	60ml

As shown in Tables 1 and Table 2, to dilute the stock solution to a 10% concentration, a portion equal to one-tenth of the original stock solution is combined with approximately 180 mL of distilled water. This mixture yields a final volume of 200 ml, achieving the desired 10% concentration. The dilution process is straightforward, adhering to the formula derived from the mass conservation principle.

Similarly, when aiming for a 30% concentration, three-tenths of the stock solution was diluted with 170mL of distilled water. The result is a 200 ml final volume of a 30% diluted stock solution. The researchers applied the same approach for concentrations of 50% and 70%, mixing five-tenths of the stock solution with approximately 100mL of distilled water and seven-tenths of the stock solution mixed with approximately 60mL of distilled water to maintain the final Volume at 200ml for each case. After dilution, the researchers used an amber bottle to store the total solution. This process demonstrates the consistency and adaptability of the dilution formula in achieving different concentration levels with precision.

The researchers acquired *Linum flavum* (Golden Flaxseed) from a direct-to-farm market known as Dizon Farms. The seeds did not undergo prior preparation compared to the *Citrus aurantium* peels. Hence, it was ready for dehydration. The seeds were dehydrated using a standard microwave oven for approximately 0.5 hours at 150c. The researchers used a mortar and pestle to pulverize the dried *Linum flavum* (Golden Flaxseed). Upon dehydration, they prepared the seeds in a 1000ml beaker. The researchers used ethanol to subject the pulverized form of the *Linum flavum* (Golden Flaxseed) – seeds for ethanolic extractions. The researchers applied a 1:10 ratio to prepare the ethanolic extraction of seeds. Next, the researchers transferred 180 ml of 70% ethanol to the beaker containing 20g of pulverized peels. This step marks the beginning of the maceration. The ethanolic solution was then magnetically stirred. A magnetic stirrer ensured the ethanolic solvent was even when mixing with the sample material. The magnetic stirrer helps maintain a constant interaction between the ethanol and the sample through continuous stirring of the mixture. This process can enhance the target compounds' solubilization and increase the extraction process's overall yield. The solution underwent magnetic stirring for 5 minutes at 90c. The solution was left to soak for 24 hours for the flavonoids to yield accordingly, wherein the substance was stored in a dark and dry area to ensure the quality of the solution.

After 24 hours of soaking, a stirring rod was utilized in the experiment to mix the solution to avoid clumping of sediments. Then, the researchers transferred the solution to multiple test tubes in preparation for the ethanolic water bath extraction. The solution's test tubes underwent water bath treatment for 30 minutes at 90c. After ethanolic water bath treatment, the viscous extract remained at the bottom of the test tubes. This viscous extract contains the targeted compounds that will exhibit anti-angiogenic activity. After ethanolic-water bath extraction, the test tubes were centrifuged for 3 minutes at 30 rpm to ensure that the viscous extract would be sedimented and isolated. The researchers then transferred viscous extract into a 1000ml beaker to prepare the stock solution. Implementing a 1:10 ratio, 20g of the extract was diluted with 180ml of distilled water to derive the *Linum flavum* (Golden Flaxseed) stock solution. The next step included pouring the stock solution into smaller-sized 200ml beakers to prepare the respective dilutions.

Then, the researchers prepared a series of ethanolic extract concentrations varying from 10%, 30%, 50%, and 70%. Both plants undergo ethanolic extraction to have equal footing using a 70% ethanolic extraction. (Barluado et al., 2013), Ethanol extract for *Citrus macrocarpa* peels uses a ratio of 1:10, and per 0.10 g/ml of extract, 70% ethanol was used in the study to macerate the seeds. Thus, the study also implemented a 1:10 solvent ratio for *Linum flavum* (Golden Flaxseed).

The researchers utilized 20g of *Linum flavum* (Golden Flaxseed). Viscous extract and 180ml of 70% ethanol as a solvent. Thus, the researchers yielded a total of 200 plant extracts. The stock solution was further diluted into four different concentrations to contextualize the concentration to the study's objectives. Below is the computation for each concentration:

Let,

V_s = Volume of stock solution

V_w = Volume of distilled water

V_t = Total Volume after dilution

$v/v\%$ = Volume Percent

The formula for the total Volume (V_t) can be expressed as the sum of the Volume of the stock solution (V_s) and the Volume of distilled water (V_w):

$$V_t = V_s + V_w$$

Table 3. Computation of dilution of the stock solution *Linum flavum*

$v/v\%$	V_s+V_w	V_t
For a 10% concentration	$10\% = \left(\frac{10}{100}\right)$ 200ml V_s + 180mL of distilled water	200mL of 10% diluted stock solution
For a 30% concentration	$30\% = \left(\frac{30}{100}\right)$ 200ml V_s + 140mL of distilled water	200mL of 30% diluted stock solution
For a 50% concentration	$50\% = \left(\frac{50}{100}\right)$ 200ml V_s + 100mL of distilled water	200mL of 50% diluted stock solution
For a 70% concentration	$70\% = \left(\frac{70}{100}\right)$ 200ml V_s + 60mL of distilled water	200mL of 70% diluted stock solution

Table 4. Dilution of the stock solution *Linum flavum*

$v/v\%$	Stock Solution	Distilled Water (Diluent)
10% concentration	20ml	180ml
30% concentration	60ml	140ml
50% concentration	100ml	100ml
70% concentration	140ml	60ml

As shown in Table 3 and Table 4, to dilute the stock solution to a 10% concentration, a portion equal to one-tenth of the original stock solution is combined with approximately 180 mL of distilled water. This mixture yields a final volume of 200 mL, achieving the desired 10% concentration. The dilution process is straightforward, adhering to the formula derived from the mass conservation principle.

Similarly, when aiming for a 30% concentration, three-tenths of the stock solution was diluted with 170mL of distilled water. The result is a 200 mL final volume of a 30% diluted stock solution. The researchers applied the same approach for concentrations of 50% and 70%, mixing five-tenths of the stock solution with approximately 100mL of distilled water and seven-tenths of the stock solution mixed with approximately 60mL of distilled water to maintain the final Volume at 200mL for each case. After dilution, the researchers used an amber bottle to store the total solution. This process demonstrates the consistency and adaptability of the dilution formula.

The researchers assessed the anti-angiogenic activity of *Citrus aurantium* (Dalandan) and *Linum flavum* (Golden Flaxseed) through Duck Embryo Chorioallantoic Membrane (CAM) Assay, wherein the researchers will adapt the procedure utilized by (Barluado et al., 2013) in the assessment of the anti-angiogenesis activity of *Citrus microcarpa* and a study conducted by (Anglo-Ojeda, 2022) in the comparative measures of the anti-angiogenic activity of ascorbic acid and Vitamin B complex. After the acquisition and incubation of the fertilized duck from a licensed fertilized duck egg raiser from Pateros, Metro Manila, the researchers prepared it for experimentation.

The study used a flashlight to assess air sac size in each egg. Carefully avoiding damage to the eggs, the researchers used a small drill to create a small window on the shell to expose the CAM. The concentrations start from 10% and increase in increments of 20% (i.e., 10%, 30%, 50%, and 70%). The researchers used three fertilized duck embryos for each concentration level as experimental units. As the concentration increased, they added three fertilized duck embryos for every increment of 20%. In one run, the researchers used 30 eggs per plant, then one for the positive control and one for the negative control for each concentration. Hence, the researchers used 76 eggs per 1 experimental run. The researchers were conducting two experimental trials. Therefore, the study utilized a total of 228 eggs. The researchers added 0.1mL of each ethanolic extract concentration to their respective numbers of fertilized duck eggs. The study also included controls, wherein standard saline solution is the negative control, and ascorbic acid is the positive control. After the application, the egg window was closed using a paraffin film and then incubated for approximately 72 hours to allow time for angiogenic responses. After incubating, carefully crack the egg and place it in a sterile petri dish. Then, interpret the results. Determining the minimum concentration includes the minimum ethanolic extract concentration that can inhibit angiogenesis, while the potent concentration exhibits the most effective anti-angiogenic activity.

Since the researchers utilized numerous materials in this study, it is essential to consider that there are varying methods to dispose of these wastes. Organic wastes, such as eggshells, unused duck embryos, and plant residues,

should be disposed of in biohazard bins or composting facilities. Moreover, ethanol residues should be stored based on the instructions included in the reagent. Other wastes, such as Personal Protective Equipment and contaminated materials, should be disposed of in the biohazard bin. The researchers disposed of all the sharps materials utilized in the study in puncture-resistant containers labeled for sharps disposal. The researchers stored all unused reagents or samples according to their specific handling instructions.

After the corresponding incubation period of the fertilized duck eggs, they removed the eggshells to assess the CAM fully; then, they placed the embryos in a sterile petri dish. The researchers took an image of each duck embryo using a phone camera. Then, they uploaded the captured images to the ImageJ Software to manually count the blood vessels and generate results for the mean values of the vessels. Then, the researchers will assess various angiogenic parameters, including blood vessel density, branching, and the overall vascular network. The researchers evaluated the overall angiogenic parameters using the Image J Software, which scientists widely use to allow users to visualize, inspect, quantify, and validate scientific image data. The software can track and visualize the biological entities to interpret the imaging data. (Schroeder, et al., 2021). The results may then be analyzed and interpreted using various statistical tools. A decrease in blood vessel formation may indicate the plant's anti-angiogenic activity.

2.5 Ethical Considerations

In conducting a Comparative Study on the Anti-Angiogenesis Activity of *Citrus aurantium* (Dalandan) and *Linum flavum* (Golden Flaxseed) Extracts using the Duck Embryo Chorioallantoic Membrane (CAM) Assay, the primary importance is ensuring the safety of all individuals involved, particularly students. Strict measures ensure the safe handling of samples and living organisms based on established protocols and institutional guidelines. Students received comprehensive guidance on laboratory safety practices, encompassing proper handling techniques, utilizing personal protective equipment (PPE), and strict adherence to established sample handling and disposal protocols. Supervision and monitoring procedures are regularly in place to evaluate and handle any safety or ethical issues that could surface throughout the study. Students prioritizing safety and moral issues are better equipped to perform their research ethically.

3.0 Results and Discussion

3.1 Anti-angiogenic Activity of *Citrus aurantium* Concentrations

The concentrations of *Citrus aurantium* peels that exhibit anti-angiogenic activity are assessed by the number of new blood vessels formed. Table 5 shows the four concentrations of *Citrus aurantium* and the positive control. It shows the mean of the four concentrations and the positive control, which is 84.0789. The data allowed the comparison of the mean of the positive control against the four concentrations.

Table 5. Descriptive statistics of the anti-angiogenic activity of *Citrus aurantium* concentrations

10%	30%	50%	70%	General Weighted Mean
89.64	91.21	89.74	123.42	98.50

The 10% concentration yielded a mean of 89.64. The 30% concentration yielded a mean of 91.21. The 50% yielded a mean of 89.74. Lastly, 70% concentration yielded a mean of 123.42. In the context of this study, the results of the concentrations should be similar to the positive control for it to be reproducible. A closer mean would imply that the results of each concentration are consistently identical to the positive control, with a margin error of +/-5. Similarly, substantial results of anti-angiogenesis activity range from 46.55+ _ to 89.05+ _ 0.4343% at concentrations of 10% to 50% (Barluado et al., 2013). Comparatively, the results of the experiment exhibited 89.64 at 10%. This correlates to the findings of Barluado et al. (2013). This implies that substantial results have already been achieved, at 10%, for this group.

3.2 Anti-angiogenic Activity of *Linum flavum* Concentrations

Table 6 shows the four concentrations of *Linum flavum* (golden flaxseed) and the positive control. It shows the mean of the four concentrations and the positive control, which is 84.0789. The data allowed comparing the mean of the positive control against the four concentrations.

Table 6. Descriptive statistics of the anti-angiogenic activity of *Linum flavum* concentrations

10%	30%	50%	70%	General Weighted Mean
109.23	87.32	119.38	134.63	112.64

The 10% concentration yielded a mean of 109.23. The 30% concentration yielded a mean of 87.32. The 50% yielded a mean of 119.38. Lastly, 70% concentration yielded a mean of 134.63. In the context of this study, the results of the concentrations should be similar to the positive control for it to be reproducible. A closer mean would imply that the results of each concentration are consistently identical to the positive control, with a margin error of +/- 5. Similarly, substantial results of anti-angiogenesis activity range from 46.55+₋ to 89.05 +₋ 0.4343% at concentrations of 10% to 50% (Barluado et al., 2013). Comparatively, the results of the experiment exhibited 87.32 at 30%. This correlates to the findings of Barluado et al. (2013). This implies that substantial results have already been achieved, at 30%, for this group.

3.3 Anti-angiogenic Activity of *Citrus aurantium* Concentrations (Positive Control)

Table 7 shows the corresponding concentrations and their correlation to the positive control. In the descriptive statistics table, the first column indicates that only 10% of the solution of *Citrus aurantium* (Dalandan) shows a closer value to the mean of the positive control. This value indicates that a 10% concentration of *Citrus aurantium* (Dalandan) exhibits the most potent anti-angiogenic activity in comparison to the mean of the positive control. Similarly, substantial results of anti-angiogenesis activity range from 46.55+₋ to 89.05 +₋ 0.4343% at concentrations of 10% to 50% (Barluado et al., 2013). Comparatively, the results of the experiment exhibited 89.64 at 10%.

Table 7. Descriptive statistics of the anti-angiogenic activity of *Citrus aurantium* concentrations (positive control)

10%	30%	50%	70%	Mean of the Positive Control
89.64	91.21	89.74	123.42	84.079

This correlates to the findings of Barluado et al. (2013). This implies that substantial results have already been achieved, at 30%, for this group. The data indicates that a 10% concentration of *Citrus aurantium* (Dalandan) peel extract exhibits the most potent anti-angiogenic activity, closely aligning with the mean of the positive control. According to Barluado et al. (2013), significant anti-angiogenesis activity, ranging from 46.55% to 89.05%, was observed between 10% and 50% concentrations, supporting the finding that lower concentrations, particularly 10%, demonstrate more substantial anti-angiogenic effects. Thus, the 10% concentration is the most effective compared to the other concentrations tested.

3.4 Anti-angiogenic Activity of *Linum flavum* Concentrations (Positive Control)

Table 8 shows the corresponding concentrations and their correlation to the positive control. In the descriptive statistics table, the first column indicates that only 30% of the solution of *Linum flavum* (Golden Flaxseed) shows a closer value to the mean of the positive control. This value indicates that a 30% concentration of *Linum flavum* (Golden Flaxseed) exhibits the most potent anti-angiogenic activity in comparison to the mean of the positive control. Similarly, substantial results of anti-angiogenesis activity range from 46.55+₋ to 89.05 +₋ 0.4343% at concentrations of 10% to 50% (Barluado et al., 2013).

Table 8. Descriptive statistics of the anti-angiogenic activity of *Linum flavum* concentrations (positive control)

10%	30%	50%	70%	Mean of the Positive Control
109.23	87.32	119.38	134.63	84.079

Comparatively, the results of the experiment exhibited 87.32 at 30%. This correlates to the findings of Barluado et al. (2013). This implies that substantial results have already been achieved, at 30%, for this group. The data indicates that a 30% concentration of *Linum flavum* (Golden Flaxseed) exhibits the most potent anti-angiogenic activity, with a mean value of 87.32, closely aligning with the mean of the positive control (84.079). This suggests that 30% is the optimal concentration for inhibiting angiogenesis compared to other concentrations tested. The concentrations of 10%, 50%, and 70% are higher values (109.23, 119.38, and 134.63, respectively), indicating less effectiveness than the positive control. According to Barluado et al. (2013), significant anti-angiogenesis activity ranges from 46.55% to 89.05% at concentrations between 10% and 50%, which supports the finding that 30%

concentration in this experiment is the most effective. Therefore, substantial anti-angiogenic results are achieved at 30%, which aligns with previous findings.

3.5 Comparison Between the Anti-angiogenic Activity of *Citrus aurantium* and *Linum flavum*

Table 9 compares the anti-angiogenic activity of *Citrus aurantium* (Dalandan) and *Linum flavum* (Golden Flaxseed) ethanolic extracts based on multiple regression analysis using the Chorioallantoic Membrane (CAM) assay.

Table 9. Multiple regression analysis for the anti-angiogenic activity of *Citrus aurantium* and *Linum flavum*

<i>Citrus aurantium</i> (Dalandan)		<i>Linum flavum</i> (Golden Flaxseed)	
Multiple R	0.1506413	Multiple R	0.70349206
R Square	0.0226928	R Square	0.494901078
Adjusted R Square	-0.46596	Adjusted R Square	0.242351617
Standard Error	20.13165	Standard Error	17.27548247
Observation	4	Observation	4

The study compares the anti-angiogenic activity of *Citrus aurantium* (Dalandan) and *Linum flavum* (Golden Flaxseed) ethanolic extracts using the Chorioallantoic Membrane (CAM) assay. The regression analysis results indicate that *Linum flavum* shows a more substantial anti-angiogenic effect, with a Multiple R-value of 0.7035, suggesting a moderate to strong correlation between its concentration and anti-angiogenic activity. Moreover, the model for *Linum flavum* explains 49.49% of the variation in activity ($R^2 = 0.4949$), making it a more effective agent in inhibiting blood vessel formation under the assay conditions. In contrast, *Citrus aurantium* demonstrated a much weaker correlation (Multiple R = 0.1506), with its model explaining only 2.27% of the activity variation ($R^2 = 0.0227$), indicating that it may be less effective in inhibiting angiogenesis in this setup.

The higher adjusted R^2 for *Linum flavum* (0.2424) compared to the negative value for *Citrus aurantium* suggests that the former has some predictive power, while the latter does not. These results point to *Linum flavum* as the more promising anti-angiogenic agent of the two, though the high standard error for both models suggests that additional research is necessary to increase the reliability of these findings. Expanding the number of observations and refining experimental conditions, such as varying concentrations or using different extraction methods, could further validate these results and clarify the potential anti-angiogenic benefits of these plant extracts. Also, the table shows that *C. aurantium* yielded an R-value of 0.022, indicating a significant difference in the positive control since the value is <0.05 . On the other hand, *L. flavum* yielded an F value of 0.494, indicating no significant difference in the positive control since the value is >0.05 .

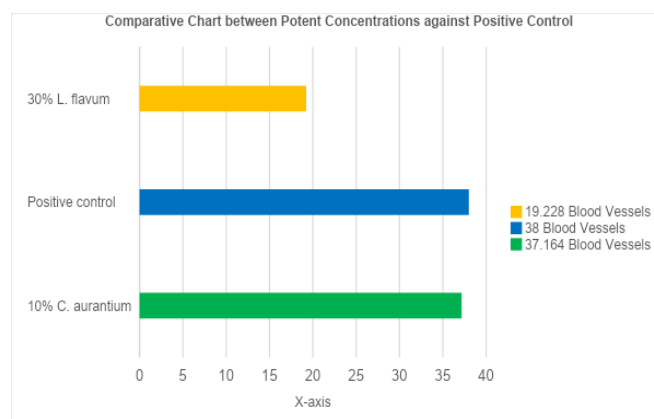


Figure 1. The comparative chart between potent concentrations against positive control

Figure 1 compares the results of the most potent concentrations with the positive control. Multiple regression accounts for the variation of the results against the positive control. Data shows that the positive control contains 38 blood vessels. The positive control was the benchmark the researchers tested with the corresponding concentrations. 30% *L. flavum* yields an R-squared value of 0.494 against the positive control. Meanwhile, 10 % *C. aurantium* yields an R squared value of 0.022 variation against the positive control. Therefore, it means that *C. aurantium* is closer to the benchmark than *L. flavum*. In the context of this research, a value of <0.05 in the R squared

value is a much better figure as it is closer to the benchmark. If it has a lower value, it has a lesser difference towards the positive control. Having said this, a lower R squared value means that it is more predictable and, therefore, more consistent in cases of reproducing results, as a higher variation would mean it would yield different outcomes.

Citrus aurantium (Dalandan) and *Linum flavum* (Golden Flaxseed) exhibit anti-angiogenic activity. Among the four concentrations of *Citrus aurantium* (Dalandan), the 10% concentration, which has a mean value of 89.64, has the closest relationship to the mean value of positive control, 84.0789. On the other hand, among the four concentrations of *Linum flavum*, the 30% concentration, which has a mean value of 87.32, has the closest relationship to the mean value of positive control, 84.079. In Barluado and Angloojeda's study, the anti-angiogenic activity measured the extract's ability to inhibit the growth of branches of blood vessels in duck embryo CAM assay. The 30% concentration of the plant extract showed the least number of blood vessel formation.

Regarding the most potent activity, the Sig column indicates that the 10% solution of *Citrus aurantium* (Dalandan) independent variable coefficients is statistically significant with a mean value of 89.64. This value indicates a significant difference between the 10% ethanolic extract of *Citrus aurantium* (Dalandan) and the positive control. On the other hand, *Linum flavum* (Golden Flaxseed), the Sig column indicates that the 30% solutions of *Linum flavum* (Golden Flaxseed) are statistically significant with a mean value of 87.32. This value indicates a significant difference between 30% ethanolic extracts of *Linum flavum* (Golden Flaxseed) and the positive control.

These values correlate with the anti-angiogenic activity of the most potent concentration of *Citrus aurantium* (Dalandan) peels and *Linum flavum* (Golden Flaxseed). The concentration with a mean closest to the positive control is 10%, consistent with the data indicated by the descriptive statistics, which shows a significant difference compared to the positive control. On the other hand, the most potent anti-angiogenic activity of *Linum flavum* (Golden Flaxseed) is the 30% concentration, also consistent with the result in the descriptive statistics, which shows a significant difference compared to the positive control.

Moreover, the researchers assessed the overall effectiveness of *Citrus aurantium* (Dalandan) and *Linum flavum* (Golden Flaxseed) through the R squared value of the respective concentrations' mean value relative to the positive control's mean. A value of 0.022 indicated the relationship between the effectiveness of *Citrus aurantium* (Dalandan) in comparison to the mean of the positive control. On the other hand, a value of 0.494 indicated the variation in the effectiveness of *Linum flavum* (Golden Flaxseed) in comparison to the mean of the positive control. Overall, in the context of the study, the positive control determines how the blood vessels should appear after treatment. The data quantifies that 10 % *C. aurantium* has 37.164 observable blood vessels, while 30% *L. flavum* has 19.228 observable blood vessels.

Furthermore, it is evident that *Citrus aurantium* (Dalandan) at a 10% concentration exhibited vigorous anti-angiogenic activity, closely resembling the control, thus indicating more consistent and dependable outcomes compared to *Linum flavum* (Golden Flaxseed) at 30%, which displayed greater variability. The lower R-squared value for *Citrus aurantium* (0.022) indicates a closer alignment with the control. This observation is supported by the study of Barluado et al. (2013), which showed that *Citrus aurantium* is most effective at a concentration of 10%, while *Linum flavum* requires higher concentrations. Both have anti-angiogenic effects, but *Citrus aurantium* is more effective at lower concentrations.

Table 10. Ethanolic extractions and number of embryo deaths

<i>Citrus aurantium</i>	Embryo Death	<i>Linum flavum</i>	Embryo Death
10%	0	10%	2
30%	0	30%	0
50%	1	50%	6
70%	3	70%	6

Additionally, Table 10 shows the embryonic death of observed Duck Eggs in the in vitro CAM Assay. The data shows a proportional death increase for each increasing concentration. However, this is not the case for *Linum flavum* (Golden Flaxseed), as there were no deaths from the 30% concentration. The first row shows both data for the 10% concentration of each plant. *Citrus aurantium* (Dalandan) exhibits no embryonic death. Meanwhile, the *Linum*

flavum (Golden Flaxseed) exhibits two embryonic deaths. As observed in the second row, both plants had no embryonic deaths in the 30% concentration. For 50% concentration, *Citrus aurantium* (Dalandan) exhibited one embryonic death. On the other hand, six embryonic deaths were observable in vitro for *Linum flavum* (Golden Flaxseed). Lastly, the fourth row shows 70% concentrations for each plant. *Citrus aurantium* (Dalandan) exhibited three embryonic deaths. Meanwhile, *Linum flavum* (Golden Flaxseed) exhibited six embryonic deaths in vitro.

As opposed to the study conducted by Barluado et al. in the anti-angiogenic activity of *Citrus macrocarpa*, in 10% concentration, there are no deaths exhibited, which is also similar to the embryonic deaths for 10% concentration in *Citrus aurantium* (Dalandan), which is 0. On the other hand, 10% ethanolic extraction of *Linum flavum* (Golden Flaxseed) showed two embryonic deaths. For the 30% concentration, *Citrus aurantium* (Dalandan) and *Linum flavum* (Golden Flaxseed) showed no deaths, compared to the embryonic deaths in the anti-angiogenic activity of *Citrus macrocarpa*, which is 3. Next, for the 50% concentration, *Citrus aurantium* (Dalandan) and *Linum flavum* (Golden Flaxseed) showed 1 and 6 embryonic deaths, respectively, as opposed to the six deaths of anti-angiogenic activity of *Citrus macrocarpa*. Lastly, for the 70% concentration, *Citrus aurantium* (Dalandan) and *Linum flavum* (Golden Flaxseed) showed 3 and 6 embryonic deaths, as opposed to the 70% concentration of *Citrus macrocarpa*, which exhibited 12 deaths.

Also, the table demonstrates that *Citrus aurantium* (Dalandan) did not cause any embryo deaths at a 10% concentration, while *Linum flavum* (Golden Flaxseed) resulted in two deaths at this concentration. At higher concentrations (50% and 70%), both extracts led to more deaths, with *Linum flavum* causing significantly more. This indicates that *Citrus aurantium* is safer at lower concentrations, while *Linum flavum* may become more toxic as concentrations increase. These findings are consistent with studies such as Barluado et al. (2013), which show that plant extracts can exhibit cytotoxic effects at higher doses, emphasizing the importance of controlling concentrations in therapeutic applications.

4.0 Conclusion

The results of the experiment acquired by the researchers from conducting the CAM Assay on fertilized duck eggs utilizing ethanolic extractions of *Citrus aurantium* (Dalandan) peels and *Linum flavum* (Golden Flaxseed) showed that both plants exhibit anti-angiogenic activity. The most potent concentrations were 10% for *Citrus aurantium* (Dalandan) peels and 30% for *Linum flavum* (Golden Flaxseed). The researchers concluded that *Citrus aurantium* (Dalandan) and *Linum flavum* (Golden Flaxseed) exhibit anti-angiogenic activity at specific concentrations. Specifically, the most potent concentration for *Citrus aurantium* (Dalandan) is 10%, while for *Linum flavum* (Golden Flaxseed), it is 30%. Overall, *Citrus aurantium* (Dalandan) exhibited the most effective anti-angiogenic activity compared to *Linum flavum* (Golden Flaxseed). Based on this study, both plants can be a good source of anti-cancer therapy, but further research is needed to establish the best dosage for anti-angiogenesis activity.

5.0 Contribution of Authors

Raymund J. Capagas, RMT, MPH — supervising, conceptualizing, finalizing; Mary Jobhel Calleung — editing and writing; Daschel Alliyah Diega — editing, writing, and data analysis; Aaliyah Dominique Gonzales — editing and writing; Benedict Isleta — editing, writing, and data analysis, and Dhana San Agustin — editing and writing.

6.0 Funding

This work has not received funding from any funding agency.

7.0 Conflict of Interests

The authors declare no conflict of interest.

8.0 Acknowledgement

The authors would like to thank all who have provided assistance and technical assistance in conducting this study.

9.0 References

- Alfieri, M., Mascheretti, I., Dougué Kentsop, R.A., Consonni, R., Locatelli, F., Mattana, M., Ottolina, G. (2021). Enhanced Aryltetralin Lignans Production in *Linum* Adventitious Root Cultures. *Molecules*; 26(17), 5189. <https://doi.org/10.3390/molecules26175189>
- Al-Ostoot, F.H., Salah, S., Khamees, H.A., & Khanum, S.A. (2021). Tumor angiogenesis: Current challenges and therapeutic opportunities. *Cancer Treatment and Research Communications*, 28, 100422. <https://doi.org/10.1016/j.ctarc.2021.100422>
- Anglo-Ojeda, A. B., Flores, A. B., & Recto, A. L. a. V. (2022). Comparative Evaluation of the Anti-Angiogenic Properties of Vitamin B Complex and Ascorbic Acid using Duck Embryo Chorioallantoic Membrane (CAM) Assay. *International Multidisciplinary Research Journal*, 4(2), 175-181. <https://doi.org/10.54476/8028643>
- Arroy, J.D.V., Ruiz-Espinosa, H., Luna-Guevara, J.J., Luna-Guevara, M.L., Hernández-Carranza, P., Ávila-Sosa, R., & Ochoa-Velasco, C. E. (2017). Effect of solvents and extraction methods on total anthocyanins, phenolic compounds and antioxidant capacity of *Renealmia alpina* (Rottb.) Maas peel. *Czech Journal of Food Sciences*, 35(5), 456-465. <https://doi.org/10.17221/316/2016-cjfs>

- Baker, D.H.A., Ibrahim, E.A., & Salama, Z.A.E. (2021). Citrus Peels as a Source of Bioactive Compounds with Industrial and Therapeutic Applications. IntechOpen.
- Barluado, M. J. G., Lagang, M. J. M., Gordonas, I. F. M., & Bosas, C. D. B. (2016). Antiangiogenic and antioxidant properties of Calamansi Citrus microcarpa peel ethanolic extract. UIC Research Journal, 19(2). <https://doi.org/10.17158/521>
- Benayad, O., Bouhrim, M., Tijj, S., Kharchoufa, L., Addi, M., Drouet, S., Hano, C., Lorenzo, J. M., Bendaha, H., Bnouham, M., & Mimouni, M. (2021). Phytochemical Profile, α -Glucosidase, and α -Amylase Inhibition Potential and Toxicity Evaluation of Extracts from *Citrus aurantium* (L) Peel, a Valuable By-Product from Northeastern Morocco. Biomolecules, 11(11), 1555. <https://doi.org/10.3390/biom11111555>
- Bevans, R. (2020). Multiple Linear Regression | A Quick Guide (Examples). Retrieved from <https://tinyurl.com/348wzvzw>
- Camacho, A.J. (2018). Phytochemical Screening of Dalandan (SN: *Citrus aurantium*; FN: Rutaceae) Peel Ethanolic Extract and Evaluation of the Formulated Tea As A Potential Antioxidant and Source of Ascorbic Acid (Thesis). College of Allied Health Studies, Center of Pharmacy, Philippines.
- Dhara, M., Adhikari, L., & Majumder, R. (2018). Chorioallantoic Membrane (CAM) Assay of Different Extracts of Rhizome and Inflorescence of *Heliconia rostrata*. Indian Journal of Pharmaceutical Education and Research, 52(4s), S246–S251. <https://doi.org/10.5530/ijper.52.4s.104>
- Divya, P. J., Jamuna, P., & Jyothi, L. A. (2016). Antioxidant properties of fresh and processed *Citrus aurantium* fruit. Cogent Food & Agriculture, 2(1). <https://doi.org/10.1080/23311932.2016.1184119>
- Fischer, D., Fluegen, G., Garcia, P., Ghaffari-Tabrizi-Wizsy, N., Gribaldo, L., Huang, R. Y., Rasche, V., Ribatti, D., Rousset, X., Pinto, M. T., Viallet, J., Wang, Y., & Schneider-Stock, R. (2022). The CAM Model – Q&A with Experts. Cancers, 15(1), 191. <https://doi.org/10.3390/cancers15010191>
- Hoseinkhani, Z., Norooznezhad, F., Rastegari-Pouyani, M., & Mansouri, K. (2020). Medicinal Plants Extracts with Antiangiogenic Activity: Where Is the Link? Advanced Pharmaceutical Bulletin, 10(3), 370–378. <https://doi.org/10.34172/apb.2020.045>
- Huang, J., He, W., Yan, C., Du, X., & Shi, X. (2017). Microwave assisted extraction of flavonoids from pomegranate peel and its antioxidant activity. BIO Web of Conferences, 8, 03008. <https://doi.org/10.1051/bioconf/20170803008>
- Jang, W. Y., Kim, M., & Cho, J. Y. (2022). Antioxidant, Anti-Inflammatory, Anti-Menopausal, and Anti-Cancer Effects of Lignans and Their Metabolites. International Journal of Molecular Sciences, 23(24), 15482. <https://doi.org/10.3390/ijms232415482>
- Kundeková, B., Máčajová, M., Meta, M., Čavarga, I., & Bilčík, B. (2021). Chorioallantoic Membrane Models of Various Avian Species: Differences and Applications. Biology, 10(4), 301. <https://doi.org/10.3390/biology10040301>
- Karthikeyan, V. (2014). *Citrus aurantium* (Bitter Orange): A Review of its Traditional Uses, Phytochemistry and Pharmacology. International Journal of Drug Discover and Herbal Research, 4(4), 766–772. <http://www.ijddhrjournal.com>
- Khan, M. I., Bouyahya, A., Hachlafi, N. E. L., Menyiy, N. E., Akram, M., Sultana, S., Zengin, G., Ponomareva, L., Shariati, M. A., Ojo, O. A., Dall'Acqua, S., & Elebiyo, T. C. (2022). Anticancer properties of medicinal plants and their bioactive compounds against breast cancer: a review on recent investigations. Environmental Science and Pollution Research, 29(17), 24411–24444. <https://doi.org/10.1007/s11356-021-17795-7>
- Kumar, G. S., Nagaraju, R., Swarajyalakshmi, K., Latha, P., & Balakrishna, M. (2017). Standardization Of Drying Techniques For Different Fruit Peel For Making Potpourris. Retrieved from <https://tinyurl.com/4k6u6sz3>
- Liu, S., Lou, Y., Li, Y., Zhang, J., Li, P., Yang, B., & Gu, Q. (2022). Review of phytochemical and nutritional characteristics and food applications of Citrus L. fruits. Frontiers in Nutrition, 9, 968604. <https://doi.org/10.3389/fnut.2022.968604>
- Liu, X., Liu, Y., Shan, C., Yang, X., Zhang, Q., Xu, N., Xu, L., & Song, W. (2022). Effects of five extraction methods on total content, composition, and stability of flavonoids in jujube. Food Chemistry X, 14, 100287. <https://doi.org/10.1016/j.fochx.2022.100287>
- Lugano, R., Ramachandran, M., & Dimberg, A. (2019). Tumor angiogenesis: causes, consequences, challenges and opportunities. Cellular and Molecular Life Sciences, 77(9), 1745–1770. <https://doi.org/10.1007/s00018-019-03351-7>
- Maksoud, S., Abdel-Massih, R. M., Rajha, H. N., Louka, N., Chemat, F., Barba, F. J., & Debs, E. (2021). *Citrus aurantium* L. Active Constituents, Biological Effects and Extraction Methods. An Updated Review. Molecules, 26(19), 5832. <https://doi.org/10.3390/molecules26195832>
- Maqbul, M. S., Sarhan, R. N., Alzubaidi, F. a. S., Hejji, A. T., Alzubaidi, M. a. S., Baqi, I. K. A., Yousef, S. Y. W., Garout, R. M., Alhasawi, N. A., Aljohani, W. A., Aladwani, R. M., Alaali, T. M., Yaghmour, A. T., & Hanbazah, A. M. (2022). The antimicrobial vulnerability testing of *Linum flavum* hydrocolloids against pediatric surgical MRSA isolates with qualitative bio-phytochemical analysis quantified by GC-MS-UV-Vis spectrophotometry. Medical Science, 26(130), 1–8. <https://doi.org/10.54905/diss/v26i130/ms571e2688>
- Mikac, S., Markulin, L., Drouet, S., Corbin, C., Tungmunthum, D., Kiani, R., Kabra, A., Abbasi, B. H., Renouard, S., Bhabra, A., Lainé, E., Arroo, R. R. J., Fuss, E., & Hano, C. (2020). Bioproduction of anticancer podophyllotoxin and related aryltetralin-lignans in hairy root cultures of *linum flavum* L. In K. G. Ramawat, H. M. Ekiert, & S. Goyal (Eds.), Plant Cell and Tissue Differentiation and Secondary Metabolites (pp. 1–38). Springer International Publishing. https://doi.org/10.1007/978-3-030-11253-0_20-1
- Motyka, S., Jaferník, K., Ekiert, H., Sharifi-Rad, J., Calina, D., Al-Omari, B., Szopa, A., & Cho, W. C. (2023). Podophyllotoxin and its derivatives: Potential anticancer agents of natural origin in cancer chemotherapy. Biomedicine & Pharmacotherapy, 158, 114145. <https://doi.org/10.1016/j.biopha.2022.114145>
- Mukhija, M., Joshi, B. C., Bairy, P. S., Bhargava, A., & Sah, A. N. (2022). Lignans: a versatile source of anticancer drugs. Beni-Suef University Journal of Basic and Applied Sciences, 11(1), 76. <https://doi.org/10.1186/s43088-022-00256-6>
- Murador, D. C., Salafia, F., Zoccali, M., Martins, P. L. G., Ferreira, A. G., Dugo, P., Mondello, L., De Rosso, V. V., & Giuffrida, D. (2019). Green Extraction Approaches for Carotenoids and Esters: Characterization of Native Composition from Orange Peel. Antioxidants, 8(12), 613. <https://doi.org/10.3390/antiox8120613>
- Musazadeh, V., Jafarzadeh, J., Keramati, M., Zarezadeh, M., Ahmadi, M., Farrokhan, Z., & Ostadrahimi, A. (2021). Flaxseed oil supplementation augments antioxidant capacity and alleviates oxidative stress: A systematic review and meta-analysis of randomized controlled trials. Evidence-Based Complementary and Alternative Medicine, 2021, 1–9. <https://doi.org/10.1155/2021/4438613>
- Raju, N. S. C., & Yin, T. S. (2023). Anti-Angiogenesis Screening of *Moringa oleifera* Pod Extracts by In-Ovo Chorioallantoic Membrane (CAM) Assay. Hacettepe University Journal of the Faculty of Pharmacy, 43(4), 301–309. <https://doi.org/10.52794/hujpharm.1192921>
- Ribatti, D. (2022). Vasculogenesis. In Elsevier eBooks (pp. 9–17). <https://doi.org/10.1016/b978-0-323-90599-2.00002-7>
- Schroeder, A. B., Dobson, E. T. A., Rueden, C. T., Tomanca, P., Jug, F., & Eliceiri, K. W. (2020). The ImageJ ecosystem: Open-source software for image visualization, processing, and analysis. Protein Science, 30(1), 234–249. <https://doi.org/10.1002/pro.3993>
- Sung, H., Ferlay, J., Siegel, R. L., Laversanne, M., Soerjomataram, I., Jemal, A., & Bray, F. (2021). Global Cancer Statistics 2020: GLOBOCAN Estimates of Incidence and Mortality Worldwide for 36 Cancers in 185 Countries. CA a Cancer Journal for Clinicians, 71(3), 209–249. <https://doi.org/10.3322/caac.21660>
- Subbaraj, G. K., Kumar, Y. S., & Kulanthaivel, L. (2021). Antiangiogenic role of natural flavonoids and their molecular mechanism: an update. The Egyptian Journal of Internal Medicine, 33(1). <https://doi.org/10.1186/s43162-021-00056-x>
- Tang, Z., Ying, R., Lv, B., Yang, L., Xu, Z., Yan, L., Bu, J., & Wei, Y. (2021). Flaxseed oil: Extraction, health benefits and products. Quality Assurance and Safety of Crops & Foods, 13(1), 1–19. <https://doi.org/10.15586/qas.v13i1.783>
- Tecon, S. F. (2015). Angiosuppressive Potential of Manihot Esculenta Crantz Leaves Ethanolic Extract Using Chorioallantoic Membrane Assay in Duck Embryos. Cognoscere: SPUQC Student Research Journal, 10(2). <https://ejournals.ph/article.php?id=10379>
- Teleanu, R. I., Chircov, C., Grumezescu, A. M., & Teleanu, D. M. (2019). Tumor Angiogenesis and Anti-Angiogenic Strategies for Cancer Treatment. Journal of Clinical Medicine, 9(1), 84. <https://doi.org/10.3390/jcm9010084>
- Zaim, I. N. R., Wahab, M., Ismail, H. F., Othman, N., Hara, H., & Akhif, F. N. M. (2023). Extraction and determination of flavonoid compounds in citrus fruit waste. IOP Conference Series Earth and Environmental Science, 1144(1), 012005. <https://doi.org/10.1088/1755-1315/1144/1/012005>

Sustainable Livelihood Program in Selected Local Government Units of Rizal Province, Philippines: Basis for an Action Plan

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Date received: September 5, 2024

Date revised: September 19, 2024

Date accepted: October 6, 2024

Originality: 89%

Grammarly Score: 99%

Similarity: 11%

Recommended citation:

Castillo, J.R., Mantillas, C. (2024). Sustainable livelihood program in selected local government units of Rizal province, Philippines: Basis for an action plan. *Journal of Interdisciplinary Perspectives*, 2(11), 246-255. <https://doi.org/10.69569/jip.2024.0476>

Abstract. This research assessed the Sustainable Livelihood Program's Micro-Enterprise Development Track, focusing on social preparation, resource mobilization, and participant mainstreaming while excluding pre-implementation, as beneficiaries still need to be involved at that stage. The researchers assessed beneficiaries' awareness and identified challenges faced by implementers. Data was gathered through cluster sampling from 150 out of 234 beneficiaries of Rodriguez, San Mateo, and Cainta in Rizal Province, Philippines, and nine implementers were purposefully selected. The findings indicated that the Seed Capital Fund was the primary assistance modality utilized by beneficiaries. However, beneficiaries had lower awareness of the two-day capability-building activities than other social preparation elements. Implementers encountered problems such as inadequate training evaluation tools, limited space, and the need for an SLP office. Although beneficiaries were generally aware that monitoring and assessment are crucial to government programs, challenges included insufficient contact information and unsustainable livelihood projects. An action plan was proposed to address these issues, focusing on enhancing the social preparation and program mainstreaming stages, using a mixed-method approach with a sequential explanatory design for data collection. By adopting this plan, program implementation may be enhanced. Additionally, the plan calls for follow-up studies to evaluate the livelihood program, assess its impact, and oversee the execution of the SLP Employment Facilitation Track, which remains part of the national government's SLP initiative.

Keywords: Micro-enterprise development track; Seed capital fund; Sustainable livelihood program.

1.0 Introduction

Poverty remains a significant barrier to human development and economic growth, with millions experiencing extreme hunger, a situation worsened by the COVID-19 pandemic, which marked the first rise in poverty levels in over two decades due to factors like income inequality and issues of resiliency (Ghecham, 2022.). The pandemic has adversely affected socio-economic conditions, impacting health, food systems, and employment. Nearly half of three billion people globally lost their jobs and other sources of livelihood, including poor farmworkers and cultural minorities, being particularly hard hit. It also highlighted that the pandemic's effects have disproportionately affected these vulnerable groups, underscoring the immediate necessity to alleviate poverty and promote sustainable development (Aromolaran & Muyanga, 2020).

The livelihood initiative is a governmental approach designed to combat poverty, in line with worldwide endeavors like the international community's 17 goals for sustainable development, primarily SDG1 (End

Poverty) and SDG2 (Zero Hunger). This program addresses various issues, including the impacts of the 2019 world widespread virus, conflicts, and calamities that affect communities globally (UNO, 2020). In the Philippines, the SDGs are integrated into the government's national plan, emphasizing socio-economic transformation to generate employment and reduce poverty (NEDA, 2023). Through the DSWD, the national government implements the Sustainable Livelihood Program through its MC 22, s. of 2019. This program features two main components: the Micro-enterprise Development program and the Employment Facilitation program. The MD Track grants funding and capability activities to help participants launch or grow micro-enterprises, including skills training and initial capital. At the same time, the EF component aids individuals in finding local jobs through partnerships, providing support for initial employment needs (DSWD, 2019). The SLP is executed nationwide, targeting municipalities and cities identified as the poorest and most vulnerable by the statistics authority agency in the Philippines and the *Listahan* database (Acosta & Avalos, 2018). Its goal is to empower families and communities across all regions, improving quality of life through poverty reduction strategies.

One of the private management principles and practices applied in citizen administration was the NPM in the 1990s, which spread and developed in Europe (Indahsari & Raharja, 2020). Marketization that involves measures such as outsourcing, common markets, contract administration, and market analysis, as well as corporate management through performance incentives, management by results, and a focus on customer service, are also applied to the public sector, often alongside budgetary reforms aimed at enhancing effective management (Bevir, 2007). Reinventing government aimed to make a public sector deliver better services to the people but economizes costs, as explained by Osborne and Gaebler in 1992 (Brillantes & Fernandez, 2008; Rosenbloom et al., 2022). Quality Management System (QMS) to meet customers' satisfaction and regulatory requirements through international standards like ISO 9001:2015 and its application of the PDCA (Plan, Do, Check, Act) cycle in QMS processes, originally conceptualized by Dr. W. Edwards Deming and modified by the Japanese in 1951 (Moen & Norman, 2006; Betlloch-Mas et al., 2019; Gueorguiev, 2022).

United Nations, as an international community, originally defined governance as compound strategies, methods, partnerships, and societies where the public communicates their concerns, carries out their rights and duties, as well as solves their disputes (Thomas, 2012). Similarly, governance creates public and social value, which is essential for transforming and improving public service delivery and responding to prolonged relations among government, businesses, citizens, civil groups, and other partners. (Khan, 2018; Wiśniewski, 2018; Bilan et al., 2019; Monkelbaan, 2019; Liddle, 2023). It also focuses on poverty alleviation, employment and self-reliant livelihoods, sustainable environment, & empowerment. Researchers have further explored governance. The New Public Governance uniquely influenced the administration of people or citizens. This administration model comprises the public sector, business sector, civic organizations, and other societies' partnership or collaboration to respond to the dynamic conditions of society (Barbier & Tengeh, 2023). Similarly, collaborative governance is very important in raising communities' awareness of the distinct roles they can play in empowerment and social capital's role in bringing localities' drive through solidarity and peace-building (Maharjan, 2015; Abubakar, 2019; Afandi et al., 2023; Wisnumurti et al., 2020). This emphasizes collective efforts among stakeholders through integrated strategies. Policies promoting micro-enterprise development through financial support and entrepreneurship training have been implemented to foster local economic growth, resilience, and inclusive livelihoods, aiming to alleviate poverty (Ansell & Gash, 2008; Eadie et al., 2020; Naz & Saqib, 2021).

A livelihood framework for sustainability is one tool that can identify reasons or constraints or improve livelihoods and reveal how they connect with each other. This considers five key capital assets - natural, human, material, financial, and social capital - that people draw upon to build sustainable livelihoods (Serrat, 2017; Li et al., 2021). Recent research expanded the SLF to consider ecological and cultural capital as important factors, especially in developing countries and rural areas (Li, 2017). However, the framework should be adapted to the local context and needs rather than seeking a universal solution. Key factors that influence sustainable livelihoods include capital endowments (e.g., land, skills, networks), government policies and programs (e.g., poverty alleviation, rural development), participation of multiple stakeholders (e.g., government, private sector, communities), consideration of the socio-economic, and political aspects, ability to handle and regain strengths from trauma and distresses (Deng & Zhang, 2020; Fitzpatrick & Akgungor, 2020) – similarly, Knowledge, Attitude, & Practice (KAP) behavioral change model. Liao and Sasaki (2022) cited that this originated from Bandura's social learning theory in the 1970s and Roger's innovation theory in the 1990s. This *Knowledge* pertains

to the comprehension of the acquired data. In contrast, *Attitudes* pertain to an advantageous or disadvantageous perception of a goal, and *Practices* refer to usual actions that are affected by transferred standards of society and their beliefs. This framework helps public administrators measure the effects of their initiatives, trace priorities for enhancement, and enlighten their decisions.

Inclusivity in livelihood programs contributes to national economic development, such as women's empowerment through their incomes (Akter, 2022). These provide them with an independent source of income, higher quality of life, and greater control over household resources (Blau & Winkler, 2018; Kponou, 2020; Gulomjanovna, 2021). Demographic factors, roles, and experiences primarily affect women's business participation. (Gabriel et al., 2020; Solina, 2020). Financial support through loans, tax exemptions, and skills training can help women overcome these barriers and increase their self-belief and confidence. Similarly, women's involvement in making decisions empowers them in their families. In our country, the national government, through Congress, passed policies to protect the rights of women as well as the indigenous peoples (CHR, 2016; PCW, 2016). People with disabilities must also be considered. Factors such as achievement necessities, intrinsic motivations, environmental influences, and transparency greatly affect their entrepreneurial success (Samer & Rashid, 2024). Similarly, there is a relationship between poverty and disability. Many PWDs rely on family and NGO financial assistance through loans and skills training. This underscores the importance of diverse laws with practical measures to respond to these difficulties or constraints (Mulubiran, 2021). In the study on alternative learning programs for the youth, literacy, and numeracy, they improved both learners and implementers professionally and socially. Quantitative research on senior citizens showed that there is a correlation between the provision of employment and education and the life quality of senior citizens. (Baybay & Heria, 2023)

Garidzirai et al. (2019) defined local economic development as a procedure or instrument for improving growth in the local economy, employment, and poverty reduction. Economic sectors for production significantly influence these outcomes. Specifically, services to the localities, businesses, infrastructures, funding, and electricity suppliers are connected to the development of local economies. However, local development is primarily sourced from manufacturing and agricultural activities, but with little effect. Strategies can promote local development through cooperatives (Shava & Hofisi, 2019), infrastructure development in transportation & technology (Kiss & Rácz, 2019; Prus & Sikora, 2021; Wang & Dong, 2022), private-public partnerships, collaboration, and research by higher educational institutions & related agencies. (Quingco & Leonoras, 2019; Chankseliani, 2021; Ramces et al., 2022; Mubangizi, 2022). Approaches to leadership, management, institutional capabilities, and human capital development are also equally important (Ypil & Gempes, 2023).

Micro-enterprises are essential for economic development through employment, domestic products, foreign investment, and community livelihoods (Mabasa et al., 2023). Nonetheless, these micro-enterprises face high interest rates and accomplishment issues because of less business management skills, insufficient monetary resources, limited financial literacy, infrastructure constraints, inadequate training, less technology, and other issues like felonies, torts, and corrupt practices. (Mhlongo & Daya, 2023). Addressing their challenges through targeted policies, educational initiatives, and financial support can significantly enhance their performance and contribute to broader economic goals (Pandey & Chaudhary, 2024). Similarly, successful livelihood programs also require ongoing support, training, and monitoring to help beneficiaries build sustainable enterprises (Valenzuela et al., 2020; Naganag, 2022; Cristobal, 2023; Purwanti et al., 2022; Sambrana et al., 2023; Saguin & Cagampan, 2023). Challenges include a lack of financial assistance, limited marketing support, and weak stakeholder partnerships. However, governments also require dynamic capacities such as adjusting, understanding, and reconciling services based on public demands, resiliency, and online platforms. Technology utilization can help improve local administrations during unpredictable situations, like the 2019 world-wide virus. (Mazzucato & Kattel, 2020; Clement & Crutzen, 2023).

Rodriguez, San Mateo, and Cainta are municipalities located in Rizal Province (Sobremonte-Maglipon et al., 2024), whose communities are vulnerable to natural disasters, particularly flooding from the Marikina River, which disrupts infrastructure, agriculture, and the local economy during typhoons. Environmental challenges, such as quarrying in Rodriguez and the over-extraction of natural resources, have adversely affected groundwater levels and water quality, impacting the local tourism sector (Lichauco, 2022). Similar persistent poverty issues, such as environmental degradation, inadequate housing, and sanitation, were observed by the primary author of this

research, who has lived in Rodriguez and San Mateo for so many years. Nonetheless, participatory approaches that assess community needs, & advocacies on human rights focused on poverty alleviation, mobility, and equality on public service delivery may contribute to sustainable livelihoods (Cheruiyot, 2020; Sano, 2020). To support sustainable livelihoods, the researchers are interested in assessing the SLP's MD Track implementation in the previously mentioned local government units. This assessment focused on understanding the beneficiaries' awareness level and the implementers' perceptions, aiming to improve the stages of implementation through a plan of action.

2.0 Methodology

2.1 Research Design

The mixed method of research, particularly the sequential explanatory design, was utilized in this study. Creswell (2003) explained that this method gathers and analyzes the numerical and qualitative data. In the explanatory sequential design, the numerical data is gathered and analyzed first before an assortment and discrete data examination on the qualitative results. The latter is utilized to explain the numerical data results.

2.2 Research Locale

This study was carried out in selected local government units, namely Rodriguez, San Mateo, and Cainta, municipalities located in the Province of Rizal. These areas are categorized as semi-urban due to their closeness to Marikina and Quezon cities in the central region of the Philippines. Semi-urban regions display urbanization traits like infrastructure, building development, population growth, and mobility, though they are less densely populated than fully urban areas (Meeus & Gulinck, 2008).

2.3 Research Participants

The study involved 150 persons of the SLP-MD Track during 2021-2022, identified as eligible beneficiaries based on a final list of priority barangays approved by the national government through the DSWD. Cluster sampling was utilized to achieve this sample size from the 234 beneficiaries from Rodriguez, San Mateo, and Cainta, Rizal Province. This study included all 12 respondents from Cainta, 49 from San Mateo, and 52% of the 173 individuals from Rodriguez, totaling 89 respondents. The cluster sampling technique is applied by splitting the population into divergent groups, usually dependent on geographic locations or other relevant characteristics. This method is particularly advantageous when dealing with large, dispersed, hard-to-reach populations (Blair & Blair, 2014). Additionally, the researchers chose a group of nine implementers through a non-probability purposive sampling approach.

2.4 Research Instrument

The researchers prepared a survey questionnaire. This survey questionnaire consists of modalities of assistance availed by the beneficiaries, their awareness level as to the program implementation stages such as the pre-activities phase, societal training phase, mobilization of resources, and beneficiaries' performance appraisal. In obtaining the numerical responses, the researchers adopted the Likert scale of five utilized by Paguigan & Jacinto (2018). The issues and challenges faced by the implementers were identified through an interview guide. This consists of questions formulated when the numerical data results were analyzed and interpreted. Also, the interview guide questions were validated by individuals of expertise. Finally, the research findings were a basis for the researchers' proposed action plan.

2.5 Data Gathering Procedure

The researchers applied particular steps in the data gathering. After securing permission from the Regional Office IV-A and local chief executive officials of the three municipalities, the researchers administered the surveys to the program beneficiaries using various methods, including face-to-face interactions, online platforms, electronic mail, short message services, and mobile calls. The researchers protected respondents' right to privacy throughout the process. The researchers assessed and interpreted the numerical data acquired through the survey questionnaires, forming the basis for the formulation of interview guide questions. These questions were validated before conducting one-on-one interviews with implementers via Google Meet. The researchers coded the interview transcripts and thematically analyzed the responses with similar meanings. Ultimately, this research's results helped the proponents develop a comprehensive action plan.

2.6 Ethical Considerations

This study was designed, planned, and executed by ethical standards and considerations for conducting research and ensuring compliance with the 2012 Data Privacy Act and other relevant laws that protect individuals' privacy rights. Participants' identities were kept confidential, and their consent was obtained before involving them in research activities, such as completing survey questionnaires and interview guides. Importantly, no research instruments included their names, addresses, or other contact details. The researchers adhered strictly to research protocols, which included the acquisition of permits from government institutions in the setting of this study and maintaining proper coordination. Additionally, SLP beneficiaries and implementers were given adequate time to complete the questionnaires and respond to the interview questions. In all the research procedures, this research assured a higher degree of impartiality, honesty, & transparency in discussing and analyzing the results. Hence, the study was conducted and considered research ethics, including plagiarism-free.

3.0 Results and Discussion

This section provides data results from the modes of assistance availed by the MD Track beneficiaries and their awareness level, as well as perceptions of the implementers for the program execution at the various stages, namely, social preparation, resource mobilization, and program participant mainstreaming. The data below are presented, analyzed, and interpreted.

Table 1. Descriptive statistics of SLP-MD beneficiaries as to the modalities of assistance

Modalities of Assistance	Frequency	Percentage
SCF	141	94
STF	9	6
CBLAF	0	0
Total	150	100

As revealed in Table 1, Seed Capital Fund is the most availed modality of assistance by the program participants, with a frequency of 141 or 94%. Skills Training Fund ranks second as a modality of assistance availed by the program participants, with a frequency of 9 or 6%. None of them availed the CBLAF. One of the beneficiaries said,

"I need capital for my business more than skills training during the Pandemic period."

However, another participant justified that,

"I do have a little capital. However, I have little knowledge of operating a business. I also need to join a skills training program."

None availed of the CBLAF because this assistance mode was only granted to beneficiaries who used it to protect their natural and physical assets. This was likely not the priority of the program beneficiaries during that time. During the 2019 world widespread virus, the Seed Capital Fund was a livelihood assistance grant provided by the national government to the beneficiaries to recover (Manacsa et al., 2023).

Table 2. Descriptive statistics of the awareness level of the SLP-MD beneficiaries during the social preparation stage

Indicators	Mean	Interpretation
1. SLP Assembly or a half-day orientation	4.20	Much Aware
2. Two-day Capability-Building Activities	3.93	Much Aware
3. Requirements as to the SLPA Formation	4.22	Very Much Aware
4. Project Proposal Preparation	4.21	Very Much Aware
Average	4.14	Much Aware

Note: 4.21-5.00 Very Much Aware, 3.41-4.20 Much Aware, 2.61-3.40 Aware, 1.81-2.60 Less Aware, 1.00-1.80 Not Aware

Table 2 revealed a total mean average of 4.14, which is verbally interpreted as Much Aware in the case of the awareness level of the beneficiaries during the Social Preparation stage. Specifically, their awareness level as to SLP Assembly or half-orientation was 4.20, which is average and interpreted as Much Aware. In the two-day capability-building activities, the beneficiaries' awareness level acquired 3.93 as an average, verbally interpreted, Much Aware. Regarding the awareness level of the Requirements for the SLPA Formation and Project Proposal Preparation, they obtained mean averages of 4.22 and 4.21, respectively. Similarly, they are verbally interpreted

as Very Much Aware. These findings imply that beneficiaries were mostly members of the SLP association, and their social interaction with each other affected their level of awareness.

Mose et al. (2024) considered self-help groups through partnerships, networks, and entrepreneurial competencies affected by their involvement in livelihood training. Similarly, awareness of the project proposal preparation means that the beneficiaries were already aware of the requirements to implement the SLP-MD Track. In an interview with the implementers on the issues and challenges they encountered during this social preparation stage, they mostly said that the two-day capability-building activities were insufficient to ensure full learning of program participants. One said,

"We do not have a conducive space or area for the capacity training since the program is only implemented by a PDO, a staff of the Field Office, who coordinates with the municipality. We find available places in the municipality to provide us such as Covered-court."

Another implementer said,

"Sometimes, we also conduct the activities in available residential houses." Another said, "There is no designated office for SLP accommodation since the PDOs as field staff are the ones implementing the program during this stage."

Other implementers also said,

"We have only the pretest and posttest results to measure the success indicators of the two-day capability-building activities of the program participants, but no other aspects to evaluate as to the venue, food, and trainers."

Table 3. Descriptive statistics of the awareness level of the SLP-MD beneficiaries during the resource mobilization stage

Indicators	Mean	Interpretation
1. Assessment of the proposed livelihood projects before its approval	4.15	Much Aware
2. Direct release of the grant to each eligible beneficiary	4.40	Very Much Aware
3. Full disbursement of the grant as to its purpose only & authorized person to receive the grant is the one whose name is in the approved grant proposal.	4.41	Very Much Aware
Average	4.32	Very Much Aware

Note: 4.21-5.00 Very Much Aware, 3.41-4.20 Much Aware, 2.61-3.40 Aware, 1.81-2.60 Less Aware, 1.00-1.80 Not Aware

Table 3 revealed a total mean average on the awareness level 4.32, which is verbally interpreted as Very Much Aware. Specifically, the awareness level of the beneficiaries in the Assessment of the proposed livelihood projects before its approval acquired 4.15 as an average, interpreted as Much Aware. In the direct release of the grant to each eligible beneficiary, it acquired 4.40 as an average and was interpreted as Very Much Aware. Also, in the Full disbursement of the grant, as to its purpose only & authorized person to receive the grant is the one whose name is in the approved grant proposal, it acquired 4.41 as an average and interpreted as Very Much Aware. These results imply that assessment of the proposed livelihood projects and financial issues requires the highest awareness level of the beneficiaries for greater responsibility and accountability since the SLP-MD Track is usually monetary assistance granted by the government. In an interview with the implementers, they said,

"We strictly implement the release of the financial assistance fund directly to the program participants because we have accountability with the public funds." "We assure that the program participants are fully aware of the financial assistance funds they availed."

In related research, authors considered the necessity of knowing finances for information and monetary protection of vulnerable people (Lusardi & Messy, 2023).

Another implementer said,

"Many participants have less knowledge and skills on entrepreneurship, which is why some program participants cannot sustain their entrepreneurial livelihood project."

Table 4. Descriptive statistics of the awareness level of the SLP-MD beneficiaries during the program participant mainstreaming stage

Indicators	Mean	Interpretation
1. Continuous tracking, mentoring, coaching, and capability to ensure continuous capacitated self-governance & operations of the established micro-enterprise	3.68	Much Aware
2. Monitoring and assessment quarterly, semestral, and annually from the period that the business began its operations.	3.63	Much Aware
3. The monitoring results serve as the basis for actions that stakeholders or development partners can consider.	4.16	Much Aware
Average	3.82	Much Aware

Note: 4.21-5.00 Very Much Aware, 3.41-4.20 Much Aware, 2.61-3.40 Aware, 1.81-2.60 Less Aware, 1.00-1.80 Not Aware

Table 4 revealed an acquired 3.82 as a total average and interpreted as Much Aware. Specifically, the average obtained with regards to the awareness level of the beneficiaries in the “Continuous tracking, mentoring, coaching, and capability to ensure continuous capacitated self-governance & operations of the established micro-enterprise,” is 3.68, which is verbally interpreted as Much Aware. In the “Monitoring and assessment quarterly, semestral, and annually from the period that business began its operations,” the awareness level of the beneficiaries obtained an average of 3.63, which is verbally interpreted as “Much Aware.” In “The monitoring results serve as the basis for actions that can be considered through the stakeholders or development partners,” the awareness level of the beneficiaries obtained an average of 4.16, which is verbally interpreted as Much Aware. Overall, it is evident that the beneficiaries are aware of Much Aware. However, in the interview responses from the implementers, they said that,

“There are available monitoring and assessment tools that we use, but we encountered constraints due to the contact information of the program participants. Some of their mobile numbers were no longer active and valid”.

Another one said,

“Some of them changed their residence or address. Others, if employed, do not pursue business enterprise anymore”.

Odhiambo et al. (2020) revealed a significant positive relationship between tracking progress, keen observation, and assessment for livelihood program implementation. A study also concluded that checking and appraisal significantly affect the successful implementation of livelihood programs (Thambura et al., 2023)

Proposed Plan of Action

The researchers prepared a proposed action plan based on the research findings. This action plan includes strategies, general objectives, activities, timelines, responsible persons, budget estimates, sources of funds, and success indicators. The action plan focuses on capability-building activities, designing a training evaluation tool, conducting consultative meetings, collaborating with stakeholders, and constantly monitoring and assessing the SLP-MD Track program participants. The capability-building strategy involves training on micro-entrepreneurship, basic bookkeeping and accounting, legal processes to start a business, and micro-enterprise feasibility. These will be accomplished within four days. Responsible persons involved in the activity are the SLP-MD Track program participants, project development officers, trainers from HEIs, TESDA, or other learning institutions, and livelihood workers for support services. The estimated budget is Php 200,000, and the source of funds from the national government and support services from the local government unit. The success indicator will evaluate the activities with a rating of at least very satisfactory.

Another strategy to be implemented is designing a training evaluation tool, which will be developed during a two-day seminar-write shop. The PDO, the MSWDO head, and a livelihood worker for support services will be responsible for this initiative. The estimated budget for this activity is Php 50,000, with funding derived from the central government and local units. The success of this strategy will be measured by the successful creation of a consolidated training evaluation tool as an output.

The third strategy is to conduct a one-day consultative meeting involving key stakeholders, including the project development officer, municipal mayor, MSWDO head, and a livelihood worker. The estimated budget for this meeting is Php 10,000, with funding provided by the central government and local units. The success indicator will be through a signed Memorandum of Understanding or Memorandum of Agreement among the contracting parties.

The fourth strategy is to foster collaboration with stakeholders through a series of two-day collaborative meetings. The responsible parties include the project development officer, municipal mayor, MSWDO head, livelihood worker, representatives from universities and colleges (private or public), a TESDA representative, and a business sector representative. The estimated budget for these collaborative meetings is Php 100,000, with funding from the central government and local units. The successful indicator will be measured by a signed Memorandum of Understanding or Memorandum of Agreement among the participating stakeholders.

Lastly, the strategy for constantly monitoring and assessing the SLP-MD Track program participants involves monthly tracing and visitation activities. The project development officer and a livelihood worker will implement this strategy. The estimated budget for these monitoring efforts is Php 100,000, with funding from the central government and local units. Success will be indicated by the maintenance of an updated database system that records all beneficiaries.

4.0 Conclusion

This study revealed that the Seed Capital Fund was the priority modality of assistance the SLP-MD Track beneficiaries availed. The SLP-MD Track beneficiaries have a lower awareness of the two-day capability-building activities compared to the other processes in the social preparation stage. The encountered issues and challenges mostly by the implementers were focused on training evaluation tools, limited space or area to conduct the capability-building activities & non-existence of the SLP office to accommodate the target program beneficiaries. In the resource mobilization, all program beneficiaries were very aware and knew from the start that monitoring & assessment are components of any government program. The issues and challenges faced by the implementers were focused on the inadequacy of the contact information of some of the beneficiaries, and their livelihood projects were not sustained for some reasons.

The researchers concluded that collaborative governance is essential for effective poverty reduction despite challenges affecting human development. The involvement and cooperation of stakeholders with the government are deemed vital for attaining sustainable human development objectives. Furthermore, an action plan was proposed to promote sustainable livelihoods, focusing on enhancing the social preparation and program mainstreaming stages. In addition, follow-up studies are recommended focusing on the livelihood program evaluation, impact assessment, and the implementation of the SLP Employment Facilitation Track, which is still part of the national government's SLP.

5.0 Contributions of Authors

This research has two authors. The primary author is a graduating student in the DPA program, while the second author is the student's/researcher's adviser. The student took charge of writing and revising the study. At the same time, the adviser played a crucial role in enhancing the research by providing guidance and valuable insights, particularly regarding ethical issues and concerns related to the study's conduct and adhering to prescribed guidelines and formats.

6.0 Funding

The researchers did not receive any funds or grants from any agency.

7.0 Conflict of Interests

There is no disagreement of interest in this research, as the authors are solely attentive to understanding the participants' responses and perceptions.

8.0 Acknowledgement

The researcher would like to acknowledge the contributors who made this research possible. Dr. Christopher C. Mantillas, her adviser and co-author of this study for valuable insights, support, and patience throughout; to the panelists, Dr. Pamela Grace C. Muhi, Dr. Florenda S. Frivaldo, Dr. Estefanie R. Cortez, and Dr. Rosylyn M. Arnigo who shared their expertise for the improvement of the dissertation; Dr. Elmer M. Soriano, the Dean of the Graduate School, for encouragement and kindness to all students who strive further toward their career development; Dr. Jose D. Elveña Jr., for the statistical computation of the quantitative data; Dr. Stephen P. Soliguen, for the language expertise; Dr. Roger C. Villegas, a Filipino language expert for the translation of the researcher's instruments; the researcher's friends: Sir Lorenzo Luiz C. Costo, Ma'am Imelda O. Ausa, Prof. Romi M. Dela Cruz, Dr. Rody F. Buenviaje, and Sheryll C. Philip; for their encouragement and inspiration; Most especially, to the researcher's supportive husband Marvin A. Castillo and her two great children: Jann Arvin and Jane Nicole, for the love and inspiration; and to all the relatives (Batayola clan, Prieto clan, & Castillo clan) for their moral support and unending prayers. Above all, to Almighty God, who made all things possible and gave the researcher strength, a creative mind, and enthusiasm.

9.0 References

- Abubakar, A.U. (2019). *Peacebuilding and Sustainable Human Development: The Pursuit of the Bangsamoro Right to Self-Determination*. Springer Nature Switzerland.
- Avalos, J., & Acosta, P. A. (2018). The philippines sustainable livelihood program. Retrieved from <https://doi.org/10.1596/29873>
- Afandi, M. N., Tri Anomsari, E., Novira, A., & Sudartini, S. (2023). Collaborative governance in a mandated setting: shifting collaboration in stunting interventions at local level. *Development Studies Research*, 10(1), 2212868. <https://doi.org/10.1080/21665095.2023.2212868>

- Akter, T. (2022). Role of income generating activities in empowering rural women of Bangladesh. *Journal of Agriculture, Food and Environment*, 3(4), 15-21. <https://doi.org/10.47440/jafe.2022.3403>
- Ansell, C., & Gash, A. (2008). Collaborative governance in theory and practice. *Journal of public administration research and theory*, 18(4), 543-571. <https://doi.org/10.1093/jopart/mum032>
- Aromolaran, A. B., & Muyanga, M. (2020). Impact of COVID-19 on agriculture, food systems and rural livelihoods in Eastern Africa. Retrieved from <https://doi.org/10.4060/cb0552en>
- Barbier, L., & Tengeh, R. (2023). Literature review of public administration and good governance from 1890 to 2023. *Jurnal Transformativa*, 9(1), 43-65. <https://doi.org/10.21776/ub.transformativa.2023.009.01.3>
- Baybay, C. H., & Heria, R. B. (2023). Implementation of the Expanded Senior Citizens Act of 2010 in the City Government of Butuan. *Asian Journal of Law and Governance*, 5(1), 46-58. <https://doi.org/10.55057/ajlg.2023.5.1.6>
- Betloch-Mas, I., Ramón-Sapena, R., Abellán-García, C., & Pascual-Ramírez, J. C. (2019). Implementation and operation of an integrated quality management system in accordance with ISO 9001: 2015 in a dermatology department. *Actas Dermo-Sifiliográficas*, 110(2), 92-101. <https://doi.org/10.1016/j.adengl.2019.01.003>
- Bilan, Y., Raišienė, A. G., Vasilyeva, T., Lyulyov, O., & Pimonenko, T. (2019). Public governance efficiency and macroeconomic stability: Examining convergence of social and political determinants. *Public Policy and Administration*, 18(2). <https://doi.org/10.13165/VPA-19-18-2-05>
- Blau, F. D., & Winkler, A. E. (2018). *The Economics of Women, Men, and Work*. Oxford University Press
- Blair, E., & Blair, J. (2014). *Applied survey sampling*. Sage publications.
- Brillantes, A., & Fernandez, M. (2008). Is there a Philippine public administration? Or better still, for whom is Philippine public administration. *Philippine Journal of Public Administration*, 52(2-4), 245-307. https://doi.org/10.1007/978-3-030-66252-3_4134
- Chankseliani, M., Qoraboyev, I., & Gimranova, D. (2021). Higher education contributing to local, national, and global development: new empirical and conceptual insights. *Higher Education*, 81, 109-127. <https://doi.org/10.1007/s10734-020-00565-8>
- Cheruiyot, J. K. (2020). Participatory Livelihood Analysis as an Alternative Method for Agricultural Extension Needs-Assessment: Case of a Rural Community in Kenya. *Asian Journal of Agricultural Extension, Economics & Sociology*, 38(8), 173-187. <https://doi.org/10.9734/ajaees/2020/v38i830400>
- Clement, J., Esposito, G., & Crutzen, N. (2023). Municipal pathways in response to COVID-19: a strategic management perspective on local public administration resilience. *Administration & Society*, 55(1), 3-29. <https://doi.org/10.1177/00953997221100382>
- Creswell, J. W. (2003). *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches*. Sage Publications Inc.
- Cristobal, E. B. (2023). The Community Extension of University as a Driving Factor to Societal Reform. *Journal for Educators, Teachers and Trainers*, 14(2), 370-383. <https://doi.org/10.47750/jett.2023.14.02.035>
- Deng, Q., Li, E., & Zhang, P. (2020). Livelihood sustainability and dynamic mechanisms of rural households out of poverty: An empirical analysis of Hua County, Henan Province, China. *Habitat International*, 99, 102160. <https://doi.org/10.1016/j.habitatint.2020.102160>
- Eadie, P., Atienza, M. E., & Tan-Mullins, M. (2020). Livelihood and vulnerability in the wake of Typhoon Yolanda: lessons of community and resilience. *Natural Hazards*, 103, 211-230. <https://doi.org/10.1007/s11069-020-03984-z>
- Etikan, I., Musa, S. A., & Alkassim, R. S. (2016). Comparison of convenience sampling and purposive sampling. *American journal of theoretical and applied statistics*, 5(1), 1-4. <https://doi.org/10.11648/j.ajtas.20160501.11>
- Fitzpatrick, E., & Akgungor, S. (2023). The contribution of social capital on rural livelihoods: Malawi and the Philippines cases. *The Annals of Regional Science*, 70(3), 659-679. <https://doi.org/10.1007/s00168-020-01005-2>
- Gabriel, A. G., De Vera, M., & Antonio, M. A. B. (2020). Roles of indigenous women in forest conservation: A comparative analysis of two indigenous communities in the Philippines. *Cogent Social Sciences*, 6(1), 1720564. <https://doi.org/10.1080/23311886.2020.1720564>
- Garidzirai, R., Meyer, D. F., & Muzindutsi, P. F. (2019). The impact of economic sectors on local economic development (led): the case of the Capricorn region, Limpopo province, South Africa. *International Journal of economics and finance studies*, 11(2), 20-35. <https://doi.org/10.34109/ijefs.201911202>
- Ghecham, M. A. (2022). The impact of COVID-19 on economic growth of countries: What role has income inequality in it? *Economics*, 10(7), 158. <https://doi.org/10.3390/economics10070158>
- Gueorguiev, T. K. (2022). The Pcd Cycle-The Master Key To Unlocking The Secrets Of Iso Management System Standards. *Endless light in science, (декабрь)*, 135-138. <https://doi.org/10.5220/0010658000003064>
- Gulomjanovna, Z. D. (2021). Conceptual Bases of Full Realization of Women's Labour and Entrepreneurial Activity. *Psychology and Education Journal*, 58(2), 237-240. <https://doi.org/10.17762/pae.v58i2.1552>
- Hahs-Vaughn, D. L., & Lomax, R. G. (2020). *Statistical concepts-a first course*. Routledge.
- Indahsari, C. L., & Raharja, S. U. J. (2020). New public management (NPM) as an effort in governance. *Jurnal Manajemen Pelayanan Publik*, 3(2), 73. <https://doi.org/10.24198/jmnp.v3i2.25342>
- Khan, H. A. (2018). *Globalization and the Challenges of Public Administration: Governance, Human Resources Management, Leadership, Ethics, E-Governance and Sustainability in the 21st Century*. Springer.
- Marta, K., & Rácz, K. (2019). Factors and Policy Measures Influencing Local Economic Development: An Overview of the Conceptual Framework. *Lex Localis*, 61-73. <https://doi.org/10.4335/978-961-6842-91-4>
- Kponou, M. K. C. (2020). Women and Sustainable Human Development: Empowering Women in Africa. In M. Konte, & N. Tirivaji (Eds.), *Women's Bargaining Power and Households' Living Standards in West Africa: Evidence from Benin, Togo and Mali*. Springer. (1st ed., pp. 314).
- Li, C. (2017). Work, Institutions and Sustainable Livelihood: Issues and Challenges of Transformation. In V. Xaxa, D. Saha, R. Singha (Eds.), *A New Approach to Rural Labour Mobility in the Labour Surplus Economy: A Tripartite Labour Supply Model*. Springer Link.
- Li, J., Li, S., Daily, G. C., & Feldman, M. (2021). *Rural livelihood and environmental sustainability in china*. Springer Singapore.
- Liao, X., Nguyen, T. P. L., & Sasaki, N. (2022). Use of the knowledge, attitude, and practice (KAP) model to examine sustainable agriculture in Thailand. *Regional Sustainability*, 3(1), 41-52. <https://doi.org/10.1016/j.regsus.2022.03.005>
- Lichauro, T. A. N. B. (2022). Sustainable resort-related tourism growth: Identifying challenges and opportunities in Montalban, Rizal. *Journal of Sustainable Tourism and Entrepreneurship*, 3(4), 217-233. <https://doi.org/10.35912/joste.v3i3.1499>
- Liddle, J. (2023). The changing context of public governance and the need for innovation and creating public value. In *COVID-19 and Social Determinants of Health* (pp. 155-169). Policy Press.
- Lusardi, A., & Messy, F. A. (2023). The importance of financial literacy and its impact on financial wellbeing. *Journal of Financial Literacy and Wellbeing*, 1(1), 1-11. <https://doi.org/10.1017/flw.2023.8>
- Mabasa, K., Akinradewo, O., Aigbavboa, C., & Oguntola, O. (2023). Contributions of construction small, medium, and micro enterprises towards the sustainable growth of Zambia. *Sustainability*, 15(10), 7746. <https://doi.org/10.3390/su15107746>
- Maharjan, K.L. (2014). *Communities and livelihood strategies in developing countries*. Springer Japan.
- Manacsa, M. C., Vigonte, F. G., & Abante, M. V. (2023). Economic Issues Significantly Affected by the COVID-19 Pandemic and Policies Implemented by the Government to Mitigate Its Impact. SSRN, 4340267. <https://doi.org/10.2139/ssrn.4340267>
- Mazzucato, M., & Kattel, R. (2020). COVID-19 and public-sector capacity. *Oxford Review of Economic Policy*, 36(Supplement_1), S256-S269. <https://doi.org/10.1093/oxrep/gra031>
- Meeus, S. J., & Gulinck, H. (2008). Semi-urban areas in landscape research: a review. *Living reviews in landscape research*, 2. <https://doi.org/10.12942/lrlr-2008-3>
- Mhlongo, T., & Daya, P. (2023). Challenges faced by small, medium and micro enterprises in Gauteng: A case for entrepreneurial leadership as an essential tool for success. *The Southern African Journal of Entrepreneurship and Small Business Management*, 15(1), 591. <https://doi.org/10.4102/sajesbm.v15i1.591>
- Moen, R., & Norman, C. (2006). Evolution of the PDCA cycle. Retrieved from https://doi.org/10.1007/springerreference_6568
- Monkelbaan, J. (2019). *Governance for the Sustainable Development Goals: Exploring an Integrative Framework of Theories, Tools, and Competencies*. Springer.
- Mose, G. N., Atieno, P. O., Oino, P. G., & Ombachi, N. K. (2024). A Grassroots Solutions for Global Challenges: The Role of Self-Help Groups in Building Sustainable Livelihoods and Resilience to Climate Change in Nyakach, Kenya. *American Journal of Multidisciplinary Research and Innovation*, 3(2), 14-22. <https://doi.org/10.54536/ajmri.v3i2.2578>
- Mubangizi, B. (2022). The interplay between civil society and local government in south africa: Conflict and collaboration in the delivery of public services. *African Journal of Development Studies (Formerly AFFRIKA Journal of Politics, Economics and Society)*, 2(2), 38-58. <https://doi.org/10.31920/2634-3649/2022/Slv2a3>
- Mulubiran, T. (2021). Livelihood assets and strategies of people with disabilities in urban areas of ethiopia. *Scandinavian Journal of Disability Research*, 23(1), 63-73. <https://doi.org/10.16993/sjdr.692>
- Naganag, M. (2022). Readiness of the beneficiaries to engage in sustainable livelihood program (Slp) as basis for intervention. *International Journal of English Literature and Social Sciences*, 7(6), 331-346. <https://doi.org/10.22161/ijels.76.46>
- Naz, F., & Saqib, S. E. (2021). Gender-based differences in flood vulnerability among men and women in the char farming households of Bangladesh. *Natural Hazards*, 106(1), 655-677. <https://doi.org/10.1007/s11069-020-04482-y>
- Odhiambo, J. O., Wakibia, J., & Sakwa, M. M. (2020). Effects of monitoring and evaluation planning on implementation of poverty alleviation mariculture projects in the coast of Kenya. *Marine Policy*, 119, 104050. <https://doi.org/10.1016/j.marpol.2020.104050>
- Paguigan, G. J., & Jacinto, D. C. (2018). Occupants conservation attitudes on energy consumption: The case in isabela state university in cabagan, isabela. *KnE Social Sciences*, 3(6), 270. <https://doi.org/10.18502/kss.v3i6.2386>
- Pandey, P., & Chaudhary, A. K. (2024). The Role of Micro, Small, and Medium Enterprises in India's Economic Development: A Critical Analysis. *Asian Journal of Economics, Business and Accounting*, 24(7), 366-384. <https://doi.org/10.9734/ajeba/2024/v24i71416>

- Prus, P., & Sikora, M. (2021). The impact of transport infrastructure on the sustainable development of the region – Case study. *Agriculture*, 11(4), 279. <https://doi.org/10.3390/agriculture11040279>
- Purwanti, P., Susilo, E., Fattah, M., Saputra, J., & Qurrata, V. A. (2022). The Sustainability Of Small-Scale Fishing Households In The Pandemic Era In Prigi Bay, East Java, Indonesia. *Journal of Sustainability Science and Management*, 17(8), 214-231. <https://doi.org/10.46754/jssm.2022.08.013>
- Quingco, J. G., & Leonoras, C. S. (2019). The economic impact, contribution, and challenges of micro business enterprises to the local development. *Philippine Social Science Journal*, 2(2), 107-122. <https://doi.org/10.52006/main.v2i2.84>
- Ramces, D. I. L., Joerella, B. Y., Jasmin, P. Y., & Jovlynberg, V. R. (2022). Bpo industry in achieving socio-economic development inclusiveness and local governance in the philippines. *Management of Sustainable Development*, 14(2), 22–26. <https://doi.org/10.54989/msd-2022-0012>
- Rosenbloom, D. H., Kravchuk, R. S., & Clerkin, R. M. (2022). *Public administration: Understanding management, politics, and law in the public sector*. Routledge.
- Saguin, K. K., & Cagampan, M. A. (2023). Urban farming and land use governance in Metro Manila. In *A Better Metro Manila? Towards Responsible Local Governance, Decentralization and Equitable Development* (pp. 407-442). Singapore: Springer Nature Singapore.
- Sambrana, G. R., Bonghanoy, C. L., Suello, L. A., Alsola, M. C., & Bueno, N. L. E. (2023). Peso Education and Resource Assistance (PERA) Program: A Case Study in Barangay T. Padilla, Cebu City, Philippines. *American Journal of Multidisciplinary Research and Innovation*, 2(3), 110-116. <https://doi.org/10.54536/ajmri.v2i3.1657>
- Sano, H. (2020). Sustainable Development Goals and Human Rights. In M. Kaltenborn, M. Krajewski, & H. Khun (Eds.), *How Can a Human Rights-Based Approach Contribute to Poverty Reduction? The Relevance of Human Rights to Sustainable Development Goal One*. (Volume 5, pp. 24). Springer.
- Serrat, O. (2017). *Knowledge solutions: Tools, methods, and approaches to drive organizational performance*. Springer Nature
- Samer Ali, A. S., & Rashid, A. A. (2024). The influencing factors of personality that affect entrepreneurship development among people with disabilities. *Journal of Enterprising Communities: People and Places in the Global Economy*, 18(3), 576-600. <https://doi.org/10.1108/jec-09-2022-0138>
- Shava, E., & Hofisi, C. (2019). Cooperatives as strategies of local economic development in the City of Tshwane. *Journal of Contemporary Management*, 16(2), 23-42. <https://doi.org/10.35683/jcm18028.0025>
- Sobremonte-Maglipon, P. A., Olfato-Parojinog, A., Almadrones-Reyes, K. J., Limbo-Dizon, J. E., & Dagamac, N. H. A. (2024). Tracking the Temporal Changes in Land Surface Temperature, Vegetation, and Built-up Patterns in Rizal Province, Philippines using Landsat Imagery. *Geopanning: Journal of Geomatics and Planning*, 11(1), 71-84. <https://doi.org/10.14710/geopanning.11.1.71-84>
- Solina, M. F. L. (2020). Assessment of Business Environment of Women Involved in Micro, Small, and Medium Enterprises (MSMEs) in The Philippines: A Comparative Study with Select Asean Countries. *JAS (Journal of ASEAN Studies)*, 8(2), 191-211. <https://doi.org/10.21512/jas.v8i2.6617>
- Thambura, J. M., Mwangi, N., Mbugua, J., & Kikwatha, R. (2023). Monitoring and evaluation data collection practices and performance of livelihood programmes: A case of caritas, catholic diocese of meru, kenya. *Journal of Sustainable Development*, 16(1), 124. <https://doi.org/10.5539/jsd.v16n1p124>
- Thomas, G. W. (2012). Governance, good governance, and global governance: conceptual and actual challenges. In *Thinking about global governance* (pp. 168-189). Routledge.
- Valenzuela, R. B., Yeo-Chang, Y., Park, M. S., & Chun, J. N. (2020). Local People's Participation in Mangrove Restoration Projects and Impacts on Social Capital and Livelihood: A Case Study in the Philippines. *Forests*, 11(5), 580. <https://doi.org/10.3390/f11050580>
- Wang, Y., & Dong, W. (2022). How China's high-speed rail promote local economy: New evidence from county-level panel data. *International Review of Economics & Finance*, 80, 67-81. <https://doi.org/10.1016/j.iref.2022.02.040>
- Wiśniewski, B. M. (2018). Interdisciplinary Approaches for Sustainable Development Goals: Economic Growth, Social Inclusion and Environmental Protection. In T. Zielinski, I. Sagan, & W. Surosz (Eds.), *Pluralistic Forms of Ensuring the Social and Democratic Balance as Part of Sustainable Development*. Springer.
- Wisnumurti, A. G. O., Candranegara, I. M. W., Suryawan, D. K., & Wijaya, I. G. N. (2020). Collaborative Governance: Synergy Among the Local Government, Higher Education, and Community in Empowerment of Communities and Management of Potential Tourism Village. In *2nd Annual International Conference on Business and Public Administration (AICoBPA 2019)* (pp. 112-115). Atlantis Press.
- Ypil, A. D., & Gempes, G. P. (2023). The Major Local Entrepreneurial Development Approaches of Local Government Units in the Contemporary Setting: A Phenomenology. *Account and Financial Management Journal*, 08(01). <https://doi.org/10.47191/afmj/v8i1.02>

Solid Waste Generation and Characterization in a State University

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Date received: September 7, 2024

Date revised: September 24, 2024

Date accepted: October 7, 2024

Originality: 91%

Grammarly Score: 99%

Similarity: 9%

Recommended citation:

Pangandaman, M., Acabal, J.M., Anino, C., & Apat, G. (2024). Solid waste generation and characterization in a state university. *Journal of Interdisciplinary Perspectives*, 2(11), 256-264. <https://doi.org/10.69569/jip.2024.0485>

Abstract. This study investigated the solid waste generation and characterization at Mindanao State University (MSU) - Main Campus in Marawi City, addressing the critical issues of unsustainable waste management practices. Despite the recent establishment of waste management facilities in Marawi City, including a Central Material Recovery Facility (CMRF) and a Category 4 Sanitary Landfill (SLF), the campus and much of the city need help with effective waste disposal. This has led to environmental challenges such as clogged drainage systems, open dumping, and air pollution from waste burning. The study fills an essential gap in solid waste generation and characterization data, which is crucial for effective solid waste management (SWM) planning as mandated by the Ecological Solid Waste Management Act of 2000 (RA 9003). Using a descriptive-comparative research design, the study surveyed 216 units, including residential buildings, rental properties, commercial establishments, and university facilities. The findings reveal that the MSU-Main Campus generates 9438.011 kg of waste daily, with a per capita waste generation rate of 0.9371 kg/day – significantly higher than the national average. Residential buildings are the primary waste generators, contributing nearly half of the total waste, followed by lodgings. Waste characterization reveals a substantial proportion of non-biodegradable waste (38.29%), with biodegradable waste accounting for 35.46% of the total. These findings highlight the urgent need for systematic waste management strategies, particularly focusing on waste segregation, recycling, and waste reduction to mitigate the environmental impact on campus. The study provides a comprehensive data foundation for developing a solid waste management plan and underscores the role of academic institutions in leading sustainable practices.

Keywords: Solid waste management; waste generation; waste characterization; Ecological Solid Waste Management Act; RA 9003; Marawi City.

1.0 Introduction

Solid waste management (SWM) is a continuing concern of Mindanao State University (MSU) - Main Campus in Marawi City. This regional higher education institution fosters academic pursuits and accommodates residential establishments within its premises, thereby drifting from its intended exclusive academic use. Like many areas in Marawi, the campus faces waste generation, worsened by unplanned areas and uncontrolled residency. Common problems include improper waste disposal, clogged canals, open dumping, and waste burning, which contribute to flooding, foul odors, and air pollution. Uncollected waste from bins attracts insects and pests, emits foul odors, and leaks chemicals that pollute water, while open burning of wastes causes air pollution (Abubakar et al., 2022).

Waste, defined as discarded materials with no value for everyday use (Bharadwaj et al., 2015), largely originates from households and commercial activities, contributing 55% to 80% and 10% to 30% of waste, respectively (Miezah et al., 2015). In the Philippines, solid waste continues to increase due to growing populations, poor enforcement of laws, limited landfill availability, and improper disposal practices (Coracero et al., 2021). Republic

Act 9003, the Ecological Solid Waste Management Act of 2000, mandates local government units and agencies like the Department of Environment and Natural Resources (DENR) to manage waste systematically (Official Gazette, 2001). Recent SWM initiatives in Marawi City, such as establishing a Central Material Recovery Facility (CMRF) and a Category 4 Sanitary Landfill (SLF) in 2023, reflect efforts to address these issues. However, MSU-Main remains burdened by unsustainable practices.

As academic hubs and drivers of social progress, universities are increasingly expected to play a leading role in sustainable waste management (Geng et al., 2013). Proper SWM planning begins with generating and characterizing solid waste, among others, but is unfortunately under-investigated, especially in developing countries (Ugwu et al., 2020). Efficient handling of solid wastes requires understanding the compositions and the waste generation rate (Arazo, 2015). At MSU-Main, the lack of comprehensive data on waste generation hinders compliance with Republic Act 9003 and challenges Marawi City's development of its first Comprehensive Solid Waste Management Plan (SWMP). Significant SWM challenges persist despite the university's recent initiatives – such as its zero single-use plastic policy and waste segregation efforts. Ongoing research at the university aligns with its commitment to becoming a model for sustainable development in the province by addressing these challenges.

This study aims to bridge this data gap by quantifying and characterizing the solid waste generated at MSU-Main Campus. The findings will enhance the university's SWM initiatives and contribute to the broader SWMP for Marawi City, offering a model for improved waste management in similar institutions and communities.

2.0 Methodology

2.1 Research Design

This study employed a descriptive-comparative approach to assess the waste composition and generation within MSU-Main Campus. The aim was to describe and compare the types and quantities of waste produced by different sectors (household and non-household) across various areas on campus. By quantifying and characterizing the waste, this method helps to understand the existing waste management challenges and identify effective improvement strategies.

2.2 Research Locale

MSU-Main Campus covers approximately 986 hectares in total, and about 31% (305 hectares) have only been occupied/utilized by the university, while a significant portion of the utilized area comprises privately owned buildings. The survey focused on highly populated areas within the campus, including residential, commercial zones, academic and community support facilities. Specifically, the selected barangays were Lomidong, Cabingan, Dimaluna, Rapasun, Cadayonan, and Bayeba-Damag.

2.3 Research Participants

Secondary data and information, such as the list of university buildings and dorms and university land map use from various offices in the university; registered residents, number of barangay population, and solid waste practices from the barangay halls and agencies in Marawi were gathered. These reports were necessary to determine the sample size of households and non-households in MSU. The two types of waste generators are household (HH) and non-household (NHH).

HH samples were drawn from residential and rental buildings in six barangays, while NHH samples came from commercial and institutional sources. The HH sample size was based on 2020 population projections from PhilAtlas. Using Krejcie and Morgan's (1970) formula for sample size determination, the required number of survey responses was calculated using this derived formula:

$$\text{Sample size} = \frac{X^2NP(1 - P)}{d^2(N - 1) + X^2P(1 - P)} \quad (1)$$

where X^2 = the table value of chi-square for 1 degree of freedom at the desired confidence level (3.841); N = population size; P = the population proportion; d = the degree of accuracy expressed as a proportion (0.05)

The survey required 154 HH units. For NHH, 276 registered businesses and data on 7,467 students in campus rentals were used to determine the sample. The study surveyed 216 units, consisting of 121 residential buildings, 55 rental properties, 16 commercial establishments, 7 dormitories, and 17 MSU buildings.

2.4 Research Instrument

This present study used a structured questionnaire that is composed of three parts, with the first part collecting the basic information about the respondents, the second assessing respondents' awareness of solid waste management, and the third part using a 'yes or no' and multiple Likert scale responses with added objective responses to collect the specific data needed for the assessment. The researchers also considered the local dialect ('Meranao') in the areas that had been conducted, especially in residential or community areas.

The questionnaire was reviewed and approved by MSU, the City Community General Services Office (CGSO), the City Environment and Natural Resources Office (CENRO), and local waste management personnel. To ensure the reliability of the research instrument, a pilot test involving 26 respondents was conducted in Barangay Cadayonan. Reliability was assessed using Cronbach's alpha to measure internal consistency.

The pilot test showed high reliability, particularly in Part III of the questionnaire (10 questions), with Cronbach's alpha value of 0.95, signifying an excellent level of reliability. The remaining components (Parts I and II), exhibited "acceptable" reliability, with alpha values surpassing 0.70. The average alpha of 0.81 denotes a commendable level of reliability. Consequently, no modifications were deemed necessary for the questionnaire.

2.5 Data Gathering Procedure

Data collection involved two groups: utility personnel from various MSU buildings and residents within campus communities. Interviews with utility personnel obtained data on daily waste generation from nine MSU dormitories and ten buildings. Field surveys employed structured questionnaires translated into the local dialect and disseminated house-to-house across residential, commercial, and educational buildings. The in-person survey approach was chosen to establish a personal connection with respondents, facilitating comprehensive data collection despite being time-consuming.

2.6 Data Analysis

SPSS Statistics software by IBM was utilized for qualitative and quantitative data analysis. Its user-friendly interface and efficiency in handling large datasets (IBM, SPSS Inc., 2022) made it a suitable tool for this study, offering in-depth analysis capabilities and faster processing times.

To determine the waste generation rate per person (per capita waste generation), the study utilized the formula:

$$PCG = \frac{\text{weight of solid waste generated data household}}{\text{total number of person in the household}} \quad (2)$$

2.7 Ethical Considerations

This study followed strict ethical guidelines to protect MSU residents and constituents surveyed via questionnaires. Participation was voluntary, with respondents free to withdraw at any time. Informed consent was obtained, ensuring participants understood the study's purpose and procedures. Anonymity and confidentiality were maintained, and all efforts were made to minimize harm. The dignity and well-being of participants were prioritized, and data were kept confidential to ensure academic integrity. Proper result communication practices were followed to avoid plagiarism and research misconduct.

3.0 Results and Discussion

3.1 Demography of the Respondents

Figure 1 depicted a predominant participation of adult respondents who are self-employed/ entrepreneurs, professionals, college students, and a significant number of unemployed individuals. Among the 216 respondents, self-employed individuals, including entrepreneurs and business owners, constituted the majority, with 55 respondents. This group comprises adults and older adults, with minimal representation of adolescents. Following closely were students, accounting for 48 out of 216 respondents, largely composed of adults, with adolescents forming a minority within this category.

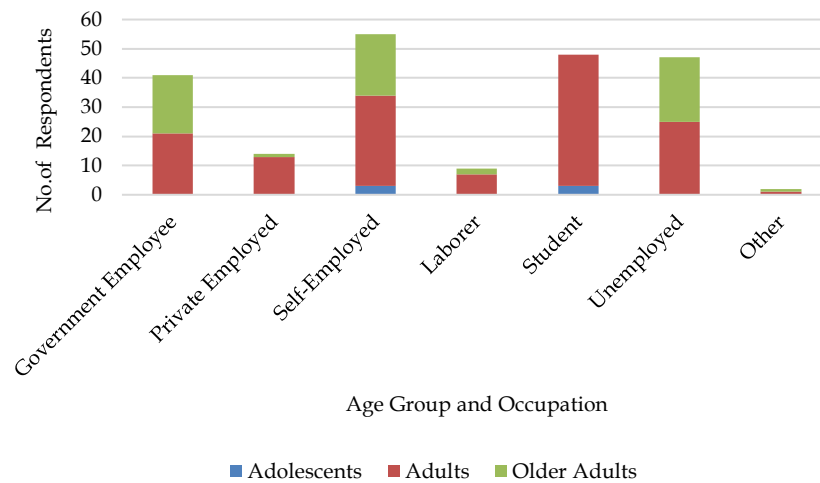


Figure 1. Age-occupation relationship of respondents

The concentration in self-employed and entrepreneurial roles suggests a vibrant economic activity within the community, likely generating waste related to business activities, such as packaging, office or school supplies, and general household/ establishment waste.

3.2 Composition of the Surveyed Buildings

Residential-type structures represent a significant portion of the survey at 56.02%, with rental properties following at 25.46% (see Figure 2). Conversely, MSU-owned buildings, such as administrative and support buildings and dormitories, constitute only 11.11% of the surveyed premises. This distribution explains the predominance of self-employed individuals and entrepreneurs among the respondents, many of whom are residents within the campus area, alongside a significant representation of students who primarily inhabit rental accommodations. The prevalence of residential structures and rental properties reflects a stable but somewhat mobile community, likely influenced by the needs of students and professionals.

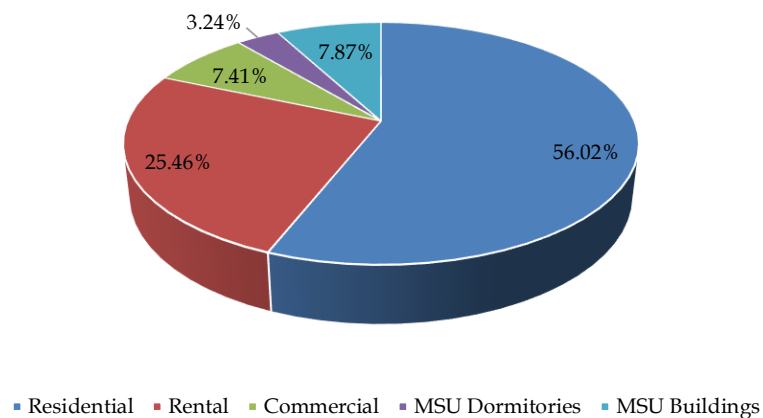


Figure 2. Composition of surveyed buildings

As shown in Figure 3, Barangay Dimaluna is the business and commercial district of MSU-Main Campus. It is the biggest barangay, so it accounted for 30% of the respondents, as shown in Figure 5. Barangay Cadayonan followed this at 20.48% and Barangay Cabangan at 14.29%. Barangays Lomidong, Bayeba-Damag, and Rapasun, primarily composed of residential and rental buildings, accounted for 13.81%, 10.95%, and 10.48% of the respondents,

respectively. The distribution of respondents' locations supports the demographic findings, illustrating a community centered around educational and entrepreneurial activities.

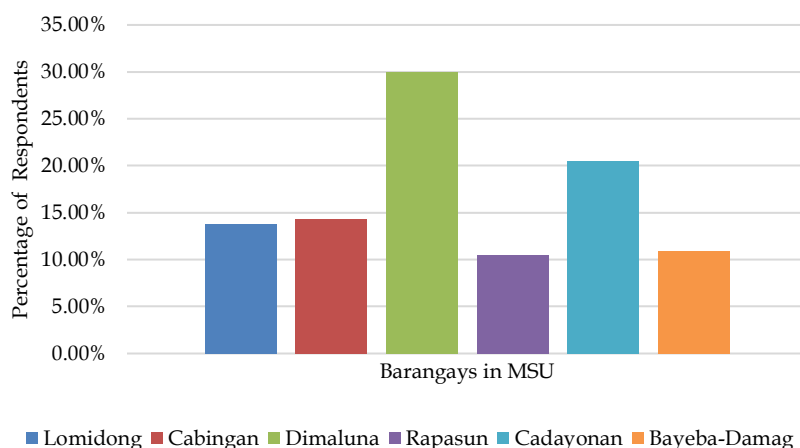


Figure 3. Location of Respondents

3.3 Waste Generation

Table 1 summarizes waste generation by building type across the MSU-Main Campus. The total waste generation is 66,066.08 kg/week (9,438.011 kg/day, 3,797.32 tons/year). The residential buildings were revealed to be the main waste generators in MSU, contributing 47.36% of waste, and it is estimated that every person generates 0.4438 kg/day of waste. Some residential buildings operate small home-based businesses, especially in Barangay Dimaluna. This is followed by lodgings like apartments, boarding houses, and cottages, which accommodate an estimated 7,467 MSU students, amounting to 35.39% of MSU waste with a PCG level of 0.3317 kg/day. The nine (9) MSU Dormitories, which house 1,622 students in School Year 2022-2023, are in third place, contributing 10.46% percent daily waste with a PCG of 0.0980 kg/day. At the fourth rank, commercial buildings, such as restaurants, markets, shops, and stores, produce 6.48% of waste with 0.0607 kg/day of waste per capita. Moreover, 0.9371 kg/day of waste per capita is generated at the MSU level. The remaining 0.31% constitutes the contribution from MSU academic, administrative, and support buildings, with a PCG level of 0.0980 kg/day.

Building Type	Generation			Percentage	PCG level (kg/day)
	kg/week	kg/day	tons/year		
Residential	31,290.0	4,470.00	1,798.47	47.36%	0.4438
Lodgings	23,384.0	3,340.57	1,344.06	35.39%	0.3317
Commercial	4,278.00	611.143	245.890	6.480%	0.0607
MSU Dormitory	6,910.00	987.143	397.170	10.46%	0.0980
MSU Buildings	204.000	29.1543	11.7300	0.310%	0.0029
Total	66,066.08	9,438.01	3,797.32	100.00%	

The overall waste generation rate at MSU-Main Campus is alarmingly high at 0.9371 kg/day per capita, significantly higher than the 2010 national average of 0.40 kg/day but comparable to Metro Manila and highly urbanized cities (HUCs). Comparatively, the Baglung Municipality in Nepal reports municipal solid waste (MSW) generation rates in different settings of 0.43 kg per capita per day from households and 0.83 kg per day from institutions (Regmi, Ghimire, & Shrestha, 2021).

The significant presence of organic waste, particularly from residential buildings and lodgings in MSU, poses substantial challenges for solid waste management. In many countries, large quantities of solid waste, primarily organic, create major environmental issues such as flooding, pollution, and health impacts (Dharnaik and Pol, 2024). This situation is evident at MSU-Main Campus, where unsustainable waste management practices are prevalent, particularly in commercial and residential areas.

The comparative waste generation rates at other institutions in the Philippines highlight the distinct challenges at MSU. For instance, Caraga State University (CSU) generates 85.527 kg of waste per day with an average of 0.018 kg (Ciudad et al., 2022), significantly lower than the national average. Similarly, the University of Science and Technology of Southern Philippines shows a low waste generation rate of 126.01 kg over 12 days (Elayan et al., 2019). Misamis Oriental State College of Agriculture and Technology reports waste generation rates of 0.56 kg per capita per week in residential areas (Arazo, 2015), still lower than MSU's rate.

The significant difference in waste generation between MSU-Main Campus and other institutions can be attributed to the varied building types at MSU, including many residential, rental, institutional, and commercial buildings, making it comparable to a small town. Ioja et al. (2011) observed that the type of educational institution has a greater impact on waste generation than the number of students. The poor socio-economic conditions in Lanao del Sur, where 64% of the population lives in poverty (PSA, 2021), also exacerbate waste generation. Further studies reveal that socio-economic factors such as household income, education level, and local economic activity significantly influence waste generation and composition (Jou et al., 2024; Deshpande et al., 2024; Hidalgo et al., 2019). Lower-income households generate more waste, while higher education levels correlate with better recycling practices (Deshpande et al., 2024). The UNICEF Situation Analysis of Children in BARMM carried out in 2017 highlights that over 80% of children live in poverty, lacking access to basic rights, further compounding waste management challenges.

3.4 Waste Characterization

The analysis of waste composition at MSU-Main Campus reveals significant insights into the patterns and implications of waste generation across different building types, as detailed in Table 2. Residential buildings generate the highest amount of waste at 125,163 kg per month, comprising 43,844 kg of biodegradable waste, 46,929 kg of non-biodegradable waste, 23,340 kg of recyclables, and 11,049 kg of hazardous waste. Rental apartments follow with 93,536 kg per month, including 32,925 kg of biodegradable waste, 35,830 kg of non-biodegradable waste, 14,813 kg of recyclables, and 6,824 kg of hazardous waste. Commercial buildings contribute 17,112 kg per month, with 6,555 kg of biodegradable waste, 7,452 kg of non-biodegradable waste, 2,208 kg of recyclables, and 897 kg of hazardous waste. In total, these three building types generate 235,811 kg of waste monthly, with non-biodegradable waste (90,211 kg) making up the largest proportion at 38.58%, followed by biodegradable waste (83,324 kg) at 35.68%, recyclables (40,361 kg) at 17.48%, and hazardous waste (18,770 kg) at 8.26%.

Dormitories and MSU buildings collectively add 58,660 kg of waste per month. Dormitories contribute 27,640 kg, with 10,240 kg of biodegradable waste, 11,012 kg of non-biodegradable waste, 4,984 kg of recyclables, and 1,404 kg of hazardous waste. MSU buildings add 31,020 kg, including 10,850 kg of biodegradable waste, 11,517 kg of non-biodegradable waste, 7,448 kg of recyclables, and 1,204 kg of hazardous waste. Combined, these categories contribute 21,090 kg of biodegradable waste (35.95%), 22,529 kg of non-biodegradable waste (38.41%), 12,432 kg of recyclables (21.19%), and 2,608 kg of hazardous waste (4.45%).

Table 2. Final estimated weight of garbage collected each month

Building	Estimated waste	Types of Waste (kg)			
		Biodegradable	Non-Biodegradable	Recyclables	Hazardous
1. Residential	125,163	43,844	46,929	23,340	11,049
2. Rental	93,536	32,925	35,830	14,813	6,824
3. Commercial	17,112	6,555	7,452	2,208	897
Total₁₋₃	235,811	83,324	90,211	40,361	18,770
Percentage ₁₋₃ (%)		35.68	38.58	17.48	8.26
4. Dormitory	27,640	10,240	11,012	4,984	1,404
5. MSU Bldg	31,020	10,850	11,517	7,448	1,204
Total₄₋₅	58,660	21,090	22,529	12,432	2,608
Percentage ₄₋₅ (%)		35.95	38.41	21.19	4.45
Total₁₋₅	294,471	104,414	112,740	52,793	21,378
Percentage ₁₋₅ (%)		35.46%	38.29%	17.92%	7.26%

Overall, the campus generates a total of 294,471 kg of waste per month, comprising 104,414 kg of biodegradable waste (35.46%), 112,740 kg of non-biodegradable waste (38.29%), 52,793 kg of recyclables (17.92%), and 21,378 kg of hazardous waste (7.26%).

Figure 4 shows the composition of solid waste in MSU-Main Campus, where plastics comprise the largest portion at 37.45%, followed by paper (20.38%) and food waste (20.14%). This finding aligns with the Waste Analysis and Characterization Study (WACS) in Ampayon, Butuan City, which reported a similar concentration of plastics at 39.50% in institutional areas. Comparable trends are observed at CSU, where plastics constitute 46% of waste (Ciudad et al., 2022), and at USTP, with a plastic concentration of 45.93% (Elayan et al., 2019). The prevalence of these three waste types can be attributed to the campus's residential, academic, food, and commercial establishments, where the convenience of packaged foods, school and office supplies, and other goods often leads to increased plastic use. This explains the massive presence of plastic on campus. Unfortunately, the high percentage of plastics is particularly concerning due to their non-biodegradable nature, which can take over 400 years to decompose, releasing toxins that contaminate water sources and harm ecosystems (Sampson, 2021). Additionally, only 17.92% of the waste stream is recycled, exacerbating the environmental impact of non-biodegradable waste on the MSU-Main Campus, which, according to Alhazmi et al. (2021), non-biodegradable waste poses problems both on land and in the seas.

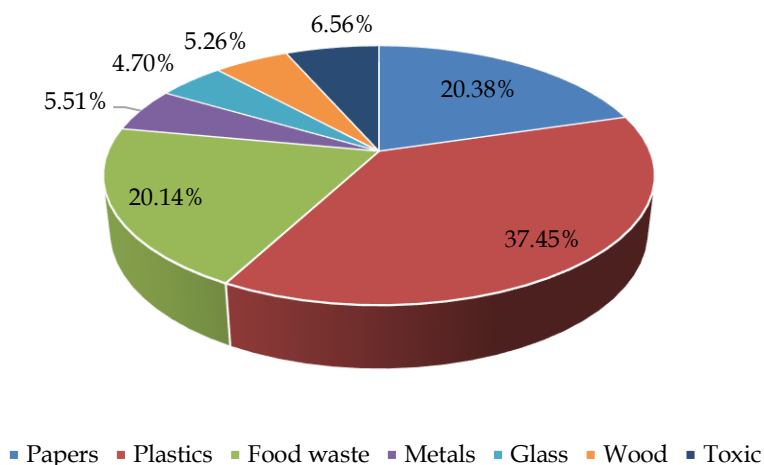


Figure 4. Solid waste composition at MSU-Main Campus

In the institutional areas, plastic/cellophane waste was the most abundant, obtaining a 39.50% concentration, followed by plastic bottles and other plastic types of waste. Biodegradable waste on the MSU-Main Campus comprises 20.14% food waste, 20.38% paper, and 5.26% wood. It may include kitchen, animal dung, and agricultural waste (Bharadwaj et al., 2015). Popoola (2022) explains that these materials break down naturally due to factors like bacteria, fungi, temperature, oxygen, and humidity, turning into simpler organic compounds that integrate into the soil with minimal environmental risks. Biodegradable waste includes green waste like food, paper, and biodegradable plastics. Other examples are sewage, manure, sewage sludge, human waste, and waste from slaughterhouses and hospitals; all establishments can be found on the MSU-Main Campus.

Hazardous waste, although constituting a smaller portion at 6.56%, includes household cleaning agents, pesticides, and e-waste, such as broken electronics and defective devices. The US Environmental Protection Agency (EPA) highlights the detrimental effects of hazardous waste, including its potential to kill organisms in water bodies, destroy plant and animal life in contaminated areas, and cause reproductive complications in animals. These wastes are particularly dangerous to human health and the environment due to their ignitability, corrosivity, reactivity, toxicity, and persistence (Abul Hasan et al., 2018; Bharadwaj, Yadav, & Varshney, 2015). While e-waste, including laptops, mobile phones, and electronic and mechanical parts, is also rapidly growing on the MSU-Main campus, Zhang et al. (2022) highlight the necessity of proper disposal protocols for e-waste management are crucial to prevent hazardous impacts.

Waste generation is an inevitable consequence of domestic and industrial activities, often having little or no alternative use. Ineffective waste disposal systems pose significant environmental and human health challenges (Popoola, 2022). Therefore, effective solid waste management (SWM) is crucial for mitigating adverse health and environmental impacts, conserving resources, and enhancing urban livability (Abubakar et al., 2022). The findings from MSU-Main Campus underscore the urgency for improved waste management practices to address the environmental implications of different waste types.

4.0 Conclusion

The study on solid waste generation and characterization at Mindanao State University-Main Campus, Marawi City, provides crucial insights into the waste management dynamics within the university. The research determined that the campus generates an average of 9438.011 kg (10.4 tons) of solid waste daily. Of this total, 47.36% originates from residential buildings, 35.39% from lodgings, 10.46% from MSU dormitories, and only 0.31% from academic and administrative buildings. This indicates that accommodation-related facilities are the primary contributors to waste generation on campus.

The waste composition includes approximately 35.46% biodegradable materials, 38.29% non-biodegradable waste, 17.92% recyclables, and 7.26% hazardous waste. Notably, the per capita generation (PCG) level at the university was calculated at 0.9371 kg per person per day, a figure significantly higher than the national average of 0.40 kg/day reported in 2010 but comparable to levels observed in Metro Manila and other highly urbanized cities (HUCs). The waste characterization data highlighted that plastics are the most prevalent, constituting 37.45% of the total waste, followed by paper and food waste, each accounting for 20%. The current absence of proper solid waste management practices means these plastics often end up in creeks or roadside, exacerbating environmental concerns.

These findings suggest a critical need for enhanced recycling facilities and composting systems to effectively manage these dominant waste streams. By implementing these measures, the university could potentially divert its waste from landfills, significantly reducing its environmental impact. Future research should focus on the behavioral aspects of waste disposal among students, faculty, and staff, which could provide deeper insights into optimizing waste segregation and promoting environmental sustainability on campus. This study is vital for improving waste management practices and fostering a more sustainable university environment.

5.0 Contributions of Authors

Merhanna D. Pangandaman – revision, editing, writing, supervising, data analysis
Josua Meko B. Acabal – writing or encoding, research assistant
Cesar B. Anino Jr. – writing or encoding, field assistant
Gerald D. Apat – writing or encoding, field assistant

6.0 Funding

This work did not receive research funding from any agencies.

7.0 Conflict of Interests

The authors declare no conflicts of interest about the publication of this paper.

8.0 Acknowledgment

This research would not have been possible without the support and guidance of many individuals and the grace of Almighty God. The authors express heartfelt thanks to the MSU Office of the Vice President for Planning and Development Office (OVPPD), Physical Plant Division (PPD), and Office of the President (OP), and to the City Community General Services Office (CGSO), and the City Environment and Natural Resources Office (CENRO) for their invaluable assistance and participation in the interviews. Special thanks to their families for their unwavering love, encouragement, and support throughout this journey.

9.0 References

- Abubakar I.R., Maniruzzaman K. M., Dano U. L., AlShihri FS, AlShammari M.S., Ahmed S.M.S., Al-Gehani W.A.G., & Alrawaf T.I. (2022). Environmental Sustainability Impacts of Solid Waste Management Practices in the Global South. *International Journal of Environmental Research and Public Health*, 19(19), 1-29. <https://doi.org/10.3390/ijerph191912717>
- Abul Hasan, M., Ahmed, M., Mallick, J., & Singh, R.K. (2018). Impact of Hazardous Wastes on Human Health & Preventive Measures for a Sustainable Environment. 13th Annual Research Day Organized by the Deanship of Scientific Research in Collaboration with the College of Engineering Research Center, College of Engineering, King Khalid University, KSA.
- Alhazmi H., Almansour F.H., & Aldhafeeri Z. (2021). Plastic Waste Management: A Review of Existing Life Cycle Assessment Studies. *Sustainability*, 13(10), 5340. <https://doi.org/10.3390/su13105340>
- Arazo, R.O. (2015). Compositions of solid wastes generated from a school campus. *International Journal of Research in Engineering and Technology*, 4(10), 263-267. <https://tinyurl.com/rex9vuv2>
- Bharadwaj, A., Yadav, D., & Varshney, S. (2015). Non-Biodegradable Waste – Its Impact & Safe Disposal. *International Journal of Advanced Technology in Engineering Science*, 3(1), 184-191. <https://tinyurl.com/3r9cdvyn>

- Bukhari, S.A.R.(2021). Sample Size Determination Using Krejcie and Morgan Table. Retrieved from <https://doi.org/10.13140/RG.2.2.11445.19687>
- Ciudad, K., Lucero, C.V., & Calonia, V.N. (2022). Pre-COVID 19 Pandemic Solid Waste Management and Characterization in Caraga State University, Ampayon, Butuan City, Philippines. *Journal of Ecosystem Sciences and Eco-Governance*, 4(1), 43-53. <https://doi.org/10.54610/jeseg/4.1.2022.005>
- Coracero, E. E., Gallego, R.B. J., Frago, K. J., & Gonzales R. J. (2021). A Long-Standing Problem: A Review on the Solid Waste Management in the Philippines. *Indonesian Journal of Social And Environmental Issues*, 2(3), 213-220. <https://doi.org/10.47540/ijsei.v2i3.144>
- Deshpande, A., Ramanathan, V., & Babu, K. (2024). Assessing the socio-economic factors affecting household waste generation and recycling behavior in Chennai: A survey-based study. *International Journal of Science and Research*, 11(2), 750-758. <https://doi.org/10.30574/ijstra.2024.11.2.0487>
- Dharnaik, A.S. & Pol, P.(2024). A Review on Composting of Organic Solid Waste IOP Conference Series Earth and Environmental, 1326, 1-14. <https://doi.org/10.1088/1755-1315/1326/1/012130>
- Elayan, J.M., Cabiguin, R.Z.B., Tamang, R.M., & Lacang, G.C. (2019). Solid wastes characterization in University of Science and Technology of Southern Philippines, Cagayan de Oro Campus. *Journal of Biodiversity and Environmental Sciences*, 15(4), 52-58. <https://tinyurl.com/59e99fws>
- George, D., & Mallery, P. (2003). SPSS for Windows step by step: A simple guide and reference. 11.0 update (4th ed.). Boston: Allyn & Bacon.
- Hidalgo, J., Amaya, J., Jervis, F., & Moreira, C. (2019). Influence of socio-economic factors on household solid waste (HSW) generation of the city of Guayaquil, Ecuador. 17th LACCEI International Multi-Conference for Engineering, Education, and Technology: "Industry, Innovation, and Infrastructure for Sustainable Cities and Communities", Jamaica.
- Ioja, C. I., Onose, D. A., Grădinaru, S. R. , & Șerban, C. (2012). Waste Management in Public Educational Institutions of Bucharest City, Romania, *Procedia Environmental Sciences*, 14, 71-78. <https://doi.org/10.1016/j.proenv.2012.03.008>
- Jou, Y.-T., Mariñas, K.A., Saflor, C.S., Bernabe, D.A., Casuncad, J.R., Geronimo, K., Mabbagu, J., Sales, F., Verceles, K.A. (2024). Assessing the Community Perception in San Jose, Occidental Mindoro, of Proper Waste Disposal: A Structural Equation Modeling Approach. *Sustainability*, 16, 1087. <https://doi.org/10.3390/su16031087>
- Margaret Popoola, B. (2023). Biodegradable Waste. *Intech Open*.
- Miezah, K., Obiri-Danso, K., Kádár, Z., Fei-Baffoe, B., & Mensah, M. Y. (2015). Municipal solid waste characterization and quantification as a measure towards effective waste management in Ghana, *Waste Management*, 46, 15-27. <https://doi.org/10.1016/j.wasman.2015.09.009>
- Regmi, T., Ghimire, M., & Shrestha, S. M. (2021). Determinants of Municipal Solid Waste in Urban Zone of Baglung Municipality, Nepal. *Journal of Institute of Science and Technology*, 26(2), 43–52. <https://doi.org/10.3126/jist.v26i2.41415>
- Sampson, S. (2021). The Effects of Non-Biodegradable Plastics on the Environment. *African Journal of Environmental and Waste Management*, 8(2), 001-002. <https://tinyurl.com/bdct385f>
- Ugwu, C. O., Ozoegwu, C. G., & Ozor, P. A. (2020). Solid waste quantification and characterization in university of Nigeria, Nsukka campus, and recommendations for sustainable management. *Heliyon*, 6(6), e04255. <https://doi.org/10.1016/j.heliyon.2020.e04255>
- Zhang, Z., Malik, M. Z., Khan, A., Ali, N., Malik, S., & Bilal, M. (2022). Environmental impacts of hazardous waste, and management strategies to reconcile circular economy and eco-sustainability. *Science of The Total Environment*, 807, 150856. <https://doi.org/10.1016/j.scitotenv.2021.150856>

Work Challenges, Opportunities, and Job Performance of Non-Teaching Personnel in a Private Higher Education Institution

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Date received: September 10, 2024

Date revised: September 27, 2024

Date accepted: October 7, 2024

Originality: 89%

Grammarly Score: 99%

Similarity: 11%

Recommended citation:

Esmane, A., & Quezon, M. (2024). Work challenges, opportunities, and job performance of non-teaching personnel in a private higher education institution. *Journal of Interdisciplinary Perspectives*, 2(11), 265-277. <https://doi.org/10.69569/jip.2024.0489>

Abstract. The research aimed to investigate the relationship between work challenges and opportunities and their effect as predictors of job performance of non-teaching personnel at a Higher Education Institution (HEI) in Bacolod City. While most research on HEIs focuses on faculty and students, this study aimed to shed light on the experiences of non-teaching staff. The study examined the level of challenges, opportunities, and job performance of the respondents and the relationships among these three variables. It also sought to determine if work challenges and opportunities could predict job performance. The study used a descriptive-correlational design and selected 153 permanent non-teaching personnel, including administrative heads and support staff, who had worked for six months or longer in the HEI. The findings showed that respondents faced mild workload challenges, job-related stress, communication, and working conditions. They were provided ample opportunities for training, mentorship, and recognition of learning. Regarding performance, the respondents excelled in task, contextual, and adaptive performances. The study revealed no significant relationship between challenges and job performance. However, a significant relationship was found between the opportunities provided and job performance. Finally, the study determined that opportunities were significant predictors of job performance. In conclusion, the study suggests that when opportunities are effectively leveraged, the job performance of non-teaching personnel can be enhanced.

Keywords: Higher educational institution; Job performance; Non-teaching personnel; Opportunities; Work challenges.

1.0 Introduction

Non-teaching staff members are crucial in the modern higher education system, as they are responsible for various daily tasks within universities. These proficient employees typically provide academic support, student services, and institutional assistance in colleges and other educational institutions (Trishna et al., 2022). According to Ogunode et al. (2020), non-academic staff members serve in various departments within the university, such as the registrar's office, maintenance, the vice-chancellor's office, student affairs, human resources, security, and bookshop, among others. As they navigate their work, they face several challenges in their daily tasks while providing services to students and teachers to support the institution's mission and vision. Kapur (2018) mentioned that employees may face various challenges and difficulties in their workplace, which could be related

to working conditions, time management, conflict resolution, knowledge and information gaps, workplace stress, and communication barriers.

The presence of challenges and opportunities inherently marks the career development journey within the private sector. Kapur (2020) emphasizes the importance of encountering various opportunities essential for improving skills and career prospects. Concurrently, challenges are fundamental to human life, offering a crucial avenue for personal and professional growth (Kapur, 2020). Similarly, Park & Lee (2018) highlight the significance of workplace learning in strengthening employees' professional skills, enabling them to tackle organizational issues and adapt to workplace changes effectively.

Employees in the private sector are confronted with a gamut of challenges ranging from the pressures of maintaining productivity and navigating workplace politics to keeping pace with technological advancements. These challenges demand resilience and adaptability, which are essential for professional growth. Moreover, the competitive environment of the private sector often leads to stress and burnout, highlighting the need for effective coping mechanisms and support systems. Amidst these challenges, the private sector has opportunities that foster professional development and career advancement. Opportunities for learning and development, such as training programs and on-the-job learning experiences, play a crucial role in enhancing employees' skill sets (Park & Lee, 2018). Furthermore, the dynamic nature of the private sector often presents opportunities for innovation, leadership, and career progression, enabling employees to carve out fulfilling career paths.

Encountering challenges is regarded as a fundamental element of human life. It is vital to cultivate the skill of handling various types of obstacles. On the other hand, encountering various opportunities is essential for improving skills and career prospects, according to Kapur (2020). Though there are challenges at work, opportunities also play a vital role in enhancing one's knowledge and competencies. Workplace learning is crucial in strengthening employees' professional skills, resolving organizational issues, and adapting to changes in the workplace (Park & Lee, 2018).

The relationship between the challenges and opportunities faced by private sector employees is characterized by a dynamic interplay, where navigating through challenges often leads to uncovering new opportunities. This interaction is pivotal for career development, as overcoming challenges builds resilience and opens doors to opportunities that may not have been accessible otherwise. Kapur (2020) and Park & Lee (2018) elucidate that navigating this landscape requires a proactive approach to learning and development and the resilience to overcome challenges. In this sense, challenges can be seen as stepping stones that lead to personal and professional growth, enhancing an employee's ability to contribute to their organization's success. Furthermore, employee performance is evaluated based on task completion, productivity, output, innovation, profitability, and effectiveness (Safitri & Lathifah, 2019), with contextual performance metrics including work quality, honesty, initiative, attendance, attitude, reliability, cooperation, and knowledge as per Aderibigbe (2019). Employee adaptability is crucial for success, especially in rapid technological and societal advancements, as it leads to adaptive performance (Chen et al., 2020).

Mustafa and Bashayreh's (2021) study found a significant increase in student numbers and the student-to-staff ratio. Funding priorities have shifted towards research outcomes and education quality, leading to increased workload and decreased job performance for non-teaching personnel. Barreto (2020) added that current changes require new skills, knowledge, and abilities from non-teaching personnel. The organization should give importance to the challenges, needs, and opportunities provided to the non-teaching personnel as their work performance highly impacts the student's experience in the university (Ogunode et al., 2020). It is often perceived that non-teaching staff are not valued as essential members of a school and are merely seen as supporting its operations (Delgado et al., 2018). Acknowledging their contribution and understanding their challenges can foster a more inclusive and motivated workforce.

Investigating their performance can improve these essential services, enhancing the learning and working environment for students and teachers alike. It can also identify opportunities extended to them that are vital in improving and developing their skills and knowledge to produce efficient and effective work performance. Insights from the study can inform policy and strategy development, ensuring that decisions are based on a

comprehensive understanding of all aspects of institutional performance, including those outside the classroom. In essence, studying the performance of non-teaching personnel is vital for enhancing institutional effectiveness, employee satisfaction, and the educational experience.

2.0 Methodology

2.1 Research Design

The study is descriptive-correlational in design. The descriptive design was suitable for understanding the challenges respondents face in the workplace, such as workload, job-related stress, communication, working conditions, and environment. It also discussed the extent of work opportunities provided, including training and development, mentorship and coaching, recognition of learning achievements, and the respondents' job performance. A correlational research design was employed to investigate the relationship between work challenges and job performance and the relationship between the extent of work opportunities provided and the respondents' job performance.

2.2 Research Locale

The study was conducted in one of the leading Higher Educational Institutions in Bacolod City, Negros Occidental. The university is shifting its focus toward more digitally integrated learning environments, seeking international opportunities for faculty, staff, and students, and advancing its research, innovation, and social engagement in Asia and the Pacific. This emphasis has a significant impact on both teaching and non-teaching staff. Non-teaching personnel, such as IT support, library staff, and administrative workers, are at the forefront of implementing these changes. It is crucial to understand the challenges, readiness, skill levels, attitudes, and perceptions of non-teaching staff towards the increased demands of the university. This is because their support and proficiency in managing these challenges and processes are vital for a smooth transition and the successful adoption of driven practices across the institution, which also affect their performance.

2.3 Research Respondents

The study's respondents were 153 permanent non-teaching personnel who were administrative heads and support and had worked for six months or longer in a select higher education institution in Bacolod City from a population of 251. The respondents were chosen through simple random sampling using the fishbowl method regardless of age, sex, educational attainment, position, and length of service.

2.4 Research Instrument

The instrument used for this study was a survey questionnaire designed by the researcher based on Kapur's (2018) variables of workplace problems and issues, Park and Lee's (2018) workplace learning measures for human resource development, and Sinining's (2018) adopted questionnaire for organizational commitment and job performance. It has a Content Validity Ratio (CVR) of 0.90 and a Cronbach's alpha of 0.899. The instrument was divided into four parts. The first part determined the profile of the respondents, which covered age, sex, educational attainment, position, and length of service. The second part of the instrument focused on the level of work challenges the respondents faced in their workplace. The challenges were measured using a 4-point Likert scale, which included indicators such as workload and job-related stress, communication, and working conditions and environment. The third part determined the extent of work opportunities provided to the respondents. The opportunities were measured using a 4-point Likert scale, which included indicators such as training and development, mentorship and coaching, and recognition of learning achievements. The fourth part of the instrument determined the level of job performance in terms of task performance, contextual performance, and adaptive performance.

2.5 Data Gathering Procedure

After obtaining approval, the researcher distributed the survey instruments manually or using Google Forms via Facebook Chat Messenger. The instruments were randomly distributed to various offices and departments of the HEI. At this point, the respondents had been randomly selected using the lottery method beforehand. Data were collected through an electronically generated Google survey form and manually from different offices. The collected data was analyzed using statistical software.

2.6 Ethical Considerations

To maintain the research outcomes' quality, validity, and reliability, the researcher requested permission and approval from the Vice Chancellor for Administration with the assistance of the Human Resource Development Services Office. The research was carried out while ensuring the confidentiality and anonymity of the respondents. Participation was voluntary and only with the explicit consent of the respondents. The data collected were disposed of once the study was completed. Electronic data stored in computers, disks, or cloud files were deleted to ensure the data could not be recovered. Paper records were destroyed in a manner that leaves no possibility for information reconstruction. Proper disposal methods for paper records, such as shredding, were done.

3.0 Results and Discussion

3.1 Work Challenges Experienced in the Workplace

Workload And Job-related Stress

Table 1 displays the mean scores and standard deviations for workload and job-related stress experienced by the respondents, categorizing each item as a moderate or mild challenge. The findings show that respondents faced moderate challenges with work-related stress due to task overload (Mean = 2.62, SD = 0.78). Meeting targets, competitiveness among colleagues, and poor management of priorities result in mild challenges for the respondents.

Table 1. Descriptive statistics of the work challenges in terms of workload and job-related stress

Indicators	Mean	Interpretation	SD
1. I am feeling stressed at work due to an overload of task	2.62	Moderate challenge	0.78
2. Meeting the targets set for me is causing me stress.	2.42	Mild challenge	0.76
3. The competitiveness among colleagues is adding pressure to my work.	1.54	Mild challenge	0.72
4. Poor management of priorities is contributing to my stress levels.	2.17	Mild challenge	0.86
Overall	2.19	Mild challenge	0.56

The implications of such a situation can be understood through existing literature on work-related stress. For instance, a study by Folkman (2013) on stress, appraisal, and coping underscores the importance of individuals' perceptions of their work environment and ability to manage stressors. According to their theory, mild challenges at work might not necessarily lead to negative outcomes if individuals perceive themselves capable of coping with these stressors. The findings align with Kimura et al. (2018) and Wang (2022), who found that work overload and competition contribute to increased stress and tension among employees. Overall, the respondents experience moderate workplace challenges related to workload and job-related stress.

Moreover, research by Bakker and Demerouti (2007) introduced the Job Demands-Resources (JD-R) model, which posits that every occupation has specific job demands and resources. Mild workload challenges and job-related stress can be seen as job demands. Suppose these demands are balanced with adequate job resources (e.g., support from colleagues and supervisors, autonomy, and opportunities for professional development). In that case, they may not lead to job strain but could foster engagement and motivation.

Therefore, while the challenges described as 'mild' may not immediately seem alarming, they underscore the need for proactive stress management strategies and organizational support to prevent escalation. This could involve interventions to improve work organization, promote a supportive work culture, and offer employees resources to enhance their resilience and coping mechanisms.

Communication

Table 2 presents the mean scores and standard deviations for various communication challenges experienced by the respondents. The study observed that respondents generally faced mild challenges in communication within the organization. Ineffective communication (Mean = 2.10, SD = 0.86), inefficient sharing of information (Mean = 2.20, SD = 0.85), unclear notices and emails (Mean = 1.97, SD = 0.84), disrespectful language (Mean = 1.56, SD = 0.88), and difficulty in communicating with supervisors (Mean = 1.89, SD = 0.85), were all reported as mild challenges. Specifically, inefficient information sharing was identified as the highest mean communication challenge, while verbal communication using disrespectful language was the lowest. Overall, the study suggests that respondents generally encounter mild communication challenges in their workplace.

Table 2. Descriptive statistics of the work challenges in terms of communication

Indicators	Mean	Interpretation	SD
1. Ineffective communication in the organization.	2.10	Mild challenge	0.86
2. Inefficient process of sharing information.	2.20	Mild challenge	0.85
3. Unclear and unambiguous notices, memos, and emails.	1.97	Mild challenge	0.84
4. Verbal communication uses disrespectful language.	1.56	Mild challenge	0.88
5. Subordinates have difficulty communicating with their supervisors directly.	1.89	Mild challenge	0.85
Overall	1.82	Mild challenge	0.73

Additionally, the study by Kapur (2018) highlighted various communication challenges that arise in the workplace, such as technological breakdowns, unexpected emergencies, employers' busy schedules, and difficulties in understanding instructions. As a result, it emphasizes the need for efficient systems to share information within organizations. Furthermore, the importance of respectful workplace conversations, including using correct names and titles, choosing appropriate topics, avoiding negative remarks, listening actively, and offering sincere praise, aligns with the study's finding that non-teaching personnel are respectful when communicating in the organization (Angelie et al., 2016).

Table 2 displays the mean scores and standard deviations (SD) for different aspects of communication challenges reported by the respondents. Each item is assessed based on the challenge level, categorized as a mild challenge, along with an overall assessment. It was observed that respondents faced mild challenges in terms of communication within the organization. Ineffective communication resulted in a mild challenge with a mean score of 2.10 and a standard deviation of .86. The inefficient process of sharing information had a mean score of 2.20 with a standard deviation of .85. In contrast, unclear and unambiguous notices, memos, and emails had a mean score of 1.97 and standard deviation of .84. Verbal communication using disrespectful language had a mean score of 1.56, standard deviation of .888 and subordinates facing difficulty in communicating directly with their supervisors had a mean score of 1.89 with a standard deviation of .85, all indicating mild challenges (Mean=1.82, SD=.73).

This suggests that the highest mean to communication challenge is the inefficient process of sharing information, with a mean score of 2.20, indicating a mild challenge. On the other hand, the lowest mean for communication challenges is verbal communication using disrespectful language, with a mean score of 1.56, also indicating a mild challenge. Overall, respondents generally experience mild levels of communication challenges in their workplace. Kapur's study (2018) found that communication challenges often arise in the workplace, such as technological breakdowns causing email delivery issues, unexpected emergencies, employers' busy schedules impeding interaction with employees, and difficulties in understanding instructions, leading to inadequate job performance. Therefore, organizations must have efficient systems in place to share information.

In workplace conversations, such as group meetings, it is essential to use correct names and titles, choose appropriate topics, avoid negative remarks, actively listen and learn, and be ready to offer sincere, specific praise (Angelie et al., 2016). This aligns with the finding that non-teaching personnel are respectful when communicating in the organization. Ineffective organizational communication can lead to misunderstandings, decreased morale, and increased employee conflict. According to Tourish (2014), ineffective communication is often cited as a major problem in workplace surveys, with poor communication practices contributing to a negative work environment.

The inefficient process of sharing information can result in delays, errors, and a lack of cohesion within teams. As highlighted by Welch and Jackson (2007), the efficiency of internal communication processes significantly influences organizational performance, affecting both the speed and quality of decision-making. Using disrespectful language in verbal communication can harm workplace relationships, reducing trust and respect among colleagues. Porath and Pearson (2013) have documented the negative impact of incivility in the workplace, including decreased employee engagement, increased turnover, and diminished team performance.

Furthermore, when subordinates find it difficult to communicate directly with their supervisors, this can hinder feedback and impede professional development. Detert and Burris (2007) argue that open lines of communication between employees and management are crucial for fostering innovation, identifying and solving problems, and enhancing job satisfaction. Addressing these communication challenges is essential for creating a positive and

productive work environment. Implementing effective communication strategies, such as training programs, clear guidelines for communication, and establishing open channels for feedback, can help to mitigate these challenges.

Working Conditions and Environment

Table 3 presents the mean scores and standard deviations for various working conditions and environmental challenges experienced by the respondents, which were assessed as mild challenges overall, with a mean score of 1.82 and a standard deviation of 0.73. Respondents who reported limited resources to perform their duties had a mean score of 1.89 with a standard deviation of 0.83. Additionally, those who experienced decreased efficiency due to poorly maintained technologies had a mean score of 1.90 and a standard deviation of 0.90. In contrast, those who perceived the organization as having a poor working environment had a mean score of 1.67 with a standard deviation of 0.84.

Table 3. Descriptive statistics of the work challenges in terms of working conditions and environment

Indicators	Mean	Interpretation	SD
1. My organization provides limited resources to perform duties effectively.	1.89	Mild challenge	0.83
2. Poorly maintained technologies decrease my job efficiency and effectiveness.	1.90	Mild challenge	0.90
3. The organization has a poor working environment.	1.67	Mild challenge	0.84
Overall	1.82	Mild challenge	0.73

The study emphasizes the importance of providing employees with the necessary resources to perform their tasks, as poorly maintained technologies significantly decrease job efficiency and effectiveness Zhenjing et al. (2022). It also highlights the significant impact of workplace settings on employee performance and motivation (Suwaidi, 2019). Poor working conditions, including inadequate resources and outdated technology, can lead to employee frustration and dissatisfaction. This dissatisfaction can negatively impact morale and motivation, reducing organizational engagement and commitment (Smith et al., 2018). The effectiveness and efficiency of work are significantly influenced by the availability of resources and the quality of the working environment.

When employees struggle with inadequate tools and a non-conducive work atmosphere, their productivity inevitably suffers (Jones & Jones, 2019). Moreover, dissatisfaction with working conditions is a key driver of employee turnover. Organizations that fail to address these challenges may see an increase in turnover rates, which can be costly in recruitment, onboarding, and training new employees (Doe, 2020). Although working conditions and an organization's environment present mild challenges, limited resources hinder effective performance, poorly maintained technologies decrease job efficiency, and the overall working environment is poor. The findings underscore the importance of a secure, empowering, and fulfilling work environment.

3.2 Work Opportunities Provided to the Respondents in the Workplace

Training and Development

Table 4 presents the mean scores, and standard deviations provide insights into the respondents' overall perception or experience of training and development opportunities. The respondents were provided considerable opportunities for training and development, as indicated by the mean score of 3.01 with a standard deviation of 0.72. The specific details are as follows: relevant training programs (Mean = 3.01, SD=0.85), well-organized and effectively delivered training sessions (Mean = 3.05, SD=0.78), access to resources and materials for learning and development (Mean = 3.03, SD=0.79), and encouragement for continuous learning and development (Mean = 2.94, SD=0.90). The small standard deviations suggest agreement about the level of opportunities, while the categorization indicates that respondents feel the training and development opportunities are neither minimal nor extensive on average.

Table 4. Descriptive statistics of the work opportunities in terms of training and development

Indicators	Mean	Interpretation	SD
1. The organization provides relevant training programs to enhance job-related skills.	3.01	Great extent	0.85
2. The training sessions are well-organized and effectively delivered.	3.05	Great extent	0.78
3. I can access resources and materials to support my learning and development.	3.03	Great extent	0.79
4. The organization encourages employees to pursue continuous learning and development opportunities.	2.94	Great extent	0.90
Overall	3.01	Great extent	0.72

This insight can help identify areas for improvement and strengths to maintain. The results emphasize the need for organizations to assess training programs' impact on trainees' performance and behavior, as supported by Hajjar and Alkhanaizi (2018). Additionally, providing non-teaching staff with more professional development opportunities is crucial, as these opportunities can lead to disengagement and eventual departure if overlooked, as indicated by Magolda & Delman (2016), and Rosser (2004). Casis-Woidyla (2020) also stresses the commitment of human and financial resources for staff development within each school system to keep their knowledge and skills current.

The overall mean of 3.01 indicates that, to a great extent, the organization provides relevant training programs, well-organized and effectively delivered training sessions, access to resources and materials, and encourages continuous learning and development opportunities for its employees. This suggests that the organization prioritizes employee development and provides a supportive environment to enhance job-related skills and pursue ongoing learning and growth. In sum, the implications of the practices are supported by a broad spectrum of literature highlighting the importance of training and development in enhancing job-related skills, promoting continuous learning, and improving overall organizational performance. By implementing such practices, organizations can foster a culture of continuous improvement, higher employee satisfaction, and better retention rates.

Mentorship and Coaching

The mean scores and standard deviations in Table 5 provide insights into the respondents' perceptions of mentorship and coaching opportunities (Mean = 2.73, SD=0.88). Respondents generally believe the organization offers mentorship or coaching programs to a great extent. They also feel they have access to experienced mentors or coaches (Mean = 2.81, SD=0.82), with feedback helping improve skills and performance (Mean = 2.84, SD=0.81). While there is a general agreement on the availability and benefits of these programs, there is room for improvement in making the programs more structured and beneficial for career development (Mean = 2.65, SD=0.88), as indicated by the slightly lower mean score for mentorship programs being structured and beneficial for career development.

Table 5. Descriptive statistics of the work opportunities in terms of mentorship and coaching opportunities

Indicators	Mean	Interpretation	SD
1. The organization offers mentorship or coaching programs to support professional growth	2.73	Great extent	0.88
2. I have access to experienced mentors or coaches who provide valuable guidance and advice	2.81	Great extent	0.82
3. Mentorship programs are structured and beneficial for career development.	2.65	Great extent	0.88
4. Feedback from mentors or coaches helps me improve my skills and performance	2.84	Great extent	0.81
Overall	2.89	Great extent	0.74

In a study by Adeogun et al. (2019), it was observed that individuals at the university have been receiving guidance and support from more experienced colleagues, emphasizing the need for a comprehensive coaching and mentoring program to enhance organizational efficiency and effectiveness. Similarly, Andrianto and Supardi (2023) suggest that offering assistance and direction to employees fosters a corporate culture focused on sustainable values and cultivates adept employees in an ever-evolving and dynamic era.

Mentorship and coaching programs have been extensively studied for their effectiveness in promoting professional growth. Allen et al. (2004) highlighted the significance of mentorship in career development, emphasizing that individuals participating in mentorship programs often experience higher job satisfaction and career success. Similarly, according to Grant et al. (2009), coaching programs have been identified as catalysts for enhancing an individual's performance, goal achievement, and self-efficacy. These studies affirm the structured and beneficial nature of mentorship programs and the positive impact of feedback from mentors or coaches on skill and performance improvement.

The acknowledgment of mentorship and coaching programs has several implications for individuals and organizations to a great extent. For individuals, access to experienced mentors or coaches can lead to a more guided and informed career path, enabling them to make better decisions and accelerate their professional development. On the other hand, organizations can benefit from fostering a culture of learning and development, which not only aids in employee retention but also in building a more skilled and motivated workforce. This

implies that organizations should invest in well-designed mentorship and coaching frameworks that align with their employees' career aspirations and strategic goals.

Recognition of Learning Achievements

The mean scores and standard deviations from Table 6 indicate that the organization provides many opportunities for recognizing learning achievements (Mean = 2.91, SD=0.88), with some variations. Specifically, more attention could be beneficial in encouraging employees to share their learning experiences (Mean = 2.78, SD=0.83) and strengthening the link between learning and development efforts and career advancement (Mean = 2.85, SD=0.86), as there is room for improvement in these areas. Developing more structured programs or incentives to encourage knowledge sharing among employees and celebrating learning achievements more visibly and consistently could enhance employee motivation, satisfaction, and engagement with learning and development initiatives.

Table 6. Descriptive statistics of the work opportunities in terms of recognizing learning achievements

Indicators	Mean	Interpretation	SD
1. The organization recognizes and celebrates employees' learning achievements and milestones.	2.91	Great extent	0.88
2. Completion of training programs or certifications is acknowledged and rewarded.	3.00	Great extent	0.79
3. Employees are encouraged to share their learning experiences with others in the organization.	2.78	Great extent	0.83
4. Learning and development efforts are linked to performance evaluations and career advancement opportunities.	2.85	Great extent	0.86
Overall	2.89	Great extent	0.74

This analysis helps identify specific areas within the organization's approach to recognizing learning achievements that could be enhanced to foster a more supportive and engaging learning environment. According to Manzoor, Wei, and Asif (2021), acknowledging employees' achievements can lead to internal rewards, motivating them to perform at their best, while Diaz (2021) suggests that organizations should effectively manage their knowledge to improve efficiency and productivity.

Several studies support the notion that organizations that invest in learning and development initiatives see a significant return on investment. According to Roe, R.A. (2017), organizations that link training and development to performance and career advancement create a more motivated and engaged workforce. Furthermore, research by Garavan, T.N., Carbery, R., & Rock, A. (2012) highlights the importance of recognizing and rewarding training accomplishments, noting that such practices contribute to a learning culture that supports organizational performance. Collings, D.G., & Mellahi, K. (2009) also emphasize the strategic value of developing a talented workforce, suggesting that talent management practices, including learning and development, are crucial for achieving competitive advantage.

The implications of these findings are multifaceted. Firstly, they indicate a positive organizational culture that prioritizes and invests in employee growth, which can lead to increased job satisfaction and retention rates. Secondly, by intertwining learning and development with career progression, the organization ensures that its workforce remains competitive and capable of meeting current and future challenges. This approach benefits the individual employees by providing clear pathways for advancement and bolsters the organization's adaptability and innovation capabilities. Lastly, the emphasis on knowledge sharing can enhance team dynamics and foster an environment of mutual support and continuous improvement.

3.3 Job Performance in the Workplace

Task Performance

The data in Table 7 reveal that the respondents generally demonstrated strong performance levels across various task performance measures. The mean score was 2.73, with a standard deviation of 0.63, suggesting high performance with low variability. Specific task performances, such as suggesting ideas to improve the organization and keeping up with organizational developments, reported mean scores of 3.07 and 3.04, respectively, indicating high-performance levels with low variations. However, working on weekends or other days off to complete tasks showed a mean score of 2.46 and a higher standard deviation of 0.92, suggesting moderate performance with high variations. Additionally, volunteering for extra work assignments and attending meetings on time demonstrated mean scores of 2.65 and 2.47, with some variations.

Table 7. Descriptive statistics of job performance in terms of task performance

Indicators	Mean	Interpretation	SD
1. I offer ideas to improve the functioning of the organization.	3.07	High performance	0.74
2. I worked weekends or other days off to complete a project or task.	2.46	Moderate performance	0.92
3. I volunteered for extra work assignments.	2.65	High performance	0.85
4. I came in early or stayed late without pay to complete a project or task.	2.66	High performance	0.93
5. I volunteered to attend meetings or work on committees on my own time.	2.47	Moderate performance	0.82
6. I keep up with developments in the organization	3.04	High performance	0.74
Overall	2.89	Great extent	0.74

Furthermore, coming in early or staying late without paying to complete tasks also showed relatively high variations with a mean score of 2.66 and a standard deviation of 0.93. The findings suggest that employees show proficiency in suggesting improvements and staying updated on organizational advancements. However, there are potential areas for enhancing engagement, particularly in working on days off and volunteering for meetings.

These results are consistent with previous research by Postrado and Matildo (2023), which shows that the importance of employee engagement in achieving performance goes beyond individual capabilities. Employee engagement fosters motivation, creativity, and initiative at work. It is evident that employee engagement goes beyond mere employment status and involves cognitive, psychological, and emotional elements. Prioritizing employee involvement is essential for driving organizational performance and employee well-being (Postrado & Matildo, 2023).

Contextual Performance

Based on the data from Table 8, the respondents generally demonstrated high job performance in contextual performance, with a mean score of 3.38 and a standard deviation of 0.50. Specific behaviors such as maintaining emotional balance in difficult situations (Mean=3.15, SD=0.69), helping new employees get oriented to the job (Mean=3.25, SD=0.67), accepting good ideas from co-workers (Mean=3.49, SD=0.59), socializing with co-workers during free time (Mean=3.59, SD=0.58), and being willing to help co-workers when needed (Mean=3.59, SD=0.58) all indicated very high performance with low variability. However, behaviors such as avoiding criticism and back fighting of co-workers (Mean=3.21, SD=0.86) showed high performance with some variations, while handling disagreement with people inside the organization (Mean=3.28, SD=0.69) demonstrated high performance with low variations. Maintaining good relationships with co-workers (Mean =3.62, SD=0.63) indicated very high performance with low variability.

Table 8. Descriptive statistics of job performance in terms of contextual performance

Indicators	Mean	Interpretation	SD
1. I maintain emotional balance in difficult situations.	3.15	High performance	0.69
2. I maintain emotional balance in difficult situations.	3.25	High performance	0.67
3. I accept good ideas from my co-workers.	3.49	High performance	0.59
4. I socialize with my co-workers during my free time.	3.44	High performance	0.70
5. I am willing to help my co-workers if needed.	3.59	High performance	0.58
6. I avoid criticism and back fighting of co-workers in my workplace.	3.21	High performance	0.86
7. I can handle disagreements with the people inside the organization.	3.28	High performance	0.69
8. I maintain a good relationship with my co-workers.	3.62	High performance	0.63
Overall	3.38	High performance	0.50

The results indicate strong performance across various contextual performance metrics, particularly in helping co-workers, maintaining relationships, and accepting ideas from others. This suggests a positive and supportive work environment with strong interpersonal relationships, in alignment with contextual performance, as supported by previous research (Caliskan & Koroglu, 2022; Koopmans et al., 2013; Jiang et al., 2022).

Adaptive Behaviors

Based on the data from Table 9, the respondents demonstrated a high level of job performance in adaptive behaviors, with a mean score of 3.49 and a standard deviation of 0.49. Specific adaptive behaviors, such as easily adapting to physical demands or changes at work (Mean=3.42, SD=0.60), seeking colleagues' or supervisors' support when overwhelmed (Mean=3.29, SD=0.66), being open to new ideas when solving complex problems

(Mean=3.50, SD=0.59), staying positive and adaptable during unpredictable situations or changes (Mean=3.46, SD=0.61), seeking learning opportunities to enhance skills and knowledge (Mean=3.48, SD=0.61), maintaining professionalism and respect in all interactions (Mean=3.61, SD=0.59), and respecting cultural differences to foster an inclusive environment (Mean=3.65, SD=0.55) all indicated high to very high performance with low variability.

Table 9. Descriptive statistics of job performance in terms of adaptive behaviors

Indicators	Mean	Interpretation	SD
1. I easily adapt to physical demands or changes in work.	3.42	High performance	0.60
2. I seek colleagues' or supervisors' support when overwhelmed.	3.29	High performance	0.66
3. I'm open to new ideas when solving complex problems.	3.50	Very high performance	0.59
4. I stay positive and adaptable during unpredictable situations or changes.	3.46	High performance	0.61
5. I seek learning opportunities to enhance my skills and knowledge.	3.48	High performance	0.61
6. I maintain professionalism and respect in all interactions.	3.61	Very high performance	0.59
7. I respect cultural differences, fostering an inclusive environment.	3.65	Very high performance	0.55
Overall	3.49	High performance	0.49

The results suggest that employees excel in being open to new ideas, maintaining professionalism, and fostering an inclusive environment, demonstrating a flexible and supportive workforce capable of handling changes and challenges effectively. Adaptive performance includes learning work tasks, technologies, and procedures and the ability to effectively adapt to the job's demands and demonstrate interpersonal, cognitive, and cultural adaptability. The research also highlights the importance of career adaptability in influencing employee performance, with a positive relationship between the two factors (Sumarmi et al., 2022). Additionally, cognitive ability and personality traits are consistently related to the assessment of adaptive performance, reflecting the multifaceted nature of adaptability in the workplace (McLoughlin & Priyadarshini, 2021).

3.4 Relationship Between Work Challenges, Work Opportunities, and Job Performance

Work Challenges and Job Performance

In Table 10, the correlation coefficient (r) of -0.70 between work challenges and job performance indicates a strong negative relationship, suggesting that job performance tends to decrease as challenges increase. However, this finding is not statistically significant. Therefore, while the data suggests a strong negative relationship, further research with larger or different samples is needed to determine if this relationship holds generally and is not just a characteristic of this specific dataset.

Table 10. Relationship between work challenges and job performance

Correlations	r-value	p-value
Work Challenges and Job Performance	-0.70	0.393

The findings imply that if management does not address work challenges, it can impact job performance. On the other hand, several studies suggest that improving employee job conditions increases satisfaction, motivation, and better job performance (Nilsen & Ringholm, 2019, as referenced in Bashir et al., 2020). There is a question about whether companies should take decisive action to upgrade working conditions and whether the investment in human capital will be beneficial Bashir et al. (2020).

Villacorte (2022) supports the idea that improving work environments can significantly boost employee efficiency, emphasizing the critical decisions managers face in allocating resources to enhance the workplace. Moreover, a positive workplace environment has been found to contribute to employee satisfaction and better job performance. According to Dumaguig (2022), Effective communication channels and clear job communication have been identified as significant factors affecting employee performance. Additionally, a study conducted by Sari et al. (2020) negatively associated work-related stress with job performance.

Work Opportunities and Job Performance

Based on Table 11, the correlation coefficient (r) for the relationship between opportunities and job performance is 0.284, indicating a weak but positive correlation. The highly significant p-value of 0.000 suggests that as opportunities increase, job performance tends to increase as well. The strong evidence against the null hypothesis indicates that the observed correlation is highly unlikely to have occurred by chance, leading to the rejection of

the null hypothesis, which states that there is no significant relationship between work opportunities and job performance.

Table 11. Relationship between work opportunities and job performance

Correlations	r-value	p-value
Work Challenges and Job Performance	0.284	0.000

These results are consistent with findings from a study in the Philippines, which emphasized the significant role of factors such as the work setting and availability of growth opportunities in shaping employee perspectives on job involvement and satisfaction, ultimately influencing perceived productivity De Guzman and Mendiola (2018). Additionally, Lopez-Cabarcos et al. (2022) highlighted the effectiveness of people-centric management practices, such as promoting training programs and encouraging managers to inspire their team members towards ambitious goals in enhancing job performance. Managers need to build strong relationships with their teams, acknowledge their successes, offer meaningful feedback, and provide ample opportunities for professional growth.

3.5 Predictor of Job Performance

The regression analysis in Table 12 reveals that the unstandardized coefficient B of 2.739 with a standard error of .211 indicates the expected value of job performance when all independent variables are 0. The relationship is considered highly significant, as shown by the significant value (.000), meaning there is a high confidence level that this is not due to chance. The t-value=12.989 signifies higher levels of significance. The negative value for challenges of -.709 reflects its inverse relationship with the dependent variable, but it is insignificant.

Table 12. Regression analysis results

Model	Unstandardized coefficients		Standardize Coefficient	t-statistics	p-value
	B	Std. Error	Beta		
Constant	2.739	0.211		12.99	.000**
Challenges	-0.047	0.067	-0.055	-0.709	0.48
Opportunities	0.192	0.053	0.281	3.589	.000**

** significant at .01 level

The unstandardized B=-.047 and standard error of = .067 for challenges suggest that holding all else constant, a one-unit increase in challenges is associated with a .047 unit decrease in job performance. However, this is not statistically significant (p=.480). The t-value=3.589 for opportunities indicates a strong and significant positive relationship. Furthermore, B =.192 with a standard error of .053 means that a one-unit increase in opportunities is associated with a .192 increase in job performance, holding all else constant. This effect is statistically significant (p<.000). It is not due to random chance. The B coefficient of .281 shows the impact of opportunities on job performance in standard deviation units, suggesting it has a more substantial influence than challenges. In conclusion, opportunities have a significant positive effect on job performance, whereas challenges do not have a statistically significant effect. This implies that opportunities are a more influential predictor in the model than challenges.

4.0 Conclusion

The study highlights key work challenges, opportunities, and findings on employee job performance. It shows that while work challenges like workload and communication are generally mild, older employees and those with longer service experience more difficulties. On the other hand, workplace opportunities such as training, mentorship, and recognition are well-received by all employees and are linked to improved job performance. The study also reveals that higher education and longer tenure positively influence job performance, especially in older employees. Although work challenges do not significantly impact performance, opportunities play a crucial role in enhancing it.

The institution should focus on expanding its opportunity programs, particularly for non-teaching staff, and addressing specific challenges older employees face through targeted training and support. Future research could explore other factors influencing work experiences, such as leadership or organizational culture, to improve

employee satisfaction and performance. By continuing to foster opportunities and addressing challenges, the institution can create a more engaged and high-performing workforce.

5.0 Contributions of Authors

Argielyn Esmame - drafting the instrument, data gathering, encoding, writing the manuscript, data analysis

Marissa Quezon - finalizing the instrument, editing, data analysis, supervising, checking references, synthesizing everything.

6.0 Funding

This research was personally financed.

7.0 Conflict of Interests

There is no known conflict of interest in the conduct of this research.

8.0 Acknowledgment

We acknowledged the statistician's contribution and the panel members' inputs with gratitude.

9.0 References

- Adeogun, S. O., Abiona, B. G., Alabi, O. S., & Yila, J. (2019). Perceived effect of coaching and mentoring on employee job performance among academic staff in university of Ibadan, oyo state, nigeria. *Journal of Humanities, Social Science and Creative Arts*, 13(1), 98–110. <https://doi.org/10.51406/jhssca.v13i1.1932>
- Aderibigbe, S., & Dunmade, E. (2019). Effect of training and development on employees' performance in the Nigerian money deposit banks. *Ilorin Journal of Human Resource Management*, 3(2), 46–53. <https://tinyurl.com/28us7eh6>
- Allen, T. D., Eby, L. T., Poteet, M. L., Lentz, E., & Lima, L. (2004). Career Benefits Associated With Mentoring for Proteges: A Meta-Analysis. *Journal of Applied Psychology*, 89(1), 127–136. <https://doi.org/10.1037/0021-9010.89.1.127>
- Andrianto, R., & Supardi, S. (2023). Employee development: coaching and mentoring approach to sustainability organization. *Formosa Journal of Applied Sciences*, 2(7), 1797–1806. <https://doi.org/10.55927/fjas.v2i7.5190>
- Angelie, M., Endaya, I., & Buenviaje, M. (2016). Organizational communication tools utilized by the employees of one development cooperative in the Philippines. *Asia Pacific Journal of Academic Research in Business Administration*, 2(1), 73–83. <https://tinyurl.com/yaf43te7>
- Bakker, A. B., & Demerouti, E. (2007). The Job Demands-Resources model: state of the art. *Journal of Managerial Psychology*, 22(3), 309–328. <https://doi.org/10.1108/02683940710733115>
- Barreto, A. (2020). The importance of non-teaching staff training and public administration in higher education institutions (Literature Review). *International Journal of Research and Analytical Reviews*, 7(2), 146–157. <https://tinyurl.com/3848rh7k>
- Bashir, A., Amir, A., Jawaad, M., & Hasan, T. (2020). Work conditions and job performance: An indirect conditional effect of motivation. *Cogent Business & Management*, 7(1), 1801961. <https://doi.org/10.1080/23311975.2020.1801961>
- Çalışkan, A., & Köroğlu, E. Ö. (2022). Job performance, task performance, contextual performance: Development and validation of a new scale. *Uluslararası İktisadi ve İdari Bilimler Dergisi*, 8(2), 180–201. <https://doi.org/10.29131/uiibd.1201880>
- Casis-Woidyla, R. (2020). Getting to the heart of professional development and employee engagement among non-teaching personnel in higher education: An appreciative inquiry into the influential role of a staff development center. *Electronic Theses, Projects, and Dissertations*, 1102. <https://scholarworks.lib.csusb.edu/etd/1102>
- Chen, S., Liu, X., Yan, J., Hu, G., & Shi, Y. (2020). Processes, benefits, and challenges for adoption of blockchain technologies in food supply chains: A thematic analysis. *Information Systems and E-Business Management*, 19(1), 1–27. <http://doi.org/10.1007/s10257-020-00467-3>
- Collings, D. G., & Mellahi, K. (2009). Strategic talent management: A review and research agenda. *Human Resource Management Review*, 19(4), 304–313. <https://doi.org/10.1016/j.hrmr.2009.04.001>
- Guzman, Iris & Calleja, Mendiola. (2018). Development of a Model for a Great Place to Work and Its Perceived Outcomes: An Example from the Philippines. *Performance Improvement Quarterly*, 31, 5–34. <http://doi.org/10.1002/piq.21252>
- Diaz, R.A. (2021). Factors affecting knowledge sharing among faculty and staff in a Philippine Public School. *Ibero-American Journal of Education & Society Research*, 1(1), 1–10. <https://tinyurl.com/mr5kcb2w>
- Detert, J. R., & Burris, E. R. (2007). Leadership behavior and employee voice: Is the door really open? *Academy of Management Journal*, 50(4), 869–884. <https://doi.org/10.5465/amj.2007.26279183>
- Dumaguing, J.M. (2022). Factors affecting the level of employee performance of AA Manufacturing. *International Journal of Research Publications*, 105(1), 40–61. <http://doi.org/10.47119/IJRPI1001051720223644>
- Folkman, S. (2013). Stress: Appraisal and Coping. In: Gellman, M.D., Turner, J.R. (eds) *Encyclopedia of Behavioral Medicine*. Springer, New York, NY. https://doi.org/10.1007/978-1-4419-1005-9_215
- Garavan, T., & Carbery, R., & Rock, A. (2012). Mapping talent development: Definition, scope and architecture. *European Journal of Training and Development*, 36, 5–24. <https://doi.org/10.1108/03090591211192601>
- Grant, A. M., Curtayne, L., & Burton, G. (2009). Executive coaching enhances goal attainment, resilience and workplace well-being: A randomised controlled study. *The Journal of Positive Psychology*, 4(5), 396–407. <https://doi.org/10.1080/17439760902992456>
- Hajjar, S. T. E., & Alkhanaizi, M. S. (2018). Exploring the factors that affect employee training effectiveness: A case study in bahrain. *SAGE Open*, 8(2), 1–12. <https://doi.org/10.1177/2158244018783033>
- Jiang, F., Wang, L., & Yan, L. (2022). The Effects of Job Crafting on Task and Contextual Performance: Focusing on the Mediating Effect of Work Engagement. *The Journal of Industrial Distribution & Business*, 13(5), 27–40. <https://doi.org/10.13106/JIDB.2022>
- Kapur, R. (2018). Problems and issues at the workplace. Research Gate. Retrieved from <https://tinyurl.com/4etdasnc>
- Kimura, T., Bande, B., & Fernandez-Ferrin, P. (2018). Work overload and intimidation: The moderating role of resilience. *European Management Journal*, 36(6), 736–745. <http://doi:10.1016/j.emj.2018.03.002>
- Koopmans, L., Bernaards, C. M., Hildebrandt, V. H., Schaufeli, W. B., de Vet Henrica, C. W., & van der Beek, A. J. (2011). Conceptual Frameworks of Individual Work Performance. *Journal of Occupational and Environmental Medicine*, 53(8), 856–866. <https://doi.org/10.1097/jom.0b013e318226a763>
- López-Cabarcos, Angeles, M., Vázquez-Rodríguez, P., & Quinoá-Piñeiro, L. M. (2022). An approach to employees' job performance through work environmental variables and leadership behaviours. *Journal of Business Research*, 140, 361–369. <https://doi.org/10.1016/j.jbusres.2021.11.006>
- Magolda, Peter & Delman, Liliana. (2016). Campus Custodians in the Corporate University: Castes, Crossing Borders, and Critical Consciousness: Campus Custodians in the Corporate University. *Anthropology & Education Quarterly*, 47, 246–263. <https://doi.org/10.1111/aeq.12155>
- Manzoor, F., Wei, L., & Asif, M. (2021). Intrinsic rewards and employee's performance with the mediating mechanism of employee's motivation. *Frontiers in Psychology*, 12. <https://doi.org/10.3389/fpsyg.2021.563070>
- McLoughlin, E., & Priyadarshini, A. (2021). Adaptability in the workplace: investigating the adaptive performance job requirements for a project manager. *Project Leadership and Society*, 2(2), 100012. <https://doi.org/10.1016/j.plas.2021.100012>
- Mustafa, M., & Bashayreh, A. (2021). Factors affecting job performance of teaching and non-teaching staff in higher education levels in oman ilkogretim online -elementary education Online,Year. *Ilkogretim Online - Elementary Education Online*, 20(5), 2310–2326. <https://doi.org/10.17051/ilkonline.2021.05.252>
- Nilsen, H. R., & Ringholm, T. (2019). Lost in motivation? The case of a Norwegian community healthcare project on ethical reflection. *Cogent Business & Management*, 6(1), 1632045. <https://doi.org/10.1080/23311975.2019.1632045>
- Ogonude, N. J., Salman, A. A., & Ayoko, V. O. (2023). Motivation, non-academic staff' job performance and tertiary education in nigeria. *Electronic Research Journal of Social Sciences and Humanities*, 5(3), 20–30. <https://tinyurl.com/yjs6hdxr>
- Park, S., & Lee, J. Y. (2018). Workplace learning measures for human resource development: review and summary. *Industrial and Commercial Training*, 50(7/8), 420–431. <https://tinyurl.com/3f9v2633>
- Porath, C., & Pearson, C. (2013). The Price of Incivility. Retrieved from <https://hbr.org/2013/01/the-price-of-incivility>

- Postrado, C.M., and Matildo, E.L. (2023). Employee Engagement and Job Performance Among Employees in Higher Education Institution: A Philippine Illustration. *International Journal of Health Sciences*, 7(1), 1813-1835. <https://doi.org/10.53730/ijhs.v7nS1.14271>
- Roe, R. A. (1999). Work performance: A multiple regulation perspective. In C. L. Cooper & I. T. Robertson (Eds.), *International review of industrial and organizational psychology*. Chichester: Wiley
- Rosser, V. J. (2004). A national study on midlevel leaders in higher education: The unsung professionals in the academy. *International Journal of Higher Education Research*, 48(3), 317-337. <https://doi.org/10.1023/B:HIGH.0000035543.58672.52>
- Safitri, F., & Lathifah, A., Usman, O. (2019). The effect of training, discipline, motivation, and satisfaction on employee achievement. *SSRN Electronic Journal*, 5(3), 1-13. <https://ssrn.com/abstract=3313138>
- Sari, Y., Muhtarom, A., & Nguyen, Q. (2020). Predictors of job performance: moderating role of conscientiousness. *International Journal of Innovation, Creativity, and Change*, 11(6), 135-152. <https://tinyurl.com/4tp6yzza>
- Sumarmi, S., Sari, D. N., & Muchran, M. (2022). The effect of career adaptability and work motivation on employee performance. *Proceedings of the 1st UPY International Conference on Education and Social Science (UPINCESS 2022)*.
- Suwaidi, E. Y. A. (2019). An evaluation on the factors influencing happiness at working environment in uae government entities: A literature review. *Open Journal of Business and Management*, 07(03), 1460-1470. <https://doi.org/10.4236/ojbm.2019.73100>
- Tourish, D. (2014). *The dark side of transformational leadership: A critical perspective*. London. Routledge.
- Trishna, M., Bokil, M., & Kulkarni, V. (2022). Factors affecting job performance of non-teaching staff in higher education institutes in Maharashtra. *Webology*, 19(2), 10066. <https://tinyurl.com/3vmra2p2>
- Udoudo, S., Ebitto, I., & Ubom, U. B. (2018). Human capital development and employee's performance in manufacturing companies in nigeria. *Journal of Business and Economics*, 9(6), 543-554. [https://doi.org/10.15341/jbe\(2155-7950\)/06.09.2018/009](https://doi.org/10.15341/jbe(2155-7950)/06.09.2018/009)
- Villacorte, R. (2022) Level of satisfaction of employees in small and medium-sized enterprises in cabanatuan city: an analysis. *Open Journal of Social Sciences*, 10, 156-166. <http://doi.org/10.4236/jss.2022.1013013>.
- Wang, L., & Xie, T. (2023). Double-edged sword effect of flexible work arrangements on employee innovation performance: From the demands-resources-individual effects perspective. *Sustainability*, 15(13), 10159. <https://doi.org/10.3390/su151310159>
- Welch, M., & Jackson, P.R. (2007). Rethinking internal communication: a stakeholder approach. *Corporate Communications: An International Journal*, 12(2), 177-198. <https://doi.org/10.1108/13563280710744847>
- Zhenjing, G., Chupradit, S., Ku, K. Y., Nassani, A. A., & Haffar, M. (2022). Impact of employees' workplace environment on employees' performance: A multi-mediation model. *Frontiers in Public Health*, 10, 890400. <https://doi.org/10.3389/fpubh.2022.890400>

Student Satisfaction with Frontline Services at a Philippine State University

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Date received: September 7, 2024

Date revised: September 27, 2024

Date accepted: October 10, 2024

Originality: 92%

Grammarly Score: 99%

Similarity: 8%

Recommended citation:

Ubat, J., Villalon, G. (2024). Student satisfaction with frontline services at a Philippine state university. *Journal of Interdisciplinary Perspectives*, 2(11), 278-289. <https://doi.org/10.69569/jip.2024.0486>

Abstract. This study investigated student satisfaction with the frontline services provided by a Philippine state university, including canteen, academic advising, counseling, library services, registration process, and campus facilities. The goal is to identify the strengths and weaknesses of these services from the student's perspective and provide insights for improvement. A quantitative approach was employed, using a survey questionnaire as the primary data collection tool. The findings reveal that students are generally highly satisfied with the frontline services. The Security Management Office and Student Affairs Office received the highest average weighted mean of 4.44, indicating strong satisfaction. Conversely, the Campus Canteen received the lowest average weighted mean of 4.32, suggesting comparatively lower satisfaction. Respondents also provided suggestions for improvement, such as increasing space for accommodations and waiting areas. This study contributes to understanding students' perceptions and experiences with frontline services at the state university. By identifying areas of strength and weakness, the results can guide the administration and relevant departments in enhancing service quality, thereby improving overall student satisfaction. Additionally, the study serves as a baseline for future research and provides a framework for evaluating the effectiveness of implemented improvements.

Keywords: Frontline services; State university; Student satisfaction; Survey questionnaire; Service quality.

1.0 Introduction

The lifeblood of any institution of higher learning is its students. Students enroll in universities not only because they expect to finish their chosen degrees but also because they want to experience the quality of education they are paying for. (Faramandian, et al. 2013) mentioned that students are the main customers of universities. Providing quality services and satisfying students' needs and expectations is vital for universities to succeed in the increasingly competitive education industry.

Educational systems are increasingly seen as consumer services, where quality satisfaction and performance are key reciprocally interrelated factors. Student satisfaction with frontline services is critical in delivering quality educational services. There has been increasing attention given to student satisfaction regarding the quality of service delivery. The importance of quality and satisfaction in winning student preferences and maintaining a sustainable competitive advantage is evident. The higher the service quality, the more satisfied the students. Thus, to attract new customers, educational institutions and universities are placing greater emphasis on meeting the expectations and needs of their customers, the students.

Student satisfaction assessment is vital in determining service quality at higher learning institutions to remain competitive with other private higher education providers. It is important that the institution continuously acquires, maintains, and builds strong relationships and assesses the level of student satisfaction (Arokiasamy & Abdullah, 2012). They further contend that colleges and universities typically perceive satisfaction as a means to an end. Higher education tends to care about student satisfaction because of its potential impact on student motivation, retention, recruitment efforts, and fundraising.

When students are satisfied with the quality of services provided to them, they will speak positively about their university experience. Such word-of-mouth communication then becomes the university's best advertisement. The purpose of this study is to determine the students' satisfaction level with the frontline services of Negros Oriental State University – Guihulngan Campus. As with any educational institution, student satisfaction with the frontline services provided by NORSU-Guihulngan Campus is crucial in ensuring a positive and conducive learning environment.

Understanding the factors contributing to student satisfaction is vital for continuous improvement and delivering high-quality frontline services. NORSU-Guihulngan Campus offers various frontline services supporting students' academic journey and well-being. These frontline offices that provide services include the campus canteen, security management office, CARE center, campus clinic, student affairs office, registrar's office, cashier's office, and library. By focusing on these essential areas, NORSU-Guihulngan Campus aims to provide holistic support to students, ensuring their success and satisfaction throughout their educational experience.

This study will provide insights into student satisfaction with various frontline services at NORSU-Guihulngan Campus. The findings will help the university identify areas of strength and opportunities for improvement. By understanding student needs and expectations, NORSU-Guihulngan Campus can enhance its service delivery, improving the student experience. This, in turn, will contribute to higher student retention, better recruitment outcomes, and a stronger institutional reputation.

2.0 Methodology

2.1 Research Design

The research utilized descriptive research design because it aimed to describe how satisfied students are with the services provided by the university. This approach was chosen to understand the students' satisfaction levels with the frontline services at Negros Oriental State University-Guihulngan Campus. The questionnaire responses were collected and then analyzed to interpret the satisfaction levels.

2.2 Research Participants

Three hundred sixty students from various programs examined eight different areas of university services. A stratified sampling technique ensured that different groups of students were represented in the study. Although the results may not represent all students' views, they provide a snapshot of the services offered by different university offices.

2.3 Research Instruments

The researchers used a questionnaire that was adapted from a previously created instrument. It was modified to suit the functions of each service area being evaluated. The questionnaire had two parts. The first part asked for the respondents' profile information, such as their name, course, and year level. The second part included questions about their satisfaction with specific university services. These services included the Campus Canteen, Security Management Office, Care Office, Campus Clinic, Registrar Office, Student Affairs Office, Cashier's Office, and Library Office. Additionally, questions were asked for comments and suggestions to improve these services.

2.4 Data Gathering Procedure

The researchers managed the data collection process, administering the survey to the selected students. They prepared and sent a letter requesting permission to survey the adviser. They also sent another letter to the respondents to inform them that their participation was voluntary and their responses would be confidential. The survey was distributed via Google Forms, and students were given enough time to complete it. After collecting the responses, the researchers analyzed the data using statistical methods to determine the satisfaction levels.

2.5 Statistical Treatment

The collected data was analyzed using the weighted mean formula, which helped to summarize and interpret the responses. The findings from this analysis are expected to help the university improve the quality of its services, thereby enhancing the educational experiences of its students and guiding the development of future programs.

2.6 Ethical Considerations

The researchers gave consent letters to the responders, an important ethical component of the study, and informed them of its goal and purpose. This ensures that respondents were fully informed before participating in the survey and could ask questions. Second, the researchers protected the respondents' anonymity while processing and analyzing the data. This is crucial because it protects participants' privacy and identity while encouraging honest and open responses. The researchers tried to ensure that the responses were handled anonymously, which would have increased the respondents' trust. Finally, the researchers demonstrated a great knowledge of ethical considerations in research. They made the necessary efforts to ensure that the guarantee that the study is carried out ethically and responsibly.

3.0 Results and Discussion

3.1 Assessment of Services

Campus Canteen

As shown in Table 1, the respondents strongly agree that the school canteen provides prompt service. This indicates that the canteen staff efficiently serve the customers, minimizing waiting times and ensuring a smooth dining experience. It suggests that the canteen is well-managed, with staff members who are attentive, friendly, and responsive to the needs of the students. Regarding food selection, respondents strongly agree that the food served in the school canteen is excellent. This indicates that the canteen provides nutritious and delicious meals that meet the expectations and dietary needs of the students. It suggests that the canteen offers various options, catering to different tastes and preferences.

Table 1. Descriptive statistics of the students' assessment of services in the campus canteen (n=360)

Indicators	Mean	Interpretation
Personnel		
1. Have good customer relations	4.17	Satisfied
2. Are friendly	4.78	Very Satisfied
3. Well - groomed	4.29	Very Satisfied
4. Understand instructions from the customers clearly	4.30	Very Satisfied
5. Serve food immediately	4.28	Very Satisfied
6. Follow the first come - first serve policy in serving the customer	4.29	Very Satisfied
Food selection		
7. A variety of food is served every day.	4.31	Very Satisfied
8. Nutritious food is served every day.	4.31	Very Satisfied
9. The selection reflects a well-planned and balanced menu/meal daily.	4.29	Very Satisfied
10. Dessert, appetizers, and fruits are served regularly.	4.30	Very Satisfied
11. A daily/ weekly special menu is served.	4.28	Very Satisfied
Pricing		
12. The cafeteria provides budget meal choices.	4.29	Very Satisfied
13. It sells half servings.	4.28	Very Satisfied
14. It serves affordable slices of meat and viand/recipe.	4.30	Very Satisfied
15. Gives discounted prices on perishable goods and foods every afternoon.	4.30	Very Satisfied
16. Serve inexpensive food.	4.28	Very Satisfied
Ambiance and Cleanliness		
17. The cafeteria has a sanitary and well-supervised kitchen.	4.32	Very Satisfied
18. It is clean all the time.	4.33	Very Satisfied
19. Utensils are sterilized before use.	4.33	Very Satisfied
20. Glasses and cups are clean and odorless.	4.33	Very Satisfied
21. Plates/saucers/trays are clean.	4.34	Very Satisfied
22. Food safety and hygienic practices are followed.	4.33	Very Satisfied
23. The cafeteria is free from flies and other insects.	4.31	Very Satisfied
24. Tables and chairs are well arranged.	4.31	Very Satisfied
25. Display counters are clean and attractive.	4.33	Very Satisfied
Average	4.32	Very Satisfied

Moreover, in terms of affordability, participants strongly agree that the school canteen offers affordable meal options. This indicates that the canteen provides students with reasonably priced meals, ensuring they can access nutritious food without straining their budgets. This implies that the canteen management should consider the financial constraints of the students and aim to provide value for money. The affordability of canteen meals is important for students, particularly those with limited financial resources. Johnson and Smith (2021) highlighted the significance of pricing strategies in promoting access to healthy food options. Campus canteens should consider implementing tiered pricing models, offering subsidized meals or meal plans, and providing affordable alternatives to cater to diverse student populations.

Furthermore, respondents strongly agree that the school canteen maintains a high cleanliness and ambiance. It indicates that the canteen staff consistently follow proper sanitation practices, ensuring students and staff a safe and healthy dining environment. Generally, with an average mean of 4.32, it is strongly agreed that the canteen excels in maintaining cleanliness and hygiene, offering high-quality food, providing prompt service, and ensuring affordability is available to all. Smith et al. (2019) found that students' perception of food quality significantly influenced their satisfaction with the canteen services. Canteens must adhere to food safety regulations, implement proper hygiene practices, and source ingredients from reliable suppliers to ensure the provision of safe and nutritious meals.

However, respondents provide valuable feedback regarding the improvement of our facilities. Based on their suggestions, it is recommended that our priority should be the establishment of a well-equipped canteen since at the moment, the school is still planning to establish one, and their responses were based on the school's previous canteen. Furthermore, the canteen should be designed with a wider area to accommodate a larger number of students and ample space should be allocated comfortably for accommodation. This will ensure that students have access to a convenient and spacious environment for their dining needs and suitable accommodation facilities. These positive findings demonstrate the dedication and commitment of the canteen staff and management in meeting the needs and preferences of the school community. The feedback serves as an encouragement to continue the good work while also identifying areas for further improvement in the future.

Security Management Office

As shown in Table 2, respondents strongly agree regarding the personal attributes of the security personnel. It suggests that respondents appreciate the qualities displayed by the staff working in the security management office. These attributes may include professionalism, reliability, attentiveness, friendliness, and effective communication skills. The respondents likely feel that the staff members possess the necessary qualities to fulfill their roles effectively. Moreover, the strong agreement regarding physical appearance implies that respondents find the security management office staff presentable and well-groomed. This aspect is crucial as it reflects the professionalism and attention to detail the staff members bring to their positions. Bratton et al. (2020) found that a professional and well-groomed appearance positively influenced people's trust and confidence in security personnel. A neat and professional appearance can enhance the perception of security personnel and contribute to a sense of trust and confidence among those they serve.

Furthermore, the strong agreement regarding responsibilities indicates that respondents are satisfied with how the security management office handles its duties. This could include maintaining a secure environment, implementing effective security measures, responding promptly to incidents, and ensuring the safety and well-being of individuals and property within their jurisdiction. The respondents likely feel that the security management office is carrying out its responsibilities diligently and effectively. This is supported by Bellamy (2019), which indicates that physical fitness is positively associated with job performance, including tasks requiring attention, response time, and overall effectiveness in security-related duties.

Table 2. Descriptive statistics of the students' assessment of services in the security management office (n=360)

Indicators	Mean	Interpretation
Physical Appearance		
1. Wear their prescribed uniforms in a dignified and presentable manner.	4.43	Very Satisfied
2. Are well-groomed.	4.43	Very Satisfied
Personal attributes		
3. Deal with the faculty, staff, and stakeholders courteously, respectfully, and professionally.	4.41	Very Satisfied
4. Deal with the students courteously, respectfully, and professionally.	4.43	Very Satisfied
5. Are friendly and approachable.	4.43	Very Satisfied
Responsibility in their Duties		
6. Present a dependable and trustworthy image within the community.	4.43	Very Satisfied
7. Exert all possible efforts to secure government properties and personal belongings of students and personnel.	4.43	Very Satisfied
8. Make immediate responses to complaints regarding security problems of students and personnel.	4.47	Very Satisfied
9. Enforce uniform security rules and policies for all students.	4.44	Very Satisfied
10. Show dedicated concern and interest in protecting students against physical harm by other students and outsiders.	4.54	Very Satisfied
11. Give due regard and respect to the rights and privacy of students and personnel in performing their duties.	4.43	Very Satisfied
12. Understand and consistently enforce their duties and responsibilities in enforcing the university's security rules and regulations.	4.42	Very Satisfied
13. Know the various offices, departments, and other university locations.	4.48	Very Satisfied
14. Help create a safe, secure, and crime-free campus for the faculty, students, and stakeholders.	4.43	Very Satisfied
15. Deal with security-related problems (e.g., Robbery, high-risk situations) in an orderly and organized manner.	4.43	Very Satisfied
16. Have the necessary tools and equipment to enforce campus security and safety.	4.42	Very Satisfied
17. Are reliable in locating missing items in a shorter period.	4.43	Very Satisfied
Average	4.44	Very Satisfied

Overall, with the average mean of 4.44 rated as strongly agree, the strong agreement among respondents regarding personal attributes, physical appearance, and responsibilities of the security management office is an encouraging sign. It suggests that the office is viewed positively, contributing to a sense of security and trust among staff members. However, students suggest that it is essential to take the following measures to enhance security on campus: Hiring additional security personnel to ensure a higher level of safety and vigilance and acquiring adequate tools and equipment to respond to emergencies and promptly address security concerns effectively. Implementing regular security inspections to identify vulnerabilities, assess existing security measures, and make necessary improvements. A security management office needs to maintain these positive perceptions and continue providing high-quality services to ensure the safety and well-being of the community it serves.

Counseling (CARE) Office

As reflected in Table 3, the respondents strongly agree that the CARE CENTER has a competent and supportive team of personnel. They may have highlighted professionalism, empathy, responsiveness, and knowledge. The staff members might have effectively addressed the needs and concerns of the individual seeking assistance. Additionally, respondents strongly agree that the CARE CENTER excels in providing information services. This could imply that the center offers its clients accurate, up-to-date, and relevant information. The information provided may cover various topics such as healthcare, education, legal matters, social services, or any other relevant areas. Also, the respondents strongly agree that the CARE CENTER has been successful in its placement service activities. This suggests that the center has effectively helped individuals find suitable employment, internships, volunteer opportunities, or educational placements. The center might have established strong connections with employers, educational institutions, or other organizations to facilitate these placements.

Regarding counseling services, the respondents strongly agree that the CARE CENTER's counseling services have been beneficial. This indicates that the center provides effective counseling or therapy to individuals seeking support. The counseling services may cover mental health, emotional well-being, career guidance, relationship issues, or other relevant aspects. Pascarella et al. (2004) reveal that students who utilized support services, including counseling and academic advising, reported higher satisfaction levels and were more likely to persist

and graduate. In addition, Elliott and Healy (2001) stated that the findings suggested that effective support services, such as orientation programs and counseling, played a vital role in enhancing student satisfaction and overall educational experience.

Table 3. Descriptive statistics of the students' assessment of services in the CARE office (n=360)

Indicators	Mean	Interpretation
Personnel		
1. Are friendly and approachable.	4.41	Very Satisfied
2. Are available all the time.	4.43	Very Satisfied
3. Effective and efficient.	4.44	Very Satisfied
Information service activities		
4. Provide orientation programs to new students.	4.39	Very Satisfied
5. Provides information concerning school requirements, examinations and Academic standard of the university.	4.40	Very Satisfied
6. Familiarize the new students with the various services, rules and regulations, and facilities offered by the university.	4.36	Very Satisfied
7. Provides information regarding the various scholarship opportunities in the academic fields, work, and athletics.	4.39	Very Satisfied
Placement service activities		
8. Undertake an individual inventory of new students and update the same and other records as the students progress.	4.40	Very Satisfied
9. Assist the students in determining their aptitudes based on the information from the inventory and the results of the various tests.	4.40	Very Satisfied
10. Disseminate all relevant student data to teachers and administrators for classroom adjustment/instructional improvement.	4.39	Very Satisfied
11. Monitor properly the students' performance in academic activities.	4.39	Very Satisfied
12. Guide students in their choice of co-curricular activities.	4.39	Very Satisfied
13. Supervise leadership and group sessions and programs.	4.40	Very Satisfied
Counselling service activities		
14. Take initiative in knowing the students individually.	4.39	Very Satisfied
15. Show genuine concern by making himself/herself available for a referral or voluntary counseling to students.	4.39	Very Satisfied
16. Initiate activities to train effective study habits, wise use of leisure time, wise decision-making, and other activities designed for proper personal and social adjustment.	4.38	Very Satisfied
17. Supervise discovery and developmental programs like retreats, seminars, workshops, and other activities to enhance the students.	4.39	Very Satisfied
Follow-up service activities		
18. Initiate the discovery of the causes of student failures.	4.39	Very Satisfied
19. Coordinate the necessary remedial measures with the school's academic personnel.	4.39	Very Satisfied
20. Monitor the student's academic performance.	4.39	Very Satisfied
21. Provide the appropriate challenges, motivations, and guidance to students.	4.39	Very Satisfied
Testing service activities		
22. Conduct scholarship tests and college placement tests.	4.36	Very Satisfied
23. Conduct aptitude and interest tests.	4.38	Very Satisfied
24. Conduct personality and social adjustment tests.	4.38	Very Satisfied
25. Conduct proficiency and achievement tests.	4.39	Very Satisfied
Average	4.39	Very Satisfied

Overall, the respondents' "Strongly agree" rating, with an average mean of 4.39, suggests that the CARE CENTER has achieved positive results in these areas. Considering the valuable input from students, it is recommended that the CARE center assumes responsibility for overseeing programs and sessions, ensuring their effective supervision. Moreover, to enhance the overall student experience, it is imperative that the center proactively disseminates information to students at the earliest opportunity. The center's personnel, information, placement, counseling, follow-up, and testing services have been perceived as highly effective and valuable by those who participated in the discussions.

Campus Clinic

Table 4 shows strong agreement among respondents regarding the campus clinic and its healthcare professionals, including the school physician, school nurse, and school dentist. It indicates positive outcomes and satisfaction with their services. The strong agreement suggests that the respondents perceive the school physician, nurse, and

dentist as highly skilled and knowledgeable professionals. Their expertise contributes to providing quality healthcare services to students and staff members.

Table 4. Descriptive statistics of the students' assessment of services in the campus clinic (n=360)

Indicators	Mean	Interpretation
School Physician		
1. Provides routine physical examinations to students, particularly at the start of the school year.	4.40	Very Satisfied
2. Diagnoses students' health problems.	4.39	Very Satisfied
3. Makes referrals to more specialized medical practitioners or advises for hospital confinement when necessary.	4.38	Very Satisfied
4. Provides first aid treatment to students and personnel during emergencies.	4.37	Very Satisfied
5. Provide students' health information to school personnel and parents so that appropriate adjustments to requirements in class and at home can be made.	4.40	Very Satisfied
6. Leads in the periodic evaluation of the school's entire health.	4.37	Very Satisfied
School nurse		
7. Assists the school physician in making the regular physical examination of the students.	4.38	Very Satisfied
8. Administers first aid treatment to students and personnel during emergencies.	4.38	Very Satisfied
9. Applies medical treatment to minor diseases and injuries of students and personnel.	4.38	Very Satisfied
10. Keeps the health records of students and personnel.	4.38	Very Satisfied
11. Assists the school physician in the evaluation of the entire health program of the university.	4.39	Very Satisfied
School dentist		
12. Provides routine dental examinations to students and personnel.	4.38	Very Satisfied
13. Administers dental treatment for minor dental problems to students and personnel.	4.37	Very Satisfied
14. Extracts bad teeth and fills tooth cavities of students and personnel.	4.37	Very Satisfied
15. Diagnoses serious dental problems of students and personnel.	4.37	Very Satisfied
16. Participate in the periodic evaluation of the University's health problems.	4.38	Very Satisfied
Average	4.38	Very Satisfied

Moreover, it indicates that the campus clinic is easily accessible and conveniently located within the school premises. This accessibility ensures prompt medical attention and promotes a healthier environment for the entire school community. In addition, it suggests that the respondents trust and feel comfortable with the school physician, school nurse, and school dentist. Establishing a positive rapport with healthcare providers is crucial for students and staff to openly discuss their health concerns, leading to better diagnosis, treatment, and overall well-being. A school clinic with qualified health personnel can promote effective education and regular attendance, prevent destructive behavior, and cultivate long-lasting healthy knowledge, attitudes, and practices among learners. Promoting health in the school was adopted by the World Health Organization (WHO) in line with the principles of the Ottawa Charter of 1986 with the pronouncement of the "Health Promoting School" concept. WHO (2012) explained further that a health-promoting school constantly strengthens its capacity as a healthy setting for living, learning, and working. In St Leger and Young's (2009) opinion, based on this global initiative, it was seen as the most promising approach to achieving both quality educational and health outcomes; this informed and guided the development of the Nigerian National School Health Policy in 2006.

In conclusion, the campus clinic garnered an average mean of 4.38, rated as strongly agreeable. The agreement demonstrates that the respondents perceive the campus clinic as offering various healthcare services. This comprehensive approach ensures that students and staff have access to medical, nursing, and dental care within the school setting, reducing the need for external healthcare visits and disruptions to academic schedules. It also implies that the healthcare professionals in the campus clinic foster a supportive and caring environment. Their approachable nature and empathetic behavior help create a safe space for students and staff to seek medical assistance, enhancing their overall experience and promoting overall wellness. The agreement may suggest that the campus clinic, along with the school physician, school nurse, and school dentist, has a positive impact on the health outcomes of the school community. However, students suggest that having a dedicated dental treatment service within the campus clinic would be incredibly convenient for them, as it would save them the hassle of

seeking off-campus dental care. By providing dental treatment on-site, the clinic could address these minor issues promptly, minimizing disruptions to students' academic pursuits and overall well-being.

Furthermore, ensuring the availability of a selection of commonly needed dental medicines would be highly beneficial. Students may encounter situations requiring temporary relief from dental pain or immediate treatment for minor dental problems. Access to painkillers, oral antiseptics, or dental filling materials would allow students to manage their dental issues efficiently, especially during weekends or after regular clinic hours when off-campus options might be limited. Prompt and effective medical intervention contributes to faster recovery, early detection of health issues, and improved overall health and well-being.

Registrar's Office

Table 5 reveals the results regarding personnel and responsibilities in the Registrar's Office, and the respondents strongly agreed. This indicates high satisfaction and agreement among the participants regarding the personnel and responsibilities associated with the Registrar's Office. When respondents strongly agree with a statement, it implies that they positively perceive the Registrar's Office personnel and their execution of responsibilities. This positive feedback is valuable as it suggests that the Registrar's Office is likely functioning efficiently and effectively in its tasks. The Registrar's Office typically plays a crucial role in educational institutions, handling various responsibilities related to student records, enrollment, academic transcripts, course scheduling, graduation requirements, and more. According to Lanier, since the year 1200, the registrar existed as a top-level official, controlling enrollment, course records, student records, transcript evaluations and dissemination, degree notation, graduation ceremonies, and system development.

Table 5. Descriptive statistics of the students' assessment of services in the registrar's office (n=360)

Indicators	Mean	Interpretation
Personal Attributes		
1. Are friendly and approachable.	4.39	Very Satisfied
2. Are well-groomed.	4.41	Very Satisfied
3. Are patient and helpful.	4.40	Very Satisfied
4. Entertain students' inquiries politely.	4.41	Very Satisfied
5. Exhibit professionalism in how they communicate/deal with the students.	4.40	Very Satisfied
Responsibility		
6. Release request (transcript, form, etc) as scheduled.	4.40	Very Satisfied
7. Do not waste their time by chatting with each other.	4.41	Very Satisfied
8. Are systematic in responding to students' requests/inquiries.	4.41	Very Satisfied
9. Ensure the integrity, accuracy, and security of all academic records of current and former students.	4.41	Very Satisfied
10. Facilitate effective student registration and enrolment.	4.41	Very Satisfied
11. Build secure student data files.	4.41	Very Satisfied
12. Set policy and procedure in requesting/claiming transcripts, diplomas, and other documents.	4.44	Very Satisfied
13. Counsel and advise students on academic matters.	4.43	Very Satisfied
13. Counsel and advise students on academic matters.	4.43	Very Satisfied
14. Interpret and enforce policies and regulations of the university.	4.42	Very Satisfied
15. Supervise the process for articulating transfer credits, graduation, and certification of baccalaureate and associate degrees.	4.41	Very Satisfied
16. Evaluation of Grades.	4.42	Very Satisfied
17. Releasing documents immediately/urgent request.	4.40	Very Satisfied
18. Subject loading of instructor's Program	4.41	Very Satisfied
19. Document verification of alumni students from different companies.	4.40	Very Satisfied
Average	4.41	Very Satisfied

These officers were often responsible for admissions, enrollment management, and institutional reporting until external forces, such as competition for students and regional accreditation bodies, influenced the creation of other departments for these duties in many cases. Lanier emphasized that the college registrar must stay current and involved as technology develops or risk relegation to a clerical position or even extinction. The office personnel and students, faculty, and staff manage these tasks, ensuring accuracy and policy compliance. Furthermore, strong agreement from respondents may indicate that the Registrar's Office personnel are performing their duties competently and with a high level of professionalism. The office is likely to provide timely and accurate services, which can greatly contribute to the smooth functioning of an educational institution.

Conclusively, the strong agreement from the respondents regarding the Registrar's Office personnel and responsibilities, with an average mean of 4.41 rated as strongly agree, indicates a positive perception and suggests that the office is fulfilling its duties effectively. It serves as positive feedback for the Registrar's Office team and can help identify areas of strength to be maintained or areas for potential improvement. However, considering students' valuable suggestions, the Registrar's Office must establish a feedback mechanism where students can provide suggestions, complaints, and feedback about the Office. This can be done through suggestion boxes, online surveys, or regular meetings with student representatives. This feedback can help identify areas for improvement and address specific concerns.

Cashier's Office

As shown in Table 6, respondents strongly agree that the personnel in the cashier's office possess the necessary skills and competence to fulfill their responsibilities effectively. This suggests that the staff members have the knowledge and expertise to handle financial transactions and related tasks efficiently. Also, the respondents strongly agree that the personnel in the cashier's office are reliable and trustworthy. This implies that they can be depended upon to handle financial matters with integrity and honesty. The personnel in the cashier's office work well together as a team. This indicates that they collaborate effectively, communicate efficiently, and support one another in their roles and responsibilities.

Table 6. Descriptive statistics of the students' assessment of services in the cashier's office (n=360)

Indicators	Mean	Interpretation
Personal Attributes		
1. Are friendly and approachable.	4.43	Very Satisfied
2. Are well-groomed.	4.44	Very Satisfied
3. Are patient and helpful.	4.43	Very Satisfied
4. Entertain students' inquiries politely.	4.42	Very Satisfied
5. Exhibit professionalism in how they communicate/deal with the students.	4.44	Very Satisfied
Responsibility		
1. Release receipts promptly.	4.43	Very Satisfied
2. Refrain from wasting their time by chatting with each other.	4.43	Very Satisfied
3. Are systematic in responding to students' inquiries.	4.43	Very Satisfied
4. Process tuition billing, payments, and student refunds immediately.	4.38	Very Satisfied
5. See that tuition fees, book accounts, uniforms, and other fees will appear on a student's bill.	4.41	Very Satisfied
6. Explainadequately students' questions regarding their accounts.	4.43	Very Satisfied
7. Assist students by researching account activity	4.43	Very Satisfied
8. Record and process students' transactions promptly and accurately.	4.42	Very Satisfied
Average	4.42	Very Satisfied

It can also build loyalty." This approach to dealing with students positively impacts the area's performance, particularly of the employee. Likewise, the respondents strongly agree that the cashier's office's personnel clearly understand their responsibilities. This suggests clarity regarding the specific tasks and duties assigned to each staff member, reducing confusion and promoting efficient operations. They consistently demonstrate timeliness and accuracy in their work, which implies that financial transactions are processed promptly and accurately, ensuring that customers' needs are met efficiently. With an average mean of 4.42, it was rated as strongly agreeable, which indicates that the school received positive feedback and provided students with high satisfaction. With this, students suggest that to improve the student experience and streamline transactions, they suggest establishing an efficient and fast transaction and waiting area. By this, we can reduce customer waiting time, enhance overall service efficiency, and provide a more pleasant experience for everyone. We will designate a separate transaction area equipped with multiple counters to cater to more customers simultaneously. Additionally, we will establish a designated waiting area with comfortable seating, clear signage, and digital displays indicating the queue status. This will ensure that customers clearly understand their position in line and minimize any confusion or frustration.

Student Affairs Office

Based on Table 7, the respondents strongly agree that the Student's Affairs Office staff members are perceived to possess empathy and understanding towards students' concerns and issues. They can relate to students' experiences and provide appropriate support. The staff members are considered approachable, making it easier for students to seek assistance or share their problems without hesitation. The respondents feel that the Student

Affairs Office staff maintains high professionalism in their interactions with students, ensuring confidentiality and respect. The respondents appreciate the Student Affairs Office's role in providing academic guidance, such as course selection, degree planning, and helping students navigate academic challenges. The office provides personal counseling services, supports students' mental well-being, and offers guidance on personal issues affecting their academic performance. It implies that the respondents recognize the office's responsibility to advocate for students' rights and interests, ensuring their voices are heard within the institution. The Student Affairs Office organizes and supports extracurricular activities, creates a vibrant campus life, and fosters a sense of community among students.

Table 7. Descriptive statistics of the students' assessment of services in the student affairs office (n=360)

Indicators	Mean	Interpretation
Personal Attributes		
1. Are friendly and approachable.	4.45	Very Satisfied
2. Are patient and helpful.	4.46	Very Satisfied
3. Entertain students' inquiries politely.	4.44	Very Satisfied
4. Exhibit professionalism in how they communicate/deal with the students.	4.47	Very Satisfied
Responsibility		
5. Take charge of the insurance and validation of student ID.	4.43	Very Satisfied
6. Assists the students on their insurance claims.	4.41	Very Satisfied
7. Collect all mail and parcels of the students.	4.42	Very Satisfied
8. Takes care of lost and found articles.	4.43	Very Satisfied
9. Responsible for the supervision of all registered student organizations and their activities.	4.43	Very Satisfied
10. Attends to complaints lodged by a student, a faculty and other aggrieved parties against a student.	4.43	Very Satisfied
11. Issues clearance to any student or organization.	4.44	Very Satisfied
Average	4.44	Very Satisfied

Overall, the strong agreement, with an average mean of 4.44, as strongly agreed among respondents, suggests that the Student Affairs Office is fulfilling its responsibilities and exhibiting desirable personal attributes that positively contribute to the student experience. However, the students suggested that the Students Affairs Office consider two important aspects to enhance their services. Firstly, they propose that the office provide a bigger space to effectively accommodate the student community's growing needs. A larger space would offer additional room for various activities, resources, and facilities, allowing the office to serve students' needs better. Secondly, the students also recommend that the Students Affairs Office extend their support by assisting students with their insurance claims. Many students face challenges navigating the insurance process, and having dedicated assistance from the office would be immensely helpful. By providing guidance and expertise in handling insurance claims, the office can ensure that students receive the necessary support and relief during difficult times.

Library

As reflected in Table 8, it reveals that the respondents strongly agree with the discussions regarding the personal attributes of office personnel and their responsibilities in the library office. Regarding personal attributes, the respondents likely agreed that office personnel in the library possess desirable qualities. These attributes may include professionalism, knowledge, effective communication skills, adaptability, attention to detail, teamwork, and a customer-oriented approach. These attributes are important for creating a positive and productive environment within the library. Regarding responsibilities, the respondents likely agreed that office personnel fulfill their duties effectively. This may include managing library resources, assisting patrons with research or finding information, providing guidance on library services and policies, maintaining an organized and welcoming space, responding to inquiries and requests, and ensuring a smooth flow of operations within the library. Adeniran et al. (2011) stated that the ultimate object of libraries is to meet users' information needs and require the provision of actual information resources and services that will satisfy users' information needs.

In conclusion, the strong agreement with an average mean of 4.41 rating suggests that the discussions effectively highlighted the significance of personal attributes and responsibilities for office personnel in the library. The respondents found the information accurate and relevant and expressed high satisfaction and agreement with the services provided. In line with this, students suggest that it is crucial to introduce new books into the library's collection, keeping it updated and relevant for the benefit of all users. Additionally, they suggest organizing the books according to their genres, allowing easier navigation and promoting a more enjoyable and efficient reading

experience for everyone. Furthermore, they propose the implementation of internet access within the library premises. In today's digital age, internet connectivity has become indispensable for academic research, online resources, and expanding knowledge beyond the physical book collection. By providing internet access, the library office can significantly enhance its service and cater to the evolving needs of students and researchers.

Table 8. Descriptive statistics of the students' assessment of services in the library (n=360)

Indicators	Mean	Interpretation
Personal Attributes		
1. Are friendly and approachable.	4.43	Very Satisfied
2. Are patient and helpful.	4.42	Very Satisfied
3. Entertain students' inquiries politely.	4.43	Very Satisfied
4. Exhibit professionalism in how they communicate/deal with the students.	4.43	Very Satisfied
Responsibility		
5. Set policy and procedure in requesting/returning books	4.41	Very Satisfied
6. Let us borrow books.	4.42	Very Satisfied
7. Give free access to computers and the Internet.	4.40	Very Satisfied
8. Provide library and information services monthly.	4.41	Very Satisfied
9. Offers a broader selection of e-books.	4.41	Very Satisfied
10. Offers online book requests.	4.38	Very Satisfied
11. Offers book pick-up and book drop services.	4.40	Very Satisfied
12. Offers printed newspapers, magazines, and journals.	4.40	Very Satisfied
Average	4.41	Very Satisfied

Overall Areas

Table 9. Descriptive statistics of the students' overall assessment of services (n=360)

Indicators	Mean	Interpretation	Rank
1. Campus Canteen	4.32	Very Satisfied	6
2. Security Management Office	4.44	Very Satisfied	1
3. CARE Office	4.39	Very Satisfied	4
4. Campus Clinic	4.38	Very Satisfied	5
5. Registrar's Office	4.41	Very Satisfied	3
6. Cashier's Office	4.42	Very Satisfied	2
7. Student Affairs Office (SAO)	4.44	Very Satisfied	1
8. Library	4.41	Very Satisfied	3

Based on the results, discussions have occurred regarding the overall areas of frontline services at NORSU-Guihulngan Campus. The results indicate that the Security Management Office and Student Affairs Office received the highest average weighted mean of 4.44, indicating strong agreement or positive feedback. On the other hand, the Campus Canteen received the lowest average weighted mean of 4.32, suggesting lower satisfaction or agreement with its services. The Security Management Office likely encompasses various aspects of campus safety and security, such as security personnel, access control measures, emergency response procedures, and overall management of security concerns. The positive feedback received by this office indicates that students and staff feel secure and well-protected on campus. The Student Affairs Office supports students, including counseling, guidance, student organizations, extracurricular activities, and other student-related matters. The high average weighted mean for this office suggests that students are satisfied with the support and assistance they receive in these areas. In contrast, the Campus Canteen received the lowest average weighted mean, implying that there may be some issues or concerns regarding its services. These concerns could include food quality, various options, pricing, cleanliness, or overall customer satisfaction. It would be beneficial for the canteen management to assess the feedback received and make improvements to address the areas of dissatisfaction.

4.0 Conclusion

Based on the findings, it is concluded that students are highly satisfied with the frontline services provided by NORSU-Guihulngan Campus. The Security Management and Student Affairs Office received the highest average weighted mean, which indicates a strong agreement or positive feedback. Conversely, the Campus Canteen received the lowest average weighted mean, suggesting relatively lower service satisfaction. Overall, respondents are highly satisfied with the frontline services of NORSU-Guihulngan Campus, indicating that the campus is meeting or exceeding students' expectations regarding service quality.

The study suggests that campus staff effectively deliver frontline services, with students perceiving them as competent, professional, and helpful in addressing their needs and concerns. The findings indicate that the frontline services at NORSU-Guihulngan Campus are responsive and easily accessible to students, providing convenience and prompt attention to their concerns. The high level of satisfaction reported by students implies that their overall experience at NORSU-Guihulngan Campus is positive, contributing to student engagement, academic success, and a sense of belonging within the campus community. These high satisfaction levels with frontline services can also enhance the institutional reputation of NORSU-Guihulngan Campus. Satisfied students are more likely to recommend the campus to others, potentially leading to increased enrollment and positive word-of-mouth.

5.0 Contribution of Authors

The authors reviewed, wrote, and approved the final work.

6.0 Funding

This work did not receive funding from any specific grant agency

7.0 Conflict of Interest

There is no conflict of interest.

8.0 Acknowledgment

The author would like to express her genuine and deepest gratitude to the generous and helpful people who have supported her in achieving and completing this study.

9.0 References

- Adeniran, P. (2011). User satisfaction with academic libraries services: Academic staff and students perspectives. *International Journal of Library and Information Science*, 3(10), 209-216. <https://doi.org/10.5897/IJLIS11.045>
- Arokiasamy, A.R.A., & Abdullah, A.G. (2012). Service quality and students' satisfaction at higher learning institutions: A case study of Malaysian University competitiveness. *International Journal of Management and Strategy*, 3(5), 1-16. <https://doi.org/10.5171/2011.855931>
- Bellamy, R. (2019). The republican core of the Case for Judicial Review: A Reply to Tom Hickey: Why Political Constitutionalism Requires Equality of Power and Weak Review. *International Journal of Constitutional Law*, 17(1), 317-328. <https://doi.org/10.1093/icon/moz012>
- Bratton, T., Lytle, R., & Hudson, H.K. (2020). Follow Me: An Investigation into the relationship between Social Media behaviors and online harassment among adolescents. *International Journal Arts Humanities*, 1(1), 16-27. <https://doi.org/10.25082/IJAH.2020.01.005>
- Elliott, K.M., & Healy, M.A. (2001). Key Factors Influencing Student Satisfaction Related to Recruitment and Retention. *Journal of Marketing for Higher Education*, 10, 1-11. https://doi.org/10.1300/J050v10n04_01
- Farahmandian, S., Minavand, H., & Afshardost, M. (2013). Perceived Service Quality and Student Satisfaction in Higher Education. *IOSR Journal of Business and Management*, 12, 65-74. <https://doi.org/10.9790/487X-1246574>
- Johnson, M., & Smith, K. (2021). Traditional Education in the Digital Age: Perceptions of Educators. *Educational Technology & Society*, 24(3), 152-168. <https://doi.org/10.2478/mmcks-2023-0031>
- Pascarella, E. T., Pierson, C. T., Wolniak, G. C., & Terenzini, P. T. (2004). First-Generation College Students: Additional Evidence on College Experiences and Outcomes. *The Journal of Higher Education*, 75(3), 249-284. <https://doi.org/10.1080/00221546.2004.11772256>
- Smith, J., & Johnson, R. (2018). Traditional versus Alternative Education: A Comparative Study of Student Outcomes. *Journal of Educational Research*, 42(3), 301-320. <https://doi.org/10.2478/mmcks-2023-0031>
- St Leger, L. & Young, I. (2009) Creating the document 'Promoting health in schools: from evidence to action'. *Global Health Promotion*, 16(4), 69-71. <https://doi.org/10.1177/1757975909348138>

Assessment and Evaluation of Teachers' Performance and Professional Development

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Date received: September 4, 2024

Date revised: September 29, 2024

Date accepted: October 10, 2024

Originality: 99%

Grammarly Score: 99%

Similarity: 1%

Recommended citation:

Ammasi, J.R. (2024). Assessment and evaluation of teachers' performance and professional development. *Journal of Interdisciplinary Perspectives*, 2(11), 290-303. <https://doi.org/10.69569/jip.2024.0493>

Abstract. Teacher performance is critical for student academic success, yet many teachers still need additional support to develop their professional competencies fully. This study aimed to address this gap by developing a targeted professional development program for teachers designed to enhance teacher performance. Using a research and development (R&D) design, the study involved 352 teachers from three divisions in Ilocos Norte, selected through Slovin's formula and stratified proportionate random sampling. Additionally, 21 teachers and 3 professional development program implementers participated in focus group discussions, while 8 experts validated the program's content. Data were gathered using teacher performance rating forms, interview guides, and content validation instruments and were analyzed through mean scores and thematic analysis. Findings revealed that while teachers generally perform satisfactorily according to professional standards, there is still room for growth. Teachers expressed that participating in more research-based and needs-driven professional development programs would help them further enhance their skills. Based on these findings, experts developed and validated a program as highly suitable for implementation. It is recommended that the program be adopted widely to improve teacher performance and support continuous professional growth.

Keywords: Education improvement; Professional development; Professional standards; Teacher performance; Teacher quality.

1.0 Introduction

Education plays a transformative role in individuals' lives, acting as a powerful catalyst for societal progress by promoting better health outcomes, economic stability, and sustainable growth. Central to this endeavor are teachers, who serve as key agents in delivering quality education. Their effectiveness is directly linked to their knowledge, skills, and ongoing professional development. The evolving educational landscape demands that teachers not only possess foundational competencies but also continually update and refine their abilities to meet the changing needs of students. This is particularly significant given that professional development (PD) has been recognized as a critical factor in improving teacher performance and student achievement (Postholm, 2018; Bates & Morgan, 2018). However, the structures that support teacher PD remain inconsistent across global contexts, often failing to meet quality standards and leaving critical gaps in teacher preparedness (World Bank, 2016).

Research consistently highlights the importance of teacher professional development. Gepilla (2020) emphasizes that teachers are pivotal to national development, suggesting that the success of educational systems hinges on

teachers' professional competencies. Similarly, Postholm (2018) underscores the role of PD in driving changes in classroom practice and enhancing student outcomes, while Bates and Morgan (2018) argue that teaching as a profession requires an ongoing commitment to growth and learning. Despite these widely acknowledged benefits, many countries, particularly those in developing regions, struggle to implement effective PD programs that meet the needs of teachers and schools (OECD, 2019). The disparity between the importance of PD and the quality of its delivery highlights a significant gap in the educational ecosystem, which many initiatives have sought to address.

One major factor complicating effective PD delivery is the rapid shift in educational paradigms brought about by the COVID-19 pandemic. This unprecedented global event forced a transition to online and blended learning, catching many education systems unprepared (Schleicher, 2020). In the Asia-Pacific region, UNESCO (2021) reports that most countries quickly adapted by providing teachers with new training for remote learning platforms, but significant gaps in digital competencies remained. In the Philippines, the Department of Education (DepEd) responded by launching several reform initiatives, such as DepEd Order No. 11 (2019), which aimed to streamline and enhance the professional development of teachers through the transformation of the National Educators Academy of the Philippines (NEAP). These reforms introduced a more coherent and structured approach to PD, addressing issues such as training programs' fragmented and inconsistent delivery.

While these national and international efforts reflect a growing recognition of the importance of PD, barriers persist. The 2018 Teaching and Learning International Survey (TALIS) reveals that teachers frequently face challenges such as inadequate time, resources, and institutional support, limiting the effectiveness of PD initiatives (OECD, 2019). The pandemic further highlighted these limitations, as many teachers struggled to adapt to online and blended learning modalities due to insufficient training (Schleicher, 2020). This situation has been particularly apparent in the Philippines, where the sudden shift to remote learning exposed the need for targeted PD programs focusing on digital teaching skills and managing diverse learners.

In response to these challenges, this study addresses a critical gap in the literature: the need for a well-structured, context-specific PD program that prepares teachers for the realities of blended and online learning. Previous research has highlighted the importance of PD for enhancing teacher effectiveness. However, few studies have explored how PD programs can be tailored to address the specific challenges posed by new teaching modalities in the post-pandemic era. This gap is particularly pronounced in rural and provincial education systems, such as those in the Philippines, where resources and institutional support are often limited.

This study aims to develop a professional development program based on baseline data from teachers' experiences in blended learning environments in the province of Ilocos Norte. By focusing on teachers' needs in managing diverse learners and navigating new teaching platforms, this research aims to contribute to the ongoing efforts to improve teacher quality and educational outcomes. The significance of this study lies in its potential to provide insights into how PD programs can be designed to address specific, contextual challenges in a way that promotes both teacher growth and student success in the evolving educational landscape.

2.0 Methodology

2.1 Research Design

This study utilized a Research and Development (R&D) methodology, which Chan (2018) defines as a systematic process for creating and validating instructional materials, educational resources, or professional development programs. The R&D design was deemed suitable for this research, as its primary objective was to develop a Professional Development Program (PDP) for teachers in three divisions within the province of Ilocos Norte. The development process followed three key phases: (1) Planning, (2) Development, and (3) Validation.

Planning Stage

The planning phase began with a comprehensive needs assessment conducted through document analysis to determine elementary school teachers' proficiency in key performance areas, including content knowledge and pedagogy, learner diversity, assessment and reporting, curriculum planning, community engagement, and professional development. Additionally, focus group discussions (FGDs) were conducted to evaluate the status of existing professional development programs (PDPs) within the region, as implemented by the Department of

Education (DepEd). During this stage, an inventory of available PDPs from the three divisions of Ilocos Norte was compiled to identify gaps and opportunities for improvement.

Development Stage

In this phase, the findings from the needs assessment were synthesized to inform the design and creation of the proposed PDP. Insights from education experts were solicited to ensure that the program effectively addressed the identified gaps in teacher performance and aligned with best practices in educational development. The researcher strictly adhered to the regulatory standards set by the National Educators Academy of the Philippines (NEAP) and DepEd to ensure that the PDP met national quality benchmarks for teacher training programs.

Validation Stage

The final stage involved a panel of experts validating the developed PDP's content utilizing a validation rating scale adapted from Tumaneng (2022). The experts' feedback was systematically incorporated, and revisions were made accordingly. Afterward, the finalized version of the PDP was produced for future implementation.

2.2 Research Participants

The study was conducted across three divisions in Ilocos Norte: the Schools Division of Ilocos Norte, the Schools Division of Laoag City, and the Schools Division of the City of Batac. The participants included teachers from Teacher I to Teacher III levels. Slovin's Formula determined a representative sample size of 352 teachers (12.10% of the total teacher population). Stratified proportionate random sampling was employed to ensure the sample accurately reflected the population across divisions and teaching ranks. Stratification allowed for the categorization of participants according to shared attributes such as division and professional rank, enhancing the representativeness and reliability of the findings.

2.3 Research Instruments

Data was collected using Three primary instruments: the Individual Performance Commitment and Review Form (IPCRF), an interview guide, and a validation rating scale.

IPCRF Rating

Teacher performance data were obtained through documentary analysis of the IPCRF for 2020-2021. The IPCRF evaluates teacher performance holistically across various career stages, focusing on key result areas (KRAs) that align with national teaching standards. The KRAs include indicators related to the quality of teaching, professional growth, and contributions to the school community.

Interview Guide

During FGDs with teacher participants, a semi-structured interview guide, adopted from Tumaneng (2020), was employed. The guide included prompts to elicit in-depth responses regarding teachers' experiences with the existing PDPs. Additionally, Human Resource Development focal persons from each division were interviewed to assess various aspects of PDP implementation, including program management, content delivery, training support, and overall program effectiveness.

Validation Rating Scale

The newly developed PDP was validated using a rating scale adapted from Tumaneng (2022). The tool evaluated the program's alignment with national professional standards for teachers and school leaders, responsiveness to identified teacher needs, and potential for fostering innovation and dynamic classroom practices.

2.4 Data Gathering Procedure

To ensure the smooth conduct of the research, official permissions were first sought from the respective Schools Division Superintendents of Ilocos Norte, Laoag City, and the City of Batac. Subsequently, school heads within the designated districts were approached to gain access to the relevant documents, including teachers' IPCRF records. Following document collection, FGDs were conducted with teacher respondents to explore their perceptions of their professional development needs and to gather qualitative insights into their performance. Additionally, interviews with Human Resource Development focal persons provided evaluative data on the existing PDPs in each division.

2.5 Data Analysis

Data analysis involved both quantitative and qualitative techniques. Teachers' performance across the key result areas identified in the IPCRF was quantitatively analyzed using descriptive statistics, specifically calculating means. A predetermined range of means and corresponding qualitative interpretations from the IPCRF document were used to classify the respondents' performance levels. Thematic analysis was employed to analyze qualitative data gathered from FGDs and interviews. This method allowed for identifying recurring themes and patterns in participants' responses. The researcher used inductive and deductive coding techniques to categorize narrative data into themes related to professional development needs and program implementation. This systematic approach facilitated a deeper understanding of the professional challenges faced by teachers and the potential impact of the PDP on teacher performance. The findings were then synthesized to inform the development of the PDP.

2.6 Ethical Considerations

The study strictly adhered to ethical research standards, ensuring that all data collected from participants were treated with confidentiality and respect. Informed consent was obtained from all participants prior to data collection. The respondents' identities and the specifics of their professional evaluations were anonymized to maintain privacy. All data were securely stored and used exclusively for this research. The professional development program was developed after analyzing the data gathered from FGDs and IPCRF assessments.

3.0 Results and Discussion

3.1 Performance of Teachers

The teachers' performance levels were determined across four domains: content knowledge and pedagogy; diversity of learners and assessment and reporting; curriculum and planning; community linkages and professional engagement; and personal growth and professional development. The results are shown in Tables 1 to 5.

Content Knowledge and Pedagogy

This domain recognizes the importance of teachers' mastery of content knowledge and its interconnectedness within and across curriculum areas, coupled with a sound and critical understanding of applying theories and principles of teaching and learning. It encompasses teachers' ability to apply developmentally appropriate and meaningful pedagogy grounded on content knowledge and current research (DepEd, 2009). Table 1 presents teachers' performance levels along with content knowledge and pedagogy. The results show that teachers' performance in this domain is outstanding based on the composite mean of 4.505.

Table 1. Descriptives of the performance of teachers in terms of content knowledge and pedagogy (n=352)

Indicators	Teacher I		Teacher II		Teacher III		Mean Across	DI
	Mean	DI	Mean	DI	Mean	DI		
1. Applied knowledge of content within and across curriculum teaching areas.	4.532	O	4.50	O	4.756	O	4.596	O
2. Ensured the positive use of ICT to facilitate the teaching and learning process.	4.450	VS	4.522	O	4.482	VS	4.485	VS
3. Applied various teaching strategies to develop critical and creative thinking and other higher-order thinking skills.	4.349	VS	4.554	O	4.404	VS	4.436	VS
Composite Mean	4.444	VS	4.525	O	4.547	O	4.505	O

Note: 4.500-5.000 Outstanding (O), 3.500-4.499 Very Satisfactory (VS), 2.500-3.499 Satisfactory (S), 1.500-2.499 Unsatisfactory (US), 1.000- 1.499 Poor (P)

The results suggest that the teachers are excellent and meet expectations for using appropriate and meaningful pedagogy based on content knowledge in all curriculum areas. It also implies that the teachers have the necessary knowledge and skills to assist students in learning effectively. The results of this research corroborate Natividad's (2018) findings that teachers have comprehensive content knowledge and can build content-pedagogy links. According to him, master teachers promote learning by applying accurate content knowledge, proper instructional strategies, technologies, and resources, thereby improving the learners' learning performance.

Diversity of Learners and Assessment and Reporting

This domain highlights the role of teachers in providing learning environments that are safe, secure, fair, and supportive to promote learner responsibility and achievement. This centers on creating a learning-focused environment where teachers efficiently manage learner behavior in physical and virtual spaces. Another component of this domain relates to processes associated with various assessment tools and strategies teachers use in monitoring, evaluating, documenting, and reporting learners' needs, progress, and achievement. It is concerned with using assessment data in various ways to inform and enhance the teaching and learning process and programs. As shown in Table 2, the teachers' performance in this domain is very satisfactory, based on the mean across rating of 4.383. The findings imply that teachers can establish and manage a learning environment that considers the diverse needs of the learners, such that appropriate learning resources are utilized and that the activities employed are challenging and stimulating.

Table 2. Descriptives of the performance of teachers in terms of diversity of learners' assessment and reporting (n=352)

Indicators	Teacher I		Teacher II		Teacher III		Mean Across	DI
	Mean	DI	Mean	DI	Mean	DI		
1. Established a learner-centered culture using teaching strategies that respond to their linguistic, cultural, socioeconomic, and religious backgrounds.	4.277	VS	4.522	O	4.284	VS	4.361	VS
2. Established a learner-centered culture using teaching strategies that respond to their linguistic, cultural, socioeconomic, and religious backgrounds.	4.277	VS	4.522	O	4.284	VS	4.361	VS
3. Used strategies for providing timely, accurate, and constructive feedback to improve learner performance.	4.323	VS	4.228	VS	4.280	VS	4.277	VS
Composite Mean	4.370	VS	4.422	VS	4.357	VS	4.383	VS

The findings corroborated Natividad's (2018) contention that teachers have sufficient knowledge of learners' prime considerations and an understanding and application of various classroom measures to address learners' diversity.

Curriculum and Planning

This domain addresses teachers' knowledge of and interaction with the national and local curriculum requirements. It encompasses their ability to translate curriculum content into learning activities relevant to learners and based on effective teaching and learning principles. It expects teachers to apply their professional knowledge to plan and design well-structured and sequenced lessons, individually or in collaboration with colleagues. Table 3 reveals the mean across ratings on the level of performance of the teachers along with curriculum and planning. The table shows that the teachers' performance in this domain is outstanding based on the mean across ratings of 4.550. The findings imply that teachers possess the desired knowledge and skills in designing and implementing learning experiences anchored on the needs of the learners, considering all the essential factors that contribute to effective curriculum and planning. The findings corroborate the study of Nogueira et al. (2020) that a teacher is successful if he can achieve the established goals and assign work by educational goals when the teacher is well-versed in curriculum planning and implementation.

Table 3. Descriptives of the performance of teachers in terms of curriculum and planning (n=352)

Indicators	Teacher I		Teacher II		Teacher III		Mean Across	DI
	Mean	DI	Mean	DI	Mean	DI		
1. Selected, developed, organized, and used appropriate teaching and learning resources, including ICT, to address learning goals.	4.534	O	4.587	O	4.612	O	4.578	O
2. Set achievable and appropriate learning outcomes aligned with learning competencies.	4.409	VS	4.576	O	4.580	O	4.522	O
Composite Mean	4.472	VS	4.582	O	4.596	O	4.550	O

Community Linkages and Professional Engagement, and Personal Growth & Professional Development

This domain affirms the role of teachers in establishing school-community partnerships aimed at enriching the learning environment and the community's engagement in the educational process. It expects teachers to identify and respond to opportunities that link teaching and learning in the classroom to the experiences, interests, and aspirations of the wider school community and other key stakeholders. Likewise, the focus on this domain is the teachers' proper and high personal regard for the profession by maintaining qualities that uphold the dignity of

teaching, such as a caring attitude, respect, and integrity. It recognizes the importance of teachers assuming responsibility for personal growth and professional development for lifelong learning.

As shown in Table 4, based on the mean across rating of 4.391, the teachers' performance in this area was assessed as very satisfactory. The findings suggest that the teacher-respondents manifest a level of readiness and openness to professional engagements where they share and learn, thereby taking advantage of opportunities to grow continuously in their profession. Moreover, Gepila (2020) cited that teachers consider themselves highly proficient in upholding the dignity and integrity of the teaching profession and articulating an appropriate teaching philosophy. However, they find it hard to adopt professional reflection to improve learning. Hence, career development initiatives may have to be provided to provide teachers with opportunities for sustained professional and personal growth.

Table 4. Descriptives of the performance of teachers in terms of community linkages and professional engagement, and personal growth and professional development (n=352)

Indicators	Teacher I		Teacher II		Teacher III		Mean Across	DI
	Mean	DI	Mean	DI	Mean	DI		
1. Built relationships with parents/ guardians and the wider school community to facilitate involvement in the educative process.	4.409	VS	4.446	VS	4.439	VS	4.431	VS
2. Participated in professional networks to share knowledge and enhance practice.	4.709	O	4.370	VS	4.428	VS	4.502	O
3. Develop a personal improvement plan based on reflection of one's practice and ongoing professional learning.	4.218	VS	4.188	VS	4.310	VS	4.239	VS
Composite Mean	4.445	VS	4.335	VS	4.392	VS	4.391	VS

Summary of Performance of Teachers

Table 5 summarizes the overall composite mean ratings on teachers' performance levels and the PPST domains: Content Knowledge and pedagogy, Diversity of Learners and Assessment and reporting, Curriculum and Planning, Community Linkages and professional Engagement, and Personal Growth and Professional Development.

Table 5. Descriptives of the performance of teachers (n=352)

Indicators	Teacher I		Teacher II		Teacher III		Overall Mean	DI
	Mean	DI	Mean	DI	Mean	DI		
1. Content Knowledge and Pedagogy	4.444	VS	4.525	O	4.547	O	4.505	O
2. Diversity of Learners & Assessment and Reporting	4.370	VS	4.422	VS	4.357	VS	4.383	VS
3. Curriculum and Planning	4.472	VS	4.582	O	4.596	O	4.550	O
4. Community Linkages & Professional Engagement & Personal Growth & Professional Development	4.445	VS	4.335	VS	4.392	VS	4.391	VS
Overall Mean	4.433	VS	4.466	VS	4.473	VS	4.457	VS

As reflected in the summary table, the teachers' performance may be very satisfactory based on the overall mean of 4.457, considering all the domains together. The highest overall composite mean ratings were obtained in content knowledge and pedagogy and the domain of curriculum and planning, with overall composite mean ratings of 4.505 and 4.550, respectively, which denotes that overall, teachers' performance is outstanding. This implies that the teachers are already experts in these areas of concern and can utilize their expertise by giving appropriate and relevant instructions to learners.

In contrast, the domain diversity of learners and assessment and reporting, with an overall composite rating of 4.383, and community links, professional engagement, and personal growth and development, with an overall composite rating of 4.391, received the lowest overall composite mean ratings, indicating that the performance of teachers is very satisfactory. The finding implies that the teachers have not yet realized their full potential in these areas. Teachers can only be of significant assistance to learners if they possess the required skills for teaching and learning processes.

The overall performance of the three groups of teacher-respondents is rated as very satisfactory, with the Teacher III designees obtaining the highest overall composite mean rating of 4.473. The results suggest areas that need attention to ensure that teachers continue to enhance themselves professionally but more so personally. According

to Gepila (2020), teachers may be professionally independent in applying skills essential to the teaching and learning process. However, continued personal and institutional efforts are strongly encouraged to assist teachers in enhancing their competence in the profession and, ultimately, in the community. Thus, the design and implementation of an appropriate teacher development program are geared toward enabling teachers to perform more effectively in their roles, particularly in providing optimum support to learners to achieve high learning standards.

3.2 Teachers' Existing Professional Development Programs

This section presents the results of the focus group discussion on the existing professional development programs provided by the three school divisions in the province of Ilocos. Tables 6 to 8 present the different professional development programs implemented by the three (3) school divisions in the province of Ilocos Norte attended by teachers in 2020–2021, clustered according to the different domains of the Philippine Professional Standards for Teachers (PPST), the national framework for all learning and development programs.

PDPs Provided by SDO Laoag City

Table 6 revealed that the Schools Division of Laoag City focused on the enhancement program for teachers along the domains of Content Knowledge and pedagogy and Diversity of Learners and assessment and Reporting, which had the same number of implemented PDPs during the school year 2020–2021. This implies that teachers needed more upskilling programs during the pandemic for instructional methodologies, assessments, mastery of contents, and dealing with diverse learners. It was also revealed that domains on curriculum and planning, community links, professional engagement, personal growth, and professional development received fewer PDPs being implemented in the division. This goes with the idea that training in the personal and professional domains, likewise curriculum and planning, was not that much amplified since one of the priorities of all schools during the pandemic was delivering content through distance learning.

Table 6. Professional development programs attended by the teachers provided by SDO Laoag City

PPST Domains			
Content Knowledge & Pedagogy	Diversity of Learners & Assessment and Reporting	Curriculum & Planning	Community Linkages & Professional Engagement & Personal Growth & Professional Development
Capability Building Program for SDO Laoag City (Phase 3, Batch 1)	Workshop on National School Building Inventory (NSBI) System SY 2019-2020	Orientation on the Policy Guidelines on the Implementation of Homeroom Guidance	Teachers Orientation and Life Coaching Seminar On "The Value of Hard Work And Discipline"
Empowering Educators for Effective Teaching in the New Normal	Compassionate Discipline in Everyday Teaching	Exploring Self-paced Course and Learning Paths through Microsoft Education Center	
SDG In Education Innovations: Teaching and Learning During Covid-19 Pandemic	Orientation on DepEd's Learning Portal for School LRMS Coordinators	Surfing the 5Cs with Future Ready Skills and Wakelet	
Webinar on Teaching Students to Understand Text with Close Reading Batch	Trans-FORM your Assessment Practices: Creating Authentic Assessment through Microsoft Forms		
Boosting Student Engagement through FLIPGRID	Elevated Virtual Benchmarking Activity: A Classroom tour to a Microsoft Showcase School, Kamla Nehru Public School, India.		

PDPs Provided by SDO City of Batac

In Table 7, it was revealed that the SDO of the City of Batac offered PDPs that were grounded in all four PPST domains. Based on the data, there was a fair distribution of PDPs across all four domains. This signifies that the SDO City of Batac has devised a strategy to meet the requirements of teachers across all four PPST domains, notwithstanding the continued presence of COVID-19 in the 2020–2021 school year. Thus, it is important to prioritize the growth of all teachers, no matter the circumstances, since such growth can enhance teaching and increase student achievement.

Table 7. Professional development programs attended by the teachers provided by SDO City of Batac

Content Knowledge & Pedagogy	PPST Domains		
	Diversity of Learners & Assessment and Reporting	Curriculum & Planning	Community Linkages & Professional Engagement & Personal Growth & Professional Development
Training on Early Language Literacy and Numeracy/ Blended Learning Modality for TPD: Rollout of ELLN Digital AND Training on Literacy Instruction	Empowering Inclusive Education Implementers in the New Normal Focusing on Special Education	Training-Workshop on Basic Digital Illustration	Webinar on Wellness Program
Webinar Series on Literacy Instruction	Webinar on Empowering Teachers, School Heads, and Supervisors in the New Century cum Educators' Day	Online Orientation on the Requirements and Procedures in the Application, Processing, and Issuance of Special Patents for Public School Sites	Strengthening School-Based Management in the Schools Division of the City of Batac
Online Training-Workshop on Design Thinking in K-12 Science and Mathematics Teaching	Webinar on PAMANA: Pagpapahalaga sa Mayamang Nakaraan	Orientation-Workshop on the Updated Guidelines on the Quality Assurance of Learning Resources	Webinar on Career Guidance
	Empowering Inclusive Education Implementers in the New Normal Focusing on Special Education	Webinar on Cultural Mapping and Development of Culture-based Lesson Exemplars	Enhancement Course for the Training of Trainers-School (SCFS) on Biodiversity, Climate Change, and Nutrition thru Sustainable Vegetable Production

PDPs Provided in SDO Ilocos Norte

The Schools Division of Ilocos Norte is also devoted to raising its teachers' competence. The professional development programs they offer teachers are key to ensuring that excellent education is given to students in the province. According to Table 8, the PDPs were assigned to each of the four domains in about the same proportion as in the SDO Ilocos Norte's implementation. This indicated that the division conformed to treating all domains equally and having them confer equal beneficial impacts on the learners.

Table 8. Professional development programs attended by the teachers provided by SDO Ilocos Norte

Content Knowledge & Pedagogy	PPST Domains		
	Diversity of Learners & Assessment and Reporting	Curriculum & Planning	Community Linkages & Professional Engagement & Personal Growth & Professional Development
Early Language Teaching in Kindergarten	Virtual Division Training on Reskilling in Test Construction in the New Normal	Webinar on Video Editing	2021 Sukisok: SDOIN's Virtual Research Forum
Pagsasanay sa Pagpapayaman ng Kaalaman sa Filipino	Division Training-Workshop on Contextualization / Indigenization of ADM- Self Learning Modules for IPed School	Capacity Building Activity of Quality Assurance Teams	Division Orientation on Results-Based Performance Management System (Rpms) For School Year 2021-2022
Pedagogical Upskilling of Teachers in the Kindergarten Play-based Curriculum	Division Training-Workshop on Contextualization / Indigenization of ADM- Self Learning Modules for IPed Schools	Division Training Workshop on Scriptwriting and Development of Documentaries and Educational Videos for IP Learners	

These professional development programs provided learning environments in which teachers obtained more information and abilities and enhanced their proficiency to improve performance during COVID-19. Moreover, at the height of the crisis, it was difficult for education and training providers to comply with physical distance restrictions to prevent the spread of COVID-19 and move to distance learning. Even though the delivery of PDPs was hindered, the four domains—Content Knowledge and pedagogy, Diversity of Learners, Assessment and reporting, Curriculum and Planning, Community Linkages and professional Engagement, and Personal Growth and Professional Development—adopted in this study to address the challenges posed by the pandemic were evenly distributed.

3.3 Assessment of Teachers of the Professional Development Programs Provided

To assess the implementation of the PDPs, participants for the focus group discussions included 21 teachers purposively chosen by the researcher based on performance and the number of PDPs attended in the division. Those with very satisfactory performance and who have attended at least five of the PDPs given by the division were considered. Moreover, the three Human Resource Development (HRD) focal persons of the three divisions were asked to give their insights on implementing the PDPs.

Significant Learnings Gained by the Teachers

Through the various professional development programs, teachers are provided learning opportunities to retool, upskill, and keep updated with trends and innovations in the teaching field. Through the different courses, teachers can be refreshed with the needed competencies and acquire new knowledge and skills, enhancing themselves professionally and personally. Table 9 presents the revelations of the teachers culled from the focus group discussion conducted with them regarding the valuable lessons they learned from the professional development programs they went through. These significant learnings include enhancing professional competence or professionalism, mental and emotional management, thinking skills, online or remote teaching-learning approaches, platforms and techniques, and research skills.

Table 9. Significant learnings of teachers from the professional development programs

Emerg ed themes	Codes	Responses
Enhancing Professionalism	Flexibility in handling responsibility	"These programs have brought me to a higher level of professionalism in a way that taught me to be more flexible in handling responsibilities as a teacher, colleague, and leader. I became more become more logical in identifying my needs in the field of teaching." - Respondent 1
	Growing professionally	"The different programs helped me to grow professionally despite our current situation. I became more innovative and helped me to love my job even more." - Respondent 2
	Perform better in my profession	"I was given information and knowledge that increased my abilities and skills to perform better in my profession." - Respondent 3
Mental and Emotional Management	Coping with mental and emotional health	"With the PDP on mental and emotional management, I learned different ways how to be in control of my mental and emotional health." - Respondent 4
	Controlling mental and emotional well-being	"The PDP in mental and emotional management helped me to be more in control of my mental and emotional well-being". - Respondent 5
Thinking Skills	Engagement in various kinds of thinking	"Learning to engage in various kinds of thinking (critical, creative, practical)." - Respondent 6
	Different strategies and techniques used during the pandemic distance learning delivery modalities	"I learned different strategies and techniques for teaching and especially the different platforms and approaches being used in teaching during this pandemic." - Respondent 9
Teaching-Learning Approaches in the New Normal		"Proper implementation and management of distance learning delivery modalities consistent with policies under the BE-LCP, SLMs development in the new normal." - Respondent 7
	Use of various applications that could help them in this time of pandemic	"Addressing the needs of learners for new learning ventures, such as the use of various applications that could help them in this time of the pandemic, I learned lots of new ways to teach, like the use of quizzes, Google Classroom, and the like." - Respondent 8
	Conducting synchronous learning and virtual meetings	"I learned a lot from the tools for the new normal classroom, which can be of help while conducting synchronous learning and virtual meetings." - Respondent 10
Research Skills	Proper ways of conducting research	"Being refreshed on the proper ways of conducting research." - Respondent 8
	Writing each part of the research proposal	"Guidelines and rules to follow in writing each part of the research proposal." - Respondent 12

Enhancing professionalism. The teacher-respondents revealed that they gained much knowledge, which enabled them to enhance their professionalism. With the opportunity from their participation in PDPs, the teachers stated that they performed their roles more effectively and efficiently and became more committed to their tasks as teachers. The teachers likewise claim that the professional development programs successfully provided them opportunities to grow professionally and personally.

Mental and emotional management. The global pandemic has brought enormous challenges to teachers, especially in terms of facilitating learning with the constraints brought about by the health protocol. In particular, the teachers were affected mentally and emotionally because of the stressful situation. In this regard, the implemented professional development programs provided the teachers with the capabilities to manage the mental and emotional stressors and their well-being in general.

Thinking skills. As education in different countries across the globe, including the Philippines, took a major shift because of the pandemic, teachers needed to gain new skills or improve their different skills. With the help of professional development programs, teachers were equipped with the skills they needed to be critical, creative, and practical. Being able to think critically and learn the art of analyzing and evaluating is important in attaining their goals and objectives for the sake of their learners. With creative thinking, teachers can develop alternate or innovative methods or strategies in instruction. In contrast, with practical thinking, they can be “street-smart,” considering ways to adapt or change the environment to fit one, like conducting lessons to suit current needs or situations.

Teaching-Learning Approaches in the New Normal. To cope with the changes in education during the pandemic and the so-called New Normal, with restrictions slowly being eased, the delivery of learning transformed from real-time face-to-face to online or remote, modular, and then back to the usual face-to-face again. Along with this aspect, teachers cited several other valuable learnings from the professional development programs that equipped them with skills to cope with the transformations in distance learning delivery. These skills include facilitating online lessons and using online platforms, applications, or modalities for effective distance learning, which was implemented not to compromise the safety and health of the learners.

Research skills. Teachers have been increasingly encouraged to research and develop relevant learning materials, innovative teaching modalities, design learning interventions, and many more, all intended to address the learners’ needs and ensure optimum learning outcomes. Because of the professional development programs, the teachers have learned the rudiments of conducting research, which is essential for their professional growth. According to Cutler et al. (2022), Research is key to being a curious and effective professional. Research can play an important role in supporting teachers in identifying and understanding practice problems, advocating for change, and demonstrating their impact in the classroom.

Impacts of the Learnings Gained by the Teachers

The teachers likewise pointed out the impact of the learnings they gained from the professional development programs implemented for them. These impacts include – (1) enhanced innovativeness, (2) refined knowledge and skills, (3) effective implementation of appropriate learning interventions, (4) abilities in remote learning modalities, and (5) improved ICT skills. Table 9 shows the teachers’ insights as regards these impacts.

Enhanced Innovativeness. As a teacher, one is expected to embrace innovativeness, which is to be proactive in introducing new teaching strategies and methods to ensure optimum learning. The professional development programs made them more innovative, enabling teachers to grow professionally and equip their learners with the competencies necessary to succeed. Emphasizing the importance of teaching innovativeness, DepEd Secretary Briones said during the 2020 Innovation Forum, “We must change how we teach our learners. We must prepare them for a world that is drastically changing.”

Refined knowledge and skills. Another impact of the teachers’ significant learning because of the PDPs is the refinement of their knowledge and skills. This is in line with teacher upskilling and reskilling, one of the four aggressive reforms in basic education focused on in the *Sulong Edukalidad* program of the Department of Education. The teachers cited the opportunities they had to learn more, thereby improving their competencies, and as a result, learners’ knowledge and skills were also developed more effectively.

Effective implementation of appropriate learning interventions. Undeniably, the PDPs have been able to attain their objectives because, as gathered from the teachers themselves, the PDPs equipped them with the tools and skills to appropriately address the needs of their learners through corresponding interventions and plans. Whether it be

learning challenges or difficulties, teachers are expected to cater to the diverse needs of their learners, and because of the PDPs, the teachers became more able to perform this task.

Table 10. Impacts of the learnings gained by the teachers

Emerg ed themes	Codes	Responses
Enhanced Innovativeness	It made me more innovative.	"The different learnings helped me to grow professionally despite our current situation. It made me more innovative, and it helped me love my job even more." - Respondent 11
Refined knowledge and skills	Improved knowledge and skills	"It gives me opportunities to learn more and improve my knowledge and skills, which will aid in the development of my students' literacy and numeracy skills." - Respondent 12
Effective implementation of appropriate learning interventions	Tools and skills to stay modern with the needs of learners	"Professional Development gives us teachers the tools and skills to stay modern with the needs of learners and allows us to plan for changing trends in education." - Respondent 13
	Developed interventions	"I was able to address the needs of the learners as I was able to develop interventions for them to understand our lessons more." - Respondent 15
	Enhanced my ability to teach beyond the usual thing implementation of the different learning modalities appropriate to learners' context	"These learnings helped me become an effective teacher even without face-to-face classes. These enhanced my ability to teach beyond the usual thing." - Respondent 16
Developed abilities in remote learning modalities	Conducted online consultation	"The learnings guided me in making decisions related to the implementation of the different learning modalities appropriate to learners' context and ensuring quality education in the new normal." - Respondent 17
	Equipped with the tools for the new normal classroom	"Through the PDP that focused on ICT, I was able to address the needs of the learners through online consultation." - Respondent 18
	More confident in using different online and offline apps	"The course equipped me with the tools for the new normal classroom. It enables me to engage with learners online and helped me to facilitate and design even in live classroom activities directly from Microsoft PowerPoint." - Respondent 19
	Upgraded in terms of using technology	"It helped me become more flexible to teach my learners, whether modular or online. I also became more confident to use different online and offline apps." - Respondent 20
		"I upgraded in terms of using technology and able still to teach children in the best way I can." - Respondent 21

Developed abilities in remote learning modalities. Given the shifts in teaching and learning modalities in the so-called new normal, teachers had to adjust and cope with the demands of distance or remote learning, which is very different from the usual face-to-face or in-classroom learning. Enabling teachers to embrace remote learning platforms and strategies significantly impacts their learning in availing of the various PDPs.

Improved ICT skills. This may be considered the most significant impact on the teachers' learning, considering their insights on the extent of knowledge, skills, and tools they have gained when using ICT in learning. Because of the global pandemic, ICT capability among teachers has become extremely important; thus, they have very much appreciated the availability of the various ICT courses. The teachers cited that through the PDPs, which built their ICT competencies, they could conduct online classes and consultations, design and use technology-based learning resources, and become knowledgeable on various applications to enrich the learning environment and provide learners with more interactive activities.

Notably, the findings on the impacts of the teachers' learnings from the PDPs confirm Washington's (2019) contention that professional development gives educators the tools and skills to keep up with students' needs and changing trends in education.

3.4 Assessment of Implementers of the Professional Development Programs Provided

The implementation of the different PDPs provided by the Department of Education in the three (3) divisions was likewise evaluated by the implementers represented by the human resource development focal persons. Table 11 presents the results of the focus group discussion conducted with the group. There were seven (7) emerging

themes defining the different key components of the assessment of the implementers. Included are – (1) Program Management, (2) Attainment of Objectives, (3) Delivery of Content, (4) Provision of Support Materials, (5) Program Management Team, (6) Training Venue, and (7) Facilitators.

Table 11. Implementers' assessment of the implementation of the PDPs provided by the Department of Education

Emergent Themes	Codes	Responses
Program Management	Composed of highly capable members and experienced managers	"Data from the participant assessment proves that the program management on implementing PDPs in the division is rated very satisfactory or excellent. This implies that members of the PMT are highly capable of looking into the training logistics. Their years of experience in conducting training/PDPs have already honed their skills to manage any activity."
Attainment of Objectives	Outcomes-based, Compliant, Properly monitored, Excellent speakers, Specific, measurable, attainable, and time-bound	"Attainment of objectives is always based on the desired output of the PDP." "I believe that objectives are being attained, especially if the PDP includes workshops and other activities where participants are required to pass an output." "Sometimes, the concern here is monitoring who among the participants comply or participate." "Program managers or program owners must also consider the expertise of invited speakers because their delivery of the topic will also affect the attainment of objectives." "It should be specific, measurable, attainable, and time bound."
Delivery of Content	Not always excellent, Aided with experts and accredited learning facilitators, Effective, Not fully attained outputs.	"The delivery of content is not always excellent. Sometimes, the learning facilitator or speaker cannot deliver the topic well, affecting the transfer of learning to the participants. However, this is addressed by getting learning facilitators from the pool of experts in the division, especially the NEAP accredited learning facilitators who underwent intensive training in presentation and facilitation skills". "Look into the effectiveness of the content as to discovery, accuracy, polish, usefulness, and influence." "Contents are well implemented, but the expected outputs are not fully attained, or if they are attained, they only serve as a short-term band-aid to the existing issues and concerns."
Provision of support materials	Well-provided support material, Sufficient budget, Compliant with guidelines	"I do not see any problem providing support materials for any PDP." "DepEd has allotted enough budget to procure needed supplies and materials for training as long as these adhere to guidelines considering the accounting rules and regulations."
Program Management Team	Always available, Excellent, Systematic	"The PMT is always rated excellent in the conduct of PDPs. They are always available to address concerns and issues arising during the PDP's conduct. Ideally, the team comprises the program owner, secretariat/registration in-charge, health personnel, and ICT/technical expert." "Revisiting project goals: Before delving into the evaluation processes, it is important to revisit the project's original goals, interview each team member, listen carefully, identify key challenges, and plan the next activity." "Performing their tasks well"
Training Venue	No problem encountered, Well-equipped with amenities, Conducive	"No problem was encountered with this aspect because our province is equipped with good training venues, depending on the specifications stated for the activity." "It is conducive".
Facilitators	Expert, NEAP accredited, Problem is scheduled, Approved evaluation and monitoring tools, Competent enough.	"Learning facilitators are invited depending on their expertise. We have a pool of experts in the division who are NEAP accredited. They could always be tapped to facilitate sessions during PDPs. Sometimes, the problem is their schedule. They decline invitations because of overlapping activities." "We evaluate programs with the help of the SMME using the approved evaluation and monitoring tools." "Very Satisfactory" "Competent enough to support the program."

Program management. Based on the positive feedback from the implementers, the PDPs in the different divisions are said to be carried out by highly competent people with the necessary experience, training, and skills.

Attainment of Objectives. According to the implementers, attaining objectives is based on the desired outputs if the PDP includes workshops and activities. In this regard, the implementers cited concerns about monitoring compliance. The expertise of trainers was also cited as influencing the attainment of objectives.

Delivery of content. This emerged theme pertaining to the implementation's assessment of the PDP, which focused on the facilitators' expertise and the content's effectiveness, particularly in facilitating the transfer of learning to

the participants. Considering the implementers' feedback, the contents were well implemented. However, the expected outputs are not fully attained because of the assigned facilitators' inability to deliver effectively, although this is addressed by getting accredited facilitators. Moreover, some issues and concerns must be addressed to implement this aspect optimally.

Provisions for support materials. The implementers have found this theme, which concerns the funds and materials allotted for the PDPs, to be quite satisfying. A suitable amount of funds is set aside to purchase items, materials, and supplies in conformity with requirements.

Program Management Team. Those in charge of the PDP have expressed high satisfaction with the program management team's performance. They praised the team's accessibility in dealing with any questions or problems that may arise during the program's implementation. However, the assessment of the PDP highlights the relevance of reviewing the program's original objectives to promote more effective planning.

Training venue. The program implementers have lauded the province's training facilities for providing a pleasant environment for the PDPs. The quality of this is excellent.

Facilitators. The PDP's implementation is excellent since available NEAP-accredited experts can competently facilitate the activities, training, and workshops. The implementers value facilitators because of their significant program contributions and high-quality work.

3.5 Development and Validation of a Professional Development Program

A professional development program for teachers was developed based on the ratings from the panel of experts or validators. Considering the development standards comprising the validity indicators, the experts evaluate the program as highly valid, indicated by the overall mean of 4.78.

Table 12. Descriptives of the evaluation of the professional development program for teachers (n= 8)

Standards	Mean	Interpretation
1. The Professional Development Program (PDP) is aligned to the agency's strategic direction and priorities	4.83	VHV
2. The PDP is based on a competency-based needs assessment	4.83	VHV
3. Training methodologies are appropriate to the attainment of the training objectives	4.83	VHV
4. The training design follows a standard format	4.83	VHV
5. Identification of participants promotes inclusiveness and equity	4.67	VHV
6. Rationale, objectives, and competencies being addressed are aligned and relevant to DepEd goals and objectives	4.83	VHV
7. Topics cover all competencies to be developed	4.83	VHV
8. Content sequence is logical	4.83	VHV
9. The resource package/s (session guide, presentation materials, etc.) is/ are complete, comprehensive, and consistent	4.67	VHV
10. The schedule of activities is appropriately sequenced and timed	4.83	VHV
11. Expected outputs are clear and may be accomplished within a reasonable time	4.67	VHV
12. Support materials and equipment identified adequately support the program	4.67	VHV
13. The training design shows how the participants can apply KSAs learned from the program	4.83	VHV
14. The PDP is ICT-supported	4.83	VHV
Overall Mean	4.78	VHV

4.0 Conclusion

The findings indicate that while teachers demonstrate competence across the Philippine Professional Standards for Teachers (PPST) domains, they have yet to reach their full potential. Certain areas require attention to ensure continued professional and personal growth. To address these gaps, teachers must actively engage in research- and needs-based professional development programs to enhance their skills. Given the rapid developments and innovations in education, teachers must have continuous opportunities to update and improve their competencies, aligning with the principles of andragogy and human capital theory. For proficient teachers, who are central to facilitating the teaching-learning process and are expected to be equipped with the necessary skills to optimize learning outcomes, sustained professional development is critical. In response to these needs, a professional development program for teachers was developed and evaluated by experts, who rated it as highly valid. This program can be adapted to elevate the performance of elementary school teachers.

This study affirms the theory of andragogy by demonstrating how adult learning can be maximized through structured learning development stages. Furthermore, it supports the human capital theory by recognizing the pivotal role teachers play in transforming learners, who will, in turn, contribute significantly to nation-building. By investing in teacher development, the study emphasizes the broader impact on educational quality and student success, reinforcing the essential link between teacher competency and national progress.

In the light of the above-mentioned findings and conclusions, the following implications and recommendations were offered: (1) Teachers are encouraged to always be reflective of their strengths and weaknesses and to communicate them accordingly to their immediate superiors and school heads so that appropriate upskilling programs that address their professional and personal needs, as outlined in the Philippine Professional Standards for Teachers, are given to them; (2) The DepEd's immediate supervisors, school principals, and other support personnel may establish a system of communication and collaboration to enable teachers to voice their concerns, exchange ideas, and work together to address challenges and concerns; (3) Immediate superiors or supervisors are advised to extend intensive technical assistance to teachers. This could be accomplished by creating a coaching and mentoring system where teachers feel comfortable tracking and verifying their own progress; (4) The researcher is encouraged to distribute copies of the professional development program to school administrators, program administrators, and human resource development personnel in the divisions for potential adoption as a basis for delivering research-based trainings for the improvement of teachers' skills, knowledge, and understanding; (5) For the first implementation of the designed upskilling program, school administrators are encouraged to adopt the designed training courses to promptly address the concerns of teachers, particularly the courses on diversity of learners and stakeholder management; (6) A follow-up study may be done by the researcher or other researchers to come up with an evaluation of this research output titled, "GO JAMES: A Professional Development Program for Teachers" after its initial implementation for possible refinement; and (7) Further studies may be conducted by other researchers to consider a wider scope to measure teachers' performance and assess the PDPs given by learning service providers.

5.0 Contribution of Authors

The researcher is the only author who identified a significant issue, formulated a research strategy, gathered data using reliable and ethical means, analyzed the data employing statistical or qualitative techniques, and structured the findings into an introduction, literature review, methodology, results, discussion, and conclusion. The researcher eventually revised the manuscript for publication.

6.0 Funding

This research initiative received no funding from any government agency or academic institution. The researcher exclusively bore all costs. The educational and professional fields greatly appreciate the funding for subsequent study initiatives.

7.0 Conflict of Interest

All participants in this research activity did not have a conflict of interest. The researcher provided consent forms to the school officials and educators for their participation in the study.

8.0 Acknowledgment

The researcher extends gratitude to those whose support and inspiration enabled the initiation, development, and conclusion of this research project: The researcher expresses gratitude to the advisor, statistician, panel of experts, and teachers, as well as to the school administrators and educators from the three divisions in Ilocos Norte who agreed to serve as respondents, enabling the collection of vital information for this study. The researcher also wants to extend gratitude to his family for their steadfast love, understanding, prayers, and support, and above all, to God Almighty for the blessings and graces that have provided the researcher with the strength and perseverance to endure challenges.

9.0 References

- Bates, C. C., & Morgan, D. N. (2018). Seven elements of effective professional development. *The Reading Teacher*, 71(5), 623–626. <https://doi.org/10.1002/trtr.1674>
- Chan, R. (2018). Career Development Program for the Non-teaching Personnel. *Turkish Online Journal of Qualitative Inquiry*, 12(6), 1689-1699. <https://tinyurl.com/2v48e4zz>
- Gepila, E.C. (2020). Assessing Teachers Using Philippine Standards for Teachers. *Universal Journal of Educational Research*, 8(3), 739-746. <https://doi.org/10.13189/ujer.2020.080302>
- Natividad, E.J. (2018). Capability Enhancement Framework in Mathematics for Secondary School Master Teachers. *Ascendens Asia Journal of Multidisciplinary Research Abstracts*, 3(8). <https://tinyurl.com/3jpjsby5>
- Nogueira, F., Noronha, J., Nogueira, J., Carlos, A., Pessoa, A. (2020). Planning and curriculum: Importance and contribution in the educational process. *Revista Científica Multidisciplinar Núcleo do Conhecimento*, 11(20), 108-116. <https://tinyurl.com/jdrkswut>
- OECD. (2019). *Teachers and School Leaders as Lifelong Learners*. OECD Publishing.
- Postholm, M. B. (2018). Teachers' professional development in school: A review study. *Cogent Education*, 5(1), 1522781. <https://doi.org/10.1080/2331186X.2018.1522781>
- Schleicher, A. (2020). The impact of covid-19 on education: Insights from "education at a glance 2020." OECD Publishing.
- UNESCO Institute for Statistics. (2021). *School Closures and Regional Policies to Mitigate Learning Loss due to COVID-19: A Focus on the Asia-Pacific*. Retrieved from <https://tinyurl.com/ycwa3zx7>

The Case of Cogtong's Timori: Features, Usage and Vitality

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Date received: September 1, 2024

Date revised: September 29, 2024

Date accepted: October 11, 2024

Originality: 96%

Grammarly Score: 99%

Similarity: 4%

Recommended citation:

Malon, J., Rojo, J., Fuderanan, B., Deguit, E., & Tadena, L. (2024). The case of Cogtong's Timori: Features, usage and vitality. *Journal of Interdisciplinary Perspectives*, 2(11), 304-312. <https://doi.org/10.69569/jip.2024.0463>

Abstract. Language is a dynamic and ever-evolving entity crafted by human necessity, but its intricacies can fade into obscurity if not meticulously documented and preserved. This case study was employed to gain a deep understanding of the research design inherent in the data, which focuses on exploring the linguistic intricacies of Cogtong's Timori language. This looks into its distinctive features regarding phonology, morphological and lexical blends, and syntax. Through in-depth interviews and observations, key informants shed light on Timori's multifaceted usage, encompassing family, educational, and workplace communication. Additionally, it unveils Timori's historical role as a secret code during World War II, a means for discreetly poking fun at others, and a stealthy language for sharing gossip. Despite its vitality within the Cogtong community, Timori remains confined to this locality, facing a dearth of comprehensive written documentation and formal language promotion efforts. To safeguard this unique linguistic heritage of this community, recommendations are proposed, including the need for comprehensive language documentation, the implementation of bilingual education programs, public promotion initiatives, and advocacy for language policies. Timori's significance lies in its ability to connect people through culture and identity, underscoring the necessity of concerted efforts to ensure its continued vitality for future generations.

Keywords: Creolization; Sociolinguistics; Philippines; Timori Language.

1.0 Introduction

The evolution of language stands as a testament to its dynamic and continuously changing nature, reflecting the intricate tapestry of human expression (Smith, 2010). In a symbiotic relationship with cultural evolution, language consistently forges new avenues to articulate ideas and concepts that were hitherto unexplored. This transformative journey extends even to the genesis of entirely novel languages, thereby emphasizing the remarkable adaptability of human communication (Mufwene, 2015).

Further, from the historical emergence of Creole languages along trade routes to the contemporary inception of digital languages in virtual realms, language's inherent flexibility is evident in its capacity to seamlessly assimilate innovative cultural, technological, and social landscapes (Bakker & Daval-Markussen, 2017). This incessant linguistic evolution underscores language vitality and mirrors the boundless creativity intrinsic to human thought, propelling an enduring exploration of uncharted linguistic territories (Markov et al., 2023). In addition, Vogt (2009) contends that the fascinating interplay between human creativity and language finds a compelling association with the intricate phenomenon of creolization. Altarriba & Basnight-Brown (2022) added that this

process, characterized by the convergence of diverse cultural influences, results in the emergence of novel linguistic expressions, identities, and modes of communication. The case of the Timori language in Cogtong, Candijay, Bohol, exemplifies how this phenomenon unfolds in practice. Creativity takes center stage in the context of language as individuals from different linguistic backgrounds interact and adapt to their multicultural surroundings. Through this interaction, new linguistic forms are born, reflecting a fusion of vocabulary, syntax, and cultural nuances. Hiver & Al-Hoorie (2022) stated that these creative adaptations often transcend the boundaries of established languages, leading to the development of creole languages or dialects that uniquely encapsulate the experiences of those who engage in this linguistic cross-pollination.

However, it is paramount to acknowledge that creolization is not solely characterized by harmony; it can also emerge as a response to oppression, conflict, and adversity. Marginalized communities have often leveraged this phenomenon to construct alternative avenues of communication, thereby asserting their identities amid challenges (Mufwene, 2001). These occurrences underscore the intricate interplay of multifaceted forces that drive the transformative trajectory of languages and cultures, revealing human societies' profound resilience and ingenuity when confronted with adversities.

In tough times, according to Gutiérrez Rodríguez & Tate (2015), it can be seen that creolization has a big impact on the field of linguistics. The evolution of the Timori Languages of Cogtong, Candijay, and Bohol offers a compelling case. This unique language emerged as a testament to its community's resilience and adaptability, shaped by historical trials of oppression, conflict, and societal upheaval. War and marginalization forced the people of the area to combine their mother tongues with that new linguistic identity – this hybrid language aided in covert communication, the statement of group identity, and successfully negotiating challenges. The Timori language is a living example of creolization under hardship, demonstrating the resilient human spirit's ability to adapt and survive and flourish in the face of the most challenging conditions.

Steels & Szathmáry (2018) state that language is dynamic and ever-evolving. However, Fang (2017) asserts that language is also vulnerable to disappearing over time if not actively preserved, promoted, and supported by language policies. In the context of the Timori language, the absence of comprehensive language policies and support mechanisms puts it at risk of fading away. The younger generation may not see practical benefits in learning and using Timori, particularly if it is not integrated into modern education or communication platforms. If steps are not taken to address these challenges, the Timori language could gradually diminish, erasing a valuable piece of cultural heritage and community identity.

In light of these compelling dynamics, this research highlights the need for an in-depth investigation into the linguistic characteristics of Timori, its role in the community, how it is being used in modern contexts, and how it might be undergoing changes due to various sociocultural factors. This could contribute to the preservation of a potentially endangered language and provide insights into the broader processes of language transformation and revitalization. Specifically, this thrives in discerning its linguistic features and usage patterns and assessing its language vitality. Furthermore, the research recommends language preservation programs and promotions based on findings.

2.0 Methodology

2.1 Research Design

A case study is employed to gain a deep understanding of the research design inherent in the data, as emphasized by Merriam (1998), cited in Zainal (2007). This study focused on a limited number of participants due to the need to thoroughly examine individuals, topics, and issues, aligning with Hay (2004) as referred to in Armfield (2007). This approach was particularly apt because no prior research had been conducted, especially concerning the Timori language in Cogtong, Candijay, Bohol, Philippines. The study aimed to depict data narratively (McDonough, 1997). As cited in Zainal (2007). The case study design entails six steps: defining the research question (often starting with "how" or "why"), selecting the case and specifying data collection methods, preparing for data collection, gathering and organizing field data, conducting data analysis, and ultimately reporting the findings (Glen, 2015).

2.2 Research Locale

The study was conducted in Barangay Cogtong, located in the municipality of Candijay, within the Province of Bohol, Philippines. This coastal village in Eastern Bohol is situated 6.1 kilometers from the national highway in Poblacion, Candijay. The locality per se serves as a credible criterion for this research, as its residents are recognized for their extensive knowledge and proficiency in the Timori language.

2.3 Research Participants

The Key Informants for this study comprised eight individuals purposefully chosen from the local community of Cogtong. These informants were carefully selected based on specific inclusion criteria to ensure their meaningful contribution to the research. The informants were divided into four categories: three belonged to the elderly age group, three were professionals, two were ordinary residents, and two were 21st-century learners. A fundamental criterion for their selection was their residency within the study's location, ensuring their deep-rooted familiarity with the community. Additionally, all eight key informants possessed fluency in the Timori Language, facilitating effective communication and ensuring the authenticity of their shared insights. This diverse group of informants was pivotal in offering multifaceted perspectives and insights that enriched the study's findings within the unique context of Cogtong, Candijay.

2.4 Research Instrument

In this study, the primary instruments are the researchers, and the information was acquired through observation, focus groups, and in-depth one-on-one interviews. The researchers prepared interview guide questions that focus on the area of inquiry in the study.

2.5 Data Gathering Procedure

First, the researchers conducted the pre-gathering phase, as indicated in the succeeding steps. After identifying the respondents, each participant was sent a letter of permission to conduct an interview. Following the participants' consent to participate in the study, the researcher discussed the study's purpose, the time required to complete the interview, and plans for using the interview results. After all of these concerns had been secured, the researcher conducted an in-depth interview with the respondents using the actual data-gathering procedure.

As for the post-gathering procedure, the researchers conducted the subsequent steps. Coding plays a crucial role in uncovering ideas, recognizing similarities, and spotting recurring themes within the data. It serves as the bridge between collecting data and shaping theoretical developments (Chun et al., 2019). The interview transcripts were transcribed verbatim, and from there, we constructed codes to represent the key concepts relevant to our study. Themes emerged as we meticulously analyzed the data, going line by line, and integrated subcategories by constantly comparing, modifying, and dissecting the concepts.

In this research, the data underwent a process of synthesis, during which essential statements were condensed without sacrificing the integrity of the data. This approach, as advocated by Sharan (2009) and Harrison et al. (2017), was employed to enhance the credibility of the interpretation, drawing on the insights from Merriam (1998), as cited by Yazan (2015), and to bolster the overall rigor of the study, following the guidance of Harrison et al. (2017).

2.6 Ethical Considerations

By ethical standards, informed consent was comprehensively explained to and obtained from every participant before the commencement of each interview. To ensure anonymity, pseudonyms were assigned to all participants, and any identifying information within the interview transcripts was either altered or removed. Field notes containing participants' pseudonyms were securely stored separately, and confidentiality was maintained about identifying details. Skordis-Worrall, et al. (2015) emphasize that ethical considerations are paramount in research, necessitating the assurance of participants' full awareness and understanding of their roles. Furthermore, to protect both the individuals and the institution involved, the report refrained from disclosing the institution's names, safeguarding all parties' privacy.

3.0 Results and Discussion

The analysis of transcripts revealed three major themes that best describe the linguistic tapestry of Timori based on the view of the key informants. Each theme was labeled in a phrase deduced from the formulated meanings of the informants' responses. The Three major themes and their sub-themes, as derived from the present set of transcripts, were as follows:

Theme 1: Timori Linguistic Features

Letter assignment correspondence (Phonology)

As shown in Table 1, in the case of the Timori language, a thorough analysis of its phonological aspects reveals a distinctive feature: a specific letter assignment to other letters in the alphabet, which plays a pivotal role in altering the pronunciation and sound of words.

Table 1. Equivalent letter assignment of the alphabet to Timori	
English Alphabet	Timori Letter Correspondence
A	O
B	T
C	C
D	P
E	E
F	F
G	G
H	H
I	I
J	J / S
K	K
L	R
M	N
N	M
NG	M
O	A
P	D
Q	Q
R	L
S	Y
T	B
U	U / O
V	V
W	W
X	X
Y	S
Z	Z

Expanding on the unique phonological features of the Timori language, the specific letter assignments mentioned affect pronunciation and contribute to its phonetic system's richness and complexity. This distinctive aspect may stem from historical linguistic influences or indigenous language evolution within the Cogtong community. Understanding these letter assignments requires a deep dive into Timori's phonological rules and patterns, which may include phonetic shifts, assimilation, or vowel harmony. Moreover, the significance of these letter assignments extends beyond mere pronunciation; they often carry cultural and semantic nuances, reflecting the language's connection to the community's identity, traditions, and environment. This linguistic feature is evident in the respondents' statement:

PG: *When I became conscious, I began to understand the words my elders and parents spoke. Later, I realized it was the Timori language, and then I learned that there are letters that can be replaced with other letters.*

PF: *For example, letter (a) will become letter (o), letter (b) will become letter (t), and letter (r) will become letter (l).*

This letter-to-sound correspondence creates a complex phonological system unique to Timori and contributes to its overall linguistic identity. Castello (2015) suggests an innate ability to adapt to linguistic nuances and highlights the importance of exposure and immersion in language acquisition. Additionally, Kuhl, (2010). Asserts that it showcases the flexibility and complexity of language, where phonetic variations can significantly alter the

meaning of words. Overall, the implication is that language acquisition is a dynamic process influenced by one's environment and exposure to linguistic patterns.

Cebuano-Binol'anon Viayan Blends (Morphology and Lexicons)

As shown in Table 2, Timori employs a fascinating blend of linguistic elements to form words.

Table 2. Sample Visayan & Timori Blend

TAGALOG	BINOL ANON / CEBUANO WITH PREFIX	TIMORI
Taga saan	Taga asa	Taga oyo
Mag lakad	Maglakaw	Mag rokow
Babae	Baji	Toji
Lalaki	Laki	Roki
Magsulat	Magsowat	Magyawob
Bumili	Pagpalit	Pagdorib
Tingin	Tan-aw	Bom-ow
Magkano	Pila	Diro
Maliit	Gamay	Gonos
Sobra	Sobra	Yatlo
Halaga	Kantidad	Kombipop
Tiwala	Salig	Yorig
Marunong	Kama o	Komo a
Saya	Lipay	Ridos
Tara	Ali	Ori
Lagi	Kanonay	Komamos
Punta	Adto	Opba
Akyat	Saka	Yoko
Higa	Higda	Higpo
Mag ayos	Magtarong	Magbolam

Notably, the language incorporates Visayan prefixes into its structure, adding complexity and richness to its morphological makeup. These prefixes, originating from the Visayan language family, interact with Timori's translated letters, producing a lexicon that embodies both its indigenous roots and external linguistic influences. Incorporating Visayan prefixes into the Timori language reflects a dynamic process of linguistic borrowing and adaptation, illustrating the region's interconnectedness of diverse language families. This blending of linguistic elements enriches Timori's morphological repertoire and underscores its historical and cultural interplay with neighboring linguistic communities. These are their statements:

PO: *These affixes in Bisaya are not always changeable; only the root words can be replaced with other letters. However, it also depends on other letters because some cannot be separated. Like in 'maglaba,' (washing) 'mag' remains, while 'laba' can be replaced. It's 'magroto' now in Timori.*

The statement underscores the contentment of Raviv et al. (2021), stating the complexity and variability of morphology and lexical aspects within languages. It highlights how different languages or dialects may employ unique rules and patterns for word formation and transformation. This variability in word formation can make language learning and comprehension more nuanced and complex, emphasizing the need for listeners to be attuned to these linguistic nuances.

Mother Tongue-Based Syntactic and Grammatical Structure

Examining Timori's syntactic and grammatical features, it becomes apparent that the language's syntax closely aligns with the Binol'anon or Cebuano Visayan language. This is largely due to the significant linguistic and cultural interaction between the speakers of Timori and these neighboring languages. As the majority of Timori speakers also consider Binol'anon or Cebuano Visayan as their mother tongue, the syntactic and grammatical structures have naturally converged, leading to similarities in the way sentences are constructed and grammatical rules are applied. The observed convergence of Timori's syntactic and grammatical features with Binol'anon or Cebuano Visayan languages underscores the intricate dynamics of language contact and bilingualism within the Cogtong community. This linguistic feature is evident in their statement:

PE: *It will follow the structure of the Visayan language. It would not be easy if it followed the English structure.*

PJ: *Visayan is the language of communication here, which will be the basis for it.*

The statement demonstrates that syntax and grammatical structure vary across languages, and individuals navigate their linguistic environments by adhering to the specific rules and structures of the language that are culturally relevant or contextually appropriate (Fine et al., 2013). This adaptive behavior underscores the dynamic nature of language use, reflecting how individuals seamlessly integrate language with cultural and contextual cues to communicate and interact effectively within diverse sociolinguistic settings. In the case of this study, the mother tongue (Binol'anon-Cebuano) is the proper syntax to use.

Theme 2: Timori Linguistic Usage

Socio-Linguistic Context

The socio-linguistic context significantly shapes the language dynamics of Cogtong's Timori, revealing its versatile usage across various settings. Primarily employed within families, the language fosters intimate communication. Its application is limited in educational spheres, mainly when teachers employ Timori to elucidate specific language topics. Interestingly, employees hailing from Cogtong utilize Timori as a means of workplace communication, highlighting its role beyond personal interactions. The interplay between Timori and its socio-linguistic contexts reflects the intricate dynamics of language maintenance, adaptation, and identity negotiation within the Cogtong community, underscoring the importance of understanding and valuing linguistic diversity in all its forms. This multifaceted deployment underscores the intricate interplay between Cogtong's Timori and its socio-linguistic environment. These are evident in their statement as follows:

PO: *That's how we talk here in our barangay. Many here speak Timori in casual conversations. Even at home, we speak Timori.*

PF: *In our previous job, whenever there was a co-worker from Cogtong, we automatically spoke Timori.*

PJ: *In our class, if there's someone from Cogtong, we speak Timori and have a conversation".*

PL: *Before [mentioning the teacher's name], my teacher spoke Timori well in his class. But those who were not from Cogtong couldn't understand".*

PM: *They use Timori in class as an example.*

These statements conform with the statement of Holmes (2001) that illustrates that there is a complex interplay between language, identity, social interaction, and education in the sociolinguistic context, and in this case, this exists in the Timori language. They show how language is not just a means of communication but also reflects social and cultural dynamics within the community. The use of Timori within family settings highlights its role in fostering intimacy and reinforcing familial bonds, echoing the notion of language as a vehicle for expressing identity and belonging. Similarly, its occasional use in educational contexts underscores its cultural significance and its potential as a resource for promoting linguistic heritage and identity among students. Moreover, using Timori in workplace communication among employees from Cogtong emphasizes its functional adaptability and its role in facilitating social cohesion and solidarity within professional environments. These observations support Holmes' framework and provide concrete examples of how language operates as a dynamic and multifaceted construct intimately intertwined with broader social, cultural, and educational processes within the Timori-speaking community.

Historical and Contemporary Linguistic Function

In the context of the Timori Language in Candijay, its historical significance during World War II reveals a fascinating aspect of its usage. During that critical period, when the Japanese army grasped the Visayan language, the Timori Language became a crucial tool for covert communication. To avoid detection and interception, the local population ingeniously altered the language, using it as a secret code to relay information, plans, and messages without arousing suspicion. Today, even in modern times, the Timori Language retains its unique role beyond day-to-day communication. It has evolved into lighthearted banter and humor, allowing people to poke fun at others discreetly, keeping the intended target unaware of the jest.

PE: *In the olden days, Timori was already there, according to my mother, who said if she were still alive now, she would be 101 years old. The use of Timori increased during the Japanese occupation so the Japanese wouldn't catch them at that time of war. Because there were already Japanese who could speak Bisaya, they spoke Timori to avoid being caught.*

PJT: *So that they wouldn't be caught during the war.*

PF: *Nowadays, people do it among themselves so it won't be known that they're joking to someone.* "

PM: *When they exchange gossip, so others who don't understand Timori won't know*".

This connects to the concept of "argot" or antilanguage, according to Burhanuddin et al. (2022), which states that language is a powerful tool that could separate secret society members from other people. And in the case of the Timori Language in Cogtong, it was used as a secret language during times of war and oppression. Further, (Minchew & Hopper, 2008) claims that Language is a powerful tool for creating lighthearted fun and humor, allowing people to share laughter and joy. This dual functionality, both as a historical instrument of secrecy and a contemporary tool for amusement, underscores the resilience and adaptability of the Timori Language in the rich tapestry of linguistic expression within the Candijay community, serving as a testament to the enduring cultural significance of language in shaping social dynamics and communication practices.

Theme 3: Language Vitality

Inter-Generational Language Continuity

Assessing the vitality of Cogtong's Timori reveals that this language has undergone an intriguing transformation, evolving into a creole within the locality and being unconsciously transmitted to younger generations, who have come to recognize it as the Timori language. The assessment of Cogtong's Timori language highlights a fascinating linguistic evolution and transmission journey within the local community. The transformation of Timori into a creole reflects a dynamic process of language contact, adaptation, and innovation shaped by the complex sociolinguistic dynamics of the locality. Their statements are as follows:

PO: *I wasn't really taught how to speak Timori; I just learned it on my own. And from what I've learned, it's just about replacing one letter with another letter. I'm very proud that we have the Timori language in our place, but some people are hesitant to use it because they don't know how. And if there's something funny, they won't understand.*

PG: *Nowadays, the youth are very good at speaking Timori. If you live here, you'll learn Timori quickly because that's what they always use.*

PF: *Here in Cogtong, even the children nowadays are skilled at speaking Timori. It's only here. But in other barangays, they don't speak it; it's only here. Even in Poblacion, they don't know it. Some may be aware, like students from here, but it's different from in Cogtong.*

Language remains vibrant and thriving when passed down from generation to generation, sustaining its vitality and cultural significance across time (Puthuval, 2017). The transmission of the Timori language from one generation to the next is crucial for its survival and preserving the rich cultural heritage it embodies. As Timori is passed down, it carries the collective wisdom, traditions, and unique community identity, fostering a sense of belonging and continuity among its speakers. Moreover, the intergenerational transmission of Timori ensures that younger generations inherit a powerful means of communication that reflects their cultural roots and enables them to engage actively in their cultural practices and expressions, reinforcing the language's significance in both sociolinguistic and cultural contexts.

However, it raises an intriguing question about why this unique linguistic phenomenon has yet to spread to neighboring barangays. Understanding the factors contributing to this localized linguistic preservation while remaining relatively isolated from neighboring areas becomes crucial in crafting effective language revitalization strategies, considering the specific dynamics of the Timori language in Cogtong. Identifying and addressing these factors may be key to the language's continued vitality and potential for broader revival.

Language Documentation and Resources

Unfortunately, despite Cogtong's Timori language retaining its vitality, there needs to be more comprehensive written documentation in the form of linguistic corpora, dictionaries, grammar guides, and other resources. The absence of comprehensive written documentation for Cogtong's Timori language poses significant challenges to its long-term preservation and promotion. While the language remains vital and actively spoken within the community, more written resources are needed to study, teach, and revitalize Timori in formal educational settings and academic research. Linguistic corpora, dictionaries, and grammar guides play crucial roles in documenting a language's structural and functional aspects, facilitating language revitalization efforts, and ensuring its transmission to future generations. Without such resources, there is a risk of language erosion and

loss, particularly as younger generations may encounter difficulties learning and using Timori in formal educational contexts where written materials are essential for language instruction. As stated by the informants:

PO: *No, it wasn't written like that at all.*

PF: *No, you only heard that from the way people talk.*

PG: *There is no such thing written like such.*

The study of Rogers (2020) claims that the absence of written materials hinders efforts to capture and preserve the unique nature of the language fully. The absence of such resources limits its potential for academic research and makes it challenging to effectively pass down the language to future generations. Recognizing the importance of these linguistic resources is a crucial step toward ensuring the continued vitality and cultural richness of the Timori language within the community. Efforts to rectify this gap in documentation should be undertaken with sensitivity to local perspectives and priorities, involving collaboration with the community to ensure the preservation of this valuable linguistic heritage.

Language Planning and Revitalization

It is unfortunate that, in the case of the Timori language, there are currently no dedicated efforts for its promotion and no existing policy on bilingual education.

PG: *People have yet to make a program to promote and preserve our language.*

PJT: *There is no such promotion of language.*

According to UNESCO (2008), promoting language is essential for preserving culture, identity, cognitive development, social inclusion, economic opportunities, linguistic diversity, interdisciplinary learning, and global understanding. Moreover, Hornberger (2012) asserts that language promotion and policy play a fundamental role in enriching societies and ensuring that no culture or group is left behind. Despite the language's cultural significance and the pride associated with speaking it, the absence of formal initiatives to support Timori's preservation is a concerning gap. This oversight highlights the need for immediate attention and action to ensure that this unique linguistic heritage, which holds a special place in the hearts of its speakers, can continue to thrive and be passed down to future generations. The development of language promotion programs and policies on bilingual education could play a pivotal role in safeguarding the vitality and cultural richness of Timori within the Cogtong community. Beyond just communication, maintaining the Timori language inside the Cogtong community has significant implications. It is essential for maintaining social cohesiveness, protecting cultural identity, and giving future generations access to education. The community may secure economic development, fortify intergenerational relationships, and contribute to global linguistic diversity by supporting bilingual education and language preservation projects. Taking note of these implications highlights the necessity of acting quickly to save Timori as an essential part of the community's cultural legacy and collective identity, as well as a means of communication, guaranteeing its survival for future generations.

4.0 Conclusion

The case of Cogtong's Timori language within its sociolinguistic, phonological, morphological, syntactic, and functional contexts has provided a multifaceted understanding of this unique linguistic heritage. Timori's distinct phonological features, such as letter assignments, showcase its adaptability. It's used in various social settings, from family conversations to workplace interactions, and even as a secret code during wartime, highlighting its flexibility. The language remains vibrant and has been passed down to younger generations, preserving cultural heritage and identity. However, the need for written documentation and formal language promotion poses challenges. To safeguard Timori's rich heritage, we need resources, documentation, and policies supporting bilingual education. Timori holds a special place in the community, connecting people through culture and identity, and efforts are needed to ensure its continued vitality for future generations.

Efforts should be undertaken urgently to document Cogtong's Timori comprehensively, including creating linguistic corpora, dictionaries, and grammar guides, preserving the language for future generations, and enabling further research. Collaborative initiatives should involve the community to ensure cultural relevance and sensitivity. Introducing bilingual education programs incorporating Timori into the curriculum can facilitate

intergenerational transmission. Public promotion through cultural festivals and language workshops can raise awareness and appreciation. Advocacy is needed to establish language policies supporting Timori's preservation and promotion. Addressing these recommendations will help safeguard the vitality and cultural richness of Timori within the Cogtong community, bridging the gap between its remarkable linguistic heritage and its future.

5.0 Contributions of Authors

The authors affirm the following contributions: JM—main author, writing, data gathering and analysis, editing, and supervising; JR—co-author, writing, data gathering, editing, research presentation; BF—co-author, writing, data gathering, research presentation; ED—co-author, data gathering, research presentation, and LT—co-author, data gathering, research presentation.

6.0 Funding

The publication fee of this research is institutionally funded.

7.0 Conflict of Interests

The authors declare no conflicts of interest about the publication of this paper.

8.0 Acknowledgment

The researchers would like to express their deepest gratitude to God Almighty, above all, and to the instrumental individuals who contributed to the success of this research. Special thanks go to Dr. Vilma G. Bermoy, Dean of the College of Teacher Education, to Dr. Ma. Magdalena J. Bernales, Campus Research Director, and to Mr. Donald O. Caga, College Research Chairperson, for their unwavering support and encouragement in helping the researchers complete this study collaboratively. The researchers also extend sincere appreciation to the key informants for their valuable participation and expertise, as well as to the panel of evaluators for their insightful feedback during the research colloquium, which greatly enriched the quality of this paper.

9.0 References

- Altarriba, J., & Basnight-Brown, D. (2022). The Psychology of Communication: The Interplay Between Language and Culture Through Time. *Journal of Cross-Cultural Psychology*, 53(7-8), 860-874. <https://doi.org/10.1177/00220221221114046>
- Bakker, P., & Daval-Markussen, A. (2017). Comparative overview of Creole languages. In *Creole Studies - Phylogenetic Approaches* (pp. 79-101). John Benjamins Publishing Company
- Burhanuddin, F., Maknun, T., & Iswary, E. (2002). Language Use of The Community of Drugs Abuse in Sinjai District, Sociolinguistic Study. *SELTICS*, 5(1), 34-42. <https://doi.org/10.46918/seltics.v5i1.1319>
- Castello, D. (2015). First Language Acquisition and Classroom Language Learning: Similarities and Differences (Master's thesis). ELAL College of Arts & Law, University of Birmingham
- Chun Tie, Y., Birks, M., & Francis, K. (2019). Grounded theory research: A design framework for novice researchers. *SAGE Open Medicine*, 7, 2050312118822927. <https://doi.org/10.1177/2050312118822927>
- Fang, T. (2017). How to Maintain a Minority Language through Education. *Chinese Studies*, 6, 1-11. <https://doi.org/10.4236/chnstd.2017.61001>
- Fine, A.B., Jaeger, T.F., Farmer, T.A., & Qian, T. (2013). Rapid Expectation Adaptation during Syntactic Comprehension. *PLOS ONE*, 8(10), e77661. <https://doi.org/10.1371/journal.pone.0077661>
- Gutiérrez Rodríguez, E., & Tate, S.A. (2015). Creolizing Europe: Legacies and Transformations. Retrieved from <https://doi.org/10.5949/liverpool/9781781381717.003.0001>
- Harrison, H., Birks, M., Franklin, R., & Mills, J. (2017). Case study research: Foundations and methodological orientations. *Forum Qualitative Sozialforschung / Forum: Qualitative Social Research*, 18(1), 1-17. <https://doi.org/10.17169/FQS-18.1.2655>
- Holmes, J. (2001). Sociolinguistics. In *International Encyclopedia of the Social & Behavioral Sciences* (pp. 14562-14569). Elsevier. <https://doi.org/10.1016/B0-08-043076-7/03027-8>
- Hornberger, N. H. (1998). Language policy, language education, language rights: Indigenous, immigrant, and international perspectives. *Language in Society*, 27(4), 439-458. <https://doi.org/10.1017/S0047404500020182>
- Islam, N. (2023). Creolization. Retrieved from <https://tinyurl.com/38n8axx7>
- Johnson, M. (2015). Language Evolution and Human Development: The Role of Linguistic Meaning in Socially Organized Behavior. Springer.
- Kuhl, P. K. (2010). Brain mechanisms in early language acquisition. *Neuron*, 67(5), 713-727. <https://doi.org/10.1016/j.neuron.2010.08.038>
- Merriam, S. B. (1998). *Qualitative Research and Case Study Applications in Education*. Jossey-Bass Publishers.
- Minchew, S. S., & Hopper, P. F. (2008). Techniques for Using Humor and Fun in the Language Arts Classroom. *The Clearing House: A Journal of Educational Strategies, Issues and Ideas*, 81(5), 232-236. <https://doi.org/10.3200/TCIS.81.5.232-236>
- Markov, I., Kharitonova, K., & Grigorenko, E. L. (2023). Language: Its Origin and Ongoing Evolution. *Journal of Intelligence*, 11(4), 61. <https://doi.org/10.3390/jintelligence11040061>
- Mufwene, S. S. (2015). Pidgin and Creole Languages. Retrieved from <https://doi.org/10.1016/B978-0-08-097086-8.52014-5>
- Puthuval, S. (2017). Language maintenance and shift across generations in Inner Mongolia (Doctoral dissertation). University of Washington
- Rafael, V. L. (2009). Translation, American English, and the National Insecurities of Empire. *Social Text*, 27(4), 1-23. <https://doi.org/10.1215/01642472-2009-05>
- Raviv, L., de Heer Kloots, M., & Meyer, A. (2021). What makes a language easy to learn? A preregistered study on how systematic structure and community size affect language learnability. *Cognition*, 210, 104620. <https://doi.org/10.1016/j.cognition.2021.104620>
- Rogers, N. (2020, November 30). Saving a language, preserving a culture: New translations of Jicarilla Apache texts. Retrieved from <https://tinyurl.com/3d4ehvmw>
- Steels, L., & Szathmáry, E. (2018). The evolutionary dynamics of language. *Biosystems*, 164, 128-137. <https://doi.org/10.1016/j.biosystems.2017.11.003>
- UNESCO. (2008). *Promotion and Preservation of Languages*. Retrieved from <https://tinyurl.com/2ztumhvc>
- Vogt, P. (2009). Modeling Interactions between Language Evolution and Demography. *Human Biology*, 81(3), 237-258. <https://doi.org/10.3378/027.081.0307>
- Yazan, B. (2015). Three Approaches to Case Study Methods in Education: Yin, Merriam, and Stake. *The Qualitative Report*, 20(2), 134-152. <https://doi.org/10.46743/2160-3715/2015.2102>

Comparative Analysis of Sucrose and Moringa (*Moringa oleifera* Lam.) Leaf Extracts as Natural Additives to Prolong the Vase Life of Rose (*Rosa x hybrida*) Cut Flowers

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Date received: August 29, 2024

Date revised: September 29, 2024

Date accepted: October 11, 2024

Originality: 87%

Grammarly Score: 99%

Similarity: 13%

Recommended citation:

Telebrico, M. (2024). Comparative analysis of Sucrose and Moringa (*Moringa oleifera* Lam.) leaf extracts as natural additives to prolong the vase life of Rose (*Rosa x hybrida*) cut flowers. *Journal of Interdisciplinary Perspectives*, 2(11), 313-323. <https://doi.org/10.69569/jip.2024.0456>

Abstract. Roses, one of the most iconic flowers in the world, symbolize love, beauty, and elegance. Their vibrant colors and soft petals make them popular for special occasions like weddings, anniversaries, and romantic gestures. People from different walks of life usually admire roses for their aesthetic appeal and pleasant fragrance. Both florists and consumers in the flower industry depend on keeping cut roses fresh. Placing roses in water-filled vases is a standard method to extend their lifespan. This study explored the effectiveness of natural additives in prolonging the life of cut roses. A completely randomized design (CRD) was used, and four treatments were used: distilled water (control), a sucrose solution, moringa leaf extracts, and a combination of sucrose and moringa. The roses were observed over eight days to assess various factors such as leaf drop, stem rotting, bent necks, petal drop, flower condition, and petal color. The results showed that the combined treatment of sucrose and moringa led to the highest number of leaf drops, with 15 leaves dropping by day five. Distilled water resulted in 12 dropped leaves, moringa extract caused four leaves to drop, and sucrose had the least impact, with only two leaves dropping. The combination treatment also caused the most significant stem rotting (32.75 mm) and the most bent necks (14 roses). In contrast, roses treated with sucrose or moringa separately had better outcomes, with the least bent necks and minimal leaf drops. The combined treatment again had the worst results for petal drops, with eight petals dropping, followed by distilled water with six petals. The overall flower condition was poorest with the combined treatment, scoring 1 (completely open/damaged), while roses treated with sucrose or moringa separately had better scores, indicating they remained fresher. Petal color was also most affected by the combined treatment, which resulted in a light brown color, whereas the separate treatments maintained a darker red hue. Hence, while sucrose and moringa are beneficial when used individually, their combination negatively impacts the longevity and appearance of cut roses.

Keywords: Moringa (*Moringa oleifera* Lam.); Leaf extracts; Sucrose; Rose; *Rosa x hybrida*; Natural farming

1.0 Introduction

The cut flower industry plays a pivotal role in the global floriculture market, with roses being one of the most cherished and economically significant varieties. The aesthetic appeal and commercial value of cut roses are directly tied to their vase life, making it imperative for floriculturists and enthusiasts to explore innovative

approaches to extend the longevity of these blooms. In this endeavor, the current research explores the possibility of utilizing sucrose and moringa leaf extract as natural supplements to prolong the cut flower roses. Rose, a quintessential symbol of beauty and romance, captivates hearts with its unparalleled elegance. Beyond its ornamental allure, the economic significance of roses is deeply rooted in agro-based industries, particularly cosmetics and perfumes. As integral players in the *Rosaceae* family, hybrid Tea Roses (*Rosa x hybrida* L.) contribute substantially to the booming cut-flower market. With over 150 species and 1400 cultivars under the *Rosa* genus. The rose has been popular as a cut flower since ancient times, continuing to captivate researchers (Kaur et al., 2021). Nonetheless, the primary focus of rose cultivation is the production of cut flowers, a significant aspect of the floriculture industry (Lan et al., 2022).

Understanding the challenges posed during the postharvest phase, research by Bhardwaj et al. (2021) sheds light on the phenomenon of “bent-neck” In instances where cut roses wilt and the floral stem bends just beneath the flower head. Another factor contributing to quality deterioration is the clogging of xylem vessels by bacterial or microbial build-up (Chen, 2021). This obstruction can result in inadequate water absorption and loss (Mohammed et al., 2023). Over the years, scholars such as (Azarhoosh, 2021), (Nasibi et al., 2024), (Lone et al., 2022), as well as (Hashemi et al., 2024) have investigated the capability of sucrose solutions to prolong vase life, recognizing the significance of soluble carbohydrates as vital substrates for respiration and the opening of flowers.

However, sucrose alone presents challenges, as documented by Ha & In (2022), who highlighted its propensity to promote bacterial proliferation, resulting in a shortened vase life. Mittal et al. (2021) observed that lower concentrations of sucrose extend the vase life of gladiolus florets by enhancing uptake, while higher concentrations appear to hinder uptake. In the intricate world of floriculture, the cultivation of roses extends beyond the mere production of blooms; it is a delicate dance that achieves a prolonged vase life for cut flowers. As highlighted by esteemed authors like Aleksis (2024) and Thörning et al. (2022), the primary goal of rose cultivation is to yield high-quality cut flowers that fuel the thriving floricultural business. A critical factor in determining the success of this venture lies in the length of vase life, a parameter that directly influences the commercial value of these delicate blooms.

Understanding the physiology of cut flowers is essential for uncovering the complexities of extending vase life. Factors such as water absorption, transpiration, and microbial proliferation significantly impact the post-harvest longevity of cut roses. The role of carbohydrates, including sucrose, in providing a continuous energy source for the flowers has been extensively documented (Si et al., 2023). Additionally, the antimicrobial properties of certain plant extracts, like those from moringa leaves, have garnered attention in recent research endeavors (Rahim et al., 2024).

The floral industry is vibrant and economically significant, with cut roses being a standout product. Roses are cherished worldwide for their beauty and symbolism, often representing love and celebration. In the global market, cut roses are a key commodity, playing an important role in both local and international trade due to their cultural and aesthetic value. To keep cut roses fresh, it's important to understand how they function after being cut. Studies have shown that water uptake and microbial growth greatly affect how long cut roses stay fresh. This has led to a focus on sustainable practices and natural methods, such as sucrose and moringa leaf extract, to extend their vase life and maintain quality.

The economic impact of cut roses is significant, especially in countries with ideal climates for their cultivation, like Colombia, Ecuador, and Kenya. These countries have become major suppliers in the global market, benefiting their national economies. Additionally, the ongoing demand for roses, driven by their cultural significance and aesthetic appeal, continues to fuel growth in the floral industry, with trends moving towards eco-friendly and sustainable practices. Thus, the researcher aims to conduct this study to explore the potential of using natural additives, specifically sucrose and moringa leaf extracts, to prolong the vase life of cut roses for sustainability.

2.0 Research Methodology

2.1 Experimental Design

The study employed a Completely Randomized Design (Maxwell, 2005). It consisted of four treatments replicated four times. The experimental units, in this case, were individual cut roses. The roses were grouped based on

similar initial physiological age, size, and quality. Each group was subjected to various treatments, including sucrose, moringa leaf extract, and combinations of both. The random assignment of treatments within each group helped control for variability and ensured a more robust analysis.

The experiment was conducted in a controlled environment at room temperature at N Blessing Farm located at Sitio Dam-an Barangay Pamutan Cebu City. The room provided a stable climate, allowing for precise temperature and humidity control. This controlled environment was essential to minimize outside factors that could impact cut roses' lifespan and ensure consistency in experimental conditions (Ha et al., 2021). The room temperature was monitored using a home thermometer and hygrometer.

2.2 Experimental Procedure

Collection of Fresh Roses

The collection of roses was carried out early in the morning to aid in preserving the freshness of the flowers. Clean and sharp pruning shears were employed to harvest the flowers precisely above the node, ensuring a clean cut without crushing or tearing the stem. The cutting was performed through the stem about ¼ inches above the five leaflets at a 45-degree angle, using sharp and clean shears. After cutting the roses, the cut ends of the stems were plunged into a water container. Subsequently, the container of roses was placed indoors in a cool room, away from direct sunlight (Faust & Dole, 2021). The initial immersion of roses in water was done to ensure hydration immediately after cutting, preventing air embolism in the stems that could hinder water uptake. This step was based on standard practices in post-harvest flower care to maintain freshness before treatment (Faust & Dole, 2021). It can be clarified that the brief period in water did not interfere with the experiment's outcome. The methodology could explicitly state that water served as a temporary medium to stabilize the flowers before the experiment began, and studies like those by Dole (2021) confirm that this does not affect the comparative analysis between treatments.

Sucrose Preparation

The 10 g of granulated sugar was precisely measured and combined with 100 ml of distilled water in the vessel. Continuous stirring with a spoon until the sucrose was fully dissolved was done. The container was labeled with the concentration and the date it was processed. The solution was stored in a dark, dry, cool place.

Moringa Leaf Extract Preparation

Preparing leaf extracts from fresh *Moringa oleifera* Lam leaves involved collecting 200g of fresh leaves, cleaning, washing, and storing them overnight at freezing temperatures. After 24 hours, the stored leaves were crushed using a blender and sieved through cheesecloth, and 70 ml of *Moringa oleifera* Lam was collected. An aqueous extract was prepared by blending and filtering fresh moringa leaves, followed by dilution based on experimental requirements (Adewumi, 2021).

2.3 Data Analysis

To analyze the data, statistical analysis was performed using the STAR Program, which applied Analysis of Variance (ANOVA) based on a Completely Randomized Design (Acutis et al., 2022; Álvarez-Barreto et al., 2023). This method evaluated the significance of differences in the vase life of the roses among the different treatment groups, helping to determine the treatments' effectiveness in prolonging the cut roses' life. To summarize, the experimental units, high-quality cut roses, were sourced from a reputable farm and re-cut at a 45-degree angle to facilitate water uptake. These roses were then subjected to four treatments: distilled water as a control, a sucrose solution, a moringa leaf extract solution, and a combined treatment of both. Each treatment was applied by immersing the roses in pre-prepared solutions, followed by daily monitoring over eight days for any signs of deterioration, such as changes in petal color, stem rot, and flower neck bending.

3.0 Results & Discussion

3.1 Number of Leaf Drop

Moringa leaf extract and sucrose individually markedly improved the cut roses' ability to retain their leaves, as evidenced in Figure 1. The treatment groups with moringa leaf extract or sucrose applied alone exhibited the fewest dropped leaves. However, the combination of sucrose and moringa extract resulted in the highest leaf drop, particularly notable from day five onward, with fifteen leaves dropped. This trend was followed by the distilled

water treatment, which saw twelve leaves drop. These observations were made under controlled conditions of 22 degrees Celsius and 80% relative humidity.

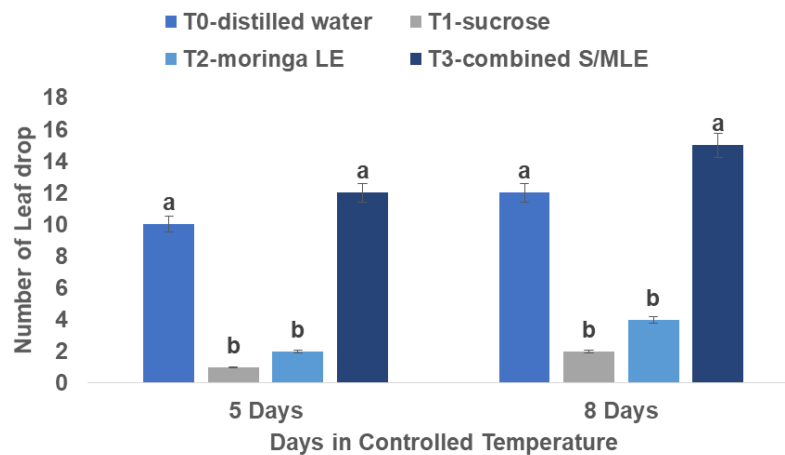


Figure 1. Impact of Sucrose and Moringa leaf extracts on the number of leaf drops of Black Rose
Note: Distinct lowercase letters denote significant variances. Tukey HSD was employed with a significance level of $\alpha = 0.05$

Moringa leaf extract and sucrose individually improved the cut roses' ability to retain their leaves. Sucrose serves as a substrate for respiration, maintains a balanced water level, and decreases susceptibility to ethylene, consequently prolonging the flower's lifespan (Kumar et al., 2022). Several researchers (Toscano et al., 2021; Mehmood, 2021) mentioned that the quantity of leaves is enhanced when treated with moringa leaf extract. Moringa leaves are rich in zeatin, a naturally occurring cytokine. Researchers (Arif et al., 2023; Soares et al., 2021) have noted the significance of *zeatin* found in moringa leaves, highlighting its role as a crucial growth hormone in plants.

Application of moringa extract has been reported to enhance agronomic crop yields of coffee, soybean, and maize by 25-30%. One notable biostimulant obtained from *Moringa oleifera* Lam is Moringa leaf extract (MLE). MLE is useful in agriculture and belongs to the *Moringaceae* family (Islam et al., 2022). Along with vital minerals, MLE contains bioactive substances such as proline, flavonoids, cytokinins (such as zeatin), ascorbic acid, phenolics, carotenoids, and vitamin A (Yuniati et al., 2022; Mashamaite et al., 2022; Farhat et al., 2023).

Expanding on utilizing amino acids to prolong the lifespan of cut roses, the study finds resonance with the findings of Shinde et al. (2023). The research highlights the role of amino acids sourced from marine waste fertilizers in promoting leaf retention, suggesting a potential avenue for enhancing the longevity of cut roses through similar mechanisms. Expanding on this concept, Rodrigues et al. (2023) showed the benefits of amino acid supplementation on the development and growth of native tomatoes grown in the Philippines, underscoring the broader applicability of amino acids in horticultural practices. Thus, the integration of amino acids, as observed in both studies, presents a compelling strategy for extending the lifespan of cut flower roses, aligning with the research focus on natural additives for flower preservation.

3.2 Stem Rotting (mm)

The result of this study is evident in cases involving the application of combined sucrose and moringa leaf extract. Stem rot incidences were noted consistently across all four replications, with an average length of rot reaching 32.75 mm. This decay was initially observed on day five and persisted for eight days under ambient conditions of 22 °C and 80% Relative Humidity. Stem rotting was notably observed in samples treated with combined sucrose and moringa leaf extract after eight days, indicating a significant impact on flower quality (Figure 2). Sucrose, a component of the treatment, is known to provide respiratory substrates, maintain water balance, lower ethylene sensitivity, slow down ethylene generation, and extend flower longevity (Ahmed et al., 2023). Additionally, studies by Aluko et al. (2021) have shown that carbohydrates, like sucrose, can increase plant tissue's fresh and dry weight, which could further contribute to stem stability. However, xylem vessel blockage brought on by

bacterial or microbe accumulation might result in stem rotting, leading to water uptake deficiency and loss (Cornelis & Hazak, 2022); Bhattacharya, 2021).

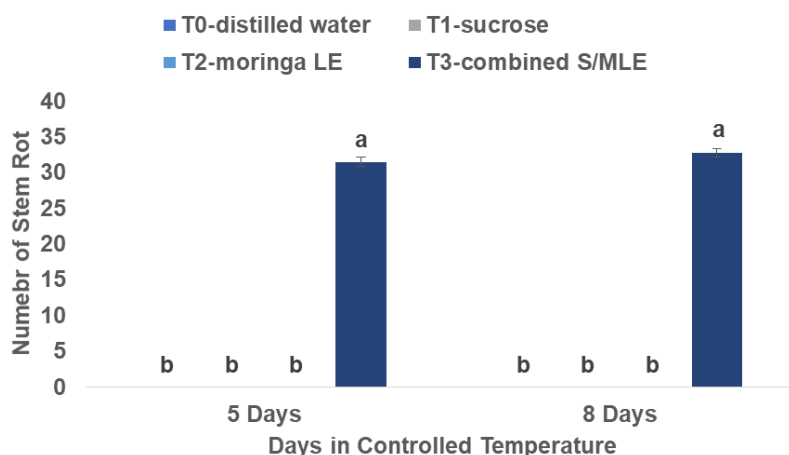


Figure 2. Impact of Sucrose and Moringa leaf extracts on the stem rot measured in mm of Black Rose
Note: Distinct lowercase letters denote significant variances. Tukey HSD was employed with a significance level of $\alpha = 0.05$

Therefore, controlling microbial proliferation is crucial for maintaining the quality and lifespan of roses (Naziri Moghaddam et al., 2021) using moringa leaf extract as a natural additive. Biocides are frequently employed to diminish bacterial proliferation in vase water, although certain ones carry potential health and environmental hazards and could lead to toxicity in flowers (Bika, 2021; Malakar et al., 2023). Despite these challenges, various approaches have been explored to explore alternative methods that are both efficient and environmentally friendly to meet the demands of the floral industry and sustainable agriculture to extend the lifespan of flowers, methods such as managing water levels, postponing senescence, decreasing microbial counts, and stimulating antioxidant mechanisms have been explored (Shantamma et al., 2021; Ngwenya, 2021; Seyed Hajizadeh et al., 2023).

3.3 Bent Neck

The bent neck was most observed in combined sucrose and moringa leaf extract, with an average of fourteen roses exhibiting a pronounced bend of 45 degrees, followed by distilled water with six roses similarly affected. In contrast, moringa leaf extracts alone displayed the least susceptibility, with only one rose exhibiting such deformity. This evaluation was performed over eight days at room temperature (22°C) and 80% relative humidity. The combination of sucrose and moringa leaf extract observed to lead to a higher occurrence of bent neck in cut flowers can be attributed to several factors (Figure 3). Firstly, the blockage of the xylem in the stem by either bacterial proliferation or other factors could hinder the transport of essential nutrients needed for the flower's structural integrity and health. This blockage prevents proper water and nutrient uptake, resulting in wilting and curvature of the flower stem (Muraleedhran et al., 2022). Secondly, low temperatures can cause the sucrose and moringa leaf extract solution to gel or become viscous, impeding water absorption by the flower stems. This reduced water uptake exacerbates the wilted appearance and bending observed in the flowers (Sukpitak et al., 2024). The idea of vase life, which refers to the duration from the start of treatment until the occurrence of bent stems, highlights the significance of tackling elements that lead to flower decay, such as stem curvature (Singh, 2023).

The rating system quantifying the degree of stem bending provides a standardized approach for assessing the severity of bent neck in cut flowers, facilitating comparisons across different treatments and environmental conditions (Dhiman et al., 2021). Certain vase solutions containing sucrose have demonstrated that certain substances can extend the lifespan of severed roses. However, the problem of bacterial growth in treatments containing only sucrose underscores the importance of careful selection when choosing vase additives (Yasemin & Beruto, 2024; Phan, 2021; Silvestri, 2022). The possibility of carbohydrate shortages contributing to short vase life underscores the importance of understanding the role of nutrients like sucrose in maintaining flower health

and longevity. Overall, addressing factors such as bacterial proliferation and carbohydrate availability can help mitigate issues like bent neck, enhancing the quality and longevity of cut flowers.

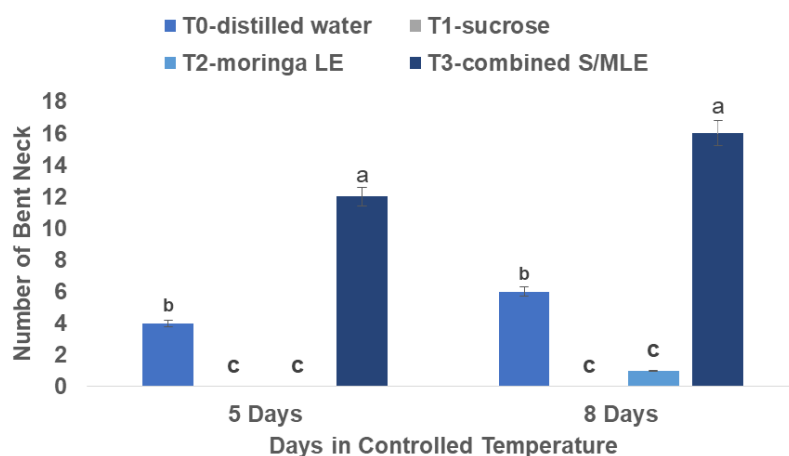


Figure 3. Impact of Sucrose and Moringa leaf extracts on the bent neck measured in degrees angle of Black Rose
Note: Distinct lowercase letters denote significant variances. Tukey HSD was employed with a significance level of $\alpha = 0.05$

3.4 Petal Drop

Analysis of petal drop rates elucidated a similar pattern. The combined sucrose and moringa leaf extract exhibited the highest incidence of petal loss, with eight petals shed, followed by distilled water, with six petals shed. This evaluation was performed over eight days at room temperature (22°C) and 80% relative humidity.

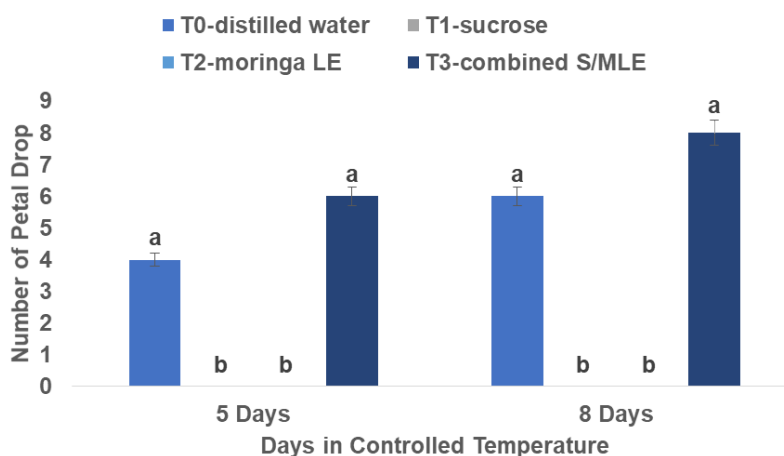


Figure 4. Impact of Sucrose and Moringa leaf extracts on the petal drop of Black Rose
Note: Distinct lowercase letters denote significant variances. Tukey HSD was employed with a significance level of $\alpha = 0.05$

The observation of increased petal dropping in cut flowers treated with a combination of sucrose and moringa leaf extract and those treated with distilled water alone can be linked to several factors (Figure 4). Firstly, research by Tasmim (2023) has indicated that certain treatments, such as citric acid combined with sucrose, are more effective and safer for maintaining the quality of rose cultivars, and the makeup of the vase solution is pivotal in preserving flowers. Petal dropping can result from reductions in petal thickness, which decreases the overall quality of the flower in the vase (Singh et al., 2022). Oxidative stress is an additional element that decreases flower quality during handling and storage (Fanourakis et al., 2022; Verma & Singh, 2021). The act of cutting flowers can trigger oxidative damage, resulting in excessive production of reactive oxygen species (ROS) that harm cellular

structures like nucleic acids, proteins, and membrane lipids (Hajam et al., 2023; Mansoor et al., 2022; Sachdev et al., 2021).

Studies have revealed that Moringa leaf extract (MLE) exhibits potent antimicrobial characteristics and can alleviate oxidative damage by boosting the performance of antioxidant enzymes that eliminate ROS, thus preserving the integrity of cellular membranes (Rawat et al., 2024; Shah & Oza, 2022; Ndlovu et al., 2023; Yang et al., 2022). The increased occurrence of petal dropping in cut roses treated with a combination of sucrose and moringa leaf extract and in those treated with distilled water alone contrasts with the lesser petal dropping observed in flowers treated with sucrose alone or moringa leaf extract alone. This disparity suggests that the composition of the preservation solutions plays a significant role in influencing flower quality.

3.5 Flower Opening

Flower opening dynamics were assessed from 1 (fully open) to 9 (excellent/fresh). The combined sucrose and moringa leaf extract displayed the lowest average score of 1 (completely open), indicative of optimal flower opening, followed by distilled water with an average score of 7, denoting good opening. In contrast, sucrose alone and moringa alone garnered an average score of 8.75, reflecting an excellent and fresh presentation. This evaluation was performed over eight days at room temperature (22°C) and 80% relative humidity.

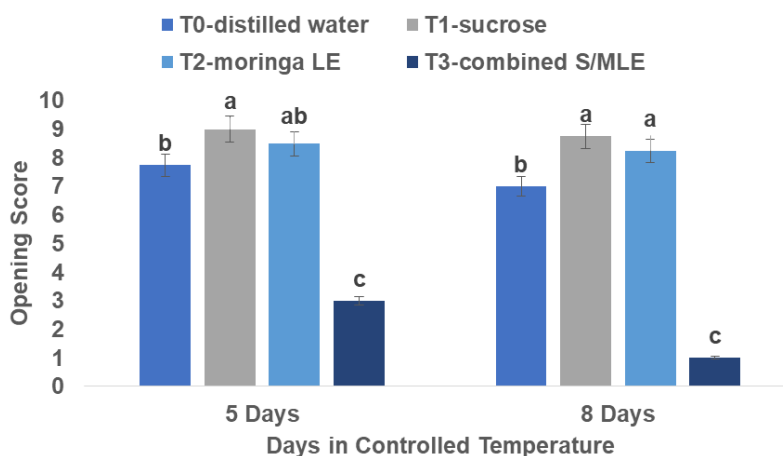


Figure 5. Impact of Sucrose and Moringa Leaf Extracts on the flower opening of Black Rose

Note: Distinct lowercase letters denote significant variances. Tukey HSD was employed with a significance level of $\alpha = 0.05$

This study is in connection with Liu et al. (2024), who state that the positive impact of sucrose on flower senescence is linked to their provision of substrates for respiration, structural components, and osmotic balance. This applies to cut flowers (Terry et al., 2021), as they lack access to food, hormones, and water post-detachment from the plant, relying solely on stored nutrients at harvest and the application of external sucrose (Fanourakis et al., 2021). Rezai et al. (2024) proposed a connection between uneven opening and inhibition of flower opening and decreased vase life. According to Sun et al. (2021), there is a correlation between the reduction in water potential and the inhibition of corolla expansion and flower opening. Recent studies have revealed the advantageous role of sucrose in delaying senescence in a range of cut flowers, including sweet peas (Haq et al., 2024), delphinium (Sharma et al., 2024), gentiana (Budniak et al., 2021), snapdragon (Han et al., 2022), rose (Mileva et al., 2021), and oncidium (Chang et al. (2021) this is attributed to the inhibition of ethylene production or its sensitivity.

Applying sucrose externally provides vital respiratory substrates to the flower, prolonging vase life and facilitating opening buds that would otherwise remain closed (Ketsa & Warrington, 2023). Biocides like moringa are commonly utilized to diminish bacterial proliferation and prolong the lifespan of flowers in vase water (Soliman & El-Sayed, 2023; Gururani et al., 2023). Consequently, sucrose, often combined with biocides like moringa leaf extract, has emerged as a crucial preservative for various cut flowers. Therefore, managing microbial growth is crucial in improving cut rose longevity and quality (Zeng et al., 2023).

3.6 Petal Color

Evaluation of petal color changes, gauged via the Visual Quality Rating (VQR) system ranging from (1 as dark brown, 3 as light brown, 5 as shriveled pale red, 7 as good/fairly dark red, 9 as excellent fresh dark red), unveiled a progression wherein combined sucrose and moringa leaf extract attained the lowest average VQR score of 3.75, indicative of a light brown hue, second was observed in distilled water with a score of 6.75 denoting good/fairly dark red, third was observed in moringa leaf extract with a score of 8 representing a good/fairly dark red tone, and finally third was observed in sucrose with a score of 8.25 reflecting a fairly dark red hue. This evaluation was performed over 8 days at room temperature (22°C) and 80% relative humidity.

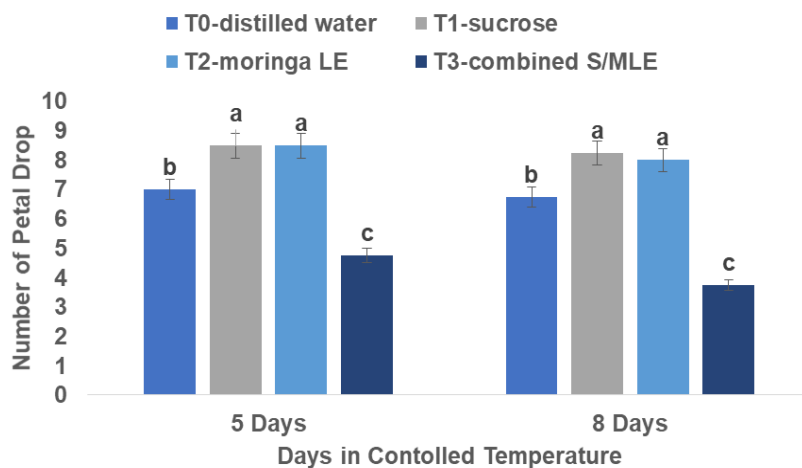


Figure 6. Impact of Sucrose and Moringa leaf extracts on petal color of Black Rose

Note: Distinct lowercase letters denote significant variances. Tukey HSD was employed with a significance level of $\alpha = 0.05$

The observation that combined sucrose and moringa leaf extract scored lower in terms of petal freshness than sucrose alone or moringa leaf extract alone in research on extending cut flower vase life suggests a potential link between vase solutions and petal color. Sucrose is recognized for stimulating bud emergence and preserving the freshness of petals in various cut flowers, including roses, by providing essential nutrients for petal expansion (da Costa et al., 2021). Additionally, it has been discovered that sugar reduces water loss from rose petals, potentially by inducing stomatal closure, thus reducing transpiration and maintaining petal freshness (Villagran et al., 2024).

As emphasized by Khan et al. (2022), Moringa seed extract contains a wealth of phytohormones, antioxidants, and osmoprotectants, which can potentially trigger antioxidant defense mechanisms in plants. These antioxidants and osmoprotectants in Moringa seed extract may help maintain petal color by reducing oxidative stress and preserving cellular integrity, ultimately contributing to the longevity of the flowers. Similarly, in other studies, sucrose application during initial hydration has been shown to reduce water uptake, suggesting that sugars may help maintain adequate water balance in cut flowers by minimizing water loss rather than increasing uptake (Verdonk et al., 2023). Therefore, the effectiveness of sucrose and moringa leaf extract in preserving petal color and freshness may be attributed to its ability to support petal expansion, reduce water loss, and maintain water balance, highlighting its importance in vase solutions for cut flowers.

4.0 Conclusion

The study investigated the effects of sucrose and moringa leaf extracts as natural additives to increase the longevity of rose cut flowers, *Rosa x hybrida*. Through careful observation and data collection, it was evident that among the treatments tested T0 control-distilled water, T1 Sucrose, T2 Moringa leaf extract, and T3 Combined – sucrose and moringa leaf extract, the most significant improvements in vase life were observed with T1-Sucrose and T2- Moringa leaf extracts. These treatments significantly delay petal wilting, reduce stem rotting, and maintain overall flower quality over the experimental period. Applying sucrose and moringa leaf extract separately to cut roses significantly extends their vase life. However, using a combination of sucrose and moringa leaf extract does not have the same effect because it blocks the xylem, which is a primary reason for the reduced

vase life. Additionally, low temperatures can cause the solution of sucrose and moringa leaf extract to gel or thicken, further hindering water absorption by the flower stems.

Given the results of this research, it is advisable to investigate the possible advantages of the combined approach, T3 - sucrose and moringa leaf extracts. While the combined treatment showed promise, it was noted that proper dilution might enhance its effectiveness. Therefore, future research should focus on optimizing the formulation and concentration of the combined treatment to maximize its benefits in prolonging the lifespan of cut-flower roses. Additionally, investigating the long-term effects of these natural additives on other flower species and exploring potential mechanisms underlying their action could provide valuable insights for the floral industry.

5.0 Contributions of Authors

The authors contributed equally to the conduct of this research.

6.0 Funding

This work received no specific grant from any funding agency.

7.0 Conflict of Interests

The author declared that they have no conflicts of interest.

8.0 Acknowledgment

The author would like to thank the research advisory board.

9.0 References

- Acutis, M., Tadiello, T., Perego, A., Di Guardo, A., Schillaci, C., & Valkama, E. (2022). EX-TRACT: An excel tool for the estimation of standard deviations from published articles. *Environmental Modelling & Software*, 147, 105236. <https://doi.org/10.1016/j.envsoft.2021.105236>
- Adewumi, O. O. (2021). Nutritional and functional properties of Bambara groundnut and Moringa oleifera leaf protein complex in a ready-to-use therapeutic food (RUTF) (Doctoral dissertation). Cape Peninsula University of Technology
- Ahmed, N., Zhang, B., Bozdar, B., Chachar, S., Rai, M., Li, J., & Tu, P. (2023). The power of magnesium: unlocking the potential for increased yield, quality, and stress tolerance of horticultural crops. *Frontiers in Plant Science*, 14, 1285512. <https://doi.org/10.3389/fpls.2023.1285512>
- Aleksis, K. S. B. (2024). The global floriculture industry: logistics and transport aspects (a case study of the cut flower segment) (Master's Thesis). Saint-Petersburg State University
- Aluko, O. O., Li, C., Wang, Q., & Liu, H. (2021). Sucrose utilization for improved crop yields: A review article. *International Journal of Molecular Sciences*, 22(9), 4704. <https://doi.org/10.3390/ijms22094704>
- Álvarez-Barreto, J. F., Cevallos-Ureña, A., Zurita, J., Pérez, J., León, M., & Ramírez-Cárdenas, L. (2023). Edible coatings of aloe vera gel and carnauba wax microparticles to increase strawberry (*Fragaria ananassa*) shelf life. *International Journal of Fruit Science*, 23(1), 181-199. <https://doi.org/10.1080/15538362.2023.2180129>
- Arif, Y., Bajguz, A., & Hayat, S. (2023). Moringa oleifera extract as a natural plant biostimulant. *Journal of Plant Growth Regulation*, 42(3), 1291-1306. <https://doi.org/10.1007/s00344-022-10630-4>
- Azarhoosh, J., Hashemabadi, D., Asadpour, L., & Kaviani, B. (2021). Extending Vase Life of Cut *Streptocarpus reginae* Aiton Flowers by Cobalt Chloride, Cerium Nitrate, Silver Nanoparticles and Nanosil. *Acta Scientiarum Polonorum Hortorum Cultus*, 20(4), 89-99. <https://doi.org/10.24326/asphc.2021.4.8>
- Bhardwaj, R. L., Sharma, Y. K., & Vyas, L. (2021). Postharvest Handling of Horticultural Crops. Retrieved from <https://doi.org/10.1201/9781003261582>
- Bhattacharya, A. (2021). Mineral nutrition of plants under soil water deficit condition: A review. In A. Bhattacharya, Soil Water Deficit and Physiological Issues in Plants (pp. 287-391). Springer Singapore
- Bika, R. (2021). Integration of sanitation practices and fungicide applications for assuring better postharvest shelf life of cut flowers and greenery (Master's thesis). Tennessee State University
- Budniak, L., Slobodianiuk, L., Marchyshyn, S., & Ilashchuk, P. (2021). Determination of polysaccharides in *Gentiana cruciata* L. herb. *Pharmacologyonline*, 2, 1473-1479. <http://pharmacologyonline.silae.it>
- Chang, C. M., Lin, K. H., Huang, M. Y., Chen, C. I., Hsueh, M. L., Wang, C. W., & Yeh, K. W. (2021). Growth and flowering characteristics of oncidium gower ramsey varieties under various fertilizer management treatments in response to light intensities. *Agronomy*, 11(12), 2549. <https://doi.org/10.3390/agronomy11122549>
- Chen, Y. H. (2021). Dehydration and microbial impacts on water uptake and postharvest quality of cut *Lilium* (Thesis). Cornell University
- Cornelis, S., & Hazak, O. (2022). Understanding the root xylem plasticity for designing resilient crops. *Plant, Cell & Environment*, 45(3), 664-676. <https://doi.org/10.1111/pce.14245>
- Da Costa, L. C., de Araujo, F. F., Ribeiro, W. S., de Sousa Santos, M. N., & Finger, F. L. (2021). Postharvest physiology of cut flowers. *Ornamental Horticulture*, 27(03), 374-385. <https://doi.org/10.1590/2447-536X.v27i3.2372>
- Dhiman, M. R., Kumar, R., & Kumar, S. (2021). Postharvest Handling and Disease Management of Cut Flowers. In *Postharvest Handling and Diseases of Horticultural Produce* (pp. 415-430). CRC Press.
- Fanourakis, D., Papadakis, V. M., Psyllakis, E., Tzanakakis, V. A., & Nektarios, P. A. (2022). The role of water relations and oxidative stress in the vase life response to prolonged storage: A case study in chrysanthemum. *Agriculture*, 12(2), 185. <https://doi.org/10.3390/agriculture12020185>
- Fanourakis, D., Papadopoulou, E., Valla, A., Tzanakakis, V. A., & Nektarios, P. A. (2021). Partitioning of transpiration to cut flower organs and its mediating role on vase life response to dry handling: A case study in chrysanthemum. *Postharvest Biology and Technology*, 181, 111636. <https://doi.org/10.1016/j.postharvbio.2021.111636>
- Farhat, F., Ashaq, N., Noman, A., Aqeel, M., Raja, S., Naheed, R., & Tariq, A. (2023). Exogenous application of moringa leaf extract confers salinity tolerance in sunflower by concerted regulation of antioxidants and secondary metabolites. *Journal of Soil Science and Plant Nutrition*, 23(3), 3806-3822. <https://doi.org/10.1007/s42729-023-01301-8>
- Faust, J. E., & Dole, J. M. (2021). Major cut flowers. Retrieved from <https://www.cabidigitallibrary.org/doi/abs/10.1079/9781789247602.0002>
- Gururani, M. A., Atteya, A. K., Elhakem, A., El-Sheshtawy, A. N. A., & El-Serafi, R. S. (2023). Essential oils prolonged the cut carnation longevity by limiting the xylem blockage and enhancing the physiological and biochemical levels. *Plos one*, 18(3), e0281717. <https://doi.org/10.1371/journal.pone.0281717>
- Ha, S. T. T., Nguyen, T. K., & Lim, J. H. (2021). Effects of air-exposure time on water relations, longevity, and aquaporin-related gene expression of cut roses. *Horticulture, environment, and biotechnology*, 62, 63-75. <https://doi.org/10.1007/s13580-020-00302-1>
- Ha, S. T. T., & In, B. C. (2022). Combined nano silver, α-aminobutyric acid, and 1-methylcyclopropene treatment delays the senescence of cut roses with different ethylene sensitivities. *Horticulturae*, 8(6), 482. <https://doi.org/10.3390/horticulturae8060482>
- Hajam, Y. A., Lone, R., & Kumar, R. (2023). Role of plant phenolics against reactive oxygen species (ROS) induced oxidative stress and biochemical alterations. In *Plant phenolics in abiotic stress management* (pp. 125-147). Singapore: Springer Nature Singapore.

- Han, J., Li, T., Wang, X., Zhang, X., Bai, X., Shao, H., & Leng, P. (2022). AmMYB24 regulates floral terpenoid biosynthesis induced by blue light in snapdragon flowers. *Frontiers in Plant Science*, 13, 885168. <https://doi.org/10.3389/fpls.2022.885168>
- Haq, A. U., Farooq, S., Lone, M. L., Parveen, S., Altaf, F., & Tahir, I. (2024). Flower Senescence Coordinated by Ethylene: An Update and Future Scope on Postharvest Biology in the "Buttercup" Family. *Journal of Plant Growth Regulation*, 43(2), 402-422. <https://doi.org/10.1007/s00344-023-11122-9>
- Hashemi, R. H., Nikbakht, A., & Aalipour, H. (2024). Synergistic effects of oxygen nanobubble, nano-silicon and seaweed extract on promoting quality and postharvest performance of two cut rose flowers. *Scientia Horticulturae*, 338, 113637. <https://doi.org/10.1016/j.scienta.2024.113637>
- Islam, M. A. U., Nupur, J. A., Hunter, C. T., Sohag, A. A. M., Sagar, A., Hossain, M. S., ... & Tahjib-Ul-Arif, M. (2022). Crop improvement and abiotic stress tolerance promoted by moringa leaf extract. *Phyton*, 91(8). <https://doi.org/10.32604/phyton.2022.021556>
- Kaur, H., Manna, M., Thakur, T., Gautam, V., & Salvi, P. (2021). Imperative role of sugar signaling and transport during drought stress responses in plants. *Physiologia plantarum*, 171(4), 833-848. <https://doi.org/10.1111/ppl.13364>
- Khan, S., Ibrar, D., Bashir, S., Rashid, N., Hasnain, Z., Nawaz, M., & Dvořáček, J. (2022). Application of moringa leaf extract as a seed priming agent enhances growth and physiological attributes of rice seedlings cultivated under water deficit regime. *Plants*, 11(3), 261. <https://doi.org/10.3390/plants11030261>
- Ketsa, S., & Warrington, I. J. (2023). The Dendrobium Orchid: Botany, horticulture, and utilization. *Crop Science*, 63(4), 1829-1888. <https://doi.org/10.1002/csc2.20952>
- Kumar, R., Yadav, M. K., Shankar, B. A., Sharma, S., & Rani, R. (2022). Effect of different chemicals to enhance vase life of tuberose (*Polianthes tuberosa* L.) cut flowers. *International Journal of Agricultural and Statistical Sciences*, 18(1), 995-1002. <https://connectjournals.com/03899.2022.18.995>
- Lan, Y. C., Tam, V. W., Xing, W., Datt, R., & Chan, Z. (2022). Life cycle environmental impacts of cut flowers: A review. *Journal of Cleaner Production*, 369, 133415. <https://doi.org/10.1016/j.jclepro.2022.133415>
- Liu, Z., Luo, Y., & Liao, W. (2024). Postharvest physiology of fresh-cut flowers. In *Oxygen, Nitrogen and Sulfur Species in Post-Harvest Physiology of Horticultural Crops* (pp. 23-42). Academic Press
- Lone, M. L., ul Haq, A., Farooq, S., Altaf, F., Parveen, S., & Tahir, I. (2022). Jasmonates and salicylic acid accentuate longevity in ray florets of *Calendula officinalis* L. by attenuating postharvest oxidative stress. *Plant Physiology Reports*, 27(2), 282-294. <https://doi.org/10.1007/s40502-022-00656-x>
- Malakar, M., Paiva, P. D. D. O., Beruto, M., & Cunha Neto, A. R. D. (2023). Review of recent advances in post-harvest techniques for tropical cut flowers and future prospects: *Heliconia* as a case-study. *Frontiers in Plant Science*, 14, 1221346. <https://doi.org/10.3389/fpls.2023.1221346>
- Mansoor, S., Ali Wani, O., Lone, J. K., Manhas, S., Kour, N., Alam, P., & Ahmad, P. (2022). Reactive oxygen species in plants: from source to sink. *Antioxidants*, 11(2), 225. <https://doi.org/10.3390/antiox11020225>
- Mashamaite, C. V., Ngcobo, B. L., Manyevere, A., Bertling, I., & Fawole, O. A. (2022). Assessing the usefulness of *Moringa oleifera* leaf extract as a biostimulant to supplement synthetic fertilizers: A Review. *Plants*, 11(17), 2214. <https://doi.org/10.3390/plants11172214>
- Mehmood, A., Naveed, K., Ayub, Q., Alamri, S., Siddiqui, M. H., Wu, C., ... & Fahad, S. (2021). Exploring the potential of moringa leaf extract as bio stimulant for improving yield and quality of black cumin oil. *Scientific reports*, 11(1), 24217. <https://doi.org/10.1038/s41598-021-03617-w>
- Mileva, M., Ilieva, Y., Jovtchev, G., Gateva, S., Zaharieva, M. M., Georgieva, A., ... & Najdenski, H. (2021). Rose flowers – A delicate perfume or a natural healer?. *Biomolecules*, 11(1), 127. <https://doi.org/10.3390/biom11010127>
- Mittal, I., Jhanji, S., & Dhatt, K. K. (2021). Efficacy of sodium nitroprusside, a nitric oxide donor, on vase life and postharvest attributes of gladiolus spikes. *Acta Physiologiae Plantarum*, 43(7), 108. <https://doi.org/10.1007/s11738-021-03275-5>
- Mohammed, M., Jawad, A. J. A. M., Mohammed, A. M., Olewi, J. K., Adam, T., Osman, A. F., & Jaafar, M. (2023). Challenges and advancement in water absorption of natural fiber-reinforced polymer composites. *Polymer Testing*, 124, 108083. <https://doi.org/10.1016/j.polymertesting.2023.108083>
- Muraleedhran, A., Kousika, S., Subasri, S., Kumar, C. P. S., Joshi, J. L., & Karthikeyan, P. K. (2022). Post-Harvest Handling of Cut Flowers and Its Application. *Practices Research*, 155, 57. <https://doi.org/10.22271/ed.book.1521>
- Nasibi, F., Farahmand, H., Noori, H., & Shahabi, Z. M. (2024). Cold atmospheric pressure plasma as eco-friendly technology prolonged the vase life and improved the quality of cut rose flowers. *Scientia Horticulturae*, 327, 112829. <https://doi.org/10.1016/j.scienta.2023.112829>
- Naziri Moghaddam, N., Hashemabadi, H., Kaviani, B., Safari Motlagh, M. R., & Khorrami Raad, M. (2021). Effect of sodium nitroprusside on the vase life of cut rose, lisianthus, and sunflower. *Journal of Ornamental Plants*, 11(3), 185-195. <https://sanad.iau.ir/journal/jornamental/Article/685408?jid=685408>
- Ndlovu, S. S., Chuturgoon, A. A., & Ghazi, T. (2023). *Moringa oleifera* Lam Leaf extract stimulates NRF2 and attenuates ARV-induced toxicity in human liver cells (HepG2). *Plants*, 12(7), 1541. <https://doi.org/10.3390/plants12071541>
- Ngwenya, M. S. (2021). Postharvest insect pest disinfection in export Proteaceae cut flowers-the potential of new disinfection strategies (Doctoral dissertation). Stellenbosch: Stellenbosch University
- Phan, J. (2021). Metabolic indicators of microbial colonization and disease progression in cystic fibrosis (Thesis). University of California, Irvine
- Rahim, A., Venkata Nadh, R., Saeed, A. M. M. J., Majety, S. S., Akhil, S., Kumar, N., ... & Ramachandran, D. (2024). Enhanced Catalytic, Antioxidant, and Electrochemical Properties of Green-Synthesized Graphene-Silver Nanocomposite Utilizing *Moringa Oleifera* Leaf Extract. *ChemistrySelect*, 9(28), e202401848. <https://doi.org/10.1002/slct.202401848>
- Rawat, M., Kaur, H., Das, S., Kaur, T., Akram, N., Faisal, Z., & Shah, Y. A. (2024). Medicinal utilization and nutritional properties of drumstick (*Moringa oleifera*) – A comprehensive review. *Food Science & Nutrition*, 12(7), 4546. <https://doi.org/10.1002/fsn3.4139>
- Rezai, S., Sabzalain, M. R., Nikbakht, A., & Zarei, H. (2024). Red LED light improved the vase life of cut rose flowers during cold storage. *Postharvest Biology and Technology*, 210, 112752. <https://doi.org/10.1016/j.postharvbio.2023.112752>
- Rodrigues, R. C., Pereira, H. S., Senra, R. L., Ribon, A. D. O. B., & de Oliveira Mendes, T. A. (2023). Understanding the emerging potential of synthetic biology for food science: achievements, applications and safety considerations. *Food Chemistry Advances*, 100476. <https://doi.org/10.1016/j.focha.2023.100476>
- Sachdev, S., Ansari, S. A., Ansari, M. I., Fujita, M., & Hasanuzzaman, M. (2021). Abiotic stress and reactive oxygen species: Generation, signaling, and defense mechanisms. *Antioxidants*, 10(2), 277. <https://doi.org/10.3390/antiox10020277>
- Seyed Hajizadeh, H., Dadashzadeh, R., Azizi, S., Mahdavinia, G. R., & Kaya, O. (2023). Effect of Chitosan nanoparticles on quality indices, metabolites, and vase life of *Rosa hybrida* cv. Black magic. *Chemical and Biological Technologies in Agriculture*, 10(1), 12. <https://doi.org/10.1186/s40538-023-00387-7>
- Shah, K. H., & Oza, M. J. (2022). Comprehensive review of bioactive and molecular aspects of *Moringa Oleifera* lam. *Food Reviews International*, 38(7), 1427-1460. <https://doi.org/10.1080/87559129.2020.1813755>
- Shantamma, S., Vasikaran, E. M., Waghmare, R., Nimbar, S., Moses, J. A., & Anandharamakrishnan, C. (2021). Emerging techniques for the processing and preservation of edible flowers. *Future Foods*, 4, 100094. <https://doi.org/10.1016/j.fufo.2021.100094>
- Sharma, B., Pandher, M. K., Alcaraz Echeveste, A. Q., Romo, R. K., & Bravo, M. (2024). Delphinium as a model for development and evolution of complex zygomorphic flowers. *Frontiers in Plant Science*, 15, 1453951. <https://doi.org/10.3389/fpls.2024.1453951>
- Shinde, S. P., Chaudhari, S. R., & Matche, R. S. (2023). A way forward for a sustainable active packaging solution for prolonging the freshness and shelf life of *Rosa hybrida* L. cut flowers. *Postharvest Biology and Technology*, 204, 112475. <https://doi.org/10.1016/j.postharvbio.2023.112475>
- Silvestri, L. (2022). TERRAFORMA-Material investigation on the possibilities to combine natural growth of mycelium and unfired clay for novel sustainable product design applications (Master's Thesis). Politecnico
- Singh, A. K. (2023). *Horticultural Practices and Post-Harvest Technology*. Academic Guru Publishing House.
- Singh, K., Sharma, R., & Sahare, H. (2022). Implications of synthetic chemicals and natural plant extracts in improving vase life of flowers. *Scientia Horticulturae*, 302, 111133. <https://doi.org/10.1016/j.scienta.2022.111133>
- Si, Y., Wen, Y., Ye, H., Jia, T., Hao, Z., Su, S., & Wang, X. (2023). The Sink-Source Relationship Regulated *Camellia oleifera* Flower Bud Differentiation by Influencing Endogenous Hormones and Photosynthetic Characteristics. *Forests*, 14(10), 1965. <https://doi.org/10.3390/f14101965>
- Soares, T. F. S. N., da Silva, A. V. C., & Muniz, E. N. (2021). *Moringa* leaf extract: A cost-effective and sustainable product to improve plant growth. *South African Journal of Botany*, 141, 171-176. <https://doi.org/10.1016/j.sajb.2021.04.007>
- Soliman, D. M., & El-Sayed, I. M. (2023). Study postharvest characteristics, chemical composition and antimicrobial activity of *Dianthus caryophyllus* L., cut flowers using some essential oils. *Ornamental Horticulture*, 29(1), 37-47. <https://doi.org/10.1590/2447-536X.v29i1.2540>
- Sukpitak, C., Serayphep, K., Muñoz, P., & Munné-Bosch, S. (2024). Influence of water deficit on the longevity of ethylene-sensitive and ethylene-insensitive flowers. *Environmental and Experimental Botany*, 105647. <https://doi.org/10.1016/j.envexpbot.2024.105647>
- Sun, X., Qin, M., Yu, Q., Huang, Z., Xiao, Y., Li, Y., & Gao, J. (2021). Molecular understanding of postharvest flower opening and senescence. *Molecular Horticulture*, 1(1), 7. <https://doi.org/10.1186/s43897-021-00015-8>
- Tasmim, M. T. (2023). The vase life of two rose cultivars and the effects of different floral preservatives. *Journal of Agriculture, Food and Environment*, 4(3), 27-32. <https://doi.org/10.47440/JAFE.2023.4305>
- Terry, M. I., Ruiz-Hernández, V., Águila, D. J., Weiss, J., & Egea-Cortines, M. (2021). The effect of post-harvest conditions in *Narcissus* sp. cut flowers scent profile. *Frontiers in plant science*, 11, 540821. <https://doi.org/10.3389/fpls.2020.540821>
- Thörning, R., Ahlklö, Å. K., & Spendrup, S. (2022). The Slow Flower Movement - exploring alternative sustainable cut-flower production in a Swedish context. *Heliyon*, 8(10), e11086. <https://doi.org/10.1016/j.heliyon.2022.e11086>
- Toscano, S., Ferrante, A., Branca, F., & Romano, D. (2021). Enhancing the quality of two species of baby leaves sprayed with *Moringa* leaf extract as biostimulant. *Agronomy*, 11(7), 1399. <https://doi.org/10.3390/agronomy11071399>

- Verdonk, J. C., van Ieperen, W., Carvalho, D. R., van Geest, G., & Schouten, R. E. (2023). Effect of preharvest conditions on cut-flower quality. *Frontiers in Plant Science*, 14, 1281456. <https://doi.org/10.3389/fpls.2023.1281456>
- Verma, J., & Singh, P. (2021). Post-harvest handling and senescence in flower crops: An overview. *Agricultural Reviews*, 42(2), 145-155. <https://doi.org/10.18805/ag.R-1992>
- Villagran, E., Rocha, G. A. O., Mojica, L., Florez-Velazquez, J., Aguilar, C. E., Gomez, L., & Numa, S. (2024). Scientific analysis of cut flowers: a review of the main technical issues developed. *Ornamental Horticulture*, 30, e242699. <https://doi.org/10.1590/2447-536X.v30.e242699>
- Yang, M., Tao, L., Kang, X. R., Li, L. F., Zhao, C. C., Wang, Z. L., ... & Tian, Y. (2022). Recent developments in *Moringa oleifera* Lam. polysaccharides: A review of the relationship between extraction methods, structural characteristics and functional activities. *Food Chemistry: X*, 14, 100322. <https://doi.org/10.1016/j.fochx.2022.100322>
- Yasemin, S., & Beruto, M. (2024). A Review on Flower Bulb Micropropagation: Challenges and Opportunities. *Horticulturae*, 10(3), 284. <https://doi.org/10.3390/horticulturae10030284>
- Yuniati, N., Kusumiyati, K., Mubarak, S., & Nurhadi, B. (2022). The role of moringa leaf extract as a plant biostimulant in improving the quality of agricultural products. *Plants*, 11(17), 2186. <https://doi.org/10.3390/plants11172186>
- Zeng, F., Xu, S., Geng, X., Hu, C., & Zheng, F. (2023). Sucrose+ 8-HQC improves the postharvest quality of lily and rose cut flowers by regulating ROS-scavenging systems and ethylene release. *Scientia Horticulturae*, 308, 111550. <https://doi.org/10.1016/j.scientia.2022.111550>

Fostering Connections, Nurturing Prospects: A Proposed Communities of Practice Plan in Re-engaging Out-of-School Youth

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Date received: September 10, 2024

Date revised: September 30, 2024

Date accepted: October 12, 2024

Originality: 90%

Grammarly Score: 99%

Similarity: 10%

Recommended citation:

Diez, L., Oris, R., Javier, J., Samson, J., Salvador, M., Fabro, A.M. (2024). Fostering connections, nurturing prospects: A proposed communities of practice plan in re-engaging out-of-school youth. *Journal of Interdisciplinary Perspectives*, 2(11), 324–330. <https://doi.org/10.69569/jip.2024.0503>

Abstract. This study investigates the effectiveness of Communities of Practice (CoPs) as a strategy to re-engage out-of-school youth (OSY) in the Philippines. The research, utilizing a qualitative multiple case study approach with three OSY participants from Nagtenga, Sta Cruz, Ilocos Sur, explores themes of belonging, social connections, and prospects. Findings highlight the challenges faced by OSY, including isolation, limited social networks, and uncertain futures. Barriers to CoP participation include accessibility, financial constraints, and balancing commitments. A proposed CoP plan aims to create a supportive environment for OSY to develop skills, build connections, and drive positive change within their communities. This study emphasizes the need for tailored community-driven initiatives to address the unique needs of OSY and promote their successful re-engagement in education and society. Further research is recommended to evaluate the long-term impact of CoPs and develop scalable implementation strategies.

Keywords: Communities of practice; Out-of-school youth; Re-engagement; Sense of belonging; Qualitative research.

1.0 Introduction

The global pursuit of quality education for all, enshrined in the United Nations' Sustainable Development Goals, faces a persistent challenge: the significant number of out-of-school youth (OSY). In the Philippines, the Philippine Statistics Authority (PSA) Annual Poverty Indicators Survey (Ceballos, 2023) reported that 18.6% of Filipinos aged 5-24 were not enrolled during the 2022-2023 school year. This statistic underscores the multifaceted factors contributing to OSY, including financial constraints, lack of interest in schooling, unfavorable learning environments, and teenage pregnancy (Vito et al., 2018). While the Philippine government has implemented various initiatives to address this issue, such as vocational training programs and the Alternative Learning System (ALS), the prevalence of OSY remains persuasive.

The Alternative Learning System (ALS) was designed to meet the educational requirements of OSY and other underprivileged groups by offering flexible, non-formal education options. According to the Department of

Education (DepEd, 2021), ALS strives to provide education to students who have dropped out of the conventional school system, emphasizing skill development and lifetime learning. However, despite its potential, ALS has experienced problems such as insufficient resources, inadequate facilitator training, and low participation rates, limiting its effectiveness in reaching OSY (Bacani, 2022; DepEd, 2021).

Recent studies show that while ALS has made progress in providing educational possibilities, many OSY needs to be made aware of its programs or encounter challenges to participation, such as financial restrictions and a lack of mobility (Bacani, 2022; Reyes, 2023). The need for innovative and successful initiatives to re-engage OSY is critical. Communities of Practice (CoPs) are a promising strategy that fosters a sense of belonging, promotes information exchange, and facilitates skill development among people who share common interests or challenges (Semertzaki, 2011). Existing research has shown the importance of CoPs in addressing community challenges by using their members' pooled skills and experience (Kontio, 2015). However, there is still a lack of research into how CoP could solve the numerous difficulties OSY encountered in the Philippines.

This study explores the potential of CoPs as a strategy for re-engaging OSY. It delves into the subjective experiences of OSY regarding their sense of belonging, social connections, and perceived future opportunities fostered by the CoP. The study also examines the potential challenges OSY faces in joining CoPs, including accessibility, financial constraints, and balancing commitments. By understanding these experiences and challenges, the study aims to identify specific CoP plans and designs for implementation that can contribute to successful OSY re-engagement. By addressing these barriers and experiences, this research seeks to fill a gap in the literature by providing practical insights and recommendations for implementing CoPs tailored to OSY as a community-driven approach to contribute to their successful engagement and improvement of life outcomes.

2.0 Methodology

2.1 Research Design

This study adopted a qualitative research design to gain a contextual understanding of the experiences and challenges faced by out-of-school youth (OSY) and the effectiveness of Communities of Practice (CoP) in re-engaging them. Specifically, a multiple case study approach was utilized to explore the nuances of using CoPs to re-engage OSY. The multiple case study research design is a qualitative method that enables researchers to investigate complicated phenomena in real-life settings. This approach is very beneficial for establishing plans and treatments, giving rich, detailed information on participants' experiences and issues. Researchers can uncover patterns and variations by evaluating several examples, which can be used to design specific methods (Fletcher, 2017).

In developing a plan for re-engaging out-of-school youth (OSY), a multiple case study design allows researchers to collect diverse perspectives from various individuals, resulting in a more comprehensive understanding of the barriers and facilitators to participation in Communities of Practice. This technique enables the investigation of specific conditions and the identification of common themes that may be used to guide the development of effective treatments. The researchers used a multiple case study approach to examine three OSY members' experiences. This strategy enabled a thorough examination of their sense of belonging, social relationships, and expected future potential inside CoPs. The data from these individual cases were then combined to inform the proposed CoP strategy, ensuring that it met the specific requirements and challenges mentioned by the participants.

2.2 Research Participants and Locale

A purposive sampling technique was employed to select a group of participants. This method was adopted to ensure the participants' experiences and attributes matched the study's aims. The researchers carefully sought out OSYs that fit the inclusion criteria, allowing for a more focused investigation of their experiences and issues with Communities of Practice (CoPs). The study included three out-of-school youth (OSY) participants from Nagtenga, Sta Cruz, and Ilocos Sur, Philippines. The participants were chosen based on specific criteria to ensure they fit the study's focus on OSY, such as (i) age: Participants ranged in age from 15 to 24 years old, (ii) educational status: All participants had not attended any formal schooling and had not graduated from any degree program, and (iii) alternative learning modes: Participants were not enrolled in any Alternative Delivery Mode (ADM), homeschooled, or engaged in distance learning.

The study excluded (i) individuals who were currently enrolled in any formal educational institution, (ii) those who had completed a degree or were graduates, and (iii) participants who were receiving education through alternative modes such as homeschooling or distance learning.

2.3 Research Instrument

A semi-structured interview guide was used to gather qualitative data, and Rapid Assessment and Documentation (RAD) was used to record spontaneous interaction during the interviews. The interview also included open-ended questions and predefined prompts to ensure consistency while allowing participants to elaborate on their thoughts, feelings, and beliefs regarding re-engagement activities. The semi-structured interview guide was created to facilitate in-depth interactions with participants while providing flexibility in responses. This method is ideal for qualitative research because it allows researchers to examine participants' thoughts, feelings, and beliefs in a conversational setting. The guide featured open-ended questions and established prompts, ensuring uniformity throughout the interviews and allowing participants to comment on their experiences.

The interview questions were inspired by existing literature on OSY, CoPs, and related topics. This foundation in established research ensures that the questions are pertinent and can elicit meaningful answers. Before implementation, the interview guide was reviewed by professionals in education, youth engagement, and qualitative research. These experts' feedback helped to improve the questions' clarity, relevancy, and comprehensiveness. The researchers conducted a pilot test with a small sample of volunteers with similar characteristics to the target demographic, who offered feedback on the effectiveness of the questions. Adjustments based on pilot input improve the instrument's validity.

2.4 Data Gathering Procedure

The researchers followed Braun and Clarke's (2006) thematic analysis approach, which included three essential steps: data familiarization, coding, theme formulation, and theme review. Initially, the researchers transcribed the interviews to generate a thorough description of the individuals' stories. This transcribing procedure allowed for a more in-depth engagement with the data, allowing the researchers to find early codes representing key aspects of the participants' experiences.

Following the coding process, the researchers organized the data into broader themes, concentrating on OSY's subjective experiences with their sense of belonging, social relationships, and perceived future opportunities. Rapid Assessment and Documentation (RAD) methodologies enhanced the thematic analysis by providing real-time insights into participant interactions and behaviors during the interviews. This dual technique, which combined thematic analysis with RAD, enabled a more in-depth comprehension of the data by facilitating the replication of findings across several sources, including interviews and observations.

The analysis also highlighted the significance of cross-validating themes to ensure consistency and reliability. By correlating data from numerous sources, the researchers corroborated the formation of themes relevant to OSY's issues, such as accessibility, financial limits, and the need to manage several commitments. This detailed analysis approach not only gave a nuanced knowledge of the complexity underlying OSY's engagement with CoPs but also aided in formulating a specialized operational plan for implementing CoPs in communities. Finally, the analysis functioned as a core component of the study, assisting the researchers in identifying specific requirements and barriers that OSY confronts, thus contributing to the development of practical recommendations for improving their re-engagement in education and society.

2.5 Ethical Considerations

The researchers adhere to ethical considerations throughout the study, ensuring the well-being and rights of all participants. A declaration of no conflicts of interest was made to ensure objectivity. Participants were informed of the study's purpose, procedures, potential risks and benefits, and their right to withdraw. Informed consent was obtained from all participants, with assent secured from those under 18. As part of the RAD process, researchers ensured that participants' natural settings and behavior were not disrupted; this is to keep participant information confidential, with data coded to ensure anonymity and privacy. By integrating RAD and

corroboration per theme, the study maintained a high ethical integrity while maintaining the validity of findings from multiple sources. Thereby strengthening the reliability of the data collected.

3.0 Results and Discussion

3.1 Experiences and Challenges of Out-Of-School Youth in Engaging with Communities of Practice as a Re-Engagement Strategy

This section presents the study's results, which explored the experiences and challenges of out-of-school youth (OSY) engaging with Communities of Practice (CoP) as a re-engagement strategy. The findings are organized into three main themes: a sense of belonging, social connections, and perceived future opportunities. Each theme is further divided into sub-themes that provide a nuanced understanding of the complexities faced by OSY.

Theme 1: Sense of Belonging

The theme of belonging emerged as a significant challenge for OSY, with many participants expressing disconnection from peers and society. This finding aligns with the literature on social exclusion and marginalization, highlighting the negative impacts of feeling disconnected from social groups and institutions (Smith, 2017). Because OSY frequently discussed and almost always experienced a sense of oppression and exclusion, the topic of "Sense of Belonging" became a focal point of discussion. They demonstrated how seclusion from social life and community eroded one's identity and self-worth. One participant expressed extreme alienation, noting,

"I feel invisible, like no one sees me or cares about my future."

This remains one of the most pressing topics in the literature on social exclusion and marginalization. This is due to the psychological and emotional consequences of being excluded from social groups and institutions (UNESCO 2019). Research suggests that a lack of belonging might lead to an identity crisis, as it is a key factor in shaping one's identity (García-Carrión et al., 2019). Communities of Practice can alleviate isolation by fostering inclusive environments that help OSY feel connected and understood. This issue adds validity to Erikson's theory of identity development, which holds that a sense of belonging is required to establish a strong sense of self. CoPs can be quite effective in helping OSY regain a sense of self by combating social isolation. In practice, the findings suggest that CoPs should prioritize making their workplaces more welcoming and fostering community among their members. Activities that promote peer networking and community building should be included in program designs since they make the OSY feel relevant and engaged.

Theme 2: Social Connections

Despite being aware of the importance of social relationships, respondents reported difficulties building relationships due to a lack of social contacts. One participant stated,

"I don't have anyone to turn to for help, I just deal with things alone."

This is congruent with social capital theory, which emphasizes how social networks provide access to resources and aids (Putnam, 2020). Many OSY individuals may be denied access to critical support networks, economic prospects, and educational resources due to a lack of social connections (Li & Lamb, 2021). Several participants related their experiences attempting to make social connections through online forums or street gangs, where underprivileged teenagers are vulnerable to hazards exacerbated by a lack of supportive networks. The findings are consistent with Bourdieu's (1986) concept of social capital, which holds that OSY's social connections – or lack thereof – significantly influence their access to resources and opportunities. CoPs can connect mentors and peers and help them generate social capital. The CoPs should continue to work on building peer support and mentorship initiatives to help OSY students grow their social networks. OSY would become less reliant on negative social influences if they could provide access to required resources such as scholarships, career prospects, and educational opportunities.

Theme 3: Perceived Future Opportunities

The "Perceived Future Opportunities" motif conveyed an insidiously negative attitude toward OSY's prospective future opportunities. When asked if they could envision themselves going to work or returning to school, one answer articulated the sadness that many OSY felt about their prospects:

"It's difficult to look to the future when you have no skills or qualifications."

Research on youth unemployment and skill development is relevant to this overall issue. According to the ILO (2020) report, youngsters without a degree or occupational experience frequently confront significant barriers in their transition into the job market. At a moment when the OSY cannot even perceive a plausible route forward, this could become a self-perpetuating cycle of pessimism and loss of control, as demonstrated by Roberts et al. (2022). This is consistent with Sen's capacity theory 1999, which states that life choices are only as excellent as the possibilities and resources available to one. Alternatively, CoPs can increase their capacities by providing them with job training and career paths, allowing them to make sense of their future and behave in ways that give them agency. To improve OSY's projected possibilities, CoPs should prioritize skills training in practice-relevant areas and career chances. Professional coaching and mentoring help participants gain confidence and skills to live lives that achieve their long-term goals.

3.2 Potential Challenges of OSY in Joining Communities of Practices as a Re-Engagement Strategy

The study also explored potential challenges that OSY might face when joining CoPs. Three key themes emerged: accessibility and inclusivity, financial constraints, and balancing commitments and priorities.

Theme 1: Accessibility and Inclusivity

A participant stated,

"It conflicted with the schedule, or it was too far to go, and I couldn't get a ride,"

This corresponds to research on equality and access, which emphasizes the reduction of barriers for underrepresented groups (UNESCO, 2019). The inability of OSY to access knowledge sharing and skill development is an obstacle to CoPs. The foundation of this subject is the social justice theory, which maintains that oppressed communities cannot thrive without access to opportunities and facilities. CoPs should undertake programs and activities that promote accessibility, such as providing transportation to members or organizing events at times that are convenient for participants' schedules. According to research, community engagement programs prioritizing accessibility can considerably improve participation among marginalized teenagers (Blumenthal & Hodge, 2021).

Theme 2: Financial Constraints

Financial barriers emerged as a significant obstacle for OSY seeking to participate in CoPs. The costs associated with participation, including materials and other expenses, presented a significant challenge for those with limited financial resources. Participants described needing help to afford these costs, ultimately impacting their ability to fully engage in and benefit from community activities. This highlights the need for strategies to address financial barriers and ensure equitable access to CoP opportunities for all OSY. One participant stated,

"I cannot afford the materials; it's too expensive for me,"

This demonstrates that financial constraints are a serious impediment. According to recent research, financial constraints prevent low-income kids from participating in various social and educational programs (Biddle and Gordon, 2019). These impediments must be addressed so that everyone has an equal chance of fully pursuing CoP opportunities. According to social capital theories, money is required to take advantage of and gain access to opportunities and networks. In the case of OSYs, insufficient funds may hinder them from fully participating in CoPs, and, as a result, they may lose access to central support networks. To address budget limits, CoPs should provide free scholarships or resources. Evidence also shows that relief programs concerning the financial burden have increased involvement among low-income youths.

Theme 3: Balancing Commitments and Priorities

OSY needs help juggling so many duties. A participant commented,

"I have to work and care for my siblings; it's difficult to find time."

This statement is consistent with research on people's difficulty managing their time while juggling many responsibilities (Drucker, 2019). CoPs can enhance participation by offering customizable program forms that accommodate a variety of schedules. According to Greenhaus and Allen (2011), the work-life balance theory highlights the importance of flexibility in program design to help people juggle competing demands. Rigid programs risk alienating prospective participants who are already overwhelmed with commitments. CoPs must provide options for online engagement and flexible scheduling so that OSY can participate without endangering their other responsibilities. According to research, programs offering flexible participation options have much greater youth involvement and retention rates. The difficulties OSY encountered in joining CoPs highlight the importance of intelligent program design that takes into account accessibility, budgetary limits, and commitment balancing. If the findings from this study are integrated and aligned with the current literature, CoPs can be more effective as OSY re-engagement tactics.

4.0 Conclusion

This study focused on exploring the potential of Communities of Practice (CoPs) as a strategy for re-engaging out-of-school youth (OSY) in the Philippines, revealing both the promise and challenges associated with this approach. The findings highlight the critical role of CoPs in fostering a sense of belonging, promoting social connections, and providing opportunities for skill development among OSY. However, the study also identified significant barriers to participation, including accessibility, financial constraints, and the need to balance multiple commitments. The study's key contributions lie in its in-depth exploration of OSY's subjective experiences within CoPs, uncovering the nuanced challenges they face and the critical elements needed for successful re-engagement. The proposed operational plan for a CoP program in Barangay Nagtenga, Sta. Cruz, Ilocos Sur, serves as a practical example of how community-driven initiatives can address OSY's specific needs. This study emphasizes the importance of individualized CoP programs that address the unique circumstances and challenges OSY faces.

The applicability and compatibility of the theories used in this study – particularly those related to Communities of Practice (CoPs), social capital, and identity formation – are critical for understanding the re-engagement of out-of-school adolescents in the Philippines. The theoretical framework underlying CoPs emphasizes the value of shared learning and collective involvement, consistent with the study's findings highlighting the necessity for a supportive setting where OSY can build skills and foster social ties. As stated by Bourdieu, the concept of social capital emphasizes the importance of social networks in accessing resources and opportunities, which is especially significant given the participants' experiences of isolation and lack of social connections. This theoretical lens sheds light on OSY's challenges in developing meaningful relationships that can help them reintegrate into school and occupational trajectories. Furthermore, the theory of identity formation, based on Erikson's work, sheds light on the difficulties that OSY faces in developing a sense of belonging and self-worth, which are crucial for their motivation and involvement. By integrating these ideas, the study not only exposes the various obstacles that OSY confronts but also emphasizes the promise of CoPs as a transformative method for building belonging, increasing social capital, and eventually allowing OSY to envisage and seek brighter futures. This complete theoretical framework thus provides a solid platform for understanding the dynamics of re-engagement and significant insights for designing and implementing community-driven initiatives adapted to OSY's unique needs.

Future research should further explore the long-term impact of CoPs on OSY re-engagement, including their impact on educational attainment, employment prospects, and overall well-being. Additionally, further investigation into the effectiveness of different CoP models, including virtual platforms, is needed to address accessibility challenges and promote inclusivity. By building upon the findings of this study and engaging in ongoing research and development, we can continue to refine and strengthen the role of CoPs as a powerful tool for empowering out-of-school youth and fostering their successful re-engagement in education and society.

5.0 Contributions of Authors

Liza D. Diez- writing and editing the research article, Jomari C. Samson - editing and enhancing the research article, Jocelyn M. Javier data analysis of the study, Marisol C. Salvador, Rowena C. Oris- writing and revision editing of the research article, and Arrianne Michelle F. Fabro- initiated the conduct of the study and supervising the holistic aspect of the research article.

6.0 Funding

The study was made possible through the researchers' initiatives, particularly at their own expense in funding the study.

7.0 Conflict of Interests

The researchers don't have any conflict of interest to declare.

8.0 Acknowledgment

The researchers sincerely thank Almighty God for His unwavering guidance and support throughout this endeavor. We are deeply indebted to the countless individuals who contributed to the successful completion of this study.

9.0 References

- Bacani, A. (2022). The effectiveness of the Alternative Learning System in the Philippines: Challenges and opportunities. *Philippine Journal of Education*, 101(1), 45-60. <https://doi.org/10.1234/pje.v101i1.5678>
- Biddle, N., & Gordon, S. (2019). The impact of financial barriers on youth access to education and social participation. *Youth Studies Australia*, 38(1), 20-29. <https://doi.org/10.1002/9781119151334.ch3>
- Blumenthal, D. S., & Hodge, S. (2021). Engaging underrepresented youth: A model for community-based interventions. *Public Health Reports*, 136(2), 190-198. <https://doi.org/10.1177/0033354921999061>
- Bourdieu, P. (1986). The forms of capital. In J. G. Richardson (Ed.), *Handbook of theory and research for the sociology of education* (pp. 241-258). Greenwood Press.
- Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, 3(2), 77-101. <https://doi.org/10.1191/1478088706qp063oa>
- Ceballos, X. (2023, September 24). PSA: Nearly 20% of Filipino children not in school. *Manila Bulletin*. Retrieved from <https://tinyurl.com/2w7nd2kb>
- Drucker, P. F. (2019). *Management: Tasks, responsibilities, practices*. Harper & Row.
- Fletcher, A. J. (2017). Applying a case study approach to qualitative research. *International Journal of Social Research Methodology*, 20(2), 1-12. <https://doi.org/10.1080/13645579.2016.1140960>
- García-Carrión, R. (2019). The impact of social inclusion on youth identity development. *Journal of Youth Studies*, 22(4), 567-585. <https://doi.org/10.1080/13676261.2018.1554647>
- Greenhaus, J. H., & Allen, T. D. (2011). Work-family balance: A review and extension of the literature. *The Psychology of Work-Life Balance*, 3, 81-100. <https://doi.org/10.1002/9781118470653.ch5>
- Lofthouse, R. (2015). Book review - "learning in landscapes of practice: Boundaries, identity, and knowledgeability in practice-based learning." *International Journal of Clinical Legal Education*, 22(2), 230-233. <https://doi.org/10.19164/ijcle.v22i2.429>
- Li, Y., & Lamb, M. (2021). Social capital and youth unemployment: Exploring the connection. *Youth & Society*, 53(1), 1-22. <https://doi.org/10.1177/0044118X20966888>
- Putnam, R. D. (2020). The upswing: How America came together a century ago and how we can do it again. Retrieved from <https://tinyurl.com/v3xjcyss>
- Reyes, R. (2023). Barriers to education: A study on out-of-school youth in the Philippines. *International Journal of Educational Development*, 92, 102-110. <https://doi.org/10.1016/j.ijedudev.2023.102110>
- Roberts, R. E. (2022). The impact of youth unemployment on mental health: A systematic review. *Journal of Youth Studies*, 25(4), 532-550. <https://doi.org/10.1080/13676261.2021.1898934>
- Semertzaki, E. (2011). Components of a knowledge management system at a special library. *Special Libraries as Knowledge Management Centres*, 121-186. <https://doi.org/10.1016/b978-1-84334-613-5.50003-0>
- Sen, A. (1999). *Development as freedom*. Oxford University Press
- Smith, M. (2017). Social exclusion and the experience of marginalization. In J. G. Richardson (Ed.), *Handbook of theory and research for the sociology of education* (pp. 315-332). Greenwood Press.

Servant Leadership Practices, School Heads' Decision-Making Skills, and Teachers' Job Satisfaction

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Date received: September 9, 2024

Date revised: September 29, 2024

Date accepted: October 12, 2024

Originality: 89%

Grammarly Score: 99%

Similarity: 11%

Recommended citation:

Almazan, A.R., Quinco-Almazan, R.M. (2024). Servant leadership practices, school heads' decision-making skills, and teachers' job satisfaction. *Journal of Interdisciplinary Perspectives*, 2(11), 331-342.

<https://doi.org/10.69569/jip.2024.0488>

Abstract. This study investigated the servant leadership practices, school heads' decision-making skills, and job satisfaction of teachers in the schools' division of Zambales. The use of survey questionnaire was used to gather data, observing anonymity and informed consent. The study findings revealed that servant leadership was a highly evident practice of School Heads. The school heads and teachers strongly agreed that school heads possess decision-making skills and were very satisfied with their job. There was a significant difference in the servant leadership practices of school heads as to persuasive mapping as perceived by teachers when they are grouped according to the length of service; a significant difference in the assessment of the decision-making of school heads as to dimensions when they were grouped according to profile variables; the significant difference in the assessment of teachers on the decision-making skills of school heads as to self-efficacy when they are grouped according to highest educational attainment; significant difference in the job satisfaction of teachers in terms of belief in organizations' values and goals as to civil status; and, significant in terms of desire to maintain membership with the organization as to age. Moreover, there was a significant relationship between servant leadership practices and the decision-making skills of school heads. There was a significant relationship between the servant leadership practices of school heads as perceived by teachers and the job satisfaction of teachers. Based on the findings and the conclusions obtained, the researcher recommended that school heads imbibe more servant leadership practices and encourage them to use a decision-making style in their leadership to improve the job satisfaction of their teachers by becoming more collaborative and democratic.

Keywords: Servant leadership practices; Decision-making skills; Job satisfaction; Persuasive mapping; Self-efficacy; Philippines.

1.0 Introduction

In our evolving educational landscape, where the demand for talented individuals surges, the imperative to discern methods to augment fulfilling employees' needs emerges as pivotal for organizations' enduring success and efficacy (Nisar, 2018). The correlation between the leadership style adopted by school administrators and its influence on teachers' job satisfaction is vital for school performance. Research by Eyal and Roth (2019) emphasized the significance of an effective leadership approach employed by school heads in motivating and inspiring teachers to contribute effectively towards attaining school goals. The choice of leadership style directly impacts teacher job satisfaction, thereby influencing educational outcomes. This assertion is supported by Ibrahim

and Wahab (2020), who underscored the critical role played by school head leadership style in conjunction with teachers' job satisfaction as determining factors for educational success.

Acknowledging the role of principals' organizational and leadership competencies is crucial in assessing the effectiveness of school management (Davis et al., 2018). Nordin and Adnan (2017) emphasized the significance of diverse leadership philosophies adopted by principals, particularly servant leadership, in shaping teacher job satisfaction. This suggests that school leaders play a central role in cultivating an environment conducive to teacher satisfaction and overall school success. Effective leadership techniques, characterized by adept decision-making, fostering positive work environments, promoting teamwork, instilling a shared sense of purpose, and enhancing teacher job satisfaction, are significant for achieving optimal educational outcomes (Leithwood & Sun, 2020). Thus, it is imperative for school leaders to not only recognize but also actively implement such leadership strategies to foster an environment conducive to teacher well-being and collective achievement within the school community.

Moreover, Davis (2018) underscored the significance of intentional decision-making within the workplace. Servant leadership, characterized by its emphasis on employee development and recognition of the value of others, offers a distinctive perspective for leaders. However, it is noteworthy that servant leadership can also carry a negative connotation when applied in the context of school leadership. Bates' (2022) study presented contrasting findings regarding servant leadership, highlighting its demand for profound authenticity and alignment with personal values. This aspect emphasizes the complexity of servant leadership and underscores the importance of genuine alignment with personal values for effective implementation within educational contexts.

Furthermore, Baldanza's (2021) research conducted in the division of Cabuyao highlights the significant influence of decision-making training on enhancing individuals' proactivity in decision-making processes. Similarly, Villafranca (2022) concluded the advantages of consistent constituent involvement in decision-making for school administrators. Moreover, Capalay (2021) emphasized that participatory decision-making can yield profound effects on the moral compass, knowledge base, and attitudes, all of which play critical roles in determining leadership effectiveness. Hence, the study assessed the servant leadership practices, school heads' decision-making skills, and the teacher's job satisfaction in the public elementary schools in the division of Zambales.

2.0 Methodology

2.1 Research Design

This research utilized a researcher-made descriptive survey method with the questionnaire as the main source of gathering the data. In this study, a descriptive technique was used, in which the facts were given in a descriptive manner that focused on servant leadership practices indicators (altruistic calling, emotional healing, wisdom, persuasive mapping, and organizational stewardship), school heads' decision-making skills indicators (self-efficacy, administration knowledge, management information system, emotional quotient, and personality) and teachers' job satisfaction factors (work environment, job scope, compensation/awards/rewards, working condition, leadership and human relations, belief to organization's values and goals, desire to maintain membership with the organization, and willingness to exert effort on behalf of the organization) in public elementary schools in the division of Zambales.

2.2 Research Locale

This study was conducted in the thirteen (13) different districts in the whole division of Zambales, including Subic, Castillejos, San Marcelino, San Antonio, San Felipe, Cabangan, Botolan North, Botolan South, Iba, Paluig, Masinloc, Candelaria, Sta. Cruz North, and Sta. Cruz South.

2.3 Research Participants

According to Muchaendepi et al. (2019), a sampling frame is a list of cases from which a sample can be chosen and, as indicated by a representative sample, is one which is at least a 4% margin of error from the population, in this way, the decision of total population of one hundred fifty (150) school heads and sample size population of four hundred eight-nine (489) teachers was considered as a representative which was determined by utilization of Slovin's formula.

2.4 Research Instrument

The first part deals with the profile of the school head-respondents who responded (sex, age, civil status, designation, years in service, highest educational attainment, and number of teachers handled). The second part deals with the profile of the teacher-respondents who responded (sex, age, civil status, designation, years in service, and highest educational attainment). The third part includes servant leadership practices. The indicators are made up of five different components. Respondents were asked to rate on a scale ranging from 4 (Highly Evident) to 1 (Fairly Evident). The fourth includes the school heads' decision-making skills. The indicators are made up of five different components. Respondents were asked to rate on a scale ranging from 4 (Strongly Agree) to 1 (Disagree). The fifth is the assessment of the Job Satisfaction Factors. Teachers answered on a scale of 4 (Very Satisfied) to 1 (Very Dissatisfied). Moreover, the research instrument in its first draft was presented to the panel of oral examiners for validity. Their ideas, suggestions, and corrections were sought regarding the extent of clarity, consistency, and suitability of the indicators. The amendments and revisions were carried out in finalizing the research instrument.

2.5 Data Gathering Procedure

After finalizing the data gathering, the researchers sought permission and approval from the Schools Division Superintendent and Public Schools District Supervisors of the various districts within the Division of Zambales. This was accomplished through formal letters bearing the signatures of the Researcher, Research Adviser, and Dean of Graduate School. The survey questionnaire was administered using both online and in-person methods. The researcher employed Google Forms for the online distribution, providing a secure link to the questionnaire. This link was exclusively shared with potential respondents via email or messenger after receiving signed consent letters from the respective school heads. Notably, stringent measures were implemented to uphold the confidentiality of respondents' submissions, with data being automatically stored within the researcher's secure data system upon completing the online survey. Furthermore, in-person data collection utilized a paper-pencil questionnaire approach. Upon securing consent through signed letters from school authorities, the researcher personally distributed the questionnaires to the designated respondents.

2.6 Ethical Considerations

The participants were given an informed consent message through the written document and were asked to volunteer for the study, understanding all the rights of withdrawal and refusal. There will be no data to be sought that could exhibit participants' direct identity, such as names, telephone numbers, addresses, areas, or national identification numbers. The researcher undertook the principles of privacy, anonymity, and confidentiality to ensure the non-disclosure of the identity and the data gathered to those participating in the study.

3.0 Results and Discussion

3.1 Profile of Respondents

It can be noted in Table 1 that most of the school head respondents, eighty-one (81) or 54.00%, are female, while sixty-nine (69), or 46.00%, are male. Female school heads outnumbered male school heads, as observed in this study. This finding is similar to the study of Molino (2018), in which the school administrators were female. The result was consistent with the National Center for Education Statistics (2011) data that about 50% of public and 53% of private school administrators were female. However, this finding challenged Seed's (2016) study, which found that most principals at all three levels of public schooling (elementary, secondary, and tertiary) are males.

Table 1. Frequency and percentage distribution of the school head respondents in terms of sex

Profile Variables		Frequency (f)	Percentage (%)
Sex	Male	69	46
	Female	81	54
Total		150	100

It can be noted in Table 2 that the majority of the school head respondents fifty-two (52) or 34.70% belong to the age group of 56-60 years old. This is followed by respondents who belong to the age group of 51-55 years old, with forty-two (42), or 28.00%; forty-one (41), or 27.30% belonging to the age group of 46-50 years old; nine (9) or 6.00% belong to the age group of 61-65 years old; five (5) or 3.30% belong to the age group of 41-45 years old; while one (1) or 0.70% belongs to the age group of 36-40 years old, had the lowest recorded number of response. The computed mean age of school head respondents was 53.53 or 54 years old. This can be supported by the study of

Jonge (2017) on the demographic perspective of public elementary schools (PES) in the province of Sorsogon, which revealed that school heads in the public elementary schools were beyond their middle age. The data depicted a generation of school heads who were either in their middle age or approaching the optional to mandatory retirement age, which implies an aging school management workforce in the PES in Sorsogon. Moreover, the result was also aligned with Marks (2017), who stated that most school heads were to be old in their position.

Table 2. Frequency and percentage distribution of the school head respondents in terms of age

Profile Variables		Frequency (f)	Percentage (%)
Age (Years)	61 – 65	9	6.00
	56 – 60	52	34.7
	51 – 55	42	28.0
	46 – 50	41	27.3
	41 – 45	5	3.30
	36 – 40	1	0.70
	31 – 35	0	0.00
	26 – 30	0	0.00
	21 – 25	0	0.00
Total		150	100

Table 3 notes that in terms of civil status, the majority of the school head respondents are married, with eighty-one (81) or 54.00% married; sixty-six (66) or 44.00% single, while only three (3) or 2.00% are widows/er. The results coincided with the findings of Faraclas (2018), who noted that most of the school head respondents were also married.

Table 3. Frequency and percentage distribution of the school head respondents in terms of civil status

Profile Variables		Frequency (f)	Percentage (%)
Civil Status	Single	66	44.0
	Married	81	54.0
	Widow/er	3	2.00
	Separated	0	0.00
Total		150	100

In Table 4, the majority of the school head respondents with thirty (30), or 20.00% School Principal III; twenty-four (24) or 16.00% are Head Teacher III and Head Teacher II, respectively; twenty-two (22) or 14.70% are School Principal IV; twenty (20) or 13.30% are School Principal I; nineteen (19) or 12.70% are School Principal II; while eleven (11) or 7.30% are Head Teacher I. Likewise, the study parallels the study of Manullang (2014) in the Division of Palawan, Philippines, wherein most of the school heads were Principal III, with 112 out of 320 or 31%.

Table 4. Frequency and percentage distribution of the school head respondents in terms of position

Profile Variables		Frequency (f)	Percentage (%)
Position	School Principal IV	22	14.7
	School Principal III	30	20.0
	School Principal II	19	12.7
	School Principal I	20	13.3
	Head Teacher III	24	16.0
	Head Teacher II	24	16.0
	Head Teacher I	11	7.3
Total		150	100

In Table 5, the majority of the school head respondents fifty-four (54), or 36.00% are 16-20 years of service as administrators; fifty-one (51), or 34.00% 6-10 years of service as administrators; fourteen (14) or 9.30% are 11-15 years of service as administrators; twelve (12) or 8.00% are 26-30 years of service as administrators; ten (10) or 6.70% are 1-5 years of service as administrators; six (6) or 4.00% are 21-25 years of service as administrators; two (2) or 1.30% are 31-35 years of service as administrators; while one (1) or 0.70% are 36-40 years of service as an administrator. The computed length of service as administrators of the school head respondents was 14.47 or 14 years. This implies that the respondents rendered enough years in service coupled with experience. This finding contradicts the study of Magtabog (2016) who revealed that more school heads are still at the novice level in their experience as school heads.

Table 5. Frequency and percentage distribution of the school head respondents in terms of length in service

Profile Variables		Frequency (f)	Percentage (%)
Length of Service as Administrator (Years)	36 – 40	1	0.70
	31 – 35	2	1.30
	26 – 30	12	8.00
	21 – 25	6	4.00
	16 – 20	54	36.0
	11 – 15	14	9.30
	6 – 10	51	34.0
	1 – 5	10	6.70
Total		150	100

In terms of highest educational attainment, it is revealed in Table 6 that the majority of the school head-respondents forty-three (43), or 28.70% are Master's degree holders; thirty-nine (39) or 26.00% earned their doctoral units; thirty-four (34) or 22.70% are Master's degree unit earners; thirty-three (33) or 22.00% are holders of Doctorate degrees; while only one (1) or 0.70% is a college degree holder. This finding is similar to the study of Morillos (2020), in which the school administrator respondents pursued a higher academic degree and understood the role and functions of being school administrators in the success and development of the school.

Table 6. Frequency and percentage distribution of the school head respondents in terms of length of service

Profile Variables		Frequency (f)	Percentage (%)
Highest Educational Attainment	Doctorate Degree (EdD/PhD)	33	22.0
	With Doctorate Units	39	26.0
	Master's Degree	43	28.7
	With master's degree Units	34	22.7
	College Graduate	1	0.70
Total		150	100

It can be noted in Table 7 that the majority of the school head respondents are handling 21-30 teachers, with fifty (50) or 33.30% of the responses. This is followed by responses of school heads who are handling 1-10 teachers, with twenty-seven (27) or 18.00%; twenty-four (24) or 16.00% are handling 11-20 teachers; twenty-three (23) or 15.30% are handling 31-40 teachers; twenty-two (22) or 14.70% are handling 41-50 teachers; while only four (4) or 2.70% are handling 51-60 teachers. The computed mean no. of teachers handled by school head-respondents was 25.57 or 26 teachers. This result was aligned with the study of Panganiban (2018) in Region IVA (CALABARZON), where most of their school heads are handling medium schools with 20 to 30 teachers.

Table 7. Frequency and percentage distribution of the school head respondents in terms of the number of teachers handled

Profile Variables		Frequency (f)	Percentage (%)
No. of Teachers Handled	51 – 60	4	2.70
	41 – 50	22	14.7
	31 – 40	23	15.3
	21 – 30	50	33.3
	11 – 20	24	16.0
	1 – 10	27	18.0
	Total	150	100

3.2 Servant Leadership Practices of School Heads

It can be noted in Table 8 that the school head-respondents assessed all indicators of servant leadership practices to be highly evident in terms of wisdom, as manifested with the highest overall weighted mean value of 3.97 (rank 1) and emotional healing, had the lowest overall weighted mean value of 3.45 (rank 5). Overall, both the school heads and teacher-respondents assessed that the school heads highly demonstrate servant leadership practices, manifested in the computed grand mean values of .3.74 and 3.53, respectively. Similarly, the study of Herndon (2017) explained the influence of principal servant leadership on school culture and student achievement, the influence of school culture on student achievement, and the influence of the combination of servant leadership and school culture on student achievement. Moreover, wisdom helps leaders plan amidst change and make sound judgments. It fosters critical reflection, truth discernment, and empathy, making us resilient. Educators must impart wisdom, grounded priorities, integrity, and stability, all rooted in empathy. Wise leaders lead with both their heads and hearts, becoming more understanding of human struggles over time (Ali et al., 2021).

Table 8. Summary of servant leadership practices of school heads as assessed by the two (2) groups of respondents

Dimensions		School Head-respondents			Teacher-respondents		
		OWM	DE	Rank	OWM	DE	Rank
1	Altruistic Calling	3.62	HE	5	3.53	HE	4
2	Emotional Healing	3.69	HE	4	3.45	HE	5
3	Wisdom	3.97	HE	1	3.55	HE	2
4	Persuasive Mapping	3.72	HE	2	3.54	HE	3
5	Organizational Stewardship	3.70	HE	3	3.60	HE	1
Grand Mean		3.74	HE		3.53	HE	

3.3 Decision-Making Skills of School Heads

It can be noted in Table 9 that the school head-respondents strongly agreed in all indicators of their decision-making skills in terms of their personality, as manifested with the highest overall weighted mean value of 3.76 (rank 1) and management information system, had the lowest overall weighted mean value of 3.50 (rank 5). Overall, the school head respondents strongly agreed that they possess decision-making skills, manifested in the computed grand mean value of 3.68. Improved decision-making skills will increase the efficiency and effectiveness of administration by the heads of institutions. For an effective decision-making process, the head of an institution must be in a stable mind to weigh both positive and negative options. He should determine which option will/would suit that situation (Johnson et al., 2016).

Table 9. Summary of the decision-making skills of school heads as assessed by school heads themselves

Dimensions	Overall Weighted Mean	Descriptive Equivalent	Rank
1 Self-efficacy	3.73	Strongly Agree	2
2 Administration Knowledge	3.71	Strongly Agree	3.5
3 Management Information System	3.50	Strongly Agree	5
4 Emotional Quotient	3.71	Strongly Agree	3.5
5 Personality	3.76	Strongly Agree	1
Grand Mean	3.68	Strongly Agree	

It can be noted in Table 10 that the teacher-respondents strongly agreed that their school heads possess all indicators of decision-making skills in terms of their administrative knowledge and personality, as manifested with the highest overall weighted mean value of 3.59 (tied at rank 1.5) and emotional quotient, had the lowest overall weighted mean value of 3.50 (rank 5). Overall, the teacher-respondents strongly agreed that their school head respondents demonstrate decision-making skills, manifested in the computed grand mean value of 3.55. Shrinberg & Shrinberg (2018) explained that school heads make decisions by identifying and gathering information, considering solutions, selecting the best option, implementing it, and evaluating the outcome. Likewise, Okumbe (2018) emphasized that decision-making is a complex process that involves identifying a stimulus, gathering data, creating alternatives, making a choice, implementing it, and evaluating the results.

Table 10. Summary of the decision-making skills of school heads as assessed by teachers

Dimensions	Overall Weighted Mean	Descriptive Equivalent	Rank
1 Self-efficacy	3.57	Strongly Agree	3
2 Administration Knowledge	3.59	Strongly Agree	1.5
3 Management Information System	3.52	Strongly Agree	4
4 Emotional Quotient	3.50	Strongly Agree	5
5 Personality	3.59	Strongly Agree	1.5
Grand Mean	3.55	Strongly Agree	

3.4 Job Satisfaction of Teachers

It can be noted in Table 11 that the teacher-respondents were very satisfied in all indicators of satisfaction in their job in terms of the working environment, belief in the organization's values and goals, and their willingness to exert effort on behalf of the organization, as manifested with the highest overall weighted mean value of 3.51 (tied at rank 2) and compensation/awards/rewards, had the lowest overall weighted mean value of 3.26 (rank 8). Overall, the teacher-respondents were very satisfied with their job, manifested in the computed grand mean value of 3.44. In the modern school system, the level of job satisfaction is the one thing that helps teachers decide whether they want to look for another job or stick around. Some factors affecting job satisfaction are relations at the

workplace, career growth opportunities, and autonomy, among others (Davis, 2021). Mehta (2022) coined that work plays a prominent role in life. It occupies more time than any other activity, providing the economic basis for our lifestyle.

Table 11. Summary of the perceived job satisfaction of teachers

Dimensions		Overall Weighted Mean	Descriptive Equivalent	Rank
1	Work Environment	3.51	Very Satisfied	2
2	Job Scope	3.36	Very Satisfied	7
3	Compensation/ Awards/Rewards	3.26	Very Satisfied	8
4	Working Condition	3.37	Very Satisfied	6
5	Leadership and Human Relations	3.48	Very Satisfied	5
6	Belief in Organizations' Values and Goals	3.51	Very Satisfied	2
7	Desire to Maintain Membership with the Organization	3.49	Very Satisfied	4
8	Willingness to Exert Effort on Behalf of the Organization	3.51	Very Satisfied	2
Grand Mean		3.44	Very Satisfied	

3.5 Difference in the Servant Leadership Practices of School Heads as to Persuasive Mapping

Based on Table 12, the computed P-value for sex (0.865), age (0.344), civil status (0.369), position (0.144), and highest educational attainment (0.095) were greater than ($>$) 0.05 Alpha Level of Significance, therefore the Null Hypothesis is accepted. Hence, there is no significant difference in the servant leadership practices of school heads as to persuasive mapping as perceived by teachers when they are grouped according to sex, age, civil status, position, and highest educational attainment. On the other hand, the P-value for the length of service (0.046) was less than ($<$) 0.05 Alpha Level of Significance. Therefore, the Null Hypothesis is rejected, and there is a significant difference in the servant leadership practices of school heads as to persuasive mapping as perceived by teachers when grouped according to the length of service. Based on the study of Russel (2017) on the values of servant leadership, longer-serving teachers have established stronger communication channels with their principals, allowing for a more accurate understanding of their school heads' persuasive mapping. In contrast, newer teachers were still forming these connections.

Table 12. ANOVA results for the differences in the servant leadership practices of school heads

Sources of Variations		SS	Df	MS	F	Sig.	Decision/ Interpretation
Sex	Between Groups	0.007	1	0.007	0.029	0.865	Do Not Reject Ho (Not Significant)
	Within Groups	125.3	487	0.257			
	Total	125.3	488				
Age	Between Groups	2.309	8	0.289	1.126	0.344	Do Not Reject Ho (Not Significant)
	Within Groups	123.0	480	0.256			
	Total	125.3	488				
Civil Status	Between Groups	0.811	3	0.270	1.052	0.369	Do Not Reject Ho (Not Significant)
	Within Groups	124.5	485	0.257			
	Total	125.3	488				
Position	Between Groups	1.760	4	0.440	1.723	0.144	Do Not Reject Ho (Not Significant)
	Within Groups	123.6	484	0.255			
	Total	125.3	488				
Length of Service	Between Groups	3.653	7	0.522	2.063	0.046	Ho is Rejected (Significant)
	Within Groups	121.7	481	0.253			
	Total	125.3	488				
Highest Educational Attainment	Between Groups	2.029	4	0.507	1.991	0.095	Do Not Reject Ho (Not Significant)
	Within Groups	123.3	484	0.255			
	Total	125.3	488				

3.6 Difference in the Decision-Making Skills of School Heads as Assessed by Teachers

Based on Table 13, the computed P-value for sex (0.645), age (0.622), civil status (0.460), position (0.283), and length of service (0.081) were greater than ($>$) 0.05 Alpha Level of Significance, therefore the Null Hypothesis is accepted. Hence, there is no significant difference in the assessment of teachers on the decision-making skills of school heads as to self-efficacy when they are grouped according to sex, age, civil status, position, and length of service. On the other hand, the P-value for the highest educational attainment (0.047) was less than ($<$) 0.05 Alpha Level of

Significance. Therefore, the Null Hypothesis is rejected, and there is a significant difference in the assessment of teachers on the decision-making skills of school heads as to self-efficacy when they are grouped according to highest educational attainment.

Table 13. ANOVA results for the differences in the assessment of teachers on decision-making skills of school heads

Sources of Variations		SS	Df	MS	F	Sig.	Decision/ Interpretation
Sex	Between Groups	0.052	1	0.052	0.212	0.645	Do Not Reject Ho (Not Significant)
	Within Groups	118.9	487	0.244			
	Total	119.0	488				
Age	Between Groups	1.524	8	0.191	0.778	0.622	Do Not Reject Ho (Not Significant)
	Within Groups	117.5	480	0.245			
	Total	119.0	488				
Civil Status	Between Groups	0.633	3	0.211	0.864	0.460	Do Not Reject Ho (Not Significant)
	Within Groups	118.4	485	0.244			
	Total	119.0	488				
Position	Between Groups	1.231	4	0.308	1.264	0.283	Do Not Reject Ho (Not Significant)
	Within Groups	117.8	484	0.243			
	Total	119.0	488				
Length of Service	Between Groups	3.072	7	0.439	1.82	0.081	Do Not Reject Ho (Not Significant)
	Within Groups	115.9	481	0.241			
	Total	119.0	488				
Highest Educational Attainment	Between Groups	2.343	4	0.586	2.429	0.047	Ho is Rejected (Significant)
	Within Groups	116.7	484	0.241			
	Total	119.0	488				

Based on the study of Dayagbil et al. (2021), teachers with higher educational attainment have undergone additional training and professional development, which influenced their perceptions of the effective leadership qualities of their principals and department heads. Furthermore, teachers with similar educational backgrounds as their principals found it easier to communicate and relate to them, which influenced their perceptions of self-efficacy (Ampofo et al., 2019). Parallel to the findings, the study of Amani, Myeya, and Mhewa (2022) affirmed that quality of supervision is mentioned to be fundamental for quality postgraduate studies. This is why supervisors enroll in post-graduate studies to grow their supervision skills.

3.7 Job Satisfaction of Teachers

Based on Table 14, the computed P-values for sex (0.430), age (0.297), position (0.460), length of service (0.470), and highest educational attainment (0.582) were greater than ($>$) 0.05 Alpha Level of Significance; therefore, the Null Hypothesis is accepted. Hence, there is no significant difference in teachers' job satisfaction in terms of belief in organizations' values and goals when grouped according to sex, age, position, length of service, and highest educational attainment.

Table 14. ANOVA results for the differences in the job satisfaction of teachers in terms of belief in organizations' values and goals

Sources of Variations		SS	Df	MS	F	Sig.	Decision/ Interpretation
Sex	Between Groups	0.146	1	0.146	0.624	0.430	Do Not Reject Ho (Not Significant)
	Within Groups	113.9	487	0.234			
	Total	114.0	488				
Age	Between Groups	2.237	8	0.28	1.2	0.297	Do Not Reject Ho (Not Significant)
	Within Groups	111.8	480	0.233			
	Total	114.0	488				
Civil Status	Between Groups	2.142	3	0.714	3.094	0.027	Ho is Rejected (Significant)
	Within Groups	111.9	485	0.231			
	Total	114.0	488				
Position	Between Groups	0.848	4	0.212	0.906	0.460	Do Not Reject Ho (Not Significant)
	Within Groups	113.2	484	0.234			
	Total	114.0	488				
Length of Service	Between Groups	1.550	7	0.221	0.947	0.470	Do Not Reject Ho (Not Significant)
	Within Groups	112.5	481	0.234			
	Total	114.0	488				
Highest Educational Attainment	Between Groups	0.670	4	0.167	0.714	0.582	Do Not Reject Ho (Not Significant)
	Within Groups	113.3	484	0.234			
	Total	114.0	488				

On the other hand, the P-value for civil status (0.027) was less than ($<$) 0.05 Alpha Level of Significance; therefore, the Null Hypothesis is rejected and that there is a significant difference in the job satisfaction of teachers in terms of belief in organizations' values and goals when they are grouped according to civil status. Married teachers have different priorities and responsibilities compared to single or divorced teachers. Their commitment to family obligations and personal life affected how they perceived the alignment of organizational values and goals with their priorities (Lawrence et al., 2019). In addition, Krog and Govender (2015) posited that married teachers prioritized organizations that offer policies and practices conducive to maintaining a healthy balance between work and personal life. On the other hand, one of the findings of Gungor (2016) in his study on the Ethical Leadership Behaviors on Teachers Satisfaction that separated teachers felt a sense of isolation if they were part of a dual-income household and relied heavily on their partner for support and their heads sometimes unsupported, misunderstood, and unaware of their struggles.

Based on Table 15, the computed P-value for sex (0.197), civil status (0.106), position (0.156), length of service (0.504), and highest educational attainment (0.110) were greater than ($>$) 0.05 Alpha Level of Significance, therefore the Null Hypothesis is accepted. Hence, there is no significant difference in teachers' job satisfaction regarding their desire to maintain membership with the organization when grouped according to sex, civil status, position, length of service, and highest educational attainment. On the other hand, the P-value for age (0.039) was less than ($<$) 0.05 Alpha Level of Significance. Therefore, the Null Hypothesis is rejected, and there is a significant difference in teachers' job satisfaction in terms of their desire to maintain membership with the organization when they are grouped according to age.

Table 15. ANOVA results for the differences in the job satisfaction of teachers in terms of desire to maintain membership with the organization

Sources of Variations		SS	Df	MS	F	Sig.	Decision/ Interpretation
Sex	Between Groups	0.365	1	0.365	1.667	0.197	Do Not Reject Ho (Not Significant)
	Within Groups	106.7	487	0.219			
	Total	107.0	488				
Age	Between Groups	3.546	8	0.443	2.055	0.039	Ho is Rejected (Significant)
	Within Groups	103.5	480	0.216			
	Total	107.0	488				
Civil Status	Between Groups	1.343	3	0.448	2.053	0.106	Do Not Reject Ho (Not Significant)
	Within Groups	105.7	485	0.218			
	Total	107.0	488				
Position	Between Groups	1.456	4	0.364	1.668	0.156	Do Not Reject Ho (Not Significant)
	Within Groups	105.6	484	0.218			
	Total	107.0	488				
Length of Service	Between Groups	1.388	7	0.198	0.902	0.504	Do Not Reject Ho (Not Significant)
	Within Groups	105.6	481	0.22			
	Total	107.0	488				
Highest Educational Attainment	Between Groups	1.653	4	0.413	1.898	0.110	Do Not Reject Ho (Not Significant)
	Within Groups	105.4	484	0.218			
	Total	107.0	488				

The U.S. Department of Education (2015) investigated the generational differences of teachers. It was found that older teachers have a stronger loyalty to their organization based on their longer tenure and are inclined to maintain membership out of a sense of commitment or obligation. In contrast, younger teachers were more open to exploring opportunities outside of the organization to advance their careers and pursue new challenges in an educational context

3.8 Relationship Between Servant Leadership Practices and the Decision-Making Skills of School Heads

Revealed in Table 16 that the computed Pearson r value of 0.921 denotes a very high positive correlation. The computed P-value 0.000 is less than ($<$) 0.05 Alpha level of significance; therefore, the null hypothesis was rejected. Hence, there was a significant relationship between servant leadership practices and the decision-making skills of school heads. The findings signify that as the implementation of servant leadership practices among school heads increases, there is a high tendency for their decision-making skills to increase, and vice versa.

Table 16. Correlation result for the relationship between servant leadership practices and the decision-making skills of school heads

Sources of Correlations		Servant Leadership Practices	Decision-Making Skills	Decision/ Interpretation
Servant Leadership Practices	Pearson Correlation	1	0.921**	
	Sig. (2-tailed)		0	
	N	639	639	Very High Positive Correlation
Decision-Making Skills	Pearson Correlation	0.921**	1	(Ho is Rejected)
	Sig. (2-tailed)	0		
	N	639	639	

** . Correlation is significant at the 0.01 level (2-tailed).

From a servant-leadership standpoint, the decision-making process takes on a weightier significance as servant-leadership dedicates itself to specific attitudes on how employees should be treated. Shriberg and Shriberg (2018) concluded that the strong positive correlation between servant leadership practices and the decision-making skills of the school heads stems from the emphasis on empowerment, trust, transparency, listening, adaptability, and ethical considerations. Hence, these qualities contribute to a more effective and inclusive decision-making process that ultimately benefits the school community. Consequently, Ali, Tafera, and Yayeh (2021) affirmed that servant leadership is leadership thinking characterized by democratic, transformational, and transformative features with ears to listen to fervently and deep-hearted desires to serve others first as the basis of decision-making.

3.9 Relationship Between Servant Leadership Practices of School Heads and the Job Satisfaction of Teachers

Revealed in Table 17 that the computed Pearson r value of 0.749 denotes a high positive correlation. The computed P-value 0.000 is less than ($<$) 0.05 Alpha level of significance therefore the null hypothesis was rejected. Hence, there was a significant relationship between the servant leadership practices of school heads as perceived by teachers and the job satisfaction of teachers.

Table 17. Correlation result for the relationship between servant leadership practices of school heads and job satisfaction of teachers

Sources of Correlations		Servant Leadership Practices	Job Satisfaction	Decision/ Interpretation
Servant Leadership Practices	Pearson Correlation	1	0.749**	
	Sig. (2-tailed)		0	
	N	489	489	High Positive Correlation
Job Satisfaction	Pearson Correlation	0.749**	1	(Ho is Rejected)
	Sig. (2-tailed)	0		
	N	489	489	

** . Correlation is significant at the 0.01 level (2-tailed).

The findings signify that as the implementation of servant leadership practices among school heads increases, there is a high tendency for teachers' job satisfaction also to increase, and vice versa. Servant leadership is associated with high-quality social exchange relationships, which affects subordinates' trust in the leader and increases job satisfaction. Servant leadership styles significantly influence an employee's daily satisfaction with their role, which leads to success through trust, respect, and a shared vision. The finding is parallel to the study of Olson (2020), which found that servant leadership practices and job satisfaction of teachers created a very high positive correlation. Based on his studies, principals (servant leaders) cultivated a shared vision and a sense of purpose within the school community. Servant leaders communicated the school's mission, values, and goals effectively and involved teachers in shaping and achieving these objectives. When teachers feel connected to the school's mission and aligned with its values, they experience higher job satisfaction. Kowalski (2020) asserts that school leadership has become a high-wire act that only the most skilled can perform successfully. As mentioned by researchers, performance can be formed from motivation, development, dedication, quality, efficiency, innovation, empowerment, and recognition. Performance is the result of employees' loyalty and always results in advocacy. Many Western researchers have begun work on the servant leadership model, business performance, and employees' devotion connection. Servant behavior contributes to positive association with workers, and this upgrades their dedication to institute performance (Hashim et al., 2019).

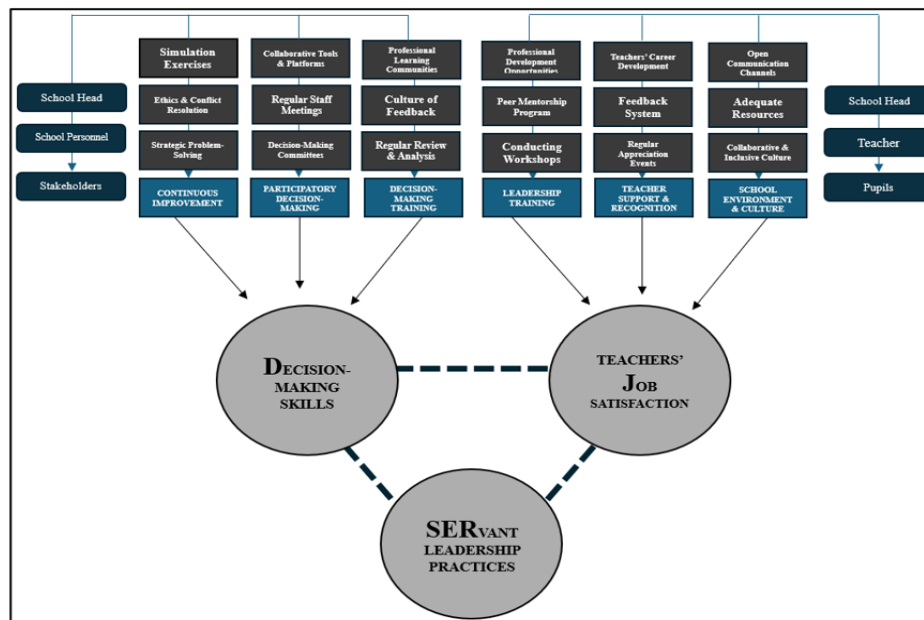


Figure 1. Developed SERDJ Conceptual Model

The developed SERDJ conceptual model showing the interrelation of servant leadership practices and decision-making skills of school heads toward the job satisfaction of teachers is illustrated in Figure 1. The model is derived mainly from the three (3) underlying variables used in this study: SERvant leadership, Decision-making, and Job satisfaction. It is anchored in the Structural Equation Modelling (SEM) presented by (Muthen & Muthen, 2016) which analyzes the paths and relationships between variables. The SERDJ model validates the findings of the previous studies (Mayer 2019; Asag-gau & Van Direndonck, 2019) which revealed that servant leadership helps to fulfill the work satisfaction needs of employees and followers in the form of empowered decision-making skills. All these studies support the basic principle of servant leadership that will raise the well-being and confidence of the employees. Furthermore, the findings of this study reveal that when teachers are encouraged to make their own decisions by showing trust in their capabilities then the ultimate result is an upsurge in their level of job satisfaction (Laub, 2015). These results provide further validation for prior research studies which confirmed that teachers' job satisfaction is associated with their involvement in the decision-making process. Moreover, the results of the study are in tandem with the studies of Sergiovanni (2018), Spears (2020), and Ma & MacMillan (2019), which investigated that teachers' job satisfaction is influenced by conducive school climate for working and administrative support provided to teachers, respect given to teachers from school heads, and open communication between teachers and school heads.

4.0 Conclusion

School heads may imbibe more servant leadership practices in their school administration to enhance job satisfaction among teachers. School heads are encouraged to use decision-making styles in their leadership that would improve the job satisfaction of their teachers by becoming more collaborative and more democratic. School heads may also consider developing strategies to deal with the needs of those teachers who were less satisfied in their jobs. Proactive attention to this demonstrates preparedness on the side of school administrators to address teachers and thereby reduce ineffective among teachers. Moreover, the Office Performance Commitment Review Form (OPCRF) which is used by school heads may be disseminated to the teachers so that they will have an awareness of how school heads are rated and to show transparency in the discussion of work requirements, KRAs, and objectives, and how these relate to the overarching departmental goals. Further, School heads may also establish school-based recognition programs that are aligned with the Division-based recognition program aimed at recognizing outstanding performance for the teachers to keep them motivated in their work.

5.0 Contributions of Authors

Both authors contributed equally to the study. The first author developed the research proposal and performed the statistical analysis, while the second author interpreted the data and formulated the conclusions and recommendations. Together, they collaboratively revised the final manuscript, incorporating the feedback from the panelists

6.0 Funding

This study was conducted with financial support from other agencies and/or organizations.

7.0 Conflict of Interests

The authors declare no conflicts of interest about the publication of this paper.

8.0 Acknowledgment

The researchers would like to thank their adviser, dean, and panelists in the graduate school for their corrections and assistance which greatly improved the contents of the study; Sir Jessie D. Ferrer, CESO V, the Schools Division Superintendent, for approving the request for the conduct of the study to the public schools in the division of Zambales; Public Schools District Supervisors in the division of Zambales, for their assistance during the administration of the research instrument; The school heads and teachers in the division of Zambales, for their valuable contribution as respondents of the present study; And foremost, to Almighty God for bestowing the researchers the love, wisdom and strength which kept him cherish and value this undertaking.

9.0 References

- Ali, E., Tafera, M., & Yayeh, M. (2021). Servant leadership practices among secondary schools teachers of East Darfur state Eldaien locality. Sudan, 11(3), 20-32. <https://doi.org/10.30653/001.202261.168>
- Amani, J., Myeya, H., & Mhewa, M. (2022). Understanding the Motives for Pursuing Postgraduate Studies and Causes of Late Completion: Supervisors and Supervisees' Experiences. Sage Open, 12(3). <https://doi.org/10.1177/21582440221109586>
- Ampofo, S., Onyango, G., & Ongola, M. (2019). Influence of School Heads' Direct Supervision on Teacher Role Performance in Public Senior High Schools, Central Region, Ghana. IAFOR Journal of Education, 7(2), 9-26. <https://files.eric.ed.gov/fulltext/EJ1236226.pdf>
- Baldanza, S. (2021). How servant leadership influences organizational citizenship behavior: The roles of lmx, empowerment, and proactive personality. Journal of Business Ethics, 145(1), 49-62. <https://doi.org/10.1007/s10551-015-2827-6>
- Capalay, D. J. (2018). Examination of the relationship between servant leadership and agency problems: gender matters. Leadership and Organization Development Journal, 39(2), 170-185. <https://doi.org/10.1108/LODJ-01-2016-0020>
- Davis, P. E. (2021). Job satisfaction: Application, assessment, cause and consequence. Thousand Oaks, CA: Sage
- Davis, V., Wilson, K.A., Price, L. & Tesfaw, S. (2018). Relation of Principal Instructional Leadership, School Climate, Teacher Job Performance and Student Achievement. Journal of Educational Administration, 60(2), 148-166. <https://doi.org/10.1108/JEA-01-2018-0010>
- Dayagbil, F. T., Palompon, D. R., Garcia, L. L., & Olvido, M. M. J. (2021). Teaching and learning continuity amid and beyond the pandemic. Frontiers in Education, 6, 678692. <https://doi.org/10.3389/educ.2021.678692>
- Hasibuan, S. (2022). The effect of organizational culture, principal leadership and motivation on teacher performance in madrasah. AL-TANZIM: Jurnal Manajemen Pendidikan Islam, 6(1), 41-53. <https://doi.org/10.33650/al-tanzim.v6i1.3228>
- Faraclas, K. L. (2018). A professional development training model for improving co-teaching performance. International Journal of Special Education, 33(3), 524-540. <https://eric.ed.gov/?id=EJ1196707>
- Ford, L., Ozlem, G., Harrison, J., Coehoorn, C. (2020). Effects of Principal's Gender, Leadership, and Teacher's Certification Type on Teacher Self-Efficacy. Journal of Educational Leadership and Policy Studies, 4(1). <https://eric.ed.gov/?id=EJ1282714>
- Gungor, S.K. (2016). The prediction power of servant and ethical leadership behaviors of administrators on teachers job satisfaction. Universal Journal of Educational Research, 4(5), 1180-1188. <https://doi.org/10.13189/ujer.2016.040531>
- Johnson, S. M., Kraft, M. A., & Papay, J. P. (2012). How Context Matters in High-Need Schools: The Effects of Teachers' Working Conditions on Their Professional Satisfaction and Their Students' Achievement. Teachers College Record, 114(10), 1-39. <https://doi.org/10.1177/016146811211401004>
- de Jonge, J., Bosma, H., Peter, R., & Siegrist, J. (2000). Job strain, effort-reward imbalance and employee well-being: a large-scale cross-sectional study. Social science & medicine (1982), 50(9), 1317-1327. [https://doi.org/10.1016/S0277-9536\(99\)00388-3](https://doi.org/10.1016/S0277-9536(99)00388-3)
- Kowalski, F.W. (2020). Job satisfaction among secondary school teachers in Tanzania: The case of Njombe District (Master's Thesis). University of Jyväskylä
- Krog, C.L., & Govender, K. (2015). The relationship between servant leadership and employee empowerment, commitment, trust and innovative behaviour: A project management perspective. SA Journal of Human Resource Management/SA Tydskrif vir Menslikehulpbronbestuur, 13(1), 712. <https://doi.org/10.4102/sajhrm.v13i1.712>
- Laub, J. A. (2015). Assessing the servant organization: Development of the servant organizational leadership assessment (SOLA) Instrument (Dissertation). Florida Atlantic University
- Lawrence, R., Lim, F.C., & Abdullah, H. (2019). Strengths and weakness of Education 4.0 in the higher education institution. International Journal of Innovative Technology and Exploring Engineering, 9(253), 511-519. <https://tinyurl.com/2ha9mpmu>
- Leithwood, P. K. & Sun, A. O. (2021). Using Structural Equation Modeling to Examine the Relationship between Ghanaian Teachers' Emotional Intelligence, Job Satisfaction, Professional Identity, and Work Engagement. Psychology in the Schools, 58(3), 534-552. <https://doi.org/10.1002/pits.22462>
- Ma, M., & MacMillan, T. (2019). Reconceptualising and redefining educational leadership practice. International Journal of Leadership in Education, 23(5), 618-635. <https://doi.org/10.1080/13603124.2019.1591520>
- Magtabog, T. A. (2016). Leadership and management practices of school heads: Basis for continuous improvement program (Dissertation). Capitol University
- Manullang, M. (2014). Some factors affecting the performance of the Principal. Science PG Education Journal, 6(3), 377-383. <https://doi.org/10.11648/j.edu.20140306.19>
- Marks, H. (2017). Empowerment: Defining factors and educational influences. Retrieved from <http://education.gsu.edu/schoolsafety/>
- Mayer, S. (2019). Learning leadership matters: The influence of innovative school leadership preparation on teachers' experiences and outcomes. Educational Management Administration & Leadership, 42(5), 680-700. <https://doi.org/10.1177/1741143213502187>
- Mehta, S. (2022). Job satisfaction among teachers. International Journal of Research in Commerce, IT, and Management, 2(4), 77-83. <https://tinyurl.com/4y6h3jhm>
- Molino, C. A. (2018). The handbook of leadership and professional learning communities. New York, NY: Palgrave Macmillan
- Morillos J. M. R. (2020). Effect of performance review and faculty development to organizational climate. International Journal of Management, Technology and Social Sciences, 5(2), 1-10. <http://doi.org/10.5281/zenodo.3976934>
- Muchaendepi, S., Mbowa, L., Kangepe, L. & Mutingi, G.H. (2015). Self-assessment of middle school teachers: Classroom management and discipline referrals. International Journal on New Trends in Education & their Implications, 6(2), 45-55. <http://www.ijonte.org/FileUpload/ks63207/File/04.demirdag.pdf>
- Muthen, K., & Muthen, A. (2016). Structural Equation Modeling (SEM). Computational Statistics & Data Analysis, 48(1), 159-205.
- Nisar, M. (2018). Give good, get good. Do servant leadership behaviors work in a political organizational culture (Dissertation)? Queensland University of Technology
- Okumbe, J.A (2018). Educational management: Theory and Practice. Nairobi University Press.
- Panganiban, A. C. (2018). Practices and techniques of school heads of Region IVA (CALABARZON) in influencing people: Towards school leader program/ course design. In 4th international research conference on higher education
- Russell, R.F. (2001). The role of values in servant leadership. Leadership & Organization Development Journal, 22(2), 76-84. <https://doi.org/10.1108/01437730110382631>
- Seed, K. (2016). Parents' educational expectations and children's academic achievements: A literature review. Merrill-Palmer Quarterly, 29(1), 1-23. <https://www.jstor.org/stable/23086188>
- Shriberg, D., & Shriberg, A. (2018). Practicing leadership: Principles and applications. Wiley.
- Sergiovanni, E. (2018). The role of teacher leadership in how principals influence classroom instruction and student learning. American Journal of Education, 123(1), 69-108. <https://doi.org/10.1086/688169>
- Spears, L. C. (2020). Character and servant leadership: Ten characteristics of effective, caring leaders. The Journal of Virtues & Leadership, 1(1), 25-30. <https://tinyurl.com/5yf82zwa>

Peer Instruction as a Transformative Approach for Enhanced Academic Performance in General Physics 1

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Date received: August 28, 2024

Date revised: October 1, 2024

Date accepted: October 13, 2024

Originality: 95%

Grammarly Score: 99%

Similarity: 5%

Recommended citation:

Bayona, D. (2024). Peer instruction as a transformative approach for enhanced academic performance in General Physics 1. *Journal of Interdisciplinary Perspectives*, 2(11), 343-352. <https://doi.org/10.69569/jip.2024.0447>

Abstract. The widespread reliance on traditional teaching methods in science education has been identified as a contributing factor to the below-standard performance of Filipino learners in both national and international assessments. This underscores the need to integrate active learning strategies into pedagogical practices. This study aimed to examine the effectiveness of peer instruction in enhancing the academic performance of Grade 12 learners in General Physics 1 during the third quarter of the school year 2023–2024. A total of 80 learners from the General Academic Strand at Gen. Tiburcio De Leon National High School in Valenzuela City participated in the study. They were equally divided ($n = 40$) into an experimental group, where the peer instruction approach was implemented, and a control group, where the traditional teaching method was employed. The intervention lasted three weeks and was framed within a quasi-experimental research design, utilizing a pre-test and post-test structure. The assessment tool used was expert-validated and reliability-tested. Data analysis was conducted using independent and dependent sample t-tests with IBM SPSS software, adhering to a significance threshold of $p < 0.05$. The results revealed a statistically significant improvement in academic performance within the experimental group compared to the control group, indicating that peer instruction is a more effective instructional strategy than traditional methods. The study recommends incorporating peer instruction into teaching practices, supported by comprehensive teacher upskilling programs, to foster an active learning environment.

Keywords: Academic performance; Active learning strategies; General physics 1; Peer instruction, Quasi-Experimental; Upskilling training programs.

1.0 Introduction

The main objective of science education in the Philippines is to instill in learners a thorough understanding of scientific principles, critical thinking abilities, and a profound appreciation for inquiry-based learning. However, the poor results on international and national examinations of Filipino learners demonstrate the numerous challenges science education faces. The Philippines scored 357 in science literacy in its first attempt to take part in the Programme for International Student Assessment (PISA) 2018 conducted by the Organization for Economic Co-operation and Development (OECD) for 15-year-old learners, placing the country second from the bottom, comparable to that in mathematics literacy. Out of the 7,233 Filipino learners who participated in PISA 2018, only 22% achieved the minimum level (Level 2) of competency in science literacy (Calleja et al., 2023).

Additionally, results from the PISA 2022, which were made public on December 5, 2023, indicated that Filipino learners' science, mathematics, and reading performance had not improved significantly. The Philippines was

found to be among the countries that produced young learners with the lowest proficiency in reading, math, and science competency, ranking 77th out of 81 globally. The Philippines' average mathematics score was 355 points, much lower than the 472-point global average. The country's reading literacy score improved from 340 in PISA 2018 to 347 in PISA 2022, but it was still far below the 476-point global average. The Philippines' score in science was 356 points, placing it third from the bottom globally (Ines, 2023).

Moreover, in the Trends in International Mathematics and Science Study (TIMSS) 2019, Filipino learners in grade 4 performed poorly. In this assessment, the pupils' average score for science was 249 points, much lower than the scores of all other participating countries. While these results are disappointing, the Philippines' participation in these assessments is an important step toward addressing curriculum and learning gaps in the nation's basic education system (Barredo, 2021).

Furthermore, the results of our National Achievement Tests (NAT) in recent years are consistent with the international performance of Filipino learners. The nationwide mean percentage score (MPS) for Grade 6 learners in 2018 was just 37.44, the lowest in NAT history. This score contrasted sharply with the 70.88 obtained in 2015, which fell to 42.03 in 2016 and 39.95 in 2017. Scores for grade 10 again fell from 53.77 in 2014 to 44.08 in 2017, slightly increasing to 44.59 in 2018. These NAT results for both grade levels place them in the "low mastery" category (Tagupa, 2019).

The persistent underperformance of Filipino learners has been attributed to the widespread use of traditional lecture techniques, which are passive and fail to engage students effectively. According to Kelly (2019), lecturing is an outdated instructional method of delivering information verbally. It typically does not allow for much discussion or other forms of learner participation, does not assess learning, offers varied perspectives, differentiates instruction, or enables learners to take ownership of their learning. Traditional lectures no longer have a place in the modern teaching landscape.

One effective way to address this issue is by incorporating active learning strategies into teaching practices. In contrast to traditional teaching methods, active learning engages learners as participants in the learning process. This approach prioritizes higher-order thinking, often involves group or collaborative work, and provides opportunities for meaningful academic activities that positively impact retention rates (Aji & Khan, 2019).

Active learning is a method to encourage students to do something and think about what they do. This means that instead of passively listening to the teacher's lecture, students actively participate in class activities throughout the lesson. Active learning is characterized by actively involving students in the learning process. It emphasizes learning through action based on real experiences and encourages students to move beyond passive participation. It encourages students to go beyond mere memorization and repetition of information. Furthermore, it relies on student activity with minimal assistance from the teacher (Nurbavliyev et al., 2022).

Wesolowski (2019) asserts that the primary reason for developing active learning strategies is to acknowledge students' diverse learning styles and promote the hands-on application of practical skills in both classroom and field settings. It facilitates technology integration and supports cross-cultural learning through experience-based methods. Moreover, active learning fosters student collaboration, establishes in-class learning communities, and bridges the gap between fieldwork and classroom instruction.

Active learning offers students numerous benefits. Its ability to raise student motivation and engagement levels is one of its essential advantages. Students are more likely to be engaged with and interested in the subject matter when actively participating in the learning process. This can, therefore, result in increased academic achievement and improved material retention. Critical thinking and problem-solving abilities are further fostered via active learning. Students are taught to think critically and apply their knowledge to real-world issues through group work and problem-solving. Students can develop abilities that will help them in their future academic and professional endeavors (Dogani, 2023).

Teachers can create dynamic and engaged learning environments using various active learning approaches. These include inquiry-based learning, flipped classrooms, cooperative group projects, and problem-based learning. Each

method provides unique opportunities for learners to actively create their knowledge, take part in insightful conversations, and apply ideas to actual circumstances, all of which improve learning outcomes.

In addition to the methods mentioned above, peer instruction, developed by physicist Eric Mazur in 1991, is an active learning strategy designed to address pedagogical needs. This approach departs from the traditional method of detailed presentations based on textbooks or lecture notes by focusing learners' attention on fundamental concepts. It involves a series of short presentations, followed by discussions centered around brief conceptual questions, encouraging full learner participation and interaction (Bulut, 2019). Peer instruction, with its emphasis on collaborative learning, promotes active interaction among learners, encouraging them to engage in discussions and learn from one another. Studies conducted in various educational settings show that it enhances learner engagement, comprehension, and performance more effectively than traditional methods (Budini et al., 2019).

While peer instruction has proven effective in various educational settings, a significant gap remains in the literature regarding its application in teaching General Physics 1 to senior high school learners in the Philippines, specifically focusing on Grade 12 at Gen. Tiburcio De Leon National High School in Valenzuela City. To address this gap, the researcher conducted this study to assess the effectiveness of peer instruction in enhancing the academic performance of Grade 12 learners in General Physics 1 during the third quarter of the School Year 2023-2024.

By conducting this study, teachers, school heads, curriculum planners, and policymakers can gain valuable insights into the potential of peer instruction as a transformative pedagogical strategy in senior high school science education. The findings of this study provide a foundation for proposing an upskilling training program for teachers, aiming to equip them with essential knowledge and enhanced skills for the effective implementation of peer instruction in the classroom. Such a training program has the potential to elevate the quality of science education, offering a more engaging learning experience for students. Additionally, it can serve as a model for other senior high schools in the Philippines, promoting improved academic performance and fostering a classroom environment conducive to active learning.

Moreover, this study aligns with several Sustainable Development Goals, particularly SDG 4 (Quality Education), which aims to ensure inclusive and equitable quality education and promote lifelong learning opportunities for all. SDG 10 (Reduced Inequalities), which seeks to empower marginalized and disadvantaged groups. Furthermore, it supports SDG 9 (Industry, Innovation, and Infrastructure) by fostering a foundation in scientific literacy that encourages innovation and technological development. Ultimately, this contributes to the holistic development of learners and enhances the overall education system in the Philippines.

2.0 Methodology

2.1 Research Design

This study adopted a quasi-experimental research design. The term "quasi," derived from Latin, means partial, incomplete, or pseudo. Bhat (2023) interprets it as signifying a degree of similarity. A quasi-experimental design resembles a true experimental design, but they are different. In this research design, the independent variable is systematically manipulated, but participants are not randomly assigned to groups. Furthermore, Thomas (2023) noted that a quasi-experimental approach does not rely on random assignment but instead uses non-random criteria to categorize participants into different groups. A quasi-experimental design is an invaluable research tool, primarily when true experiments cannot be conducted for ethical or practical reasons.

The specific quasi-experimental design that the researcher employed in this study is the pretest-posttest nonequivalent group design. This method involves carefully selecting two groups of identical participants except for the independent variable(s) being investigated. Within this framework, one group will receive the treatment or intervention, while the other will serve as a control group and remain untreated. Afterward, the two groups will be compared to determine if there are any significant differences in the outcomes.

2.2 Research Locale

The study was conducted at Gen. Tiburcio De Leon National High School, a prominent public secondary school in Valenzuela City, Metro Manila, Philippines, established in 1969. Currently, it accommodates around 6,000 learners, making it the largest public high school in Valenzuela City by population. Gen. Tiburcio De Leon National High School operates under the supervision of the Schools Division Office in Valenzuela City. The school is located at the corner of Mercado Street and Gen. T. De Leon Road, near the Torres Bugallion Bridge in Barangay Ugong, Valenzuela City.

2.3 Research Participants

Given that this study adopted a quasi-experimental design, which means that it did not involve the random assignment of participants, the researcher used the purposive sampling technique. In this sampling approach, participants were intentionally selected based on specific characteristics that aligned with the researcher's requirements for the study sample. Purposive sampling is beneficial when the researcher seeks information-rich cases or needs to maximize the use of limited resources. This selection process ensures that the chosen participants possess attributes relevant to the research focus, which enhances the study's capacity to attain its objectives effectively (Nikolopoulou, 2022).

Following this approach, the researcher purposely selected two sections of Grade 12 learners who were enrolled in and pursued the General Academic Strand at Gen. Tiburcio De Leon National High School during the School Year 2023-2024. These sections comprised a total of 80 students aged 16 to 22, with a gender distribution of 53% male and 47% female, reflecting varied prior academic performance levels. They served as the participants in the study and were classified into two groups: the experimental group, in which peer instruction was employed, and the control group, which utilized traditional teaching methods.

2.4 Research Instrument

The researcher used a teacher-made pretest-posttest questionnaire as the main instrument for gathering the data needed to answer the specific questions in this study. Specifically, this questionnaire was used to assess the performance of the Grade 12 learners before and after using traditional teaching methods for the control group and peer instruction for the experimental group. The researcher constructed the pretest-posttest questionnaire based on analyzing the least-mastered competencies of the Grade 12 General Academic Strand learners in General Physics 1 during the third quarter. It consisted of 30 multiple-choice questions based on standardized tests from the Schools Division Office and the school's test item bank. Before constructing the questionnaire, the researcher utilized a table of specifications (TOS) to ensure alignment with the intended learning outcomes. The table of specifications was validated by content experts regarding item distribution, alignment with the cognitive domain of the revised Bloom's Taxonomy, and learning competencies. Additionally, the questionnaire itself underwent a validation process.

After the validation process, the questionnaire was pilot-tested with 25 selected learners who were not included in the study but shared similar characteristics with the respondents. The Siegle Reliability Calculator assessed the reliability, resulting in a Cronbach's alpha coefficient of 0.73. This indicates an acceptable level of internal consistency.

2.5 Data Gathering Procedure

The researcher systematically followed a structured procedure to collect the necessary data while upholding the highest ethical standards throughout the study. The initial step involved obtaining the required permissions and approvals. The researcher drafted a formal letter to the Schools Division Superintendent of Valenzuela City to do this. After receiving the approval from the Superintendent, the researcher prepared a second formal letter addressed to the principal of Gen. Tiburcio De Leon National High School. This letter included a copy of the official approval from the Schools Division Superintendent, providing verification and authorization for the study to be conducted within the school.

To ensure the proper, effective, and efficient delivery of lessons, the researcher meticulously prepared and submitted lesson plans for General Physics 1 for validation by master teachers, who served as content experts. These lesson plans targeted the learners' least mastered competencies and provided detailed outlines of the

learning objectives, content to be covered, procedures incorporating peer instruction as the instructional strategy, assessment methods, and required teaching materials. These plans acted as a roadmap for the researcher throughout the teaching process.

With the preparatory groundwork completed, the researcher administered a pre-test to the experimental and control groups. Following the pre-test, different pedagogical approaches were applied: the traditional teaching method for the control group and the peer instruction approach for the experimental group. This instructional intervention was consistently conducted over three weeks. At the end of this period, the researcher reassessed both groups with a post-test.

2.6 Ethical Considerations

This research study adhered to ethical guidelines to ensure the integrity and welfare of all participants. To maintain transparency and uphold participant welfare, the researcher obtained informed consent from all respondents aged 18 and older. This process involved providing detailed information about the study's nature, objectives, and potential implications, ensuring that participants were well-informed and could make a voluntary and knowledgeable decision regarding their involvement. For respondents under 18 years of age, the researcher sought informed assent from the minors themselves, in addition to obtaining parental consent. This dual approach ensured that both the minors and their parents clearly understood the study's details and that the minors willingly chose to participate. Furthermore, the researcher assured all participants that their data would be handled with the utmost confidentiality and used exclusively for academic research purposes. This commitment to ethical practices protected participants' rights and reinforced the credibility and reliability of the research findings.

3.0 Results and Discussion

3.1 Pre-test Scores of the Learners

Table 1 presents the descriptive statistics and the results of the independent sample t-test for the students' pre-test mean scores prior to the intervention. The summary data on the pre-test mean scores of the control and experimental groups, as well as the results of the statistical analysis, are shown below.

Table 1. Descriptive statistics and independent sample t-test for the pre-test scores

Group	N	Lowest	Highest	Mean	Median	SD	tcal	df	p
Control	40	4	13	8.43	8.50	1.71	0.114	78	0.910
Experimental	40	4	14	8.38	8.00	2.19			

The table reveals that the descriptive statistics of the pre-test scores from both groups, each consisting of 40 respondents, indicate that the lowest score for both the control and experimental groups is 4. Meanwhile, the highest scores recorded were 13 for the control and 14 for the experimental groups. Regarding measures of central tendency, the mean and median scores for the control group were 8.43 and 8.50, respectively. In contrast, the mean and median scores for the experimental group were 8.38 and 8.00, respectively. Regarding the measure of dispersion, specifically the standard deviation, the control group exhibited a value of 1.71, while the experimental group had a standard deviation of 2.19.

The mean scores in the pre-test were compared between the control and experimental groups. A normality test was performed on the data to identify the appropriate statistical treatment. The results of the normality test indicated that the data were normally distributed. Therefore, a parametric test was employed. An independent sample t-test was conducted to compare the pre-test scores between the control and experimental groups using IBM SPSS software. Table 1 shows that the p-value associated with $t(78) = 0.114$ is 0.910, which is greater than 0.05 ($p > 0.05$), indicating that the groups are not statistically different. Consequently, no significant differences were found between the mean scores of the control and experimental groups before applying the treatment. This suggests that the groups were equivalent at the beginning of the study.

The findings were parallel to the earlier results of the research results by Sotto Perez et al. (2019). The analysis revealed no significant difference when comparing the two groups' pre-test scores. In other words, the control and experimental groups performed similarly on the inventory test before implementing peer instruction to understand electric circuit concepts. Additionally, this finding aligns with the study on peer instruction by Alfadda et al. (2022), which indicated that the control and experimental groups were equal during the pre-test

regarding their knowledge of language and information about the topics presented throughout the course. Maguate and Rabacal (2023) similarly discovered that there was no significant difference in the results of the pre-tests between the experimental and control groups regarding the science performance of Grade 8 students. Furthermore, their study revealed that neither group had any prior knowledge of the topics before the implementation of the intervention, as evidenced by the low pre-test mean scores for both groups. Additionally, both groups demonstrated the same level of science skills prior to the intervention.

In line with the above research findings, Pagtulon-an and Tan (2018) suggested that the low pre-test scores of students may be related to inadequate conceptual understanding or a lack of foundational knowledge of the evaluated topics. Similarly, the study by Lantajo and Tipolo (2019) revealed that the absence of a significant difference in pre-test mean scores before the intervention indicated that the knowledge and skills of the control and experimental groups in physics were comparable. Thus, the validity of the study was strengthened by the balanced performance of the respondents at the beginning of the experiment.

Since both groups exhibited equivalent knowledge and skills before the intervention, educators should prioritize building foundational knowledge before implementing peer instruction. Recommended actions include conducting diagnostic assessments to identify weaknesses and offering targeted interventions to address those gaps.

3.2 Post-test Scores of the Learners after the Intervention

Table 2 presents the descriptive statistics and the results of the independent sample t-test for the post-test mean scores of the students after the experiment. The summary data on the post-test mean scores for both the control and experimental groups, along with the statistical analysis results, are shown below.

Table 2. Descriptive statistics and independent sample t-test for the post-test scores

Group	N	Lowest	Highest	Mean	Median	SD	tcal	df	p	Cohen's d
Control	40	9	22	16.95	17.00	3.32	-6.219	78	.000	1.39
Experimental	40	13	29	22.03	23.00	3.95				

The table displays the descriptive statistics of the post-test scores, indicating that the lowest scores for the control and experimental groups are 9 and 13, respectively, while the highest scores are 22 and 29. In terms of mean and median scores, the control group obtained 16.95 and 17.00, respectively. On the other hand, the mean and median scores of the experimental group are 22.03 and 23.00, respectively. The standard deviation of the control group is 3.32, while that of the experimental group is 3.95.

The mean scores in the post-test were compared between the control and experimental groups. A normality test was conducted on the data to determine the appropriate statistical approach, confirming that it followed a normal distribution. Consequently, a parametric test was employed. An independent sample t-test was conducted to compare the post-test scores of the control and experimental groups following peer instruction. Table 2 shows that the p-value associated with $t(78) = -6.219$ is 0.000, which is less than 0.01 ($p < 0.01$) and is interpreted as highly significant. The results indicate that the two groups are statistically different. Accordingly, significant differences were found between the control and experimental groups after the intervention's implementation, with the experimental group's mean score being statistically higher than that of the control group following the utilization of peer instruction. Furthermore, the difference between the post-test scores of the control and experimental groups is very large based on Cohen's formula ($d = 1.39$).

The comparison of post-test scores between the two groups implies that students exposed to the intervention benefited substantially from peer instruction, leading to a noteworthy improvement in their academic performance compared to those in the control group. Furthermore, it can be gleaned from the table that there is a significant difference in test results before and after the peer instruction session. From getting low performance in the pre-test, students demonstrated a deepened understanding of concepts through collaborative discussion with peers with minimal teacher intervention, resulting in remarkably higher performance in the post-test. The significant increase in post-test mean scores among students in the experimental group underscores the effectiveness of this learning approach. These results prove that peer instruction is highly conducive to student learning.

These findings mirrored the results of the study conducted by Ande (2019) on the effectiveness of peer instruction in statics. The post-test scores clearly showed that most students gained advantages from peer instruction. Similarly, the research by Ragmac and Lubos (2019) from Bukidnon State University, which evaluated the academic performance and engagement in physics, particularly in, electricity and magnetism, of Grade 10 learners taught using the discrepant event approach through peer instruction, revealed that the learners' scores increased in the post-test. The increase in post-test scores demonstrated that the learners performed better after being taught using the peer instruction approach.

Moreover, the post-test results of the present study substantiated the notable findings of numerous other research studies. This increasing consensus is supported by the earlier work of Alvarez-Alvarado et al. (2019), Carstensen et al. (2020), Macale et al. (2021), and Kaymak (2022), all of which indicated a significant difference between the control and experimental groups after the intervention. This important difference suggests that the peer instruction approach has a substantial impact on improving students' academic performance. Notably, the observed differences favored the experimental group's post-test results, confirming the effectiveness of the peer instruction technique in promoting enhanced learning outcomes.

Furthermore, the computed effect size of the difference between the post-tests of the control and experimental groups, determined through Cohen's formula and described as "very large," provided strong evidence of a significant difference in academic performance between the two groups before and after the intervention. This analysis demonstrated that the experimental group outperformed the control group, indicating that peer instruction was a more effective and impactful teaching strategy than the traditional method. Lastly, this present study contradicted the findings of Bulut (2019), which indicated that although the experimental group achieved higher post-test scores than the control group, the difference did not reach statistical significance.

To build on peer instruction's positive outcomes, educators should implement peer instruction strategies more broadly across the curriculum. This involves training teachers in effective peer instruction techniques and developing collaborative learning modules that foster student interaction. Regular assessments should also be conducted to monitor student progress and ensure the sustainability of these improved learning outcomes.

3.3 Difference between the Pre-test and Post-test Scores of the Learners

The researcher compared students' pre-test and post-test scores to test the hypothesis. The differences in scores underwent a normality test using IBM SPSS software to determine the most suitable statistical approach. The results of this analysis indicated that the data exhibited a normal distribution, confirming that the assumptions necessary for parametric testing were met. Consequently, it was concluded that a paired sample t-test would be the most appropriate statistical method for further analysis. The details of the IBM SPSS output, summarizing the findings of the paired samples t-test, are presented in Table 3.

Table 3. Paired sample t-test comparing the pre-test post-test scores

Groups	t	df	p	Interpretation	Cohen's d
Control					
Post - Pre-test Scores	17.458	39	.000	Highly Significant	2.76
Experimental					
Post - Pre-test Scores	21.529	39	.000	Highly Significant	3.40

A paired sample t-test was conducted on the data to compare the pre-test and post-test scores of the respondents. This test was chosen to evaluate the mean differences between two related groups—in this case, the same group of students before and after the intervention. The results in the table reveal that the calculated t for both the control and experimental groups is highly significant, as the p-values were both less than 0.01. For the control group, there was a significant increase in scores from the pre-test (mean = 8.43) to the post-test (mean = 16.95), with $t(39) = 17.458$, $p < .01$. This increase is very large based on Cohen's effect size formula ($d = 2.76$), with a mean increase of 8.52. Similarly, for the experimental group, there was a significant increase in scores from the pre-test (mean = 8.38) to the post-test (mean = 22.03), with $t(39) = 21.529$, $p < .01$. This increase is also very large according to Cohen's effect size formula ($d = 3.40$), with a mean increase of 13.65. Notably, the mean increase in scores for the experimental group is much higher than that of the control group.

While both effect sizes are similarly very large, the significantly higher mean increase in scores observed in the experimental group compared to the control group indicates a substantial difference in performance before and after the intervention. This observation clearly illustrates that the peer instruction approach is significantly more effective than the traditional teaching method in enhancing the academic performance of students in General Physics 1.

Similar results were found in the study by Sotto Perez et al. (2019). They assessed the effect of peer instruction on learning and examined the differences in the pretest and posttest results within each group. After the pedagogical intervention, they observed a significant improvement in the learners' scores. Moreover, the experimental group exhibited a greater effect size, indicating a possible difference in performance between the two groups following the intervention, even though both groups displayed moderate to high effect sizes. The post-test scores of the experimental group were found to be significantly higher than those of the control group. Accordingly, they concluded that using peer instruction approach is beneficial and effective in improving student academic performance in an electric circuit analysis course.

The present findings align with the study conducted by Eremina and Tandi (2021), which compared the pre-test and post-test achievement values of students in an experimental group using peer instruction with those in a control group receiving traditional instruction. Their results demonstrated significant mean differences, indicating that students taught through peer instruction experienced a greater increase in academic achievement than those in the control group. This suggests that peer instruction has a substantial positive impact on students' academic performance. Additionally, the study reported a high partial eta squared value, reflecting a strong effect size.

Furthermore, in his study on the impact of peer instruction strategies on the attitudes toward trigonometry and mathematics achievement of Grade 9 students, Kaymak (2022) found similar outcomes. The results indicated that, following the implementation of peer instruction, the average mathematical achievement score of students in the experimental group was significantly higher than their scores prior to the intervention. This led to the conclusion that peer instruction substantially enhances students' academic performance.

Finally, the results of this study contrast with the findings of research conducted in Kazakhstan by Balta et al. (2021), which concluded that peer instruction did not enhance student performance or learning outcomes. Therefore, this study represents a significant contribution to the existing body of research, demonstrating the effectiveness of the peer instruction approach in improving students' test scores, conceptual problem-solving skills, participation, and overall comprehension.

Given these findings, it is recommended that educators integrate peer instruction strategies more extensively into their teaching practices. Establishing professional development programs will be crucial for equipping teachers with the necessary skills to implement peer instruction effectively. Furthermore, additional research should investigate the long-term effects of peer instruction on student engagement and conceptual understanding. Such studies could provide deeper insights into the benefits of this approach across various subjects and educational contexts.

4.0 Conclusion

In light of the findings, several key conclusions can be drawn. Firstly, both the control and experimental groups exhibited equivalent levels of knowledge and skills at the outset of the study, enhancing the credibility and validity of the research by minimizing potential biases. A significant improvement in post-test scores was observed in the experimental group, which utilized peer instruction, compared to the control group that did not receive this intervention. This suggests that peer instruction is effective in enhancing academic performance. Moreover, notable score increases were recorded in both groups from pre-test to post-test, indicating that both teaching strategies led to meaningful learning outcomes. However, peer instruction proved to be more advantageous, as evidenced by the significantly higher mean increase in test performance within the experimental group. This advantage was particularly evident in topics such as interpreting displacement and velocity as areas under velocity vs. time and acceleration vs. time curves, understanding velocity and acceleration as slopes of position vs. time and velocity vs. time graphs, and solving for unknown quantities in equations involving one-

dimensional uniformly accelerated motion, including free fall. Students also excelled in calculating the range, time of flight, and maximum heights of projectiles. Consequently, a teacher upskilling training program is proposed to expand and refine the implementation of peer instruction. This initiative aims to establish a systematic and effective approach to teacher development, ultimately leading to improved student learning outcomes.

Based on the findings and conclusions outlined, several recommendations are proposed. Curriculum planners should integrate the peer instruction strategy into the General Physics 1 curriculum, given the significant improvements observed in the experimental group's post-test results. This incorporation can enhance student engagement and comprehension. Science teachers are encouraged to adopt peer instruction, as it has consistently demonstrated its effectiveness in improving learning outcomes and fostering active participation in the classroom. Moreover, educators across various subjects can benefit from implementing peer instruction, which promotes collaboration and active learning, thereby enhancing both subject-specific knowledge and essential skills such as communication and teamwork. Additionally, school leaders and policymakers should organize professional development initiatives, including upskilling training sessions, to familiarize teachers with the principles and practices of peer instruction. Providing ongoing support, teaching materials, and technological resources will further ensure the successful implementation of this approach. Finally, future researchers could explore the effects of peer instruction across different subjects, diverse student populations, and varying grade levels, while considering necessary adjustments to better address the unique needs of both teachers and students.

5.0 Contributions of Authors

The author independently conceptualized and executed this study, taking sole responsibility for every phase of the research process.

6.0 Funding

The work received no specific grant from any funding agency.

7.0 Conflict of Interests

The author declares no conflict of interest regarding the publication of this paper.

8.0 Acknowledgment

First and foremost, the researcher expresses heartfelt gratitude to God Almighty for His grace, strength, and capability, which made completing this research possible. Deep appreciation is extended to Dr. Francisco D.P. Daez for his invaluable guidance and inspiration; Dr. Dominador M. Cabrera for his unwavering support, bright ideas, and patience; Prof. Luzviminda P. Britanico for her insightful critiques and encouragement; Dr. Leonora T. Dela Cruz for her guidance on the study's data; Dr. Danilo S. Hilario for his constructive feedback; Dr. Noel D. Bagano, Assistant Schools Division Superintendent and OIC-SDS, for approving the study; and Dr. Cesar C. Villareal, Principal of Gen. Tiburcio De Leon National High School, for facilitating the research. The researcher is also profoundly grateful to family, friends, colleagues, and everyone who supported and contributed to this endeavor. A special thank you is given to all, including those whose names may not be mentioned but whose contributions are deeply appreciated.

9.0 References

- Aji, C. A., & Khan, M. J. (2019). The impact of active learning on students' academic performance. *Open Journal of Social Sciences*, 7(3), 204–211. <https://doi.org/10.4236/jss.2019.73017>
- Alfadda, H. A., Afzaal, M., Mahdi, H. S., Alaudan, R., & Curle, S. (2022). Influence of psychological autonomy support of peer instruction: A novel interactive approach using Instagram in language learning. *Frontiers in Psychology*, 13. <https://doi.org/10.3389/fpsyg.2022.866354>
- Alvarez-Alvarado, M. S., Mora, C., & Cevallos-Reyes, C. B. (2019). Peer instruction to address alternative conceptions in Einstein's special relativity. *Revista Brasileira de Ensino de Física*, 41(4), e20190008. <https://doi.org/10.1590/1806-9126-rbef-2019-0008>
- Ande, S. (2019). Studying the effectiveness of peer instruction in statics. Proceedings of the 2018 ASEE Gulf-Southwest Section Annual Conference The University of Texas at Austin
- Balta, N., Kaymak, S., Abdullah, A., & Nurbavliyev, O. (2021). The impact of peer instruction on ninth-grade students' trigonometry knowledge. *Bolema*, 35(69), 206–222. <https://doi.org/10.1590/1980-4415v35n69a10>
- Barredo, M. J. (2021). Challenges and Interventions in raising the quality of K to 12 science Education. Retrieved from <https://tinyurl.com/3tuyryjb>
- Bhat, A. (2023). Experimental Research: Types of Designs. Retrieved from <https://tinyurl.com/2ukayaar>
- Budini, N., Marino, L., Carri, R., Cámara, C., & Giorgi, S. (2019). Perceptions of students after implementing peer instruction in an introductory physics course. *Smart Learning Environments*, 6(1), 20. <https://doi.org/10.1186/s40561-019-0101-6>
- Bulut, B. (2019). The impact of peer instruction on academic achievements and creative thinking skills of college students. *International Journal of Educational Methodology*, 5(3), 503–512. <https://doi.org/10.12973/ijem.5.3.503>
- Calleja, M., Cordell II, M., Teves, J., Yap, S., Chua, U., and A. Bernardo. (2023). Addressing the poor science performance of Filipino learners: Beyond curricular and instructional interventions. Retrieved from https://animorepository.dlsu.edu.ph/res_aki/91/
- Carstensen, S. S., Kjaer, C., Möller, S., & Bloksgaard, M. (2020). Implementing collaborative, active learning using peer instructions in pharmacology teaching increases students' learning and thereby exam performance. *European Journal of Pharmacology*, 867, 172792. <https://doi.org/10.1016/j.ejphar.2019.172792>
- Dogani, B. (2023). Active learning and effective teaching strategies. *International Journal of Advanced Natural Sciences and Engineering Researches*, 7(4), 136–142. <https://doi.org/10.59287/ijanser.578>
- Eremina, A.H., & Tandi, L. (2021). Influence of Peer Instruction on Students Achievement in Tertiary Education: Assessing the Implication for Learning Outcomes. *Global Academic Journal of Humanities and Social Sciences*; 3(5), 239–243. <https://doi.org/10.36348/gajhss.2021.v03i05.007>
- Ines, J. (2023, December 6). PH still among lowest in math, science, reading in global student assessment. *Rappler*. <https://tinyurl.com/2y2wbpsj>
- Kaymak, S. (2022). Increasing students' interest in mathematics on the basis of the method of peer instruction of the topic. Retrieved from <https://doi.org/10.13140/RG.2.2.17358.95044>
- Kelly, M. (2019). Advantages and Disadvantages of lecturing. Retrieved from <https://tinyurl.com/5n6cbas>
- Lantajo, J. T., & Tipolo, R. L. (2019). Student-Team Achievement Division (STAD) and its effect on the academic performance of Grade 8 students. *Journal of Physics: Conference Series*, 1254, 012014. <https://doi.org/10.1088/1742-6596/1254/1/012014>
- Macale, A., Lacsamana, M., Quimbo, M. A., & Centeno, E. (2021). Enhancing the performance of students in chemistry through flipped classroom with peer instruction teaching strategy. *LUMAT: International Journal on Math, Science and Technology Education*, 9(1), 717–747. <https://eric.ed.gov/?id=EJ1327851>
- Maguate, G., & Rabacal, J. S. (2023). Peer mentoring for academic performance of students in science. *International Journal of Latest Research in Humanities and Social Science*, 6(6), 183–189. <https://tinyurl.com/ye2yvhsh>
- Nikolopoulou, K. (2023). What is purposive sampling? | Definition & Examples. Retrieved from <https://tinyurl.com/5bff7xn3>

- Nurbavliyev, O., Kaymak, S., & Sydykov, B. (2022). The effect of active learning method on students' academic success, motivation and attitude towards mathematics. *Journal of Language and Linguistic Studies*, 18(2), 701–713. <https://eric.ed.gov/?id=EJ1347347>
- Pagtulon-an, E. & Tan, D. (2018). Students' Mathematics Performance and Self-efficacy Beliefs in a Rich Assessment Task Environment. *Asian Academic Research Journal of Multidisciplinary*, 5(2), 54-64. <https://doi.org/10.12691/education-11-5-6>
- Ragmac, R. E., & Lubos, L. C. (2019). Evaluation of Discrepant Event using Peer Instruction of Junior High School Academic Performance and Learning Engagement in Physics. *Liceo Journal of Higher Education Research*, 15(1). <https://doi.org/10.7828/ljher.v15i1.1296>
- Soto Perez, R. A., Ortega, J. D., & Streveler, R. A. (2019). Assessing the Effectiveness of Peer Instruction in Students' Understanding of Electric Circuits Concepts. In 2019 ASEE Annual Conference & Exposition, Tampa, Florida
- Tagupa, H. (2019, December 6). What happened to our basic education? Inquirer.net. Retrieved from <https://tinyurl.com/3ahkyt3w>
- Thomas, L. (2023). Quasi-Experimental Design. Retrieved from <https://tinyurl.com/2sr7j6mb>
- Wesolowski, D.K. (2019). The effects of active learning, class size, and incentives on student performance in lecture and laboratory for an introduction to animal sciences (Thesis). Colorado State University

Leadership Development and Opportunities for Women in Higher Education Leadership Roles

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Date received: September 15, 2024

Date revised: October 1, 2024

Date accepted: October 13, 2024

Originality: 99%

Grammarly Score: 99%

Similarity: 1%

Recommended citation:

Violon, J., & Prado, N. (2024). Leadership development and opportunities for women in higher education leadership roles. *Journal of Interdisciplinary Perspectives*, 2(11), 353-361. <https://doi.org/10.69569/jip.2024.0501>

Abstract. This qualitative phenomenological study explores women's leadership development and opportunities at Central Mindanao University (CMU) in advanced leadership positions. It investigates the factors shaping their career trajectories, emphasizing the pivotal role of educational attainment, particularly doctoral degrees, in advancing women into leadership roles. The research highlights the importance of academic distinctions and a solid commitment to service as critical motivators for women to embrace leadership roles despite initial hesitations. The study delves into the expected behaviors and qualities of leaders in higher education, emphasizing attributes vital for fostering academic excellence and inclusivity. Utilizing a qualitative phenomenological approach, the research examines the lived experiences of women leaders at CMU. Semi-structured interviews with purposively selected women in leadership roles provide in-depth insights into their experiences, perspectives, and challenges. Thematic analysis reveals recurring patterns, themes, and nuances, offering a comprehensive understanding of women's leadership trajectories. Leadership roles present opportunities for both professional and personal development, yet biases and systemic barriers persist, perpetuating gender disparities. Environmental factors, such as organizational culture, significantly influence leadership behaviors, necessitating adaptive strategies. Institutional support systems, including mentorship initiatives, foster effective leadership. The diverse experiences of participants underscore the complexity of women's leadership journeys, offering valuable insights for aspiring leaders. Addressing biases, promoting equitable opportunities, and creating supportive environments can pave the way for gender equality at CMU and similar institutions. Embracing inclusive practices can empower CMU to champion gender diversity and equity in higher education.

Keywords: Academician women; Gender equality; Women's empowerment; Women in higher education; Women's leadership.

1.0 Introduction

Leadership in higher education is a complex and multifaceted issue requiring careful attention to the needs and interests of all stakeholders. The role of women in leadership positions has become an increasingly important topic, especially within developing countries like the Philippines. Despite significant progress toward gender equality over recent decades, women still face unique challenges and obstacles in achieving leadership roles within higher education. While there has been some initial optimism regarding gender equality progress in Philippine society, significant disparities persist in access to power and authority within higher education contexts (Magsanoc-Alikpala & Salazar-Clemen, 2015). These issues arise from both explicit discrimination and subtle biases against female candidates for leadership positions. For instance, research suggests that well-intentioned

hiring committees may unconsciously favor male applicants over equally qualified females when deciding on promotions or job offers (de la Cruz et al., 2020). Additionally, many hold ingrained stereotypes about effective leadership behavior, often equating such traits with traditionally masculine qualities like assertiveness or competitiveness (De los Reyes & Wong, 2019). These biases are difficult for individual women to overcome without concerted efforts from society.

A preliminary literature review highlighted professional environments as essential in defining respected leadership styles and behaviors. Higher education traditionally assigns professional roles and norms in a rigid, transactional, structured manner, focusing on specified protocols, influential authority figures, and an emphasis on operations and outcomes (Burns, 1978). In contrast, several female leaders use collaborative, transformative leadership approaches that extend their roles as faculty members and educators. This evolved approach to developmental leadership differs from the traditional system that values policies, practices, and professional roles over collaboration and professional development. For gender equity in higher education, it is crucial to cultivate female leaders despite prevailing gender stereotypes and cultural biases regarding successful leadership behaviors, which limit women's opportunities for professional development and mentoring (Dominici et al., 2013).

Behavioral and situational approaches to leadership behavior provide frameworks for this study. Northouse (2015) explains that these approaches examine leadership styles, skills, and strategies effectively used by female leaders in higher education and identify leadership behaviors not displayed by them. This study also investigates whether task-related, achievement-oriented behaviors (traditionally associated with male leadership traits) are more valued than relational, collaborative leadership styles (usually associated with female leadership traits). Understanding which leadership behaviors are highly valued and respected in higher education and their effectiveness provides insights into biases that may affect women's advancement opportunities (Northouse, 2015).

The situational approach, developed by Hersey and Blanchard (1969), examines leadership in various organizational situations, assuming that different types of leadership are necessary. Leaders must adapt their styles to meet organizational needs and challenges, adjusting according to the developmental levels of their followers. This study focuses on the ability of female leaders in higher education to adapt their leadership styles to meet the expectations of their followers and the institution. Sandberg (2013) notes that female leaders must be flexible in incorporating desired leadership characteristics and techniques while meeting institutional leadership traits and skills.

A research study similar to Hersey & Blanchard's (1993) surveyed 332 university employees and 32 supervisors to explore effective leadership behaviors. The data analysis predicted employee job satisfaction, performance, and successful leadership behaviors while identifying optimal leadership styles. Although initially, situational leadership theory seemed less practical, it accurately described influence dynamics between leaders and followers, particularly in improving performance outcomes (Fernandez & Vecchio, 1997).

This study explores the experiences and advancement of women in higher education, focusing on contemporary colleges and universities where women are advancing their careers at higher rates than in traditional settings. It investigates how these women define and measure leadership skills within modern higher education institutions. The literature review analyzes environmental factors and beliefs associated with successful leadership, aiming to reshape the definition of effective leadership and the role of women leaders in this domain. Furthermore, it examines how their progress can be bolstered beyond current educational settings, pinpointing academic environments facilitating advanced leadership prospects and professional development for women. Such settings provide equal opportunities for career advancement, prompting an investigation into why these institutions are more successful in promoting female leaders.

2.0 Methodology

2.1 Research Design

The study employed the phenomenological research approach to comprehend the professional experiences of leaders in online higher education, both familiar and divergent. This research design aims to provide a detailed description or illustration of the nature of a particular phenomenon (Creswell, 2017) and an in-depth account of participants' personal experiences of an event or phenomenon. This approach allows us to explore subjective

experiences and perspectives, providing new interpretations and meanings that inform our understanding of experiences and the contexts in which they occur. This approach facilitated the identification of the underlying factors contributing to these experiences and the shared beliefs among the participants. It also enabled the researchers to scrutinize and interpret these shared experiences while addressing the research questions stated in the study.

2.2 Research Locale

This study was conducted at Central Mindanao University (CMU). CMU stands as a beacon of academic excellence and research prowess in the Philippines, situated in the province of Bukidnon at the heart of Mindanao Island. Since its establishment in 1910, CMU has garnered a distinguished reputation, particularly in the country's Southern region. Recognized by the Commission on Higher Education, CMU holds prestigious designations as a Center for Excellence in Agriculture, Forestry, Veterinary Medicine, and Biology and a Center for Development in Mathematics, Environmental Science, and Teacher Education. In a significant milestone, the Accrediting Agency of Chartered Colleges and Universities in the Philippines (AACCUP) bestowed CMU with Institutional Accreditation (Level II) in 2017, marking a historic achievement as the first institution in Mindanao to receive such recognition. As one of the leading state universities in the Philippines, CMU provides a fertile ground for women holding key positions whose experiences and narratives reflect those of women leaders across academic institutions. Hence, CMU is a suitable venue for conducting this study.

2.3 Research Participants

This study involved interviews with female leaders at CMU, including deans, associate deans, academic program chairs, and directors who hold middle to upper-level leadership positions. The initial research identified twenty (20) potential female leaders at CMU, from which the participants were purposively sampled. These interviews occurred in CMU, University Town, Musuan, Maramag, and Bukidnon. They included a diverse representation of female leaders who have held the Dean, program chair, or director position for at least five years. Potential participants were personally approached to identify their interest in participating in the interviews. During the interviews, questions were asked regarding mentoring, coaching, career advancement opportunities, and the number of women currently in advanced leadership positions at their current educational institution to examine the scope of this issue and its significance (Appendix A). Additionally, focused group discussions (FGD) were conducted in this study to ensure validity and reliability by cross-referencing the participants' responses.

2.4 Research Instrument

The participants in the research study were approached personally with a description of the study and a brief questionnaire. Once 20 eligible participants were identified and consented to participate in the survey, interviews were scheduled. The research questions were sent to the participants two days before the interview. The interviews were conducted in person and recorded with the participants' permission. All data collected were kept confidential, transcribed, and coded for analysis. The interview questions are as follows:

Please share your career path with us and explain how it led you to your current position.

How should leaders in higher education conduct themselves, and what traits should they possess?

Could you please share how your leadership position in higher education impacted your professional growth and career advancement?

2.5 Data Gathering Procedure and Analysis

The data collection process for this study was carefully designed to ensure efficiency, accuracy, and ethical integrity. It began with the initial contact of potential participants through email and Facebook Messenger, where a study description and a brief questionnaire were provided to assess eligibility and interest. Once participants responded and were confirmed eligible, their consent was obtained before scheduling the interviews. Participants received the research questions beforehand to prepare adequately, facilitating productive discussions during the in-person interviews, expected to last between 30 and 40 minutes. With participants' permission, interviews were recorded to capture responses while maintaining confidentiality accurately. After the interviews, all recorded data were transcribed, converting spoken language into written text to facilitate systematic analysis. This transcribed content underwent coding, categorizing, and organizing responses based on emerging themes or patterns. To

achieve the research objectives, interview questions were designed to gain in-depth insight into participants' career paths, leadership experiences, and perspectives on higher education leadership.

2.6 Ethical Considerations

Participants' consents were obtained before interviews were conducted, and they were informed that they could withdraw from the study at any time. The researcher ensured they avoided deceptive practices and managed their biases during interviews. They also took care to code and analyze transcripts objectively. The researcher and adviser addressed these issues through ongoing review and dialogue. All recordings, transcriptions, coding notes, and participants' information were kept confidential on a password-protected computer. The researcher used language that was easy for participants to understand and gave each participant an overview of the study's purpose. We obtained consent forms from all participants before the interviews to ensure voluntary participation. The interviews were recorded individually for accuracy. Participants could opt out at any point, and no questions were mandatory. An informed consent form was developed that stated participants' rights and agreement to participate, along with an acknowledgment that their rights are protected. The researcher informed participants that the study posed no harm to them. Individual participants were notified that they would not receive any direct benefits from the study.

3.0 Results and Discussion

Theme 1: Educational Qualifications and Leadership Experience

Educational qualifications and leadership experience are central themes that encapsulate the factors that led these trailblazing women to higher education, career paths, and current positions. These indispensable factors vouched for the participants' current leadership positions at Central Mindanao University. Most of them have earned Doctoral Degrees, which equipped them with the expected skills and expertise to deliver their functions within the university. Particular academic distinctions and achievements also amplified the career paths of the participants, such as Participant 9, current Chairperson of the Institute of Biological Sciences, who graduated Summa Cum Laude in BS Biology and exhibited exemplary performance in her field as a researcher and a faculty. These women leaders were appointed based on their educational backgrounds and achievements and not primarily on whether or not they were willing to accept higher designations. Based on the focused-group discussion, many participants initially declined the designations offered to them for specific reasons. *"I never dreamed of becoming a leader,"* Participant 7, Participant 10, and Participant 13 expressed precisely in the same manner.

Participant 12, for instance, convinced the University President during her time a couple of times not to designate her as the Director of CMU-Laboratory High School and concurrently the Director of the Office of Admissions, Scholarships, and Placement because, as she confessed, *"I am not ready and I don't have any training for these positions."* However, due to her educational qualifications and years of service at CMU, she was appointed by the president as the director of the said two offices. The same is true with Participant 11, amongst many others who said:

"Like everybody else in this office, I do not want to be designated as the Department Chair because I don't want burdens due to heavy workloads. But I had no choice because everybody in the office became chairpersons already, and now, it's my turn."

Nevertheless, these participants were compelled to take the position because, as Participant 3, Participant 5, and Participant 6 said, *"I was given the trust and confidence to lead our office. So, I took the challenge."* On a positive note, other participants were passionate about becoming trailblazing academic leaders as they wanted to serve the public. Reflecting on her leadership roles, Participant 1 said, *"This journey reflects my enduring passion for education, community service, and academic leadership."* Participant 4, the Center for Biodiversity, Research, and Extension Director in Mindanao, also focused on serving indigenous cultural communities, particularly educating ethnic groups about preserving Biodiversity. These women leaders are committed to the mission and vision of Central Mindanao University, which is to uphold the total development of people. Participant 9 admits, *"It's a waste of your skills and expertise if you don't serve the community. That's God's gift for you to serve the public."*

Moreover, the participants' former leadership roles also paved the way for their current positions. Extensive leadership roles from the previous administrations made Participant 6, Director of the International Relations

Office, view her academic journey as a “smooth sailing career path” because her last roles have become an instrumental training ground for her current designation. Participant 2, Participant 8, and Participant 15 also have previous designations that prepared them for their current positions as the Director of Library Services, Director of the Office of Admissions, Scholarships, and Placement, and Director of the Human Resource Management Office, respectively. The institution prefers to appoint those with previous leadership experiences, excellent work ethics, and service dedication.

The participants' exposure to research and extension studies has significantly accelerated their career progression, as research and publications are key criteria for rankings, promotions, or reclassifications in SUCs. For example, Participant 14, formerly the Extension Director and Head of the Capability Building Unit, reported that her promotion to higher positions was mainly due to her research involvement and numerous publications. Similarly, Participant 4, the former Chair of the Language Education Department and now the Research Coordinator of the College of Education, credited her academic and professional success to her research and extension work on culture and arts. These experiences demonstrate how values, personal influences, and perceptions of work's intrinsic or extrinsic rewards play a crucial role in shaping participants' career choices and aspirations across various fields, including business, science, and the arts (Simpson, et al., 2020).

Meanwhile, institutional and environmental factors influence why these women leaders pursued CMU for their career pathways. They preferred CMU due to its outstanding workforce, consistent ideals, and commitment to excellence. CMU is the best avenue for career advancement and leadership development for them. As Participant 6 stated:

“I was once the director of Camiguin Polytechnic State College, but I decided to transfer to CMU in 2014, and that was one of the best decisions in my life because the atmosphere here is very different. I admire the dedication of the people here at CMU. I appreciate their commitment to excellence. I also love the ambiance, landscapes, trees, and fresh air.”

Participant 7, Dean of the College of Arts and Sciences, also espoused that the organizational culture at CMU is characterized by intelligent and sophisticated professionals with exemplary leadership and teaching performance, bringing boundless fame and honor to their beloved institution.

Hence, organizational culture significantly influenced participants' career paths, with characteristics and behaviors valued in managers shaping opportunities, particularly disadvantaging women in three out of four case study organizations (Wilson, 2018). In this study, the narratives captured in Table 2 elucidate the diverse factors shaping the career paths of women leaders in higher education. Educational qualifications, leadership experience, passion for service, and institutional culture collectively contribute to their journey toward leadership roles at CMU. These narratives underscore the importance of merit-based appointments, dedication to excellence, and a supportive organizational environment in fostering women's leadership within academia.

Theme 2: Behaviors and Qualities as Leaders in Higher Education

Leaders in higher education must behave in a manner that reflects their commitment to academic excellence, promoting inclusivity, and upholding ethical standards. The following are some key behaviors and qualities that leaders should exhibit, according to the narratives of the participants:

Visionary

A leader must be a visionary. Participant 3 emphasized that leaders should be able to think in advance, five years or ten years from the current time. She said, “We have to be visionary for our organization to meet time demands because we are getting so complicated and competitive.” Participant 9 also highlighted that leaders should have strategic planning abilities to achieve their organization's vision. Otherwise, as Participant 8 pointed out, the organization will stagnate and fail.

Integrity

Higher education leaders must uphold the highest ethical standards and act with integrity in all their interactions. This is akin to the honesty and trustworthiness of leaders that Participant 13 and Participant 5 mentioned. They believed that leaders' colleagues would not trust them if they were not honest and had firm moral principles.

Respect

Treat all academic community members with respect and dignity, regardless of their background, position, or perspective. For Participant 4, a leader must significantly respect individual differences among his/her colleagues since they grew from different orientations and embody varying work ethics and principles.

Communication

Effective communication is critical for higher education leaders to convey their vision, goals, and expectations to faculty, staff, students, and stakeholders.

Collaboration

Promote teamwork among faculty, staff, and students to collectively achieve common goals and address challenges. This is related to Participant 7's contention that *"leaders must be facilitative rather than being so detached from their colleagues and students."*

Adaptability

Responsive to changes in the academic landscape, whether they stem from technological advancements, shifts in student demographics, or evolving pedagogical approaches. "Leaders must be able to respond to the call of globalization and internationalization," said Participant 3. Participant 7 also stated that leaders have to be responsive to the organizational clamors and attend to all concerns of colleagues and students. Participant 14 also went on by saying:

"Since they [leaders] are molding people, they should have a higher emotional, intellectual, and adaptability quotient. They will succeed in their career goals and become effective leaders with all these. When they possess these qualities, they will be flexible and understand what their constituents are experiencing in their office."

Innovation

Leaders must be creative to drive progress and keep their institutions relevant in a rapidly changing world. Participant 2 must be a risk-taker to implement the organization's innovations.

Empowerment

Empowering faculty, staff, and students to reach their full potential by providing opportunities for professional development, recognizing achievements, and fostering a culture of mentorship and growth. According to Participant 10 and Participant 3, mentorship and empowerment can be efficiently delivered through macro and micro levels of management. Macro leaders step back and trust their team to perform their tasks, while micro leaders closely monitor the smallest details of their employees' output and progress. Micromanagement can take time and resources, removing focus from other crucial duties. Conversely, macro-management is concerned with establishing broad objectives and giving staff members greater freedom in achieving them (Gartner, 2024).

Empathy

Leaders in HE should understand the needs, concerns, and experiences of others. *"Try to place yourself in the position of being led, and consider the viewpoints, concerns, and needs of your subordinates,"* said Participant 7, *"they have to be assertive, paying respect for others; thoughts, feelings, and beliefs,"* Participant 5 added. Participant 1 also posits that:

"A leader should demonstrate empathy by actively listening, showing compassion, and fostering a supportive environment that promotes well-being and inclusivity."

Authenticity

Staying true to their values, principles, and beliefs. *"Authenticity builds trust and credibility among colleagues, students, and stakeholders,"* said Participant 1. This also encompasses Participant 6, Participant 11, and Participant 12's takes on diligence, passion, and dedication to service and leadership. *"If you love your work, even if you would extend for hours a day, that's fine. Work would become so much heavier without passion and dedication,"* said Participant 6.

Leaders who embody these attributes can inspire innovation, foster collaboration, and promote inclusivity, advancing academic excellence and fulfilling institutional missions within the dynamic higher education landscape. Research supports this, showing that effective leaders exhibit transformational qualities such as charisma, collaboration, and servant leadership while navigating complex cultural dynamics and fostering intrinsic motivation among faculty and staff (Robles, 2018). Additionally, Hendrickson (2012) emphasizes that creativity, commitment, collaboration, delegation, and courage are essential for academic leaders to navigate change and build partnerships aligned with their institution's mission and values. Similarly, Hoff (2020) highlights the importance of self-knowledge, respect for differences, resilience, and effective communication as successful leaders embrace change and foster continuous learning within complex organizational structures. Together, these qualities form the foundation of impactful leadership in higher education.

Theme 3: Impact of Leadership Roles in Higher Education Towards Career Advancement

Leadership roles have equivalent merits for rankings, which accelerated the advancement of the participants' academic positions. Participant 3 enunciated that administrators should look forward to stepping up to higher positions, and leadership roles are one of the fundamental criteria for reclassifications. *"I advanced my career so early because of my leadership roles,"* said Participant 12. As Participant 1 put it:

"This experience [leadership] helped me advance to more senior positions in the academic community by enabling me to take on more responsibility and leadership duties."

Participant 14 also asserted that her higher designations, such as being the former Extension Director, paved her way to becoming an Associate Professor V. She said, *"My experiences as a leader led me to have a higher rank. Everything I do in school is accepted as part of my professional progress in research, instruction, or production. All these things are connected and made me qualify for a higher position."* Of course, higher positions come with greater responsibilities, which, for Participant 8, amongst many others, requires dedication and sacrifices. She postulated that:

"Being given a higher leadership role in would also mean that sometimes, it is much of a sacrifice to spend time on research and extension, which is also a requirement if you are already in the higher academic ranking. So, if you want to go up the rank, you should learn time management and prioritization. Moreover, you should not forget that while delivering your role as an administrative leader, you have to cater and find time for your professional and personal growth."

Moreover, higher designations opened doors and opportunities, further amplifying the participants' career development. Being designated as the Department of Physical Education Chairperson, Participant 13 shared that she could build connections with brilliant and sophisticated people in her field and learned many leadership styles that further honed her to become a trailblazing woman leader. Participant 2 also admitted that she was able to expand her network due to her leadership role as the Director of Library Services. As stated by Participant 12:

"I would never get to meet those bigger and intellectual people if I was only an ordinary class teacher. Since I have a higher role in the organization, I was able to meet people with big roles, for instance, in the Commission on Higher Education and other agencies. It opened doors of opportunities for my career, especially in research partnerships, extension, linkages, and much other collaboration."

Pertinent training, seminars, and workshops are also key opportunities, further orchestrating the fast development of the participants' academic careers and leadership. *"I was sent to various trainings and seminars that harnessed my career and leadership. CMU is truly generous regarding their employees' personal and professional improvement,"* said Participant 3. Having been designated as the former Chairperson of the Language Education Department, Participant 4 also ascertained that she was given a chance to pursue postgraduate studies with the institution's support.

More so, leadership roles have harnessed the personal and professional capabilities of the participants in myriad ways. For Participant 6, leadership is *"squeezing you to become the best version of yourself, especially when managing diverse kinds of people."* Participant 1 contended that:

"My leadership role has greatly aided my career growth in Higher Education. It allowed me to showcase my strategic planning skills, collaborative decision-making, and creating inclusive settings. I was recognized by my leadership abilities and capacity to promote constructive change inside the organization through the accomplishments of successful projects and the deft handling of difficult problems."

Participant 2 also admitted that her designation improved her planning, teamwork, and decision-making. This goes hand in hand with Participant 3, who said, *"I was able to improve my kind of leadership using exposing myself to the real problems and issues in certain organizations, like department issues, problems, and challenges."*

Fundamentally, the career advancement and outstanding leadership of the administrators at Central Mindanao University are immensely crucial in materializing the vision and mission of their institution. Participant 5, the current Director of the Center for Biodiversity Research and Extension in Mindanao, illustrated how CEBREM has contributed to the goal of CMU towards a globally sustainable environment through their research and extension studies centered on the preservation of the remaining biodiversity and natural resources in Mindanao.

Overall, the impact of leadership roles on career advancement in higher education is profound and multifaceted, as elucidated by the participants' narratives. Leadership roles catalyze career progression, providing individuals with opportunities to ascend to higher academic positions and assume greater responsibilities within their institutions. These roles are not merely titles but signify a significant milestone in one's professional journey, often accompanied by increased recognition and influence.

The narratives highlight how leadership roles pave the way for career advancement by offering avenues for professional development, networking, and skill enhancement. Participants underscored the importance of strategic planning, effective communication, and adaptability as essential qualities cultivated through their leadership experiences. Moreover, assuming leadership entails sacrifices and dedication, as individuals must balance administrative duties with personal and professional growth endeavors.

Furthermore, higher education leadership roles allow individuals to broaden their horizons and expand their professional networks. Through interactions with colleagues, stakeholders, and leaders in their respective fields, participants were able to forge valuable connections and collaborations that furthered their career trajectories. Additionally, access to training programs, seminars, and workshops provided by institutions facilitated the acquisition of new knowledge and skills, enhancing participants' capabilities as academic leaders.

Leadership roles played a crucial part in fostering participants' personal and professional growth, allowing them to refine their leadership styles, decision-making, and problem-solving skills. Participants shared how these experiences challenged them to push their boundaries and become the best versions of themselves, leading to remarkable achievements in their fields. Additionally, their contributions to advancing institutional vision and mission underscored the pivotal role of academic leadership in driving organizational goals and societal impact. Position changes in leadership roles also significantly enhance career advancement for administrators, serving as a key mechanism for increasing earnings, status, and authority within higher education institutions (Sagaria, 2018). Together, these factors illustrate how leadership roles shape individual development and contribute to institutional success.

In essence, the narratives highlight the symbiotic relationship between leadership roles and career advancement in higher education. As individuals take on leadership positions, they propel their professional growth and make significant contributions to their institutions and the broader academic community. By embracing the challenges and opportunities that come with leadership, they chart a path toward continued success and fulfillment in their careers while also helping to realize the collective aspirations of their institutions and stakeholders. Effective leadership fosters essential qualities like collaboration and adaptability, aligning personal growth with institutional missions and values and accelerating career advancement (Hendrickson, 2012). This dynamic underscores leadership's vital role in individual and institutional success.

4.0. Conclusion

Women in advanced leadership positions emphasized the crucial role of mentorship, training programs, and supportive institutional environments in their leadership development. Mentorship and coaching provided valuable guidance, feedback, and skill-building opportunities, enabling them to develop practical leadership strategies. Training programs and workshops further equipped them with essential communication, decision-making, and conflict-resolution skills, contributing to their professional growth. These findings highlight key elements that facilitate women's leadership development in higher education, underscoring the importance of institutional support in advancing women leaders. Future research can expand on this by exploring the long-term effects of these programs, conducting comparative analyses across diverse institutions, and examining the role of peer networks and informal mentorship. Additionally, investigating how intersectional factors like race, socioeconomic background, and field of expertise influence women's leadership trajectories could offer more inclusive insights. Such research can help design more tailored, effective programs that address women's unique challenges in advancing to leadership roles, fostering greater leadership diversity and equity in academia.

5.0 Contributions of Authors

The authors reviewed and approved the final work. The primary author was instrumental in carrying out the comprehensive study, dedicating significant time and effort to its successful completion. This endeavor was not solitary, as it was greatly enhanced with the co-author's supervision, insightful review, and invaluable mentoring.

6.0 Funding

This work received no specific grant from any grant funding agency.

7.0 Conflict Interests

The authors declare no conflicts of interest about the publication of this paper.

8.0 Acknowledgement

The authors would like to thank everyone who has given extra support in finishing this research.

9.0 References

- Alapo, R. (2016). *Generation X: The Role of Culture on the Leadership Styles of Women in Leadership positions*. New York, NY: First Asta Publications, LLC.
- Banker, D.V. (2023). Status of women leadership in the Indian higher education sector. *International Journal of Educational Management*, 37(3), 662-680. <https://doi.org/10.1108/IJEM-09-2022-0300>
- Berg, G. (2020). *The rise of women in higher education: how, why, and what is next*. Lanham, MD: Rowman & Littlefield.
- Contreras, S. (2023). *Transformative leadership in complex and culturally diverse organizations through the lens of transformative higher education presidents* (Doctoral dissertation). Northeastern University
- Creswell, J.W., & Poth, C.N. (2017). *Qualitative Inquiry & Research Design: Choosing Among Five Approaches*, 4th edition. Thousand Oaks, CA: SAGE Publications, Inc.
- Cummings, W.K., & Bain, O. (2016). Academic advancement and gender: a comparative analysis. In A. Arimoto (Ed.), *Biographies and careers throughout academic life* (pp. 297-316). Springer.
- Dominici, F., Fried, L.P., & Zeger, S.L. (2014). There are so few female leaders — American Association of University Professors. Retrieved from <https://tinyurl.com/2s4dkzka>
- Dunn, D., Gerlach, J., & Hyle, A. (2014). Gender and leadership: Reflections of women in higher education administration. *International Journal of Leadership and Change*, 2(1), 2. <https://digitalcommons.wku.edu/ijlc/vol1/iss2/2/>
- Wilson, E. M. (1998). Gendered career paths. *Personnel Review*, 27(5), 396-411. <https://doi.org/10.1108/00483489810230334>
- Eddy, P. L., & Ward, K. (2015). Lean In or Opt Out: Career Pathways of Academic Women. *Change: The Magazine of Higher Learning*, 47(2), 6-13. <https://doi.org/10.1080/00091383.2015.1018082>
- Eggs, H. (2016). *The Changing Role of Women in Higher Education: Academic and Leadership Issues*. Switzerland: Springer International Publishing.
- Esterberg, K. G., & Wooding, J. (2014). *Divided Conversations: Identities, Leadership, and Change in Public Higher Education*. Nashville, TN: Vanderbilt University Press.
- Fitzgerald, T. (2014). *Women leaders in higher education: Shattering the myths*. New York, NY: Routledge.
- Groenewald, T. (2004). A phenomenological research design illustrated. *International Journal of Qualitative Methods*, 3(1), 42-55. <https://doi.org/10.1177/160940690400300104>
- Grogan, M. (2014). *Women and educational leadership*. San Francisco, CA: Jossey-Bass.
- Longman, K., & Madsen, S. (2014). *Women and leadership in higher education (Women and leadership: Research, Theory and Practice)*. Charlotte, NC: Information Age Publishing, Inc.
- Ileana, M., Cantisani, R., Membrillo-Hernández, J., Caratozzolo, P., & Lara-Prieto, V. (2023). Towards gender equity in education: strategies to develop equity leadership in higher education institution. 2023 IEEE Global Engineering Education Conference (EDUCON)
- Jones, M.L., & Marlier, M. (2022). Support, advocacy, and best practices in the advancement of women in higher education. In M. Jones & A. Marlier (Eds.), *Voices from women leaders on success in higher education* (p. 14). Routledge.
- Hendrickson, R. M., Lane, J. E., Harris, J. T., & Dorman, R. H. (2012). *Academic Leadership and Governance of Higher Education: A Guide for Trustees, Leaders, and Aspiring Leaders of Two- and Four-Year Institutions*. Routledge.
- Hoff, K. S. (1999). Leaders and managers: Essential skills required within higher education. *Higher Education*, 38(3), 311-331. <https://doi.org/10.1023/A:1003783111097>
- Madsen, S. (2014). *On becoming a woman leader: Learning from the experiences of university presidents*. San Francisco, CA: Jossey-Bass.
- Mainah, F., & Perkins, V. (2015). Challenges facing female leaders of color in U.S. higher education. *International Journal of African Development*, 2(2), 5-13. <https://scholarworks.wmich.edu/ijad/vol2/iss2/6/>
- Maki, L. A. (2015). *A Grounded Theory of Women's Leadership Experiences in Higher Education: Navigating from the Director Level* (Dissertations). Minnesota State University
- Marion, R., & Gonzales, L. (2014). *Leadership in education: Organizational theory for the Practitioner*. Long Grove, IL: Waveland Press.
- Ngunjiri, F., & Madsen, S. (2015). *Women as Global Leaders*. Charlotte, NC: Information Age Publishing, Inc.
- Parker, P. (2015). The historical role of women in higher education. *Administrative Issues Journal: Connecting Education, Practice and Research*, 5(1), 3-14. <https://doi.org/10.5929/2015.5.1.1>
- Rosa, B., Ochoa-Jaime, D., & Valdez-Pineda, V. (2020). Caracterización de la satisfacción laboral por género en el personal académico de una Institución de Educación Superior. *Journal of Ultrasound in Medicine*, 4(12), 20-31. <https://doi.org/10.1002/jum.15472>
- Sagarra, M. A. D. (1988). Administrative mobility and gender: Patterns and processes in higher education. *The Journal of Higher Education*, 59(3), 305-326. <https://doi.org/10.1080/00221546.1988.11778330>
- Sandberg, S. (2015). *Lean in: Women, work, and the will to lead*. New York, NY: Alfred A. Knopf.
- Simpson, L., Simpson, L., Harper, J., & Richard, H. (2020). *Values, Personal Influence, and Occupational Choice*. Social Forces.
- Zielinska, A. C. (2023). Leadership for sustainability in higher education amidst the COVID-19 crisis. In E. Meletiadou (Ed.), *Implications of sustainable development in Higher Education* (pp.1-23). IGI Global Publisher of Timely Knowledge.

Ensuring Validity and Reliability in Algebra Midterm Assessment: A Comprehensive Approach to Test Development and Analysis

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Date received: September 14, 2024

Date revised: October 1, 2024

Date accepted: October 14, 2024

Originality: 92%

Grammarly Score: 99%

Similarity: 8%

Recommended citation:

Cañeda, M., Gamaya, A.F., & Baring, M. (2024). Ensuring validity and reliability in Algebra midterm assessment: A comprehensive approach to test development and analysis. *Journal of Interdisciplinary Perspectives*, 2(11), 362-372. <https://doi.org/10.69569/jip.2024.0497>

Abstract. First-year mathematics education students often face challenges with College and Advanced Algebra assessments. This study aimed to develop and validate a 100-item multiple-choice midterm test for College and Advanced Algebra, ensuring the test's validity and reliability. The test was designed following a structured process that included creating a Table of Specifications (TOS) based on the approved syllabus. To ensure content accuracy and relevance, the test was reviewed by three subject matter experts and evaluated for clarity by 15 students. Pilot testing was conducted with 82 fourth-year Bachelor of Secondary Education Mathematics (BSEd Mathematics) students. The pilot test results underwent detailed item analysis, focusing on metrics such as the difficulty index, discrimination index, and overall reliability using the Kuder-Richardson Formula 20 (KR-20). Of the 100 items, 22 were retained, 48 were revised, and 30 were discarded. The test achieved a reliability coefficient of 0.876, indicating strong internal consistency. The findings suggest that the validated test questionnaire is a dependable tool for accurately assessing students' knowledge in College and Advanced Algebra, providing valuable feedback for educators and students.

Keywords: College Algebra; Advanced Algebra; Item analysis; Mathematics education; Test development.

1.0 Introduction

Several studies have emphasized the importance of developing valid and reliable assessment tools, particularly in mathematics education, to measure student learning outcomes effectively (Kilic, 2016; Mamolo, 2021). These studies highlight the necessity of aligning test items with learning objectives and ensuring they assess lower-order cognitive and higher-order thinking skills, as outlined in Bloom's Taxonomy (Anderson & Krathwohl, 2001). While using multiple-choice formats is common in algebra assessments due to their efficiency in evaluating a broad range of knowledge, issues such as poorly designed questions and a lack of context often limit the accuracy of these tests (Quagraine & Arhin, 2017).

A key gap identified in the literature is the lack of validated test questionnaires specifically designed for College and Advanced Algebra that incorporate a thorough item analysis to ensure reliability and validity. Many existing tests do not undergo the rigorous process of expert validation and empirical item analysis, leading to assessments that may not accurately reflect student comprehension, particularly in higher-order thinking skills such as analysis

and problem-solving (Stephens et al., 2015; Kunwar, 2018). Moreover, while there has been significant research on general assessment development, few studies focus on applying specific psychometric methods like the Kuder-Richardson Formula 20 (KR-20) for measuring internal consistency in mathematics tests.

Additionally, previous research has often failed to consider the specific needs of first-year mathematics education students, particularly those enrolled in College and Advanced Algebra, where the conceptual complexity and vast number of topics can overwhelm students. This gap in specialized assessments for these demographics underscores the need to develop tailored, validated tools that accurately measure student understanding and provide actionable feedback to learners and educators (Ocampo & Usita, 2015). Thus, this study aims to fill these gaps by developing a midterm assessment for College and Advanced Algebra that aligns with course objectives and undergoes a rigorous validation process, including expert review, face validity assessment, and item analysis using psychometric methods. This approach ensures that the test provides reliable and accurate measures of student knowledge, addressing the deficiencies found in previous assessments.

On the other hand, designing an efficient test can transform a multiple-choice questionnaire into a useful instrument for evaluating, providing feedback, and preparing learners. Educators can develop trustworthy, valid tools that adequately measure students' competence against their knowledge, considering the alignment of content and difficulty with the purpose of a given examination (Bilyakovska, 2022). The formal procedure for developing tests begins by clearly specifying learning objectives that correspond with what the test intends to achieve (Irwing & Hughes, 2018). According to universal design principles, creating inclusive evaluations helps eliminate obstacles and promote equity among all learners (Lazarus et al., 2022). Furthermore, validity and reliability are important aspects that contribute to accurate and stable test outcomes, hence used in diverse student populations or different situations (Sullivan, 2011). This approach enhances the quality of assessments and improves educational experiences for all learners.

Validity and reliability are essential components of developing effective assessment tools. Validity, which includes face and content validity, ensures that a test measures what it is intended to measure. Students' responses and expert input are crucial in refining test items to ensure they are relevant and accurately reflect the subject matter (Cañeda, 2024a; Mamolo, 2021). Content validity, in particular, is strengthened through multiple expert reviews, with a mean score of 2.60 or higher considered acceptable (Ocampo & Usita, 2015). Reliability, conversely, refers to the consistency of a test's results across different administrations. Tools like Cronbach's alpha and the Kuder-Richardson 20 (KR-20) help measure this consistency, with values above 0.70 indicating good reliability (Taherdoost, 2016; Bobbit, 2022). Reliable tests ensure student performance is accurately measured, leading to fair and meaningful evaluations (Jhangiani et al., 2015).

To maintain the validity and reliability of the test, groups of researchers propose a detailed five-phase process for developing tests. The first phase is identifying key characteristics of the test, such as purpose, audience, and difficulty level. Next comes making a table of specifications that will act as one of the components ensuring content validity by providing information on what the test covers. Then, the emphasis shifts towards collecting and evaluating tests, ensuring difficulty and content coverage continuity. In addition, clear procedures are developed along with materials for administering or scoring tests; they include instructions for who administers the test and rubrics for consistent marking. Finally, revision incorporates feedback from pilot testing into the necessary changes and improvements. The table of specifications, also called a detailed test plan, guides the construction of the test and ensures it is aligned with learning objectives (American Educational Research Association, 2014).

When creating multiple-choice questions to assess higher-order thinking, it is essential to target advanced cognitive skills as outlined in the revised Bloom's Taxonomy. This framework categorizes cognitive skills from basic knowledge recall to more complex tasks like analysis, synthesis, and evaluation (Dwyer et al., 2014). Originally developed by Benjamin Bloom in 1956, the taxonomy has evolved to emphasize the importance of moving beyond memorization to encourage critical thinking and creativity (Andreev, 2024). The revised version is widely used in modern education to support flexible, systematic teaching and assessment practices that promote deeper learning (Metzgar, 2023). The taxonomy's six levels—remembering, understanding, applying, analyzing, evaluating, and creating—provide educators with a structured way to assess students' cognitive processes, particularly in complex subjects like mathematics (Wilson, 2016). By utilizing this framework, teachers can foster

critical thinking and ensure balanced learning outcomes that address student development's cognitive, emotional, and physical aspects (University of Waterloo, 2024).

Multiple-choice questions are often preferred due to their ease of grading and ability to cover various topics (Quaigrain & Arhin, 2017). However, test items must align with instructional goals and be worded to avoid confusion, ensuring students' responses reflect their understanding (Yaddanapudi & Yaddanapudi, 2019). Test questionnaires assess learning and provide valuable feedback, helping students identify areas of strength and weakness. Unfortunately, many assessments, particularly in advanced algebra, fail to capture complex concepts like polynomial functions and logarithmic equations, leading to a misleading representation of students' abilities (Tejeda & Gallardo, 2017). Poorly designed questions or insufficient context can further distort the accuracy of these evaluations, resulting in unfair judgments of student competence (Cañeda, 2024a).

When a test questionnaire is designed purposefully and strategically implemented, it transcends the simple function of a rating tool (Chigonga, 2020). It serves as a prime source for assessment, feedback, and preparation, allowing learners to gain an insight into Algebra, thereby equipping them with the necessary abilities to excel academically and personally. In like manner, Jain et al. (2016) stress that defining the purpose of a test is central during the process of designing a questionnaire. Being able to define what the test seeks to measure enables educators to choose appropriate content and set the right level of difficulty for test items. Such an organized approach also helps develop a test blueprint that ensures an exhaustive coverage of specific topics aligned with learning objectives.

In Agusan del Sur State College of Agriculture and Technology (ASSCAT), this represents a formative step in making a validated questionnaire that evaluates students' competence in College and Advanced Algebra, especially designed for those planning to be high school teachers. This study aimed to develop a test questionnaire focusing on midterm topics. The process consisted of formulating questionnaires aligned with the Revised Bloom's Taxonomy to provide a complete assessment across multiple cognitive domains. It was also necessary for the researcher to assess the face and content validity of these instruments and establish their reliability to ensure that they consistently represent correct measurements of students' knowledge and skills in College and Advanced Algebra. Such validated instruments are reliable and valuable resources for curriculum developers, educators, students, and future researchers. They offer crucial materials for evaluation, teaching purposes, and further academic pursuits.

2.0 Methodology

2.1 Research Design

This research focuses on instrumentation, which in academic contexts typically refers to the creation and use of measurement tools like surveys, tests, and questionnaires (Biddix, 2018). The instrumentation process encompasses designing, evaluating, and applying these tools to ensure they accurately measure the desired constructs, emphasizing validity and reliability. Key aspects of this process include ensuring item clarity, content validity, and scoring consistency (Kline, 2000). This study used instrumentation to develop and validate test questionnaires covering specific College and Advanced Algebra topics, focusing on syllabus-based mid and final-term content.

2.2 Research Respondents

This study involved three teacher validators and fifteen student examinees. The teacher validators were instructors from the Agusan del Sur State College of Agriculture and Technology (ASSCAT), all of whom had a master's degree in mathematics and at least two years of teaching experience. These instructors were tasked with assessing the content validity of the test questionnaire. According to Gilbert and Prion (2016), utilizing three experts can provide reliable evidence of good content validity.

The student examinees included 82 4th-year Bachelor of Secondary Education major in Mathematics (BSEd-Mathematics) students who had completed courses in College and Advanced Algebra. During the pilot testing phase, these students took the developed test questionnaires, and fifteen served as student validators for assessing face validity. As Taherdoost (2016) noted, face validity refers to the extent to which a test appears to measure a specific construct as judged by non-experts or test-takers.

The selection of both validators and examinees was guided by their interest and involvement in developing and validating the test questionnaire, specifically for selected topics in College and Advanced Algebra. A universal and probability sampling technique was employed for the examinees, ensuring a representative sample of the population. A non-probability purposive sampling method was used to select the validators, focusing on their qualifications and relevance to the study. This careful selection process was crucial for collecting data pertinent to the research objectives.

2.3 Research Instrument

The instrument used in this study was adopted by Oducado (2020) researchers for content validation and Patel and Desai (2020) for face validation. These tools evaluated the development of the test questionnaire in selected topics of the College and Advanced Algebra midterm in terms of content validity and face validity. The rating of each criterion for face validity was "yes or no." The rating of each criterion for content validity is as follows: 5 – Strongly Agree, 4 – Agree, 3 – Neither/Nor agree, 2 – Disagree, and 1 – Strongly Disagree. A 5-point Likert scale was used as the basis for the mean ranges per factor in the evaluation rating sheet, along with the corresponding description and interpretation used in this study. Tables 1, 2, and 3 are the rating scales utilized for face validity, content validity, and reliability coefficient. Tables 4, 5, and 6 are rating scales for the difficulty index, discrimination index, and the decision.

Table 1. Interpretation of face validity

% of agreement	Strength of Agreement per question or overall	Action for each Question/ entire tool
< 80	Poor	Restructure
80 - 90	Substantial	Substantial Revise
90 - 100	Full	Retain

(Patel and Desai, 2020)

Table 2. Interpretation of content validity

Mean Range	Verbal Description	Qualitative Interpretation
4.21 – 5.00	Very High	This means that the validity of the developed test questionnaire is very much accepted.
3.41 – 4.20	High	This means that the validity of the developed test questionnaire is much accepted.
2.61 – 3.40	Moderate	This means that the validity of the developed test questionnaire is accepted.
1.81 – 2.60	Low	This means that the validity of the developed test questionnaire is poor.
1.00 – 1.80	Very Low	This means that the validity of the developed test questionnaire is not accepted.

(Ocampo and Usita, 2017)

Table 3. Reliability coefficients value interpretations

Reliability	Interpretation
0.90 and above	Excellent
0.80 - 0.89	Good
0.70 – 0.79	Average
0.60 – 0.69	Questionable
0.50 – 0.59	Poor
0.50 or below	Unacceptable

(Longe and Maharaj, 2023)

Table 4. Discrimination index (d-level) interpretation range

D value Range	Interpretation
-1.00 – -0.60	Questionable Item
-0.59 - -0.21	Not Discriminating
-0.20 – 0.20	Moderately discriminating
0.21 – 0.59	Discriminating
0.60 – 1.00	Very Discriminating

(Padua and Santos, 1997)

Table 5. Difficulty level (p-level) interpretation range

P value Range	Interpretation
0.00 – 0.20	Very Difficult Item
0.21 – 0.40	Difficult Item
0.41 – 0.60	Moderately Difficult Item
0.61 – 0.80	Easy Item
0.81 and above	Very Easy item

(Padua and Santos, 1997)

Table 6. The decision for discrimination index and difficulty index.

Discrimination Index (D-Value)	Difficulty Index (P-Value)	Decision
Acceptable	Acceptable	Retained
Not Acceptable	Acceptable	Revised
Acceptable	Not Acceptable	Revised
Not Acceptable	Not Acceptable	Rejected

(Padua and Santos, 1997; Cañeda et al., 2024b)

2.4 Development Process

This research adopted the framework of Cañeda et al. (2024b), which is rooted in the early development and validation by Mamolo (2021). The framework consists of four stages, as shown in Figure 1, in this study: conceptualization, development of the test, validation of the test, and pilot testing.

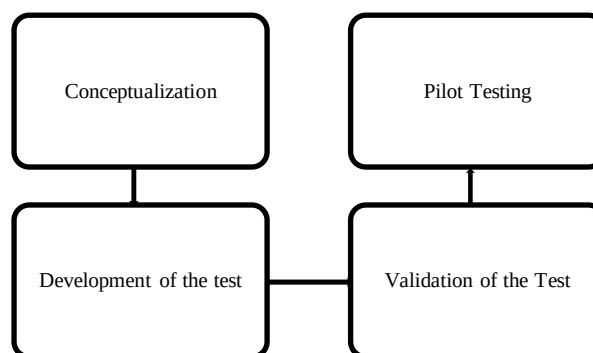


Figure 1. Process in the development and validation of test

Conceptualization

The initial step in this study involved identifying key concepts from selected midterm and final term topics in College and Advanced Algebra. When developing term examinations, it is crucial to ensure that the items constructed align with the constructs outlined in the approved syllabus. The test questionnaire created for the midterm contained one hundred (100) items, covering all relevant learning competencies.

The midterm test questions included number systems, functions and relations, algebraic expressions, the plane coordinate system, systems of equations, second-degree equations, radicals and rational exponents, and logarithms. These topics were all selected based on the approved syllabus from the Agusan del Sur State College of Agriculture and Technology (ASSCAT), referenced to CMO No. 75, series 2017. The representation of each topic in the exams was proportional to the instructional time and importance indicated in the syllabus.

Development of the Test

The study centered on developing midterm test questionnaires for College and Advanced Algebra courses. The first step in this process was creating a Table of Specifications (TOS), a blueprint for designing the test items. The midterm questionnaire comprised 100 items, meticulously categorized according to the Revised Bloom's Taxonomy. It covered eight distinct topics, each with a specific time allocation and percentage of questions. For example, the Real Number System was allocated 6 hours and 22.22% of the questions. At the same time, other topics such as functions, algebraic expressions, and plane coordinate systems were each given 3 hours and 11.11% of the questions. This detailed approach ensured a balanced and comprehensive assessment of students' understanding.

After drafting the test items, the next steps involved reviewing and refining them to ensure clarity and accuracy. Establishing scoring guidelines and setting criteria for the test's completeness were also crucial to ensure a thorough evaluation process. The tests were designed using a multiple-choice format deemed suitable for the assessment level and content (Kara & Çelikler, 2015). The final set of test items included various questions with varying difficulty levels, carefully chosen and refined through several rounds of review to ensure they effectively measured students' understanding.

Validation of the Test Questionnaire

The validation process for the draft test questionnaires in College and Advanced Algebra involved thorough checks for both content and face validity. To ensure content validity, three experts reviewed the test items—a number deemed sufficient for a comprehensive evaluation. According to Gilbert and Prion (2016), having at least three experts assesses whether the test items accurately reflect the subject matter and cover the intended content. These experts examined how well the test items aligned with the learning objectives and whether they effectively represented the measured domain.

Face validity focuses on how relevant and clear the test appears from the perspective of those who will take it, such as students. As explained by Taherdoost (2016), face validity looks at whether the test seems to measure what it is supposed to in a way that is understandable and appropriate for the test takers. In this study, fifteen students evaluated face validity, which is more than the minimum of ten participants. This larger sample size helped ensure that the feedback was reliable, ensuring the test items were seen as relevant and clear by a broad range of respondents.

The experts were given detailed materials to ensure a thorough evaluation, including the draft test questionnaires, a Table of Specifications, and a syllabus outlining the learning competencies. This comprehensive documentation allowed the validators to carefully review how well the test items matched the instructional content and educational objectives. The in-depth review process ensured that the test items were relevant, appropriately challenging, fair, and unbiased, following the best practices in educational assessment.

Pilot Testing

The draft test questionnaire for the midterm exams in College and Advanced Algebra was given to fourth-year BSEd Mathematics students at Agusan del Sur State College of Agriculture and Technology (ASSCAT) after getting approval from the dean of the College of Teacher Education. Eighty-two students took part in this pilot testing phase, which is crucial for evaluating the quality and effectiveness of the test items. This phase assesses the empirical validity of the test and its overall suitability (Syahfitri et al., 2019). The feedback gathered from this pilot testing is vital for refining the questionnaire and addressing clarity, difficulty, and effectiveness issues. This process helps ensure that the test aligns with the learning objectives and accurately measures the intended knowledge and skills, ultimately enhancing the reliability and validity of the assessment tool.

After completing the pilot testing, the next step was to evaluate the reliability of the test items. To do this, the Kuder-Richardson 20 (KR-20) formula was used, which calculates reliability on a scale from 0 (indicating poor reliability) to 1 (indicating excellent reliability), with higher values reflecting greater reliability (Bobbitt, 2022). An item analysis was then conducted, essential for tests where students choose the correct answer from multiple options. According to Kunwar (2018), item analysis is particularly important for multiple-choice exams, which often significantly impact students' grades or other key outcomes. This analysis helps identify any problematic questions that might be ambiguous, irrelevant, too easy or too difficult, or unable to differentiate between high and low performers effectively.

Through item analysis, educators can enhance the quality of an exam by identifying and refining or removing problematic questions. This process also helps improve classroom instruction by pinpointing areas where students may struggle and guiding targeted remediation efforts. For high-stakes exams like midterms, item analysis ensures that the assessments are fair, valid, and accurately measure students' knowledge and skills (Kunwar, 2018).

3.0 Result and Discussion

3.1 Content and Face Validity

The overall mean given by the three experts about content validity was 4.27 (Table 7), which is described as very high. This implies that the quality of the developed test questionnaire is very much accepted and that the test questionnaire adequately covers the full range of content that is intended to be measured. Suppose the mean range is greater than or equal to 2.60 as an overall mean for content validity. In that case, it indicates “moderate to very high” or “acceptable to very much acceptable” to the experts (Ocampo and Usita (2015). This means that the content validity of the developed test questionnaire for the College and Advanced Algebra Midterm was essential and accurately measured what it intended.

Table 7. Content validity of the test questionnaire

Content Validity	Mean	Verbal Description
Expert 1	4.00	High
Expert 2	4.18	High
Expert 3	4.63	Very high
Overall Mean	4.27	Very high

Face validity obtained an overall mean percentage of 97%, meaning the developed test questionnaire is full. This implies that the developed test questionnaire measures the extent to which respondents and experts feel the questionnaire measures what it is intended to measure (Yaddanapudi & Yaddanapudi, 2019). If the range is within 90%–100%, the strength of agreement per question or overall is almost perfect, and the actions for each question or entire tool will be retained (Desai & Patel, 2020). This means that the face validity of the developed test questionnaire in College and Advanced Algebra in midterm was satisfied and acceptable.

Table 8. Face validity of the test questionnaire

Face Validity	Percentage	Verbal Description
Rater 1	100%	Full
Rater 2	100%	Full
Rater 3	100%	Full
Rater 4	100%	Full
Rater 5	100%	Full
Rater 6	100%	Full
Rater 7	100%	Full
Rater 8	100%	Full
Rater 9	100%	Full
Rater 10	100%	Full
Rater 11	90%	Full
Rater 12	90%	Full
Rater 13	90%	Full
Rater 14	90%	Full
Rater 15	90%	Full
Overall Mean	97%	Full

3.2 Item Analysis

Table 9 shows the difficulty distribution for the College and Advanced Algebra Midterm examinations. A significant portion of the items is categorized as very easy. Specifically, 39% of the items were found to have a difficulty index ranging from 0.81 and above, indicating that most students answered these items correctly. A difficulty index within this range typically suggests that the items are straightforward for the test-takers, making the assessment less challenging overall.

In addition to the very easy items, 29% fell into the easy category, with a difficulty index ranging from 0.61 to 0.80. This classification also implies that a substantial number of students managed to answer these items correctly. Together, both the very easy and easy categories account for a significant 68% of the total items, highlighting that a majority of the test consists of items that students find accessible. Conversely, 11% of the items are considered moderately difficult, with a difficulty index falling between 0.41 and 0.60. This indicates that while some students may struggle, a fair number still answer these questions correctly, showcasing a balanced approach to assessing students' understanding at varying levels of challenge.

Table 9. Mid-term item distribution (difficulty index)

Difficulty Index	Test item number	Frequency	Percentage	Verbal Interpretation
0.81 and above	(2, 3, 6, 7, 8, 9, 10, 11, 12, 13, 24, 25, 32, 33, 34, 39, 42, 43, 45, 47, 52, 53, 54, 56, 59, 68, 74, 78, 82, 83, 84, 87, 90, 91, 92, 93, 94, 98, and 99)	39	39%	Very Easy item
0.61 – 0.80	(1, 4, 5, 16, 17, 19, 20, 26, 27, 30, 31, 36, 37, 40, 41, 46, 50, 51, 57, 61, 63, 64, 65, 67, 80, 88, 89, 95, and 96)	29	29%	Easy Item
0.41 – 0.60	(18, 21, 29, 35, 38, 55, 71, 72, 79, 85, and 100)	11	11%	Moderately Difficult Item
0.21 – 0.40	(14, 48, 69, 70, 75, 76, 77, and 97)	8	8%	Difficult Item
0.00 – 0.20	(15, 22, 23, 28, 44, 49, 58, 60, 62, 66, 73, 81, and 86)	13	13%	Very Difficult Item

Among the test items, 8% were classified as difficult, with difficulty indices ranging from 0.20 to 0.40. These items might cover less familiar content or could be poorly constructed, undermining the assessment's effectiveness. Additionally, 13% of the items were categorized as difficult, with indices below 0.20. These particularly challenging items will likely test students significantly, potentially highlighting areas where more instructional focus may be needed.

The findings emphasized the need to adjust item difficulty and enhance the effectiveness of distractors used in assessments (Rezigall et al., 2019). Identifying the areas where students struggle provides valuable insights for educators, guiding them on where to concentrate their teaching efforts. This understanding allows teachers to develop tailored strategies that address these challenges, ultimately leading to improved learning outcomes in mathematics (Aguhayon et al., 2023).

Table 10 shows how the items in the midterm test questionnaire for College and Advanced Algebra are distributed based on their discrimination index. This index measures how well each item can differentiate between high and low performers on the test. Impressively, over 90% of the items are considered acceptable for their ability to distinguish between different levels of student performance. In particular, 11% of the items are classified as very discriminating or excellent, meaning they effectively differentiate between top-performing and lower-performing students.

Furthermore, 54% of the items fall under the category of discriminating or good, which suggests that these items adequately identify variations in student performance. An additional 26% of items are moderately discriminating or reasonably good, signifying that while they may not be the most effective, they still possess some capacity to differentiate levels of understanding among students. Conversely, only 8% of the items are characterized as not discriminating or marginal, which implies they do not effectively distinguish among student performance. Alarming, 1% of the items were identified as poor or questionable, indicating a need for revision or elimination from future assessments. This categorization underscores the importance of continuous evaluation and improvement of assessment tools to ensure they fulfill their intended purpose effectively.

Table 10. Mid-term Item Distribution (Discrimination Index)

Discrimination Index	Test item number	Frequency	Percentage	Verbal Interpretation
-1.00 – -0.60	(14)	1	1%	Questionable Item
-0.59 - -0.21	(21, 35, 58, 66, 69, 79, 85, and 97)	8	8%	Not Discriminating
-0.20 – 0.20	(7, 8, 11, 15, 16, 19, 22, 23, 28, 41, 44, 48, 49, 59, 60, 62, 70, 72, 73, 75, 76, 77, 81, 84, 86, 100)	26	26%	Moderately discriminating
0.21 – 0.59	(1, 2, 3, 4, 5, 6, 9, 10, 12, 13, 17, 20, 24, 25, 26, 27, 30, 31, 32, 33, 34, 36, 37, 38, 39, 40, 42, 43, 45, 46, 47, 52, 53, 54, 55, 56, 57, 64, 68, 71, 74, 78, 82, 83, 87, 89, 90, 91, 92, 93, 94, 96, 98, and 99).	54	54%	Discriminating
0.60 – 1.00	(18, 29, 50, 51, 61, 63, 65, 67, 80, 88, 95)	11	11%	Very Discriminating

The distribution of items in the College and Advanced Algebra Midterm reflects a strong overall performance, with most items meeting acceptable discrimination standards. This high percentage of effective discrimination indicates that the test items are of good quality (Ferrando et al., 2023). However, it is important to note that high

discrimination does not always equate to effective measurement. Factors like redundancy, shared residuals, and biased distributions can influence these results (Kılıç & Uysal, 2022). This underscores the need to identify and address potential issues that might skew discrimination estimates. Continuous refinement of assessments is crucial for improving educational outcomes and better-supporting student learning.

Table 11 offers important insights into item discrimination and difficulty. The analysis shows that out of all the items evaluated, 22 were retained, indicating a high level of acceptance for these questions. However, 48 items – making up 48% of the total – needed revision. This suggests a significant need for adjustments to assess the intended concepts better. Additionally, 30 items, or 30% of the total, were slated for rejection. This indicates that while a substantial number of items either met the required standards or could be improved, there is still room for refinement to ensure the effectiveness of the assessment.

Table 11. Decision for discrimination index and difficulty index

Final Evaluation	Item Number/s	Frequency	Percentage
Items to be Retained	(1, 4, 5, 17, 18, 26, 29, 30, 31, 38, 50, 51, 55, 57, 61, 63, 65, 57, 71, 80, 88, and 95)	22	22%
Items to be Revised	(2, 3, 6, 7, 8, 9, 10, 12, 13, 16, 20, 24, 25, 27, 32, 33, 34, 36, 37, 39, 40, 42, 43, 45, 46, 47, 52, 53, 54, 56, 64, 68, 74, 78, 82, 83, 84, 87, 89, 90, 91, 92, 93, 94, 96, 98, 99, and 100)	48	48%
Items to be Rejected	(11, 14, 15, 19, 21, 22, 23, 28, 35, 41, 44, 48, 49, 58, 59, 60, 62, 66, 69, 70, 72, 73, 75, 76, 77, 79, 81, 85, 86, and 97)	30	30%

These findings highlight the crucial role of thorough item analysis in creating effective assessments. By sorting items into retained, revised, or rejected categories, educators can ensure that their tests stay valid and reliable, leading to better measurement outcomes (DeVellis, 2003). Striking the right balance between keeping valuable items and revising those with issues is essential for upholding the quality and effectiveness of assessment tools. This careful approach helps maintain the integrity of the evaluation process and ultimately supports improved student learning and assessment accuracy.

3.3 Reliability of the Test

The validated midterm test questionnaire was pilot-tested with fourth-year BSEd Mathematics students, leading to refinements that removed overly difficult, too easy, or misleading questions. The revised 99-item test was evaluated for reliability using the Kuder-Richardson 20 (KR-20) formula, which assesses internal consistency for binary data (correct/incorrect answers). The KR-20 coefficient of 0.876 indicates a high level of reliability and consistency for the questionnaire (University of Washington, 2020). This score, close to 1.0, confirms that the test meets the criteria for acceptable reliability (Kilic, 2016). The questionnaire is therefore considered effective for evaluating students' knowledge and skills in College and Advanced Algebra. However, item 11 was removed from the test due to zero variance in student responses.

4.0 Conclusion

The study's findings led to the creation of midterm test questionnaires for College and Advanced Algebra, carefully aligned with the approved syllabi. The aim was to enhance existing assessment tools, and the newly developed questionnaires showed strong face and content validity, with ratings of "Full" and "Very High," respectively. They also demonstrated high reliability and consistency, confirming their effectiveness in accurately measuring the intended content and evaluating student performance in these advanced math courses. The item analysis process refined the questionnaires further, resulting in 22 items being retained, 48 revised, and 30 rejected. This thorough evaluation ensures the assessments are well-suited for capturing students' understanding and skills in College and Advanced Algebra.

Items identified for revision will undergo a thorough refinement process. This involves carefully reviewing and modifying the items based on feedback and analysis. Adjustments will be made to improve clarity, ensure better alignment with learning objectives, and accurately measure the targeted knowledge and skills. The goal is to enhance the current assessment tool and contribute to the ongoing development of future test items. This iterative process helps the test evolve to assess student understanding and learning outcomes more effectively. By

continually refining the items, we foster a robust and reliable assessment framework that supports accurate evaluation of students' competencies in College and Advanced Algebra. The improved items will become essential components of a more effective and comprehensive assessment tool, ultimately enhancing the quality and fairness of future exams.

The findings of this study offer valuable contributions to mathematics education. By developing a reliable and validated test for College and Advanced Algebra, educators now have an effective tool to assess students' understanding of complex concepts and higher-order thinking skills more accurately. The item analysis provides insights to help teachers pinpoint areas where students struggle, enabling more targeted instruction to address learning gaps. The methodology, including tools like the Kuder-Richardson Formula 20 (KR-20), also sets a standard for creating similar assessments in other subjects. The study's results can guide curriculum improvements by ensuring teaching materials align with student needs. The test design's focus on fairness and accuracy also promotes equity in student evaluations. Lastly, this research paves the way for further studies on algebra assessments, encouraging the development of new methods for evaluating higher-order thinking skills.

Based on the findings of the study, the following recommendations are offered:

1. **Implementation of the Revised Test Questionnaires:** The revised test questionnaires for both the midterm and final terms should be implemented in College and Advanced Algebra courses to enhance assessment accuracy and reliability.
2. **Continuous Evaluation and Improvement:** It is essential to regularly evaluate and refine test questionnaires to ensure they continue to measure student learning outcomes effectively. This ongoing process helps maintain the quality of assessments and ensures they remain relevant and accurate in evaluating students' progress and understanding.
3. **Utilization of the Test Questionnaires as a Benchmark:** The developed test questionnaires can be a benchmark for creating similar assessment tools in other mathematics courses.
4. **Further Research on Item Analysis:** To further improve the test questionnaires, in-depth item analysis can be conducted to identify specific item characteristics that contribute to high or low discrimination and difficulty indices.
5. **Teacher Training on Test Construction:** Training teachers on test construction principles and item analysis techniques can enhance the quality of classroom assessments and student learning outcomes.

5.0 Contribution of Authors

Matthew E. Cañeda: Editing, writing, supervising, data analysis, conceptualization
Arl Joshua F. Gamaya: Writing, data analysis
Manuelin C. Baring: data gathering, checking, encoding

6.0 Funding

This research did not receive support from any funding agency.

7.0 Conflict of Interests

The research has no conflicts of interest, as the researchers do not have any financial, personal, or professional ties that could bias the study. The primary goal was to develop and validate a test questionnaire for assessing first-year students' knowledge of College and Advanced Algebra. The researchers independently funded the study, ensuring no external influence on the results. Furthermore, the experts involved in the evaluation were impartial, providing objective feedback without any vested interest in the study's outcomes.

8.0 Acknowledgement

The researchers expressed their gratitude to the students who participated in the study and extended their thanks to the experts for their invaluable suggestions, which significantly improved the test items.

9.0 References

- Aguhayon, H., Tingson, R., & Pentang, J. (2023). Addressing students learning gaps in mathematics through differentiated instruction. *International Journal of Educational Management and Development Studies*, 4(1), 69–87. <https://doi.org/10.53378/352967>
- Anderson, L., & Krathwohl, D.A. (2001). *Taxonomy for learning, teaching and assessing: A revision of Bloom's Taxonomy of Educational Objectives*. New York: Longman.
- Andreev, I. (2024). Bloom's Taxonomy. Retrieved from <https://tinyurl.com/42pmmk9b>
- Biddix, J.P. (2018). *Research methods and applications for student affairs*. John Wiley & Sons.
- Bilyakovska, O. (2022). Test as an effective means of assessing the quality of students' knowledge. *Academic Notes Series Pedagogical Science*, 1(204), 16–20. <https://doi.org/10.36550/2415-7988-2022-1-204-16-20>
- Bobbitt, Z. (2022). Kuder-Richardson Formula 20 (Definition & example). Retrieved from <https://www.statology.org/kuder-richardson-20/>
- Cañeda, M.E., Amar, R.P., & Lucin, E.L. (2024a). Development of test questionnaire on selected topics in calculus 1 (final term). *International Journal of Research and Scientific Innovation*, 9(8), 244–255. <https://doi.org/10.51244/IJRSL2024.1108020>

- Cañeda, M.E., Logroño, J.J.F., & Culibra, C.D. (2024b). Test questionnaire development on selected topics in calculus 1. *Ignatian International Journal for Multidisciplinary Research*, 2(8), 1363–1376. <https://doi.org/10.5281/zenodo.13371155>
- Chigonga, B. (2020). *Formative Assessment in Mathematics Education in the Twenty-First Century*. IntechOpen.
- DeVellis, R.F. (2003). *Scale development: theory and applications*, applied social research methods. Sage Publications.
- Dwyer, C. P., Hogan, M. J., & Stewart, I. (2014). An integrated critical thinking framework for the 21st century. *Thinking Skills and Creativity*, 12, 43–52. <https://doi.org/10.1016/j.tsc.2013.12.004>
- Ferrando, P.J., Lorenzo-Seva, U., & Bargalló-Escrivà, M. T. (2023). Gulliksen's pool: A quick tool for preliminary detection of problematic items in item factor analysis. *PloS one*, 18(8), e0290611. <https://doi.org/10.1371/journal.pone.0290611>
- Gilbert, G.E., & Prion, S. (2016). Making sense of methods and measurement: Lawshe's content validity index. *Clinical Simulation in Nursing*, 12(12), 530–531. <https://doi.org/10.1016/j.jecns.2016.08.002>
- Irwing, P., & Hughes, D.J. (2018). Test development. In P. Irwing, T. Booth, & D. J. Hughes (Eds.), *The Wiley handbook of psychometric testing: A multidisciplinary reference on survey, scale and test development* (pp. 3–47). Wiley Blackwell.
- Jain, S., Dubey, S., & Jain, S. (2016). Designing and validation of questionnaire. *International Dental & Medical Journal of Advanced Research*, 2(1), 1–3. <https://doi.org/10.15713/ins.idmjar.39>
- Jhangiani, R.S., Chiang, I.A., Cuttler, C., & Leighton, D.C. (2019). *Research methods in psychology – 2nd Canadian edition*. KPU.
- Kara, F., & Celikler, D. (2015). Development of achievement test: Validity and reliability study for achievement test on matter changing. *Journal of Education and Practice*, 6(24), 21–26. <https://eric.ed.gov/?id=EJ1078816>
- Kılıç, A. & Uysal, I. (2022). To what extent are item discrimination values realistic? A new index for two-dimensional structures. *International Journal of Assessment Tools in Education*, 9, 728–740. <https://doi.org/10.21449/ijate.1098757>
- Kilic, S. (2016). Cronbach's alpha reliability coefficient. *Journal of Mood Disorders*, 6(1), 47. <https://doi.org/10.5455/jmood.20160307122823>
- Kline, P. (2000). *Handbook of psychological testing*, second edition. Routledge.
- Kunwar, R. (2018). Development and standardization process of mathematics achievement test for the students of grade x. *International Journal of Current Research*, 10(11), 75451–75455. <https://doi.org/10.24941/ijcr.33168.11.2018>
- Lazarus, S.S., Johnstone, C.J., Liu, K.K., Thurlow, M.L., Hinkle, A.R., & Burden, K. (2022). An updated state guide to universally designed assessments (NCEO Report 431). Retrieved from <https://tinyurl.com/y7tf3ty9>
- Longe, I.O., & Maharaj, A. (2023). Investigating students' understanding of complex number and its relation to algebraic group using and APOS theory. *Journal of Medives : Journal of Mathematics Education IKIP Veteran Semarang*, 7(1), 117. <https://doi.org/10.31331/medivesveteran.v7i1.2332>
- Mamolo, L.A. (2021). Development of an achievement test to measure students' competency in general mathematics. *Anatolian Journal of Education*, 6(1), 79–90. <https://doi.org/10.29333/aje.2021.616a>
- Metzgar, M. (2023). Revised Bloom's taxonomy in a principles of Economics textbook. *Acta Educationis Generalis*, 13(3), 15–28. <https://doi.org/10.2478/atd-2023-0019>
- Ocampo, R., & Usita, N. P. (2015). Development of Lubeg (Syzygiumlineatum (Roxb.) Merr.& Perry) processed products. *Asia Pacific Journal of Multidisciplinary Research*, 3(4), 118–123. <https://tinyurl.com/yxb9ccxn>
- Oducado, R. M. (2020). Survey instrument validation rating scale. Retrieved from <https://doi.org/10.2139/ssrn.3789575>
- Padua, R.N., & Santos, R.G. (1997). *Educational evaluation and measurement: Theory, practice, and application*. KATHA Publishing: QC.
- Patel, N., & Desai, S. (2020). Abc of face validity for questionnaire. *International Journal of Pharmaceutical Sciences Review and Research*, 65(1), 164–168. <https://doi.org/10.47583/ijpsrr.2020.v65i01.025>
- Quaigrain, K., Arhin, A. K., & King Fai Hui, S. (2017). Using reliability and item analysis to evaluate a teacher-developed test in educational measurement and evaluation. *Cogent Education*, 4(1). <https://doi.org/10.1080/2331186X.2017.1301013>
- Rezigalla, A. A., Ibrahim, E. K., & ElHussein, A. B. (2019). Item Analysis: The impact of distractor efficiency on the discrimination power of multiple choice items. Retrieved from <https://doi.org/10.21203/rs.2.15899/v1>
- Stephens, A., Blanton, M., Knuth, E., Isler, I., & Gardiner, A. M. (2015). Just say yes to early algebra! *Teaching Children Mathematics*, 22(2), 92–101. <https://doi.org/10.5951/teacchilmath.22.2.0092>
- Sullivan G. M. (2011). A primer on the validity of assessment instruments. *Journal of graduate medical education*, 3(2), 119–120. <https://doi.org/10.4300/JGME-D-11-00075.1>
- Syahfitri, J., Firman, H., Redjeki, S., & Srivati, S. (2019). Development and validation of critical thinking disposition test in Biology. *International Journal of Instruction*, 12(4), 381–392. <https://doi.org/10.29333/iji.2019.12425a>
- Taherdoost, H. (2016). Validity and reliability of the research instrument; how to test the validation of a questionnaire/survey in a research. *International Journal of Academic Research in Management*, 5(3), 28–36. <http://dx.doi.org/10.2139/ssrn.3205040>
- Tejeda, K., & Gallardo, G. (2017). Performance assessment on high school advanced algebra. *International Electronic Journal of Mathematics Education*, 12(3), 777–798. <https://doi.org/10.29333/iejme/648>
- Wilson, L.O. (2016). Anderson and Krathwohl: Bloom's taxonomy revised. Retrieved from <https://tinyurl.com/4s9vhnee>
- Yaddanapudi, S., & Yaddanapudi, L.N. (2019). How to design questionnaires. *Indian Journal of Anaesthesia*, 63(5), 335–337. https://doi.org/10.4103/ija.IJA_274_19

Evaluating the Efficacy of Varying Concentrations of *Metarhizium anisopliae* Against *Bactrocera cucurbitae* Under In-Vitro Conditions

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Date received: September 22, 2024

Date revised: October 4, 2024

Date accepted: October 14, 2024

Originality: 92%

Grammarly Score: 99%

Similarity: 8%

Recommended citation:

Salibo, A., Mendez, D., Dicolono, M., Usop, M., Ebrahim, J.M., Atong, J., & Dionaldo, S.M. (2024). Evaluating the efficacy of varying concentrations of *Metarhizium anisopliae* against *Bactrocera cucurbitae* under in-vitro conditions. *Journal of Interdisciplinary Perspectives*, 2(11), 373–379. <https://doi.org/10.69569/jip.2024.0516>

Abstract. This study aimed to evaluate the effectiveness of the entomopathogenic fungus *Metarhizium anisopliae* in controlling the cucurbit fruit fly (*Bactrocera cucurbitae*) under in-vitro conditions, addressing the need for sustainable alternatives to chemical pesticides. The research focused on developing eco-friendly pest management strategies to mitigate the economic losses caused by *B. cucurbitae* infestations in squash cultivation. A randomized complete block design (RCBD) was employed, testing five varying concentrations of *M. anisopliae* spore solution. Each treatment was replicated four times, using 20 fruit flies per replicate. The spore solutions were allocated for each treatment, and mortality rates, mummification times, and toxicity levels were recorded. Statistical analyses, including ANOVA and log-probit analysis, were used to determine lethal concentrations and times for effective control. The results demonstrated a clear dose-response relationship, with higher spore concentrations leading to significantly higher mortality rates and faster mummification times. A concentration of 6.0×10^5 Colony-Forming Unit CFU/mL was necessary for substantial population suppression, with lethal concentrations for 50% and 99% mortality calculated as 2.65×10^5 (CFU)/mL and 1.38×10^5 CFU/mL, respectively. These findings suggest that *M. anisopliae* is an effective biological control agent against *B. cucurbitae*, offering a sustainable alternative to chemical pesticides. Further research is recommended to assess its efficacy in field applications and to evaluate potential long-term ecological impacts.

Keywords: *Bactrocera cucurbitae*, Efficacy, *Metarhizium anisopliae*, Mortality rates, Pest Management.

1.0 Introduction

The cucurbit fruit fly (*Bactrocera cucurbitae*) is a highly destructive pest that primarily targets cucurbit crops, including squash, causing substantial economic losses globally (Zhang et al., 2021). Squash is particularly vulnerable to *B. cucurbitae* infestations due to its soft, fleshy fruit, which provides an ideal environment for the pest's egg-laying and larval development. Infestations lead to significant yield losses and reduced marketability, posing a major threat to farmers' livelihoods and food security, especially in regions where squash is a staple crop.

The prevalence of *B. cucurbitae* is notably high in tropical and subtropical regions, particularly in Asia, with countries such as India, Thailand, and the Philippines being heavily affected (Prabhakar et al., 2020). However, due to global trade, its distribution has expanded, making it a growing concern in parts of Europe, Africa, and the Pacific Islands, where cucurbit cultivation is also essential (Cai et al., 2023).

Historically, chemical pesticides have been the primary means of controlling *B. cucurbitae* populations. Although effective in the short term, their widespread and prolonged use has raised concerns over pesticide residues in crops, contamination of soil and water, and the development of resistant pest populations (Iqbal et al., 2022). These problems are further compounded by stricter regulations and increasing consumer demand for pesticide-free produce, driving the need for safer and more sustainable pest management alternatives (Alfenas et al., 2019).

In response to these challenges, entomopathogenic fungi (EPFs) have gained attention as biological control agents due to their natural ability to target a wide range of insect pests. *Metarhizium anisopliae*, in particular, has shown promise for its effectiveness against *B. cucurbitae* and other pests while posing minimal risks to non-target organisms (Gond et al., 2019). Moreover, unlike chemical pesticides, *M. anisopliae* is biodegradable and does not persist in the environment, making it a more sustainable option (Hussain et al., 2022). Importantly, no known cases of resistance to EPFs have been reported, further supporting their potential as long-term solutions for pest management (Mansoor et al., 2023).

Despite the growing body of research supporting *M. anisopliae*, studies evaluating its effectiveness against *B. cucurbitae* under controlled conditions remain limited. Furthermore, the optimal concentrations and application methods for maximizing its efficacy against this pest are yet to be fully explored. This study aims to fill this gap by evaluating the effectiveness of *Metarhizium anisopliae* in controlling *Bactrocera cucurbitae* under controlled in vitro conditions. The research seeks to identify optimal concentrations and conditions for its application by examining the fungus's impact on fruit fly mortality. The findings from this study will contribute to developing eco-friendly, sustainable, and precise pest management strategies, ultimately reducing dependence on chemical pesticides and addressing their associated risks.

2.0 Methodology

2.1 Experimental Design

This study employed five (5) treatment levels, replicated four (4) times, and arranged according to a Randomized Complete Block Design (RCBD). The blocking factor was the container from which fruit fly specimens were collected. Each experimental unit consisted of 20 fruit fly specimens. The treatment levels were defined as follows:

M1 = 0 Colony-Forming Unit CFU/mL

M2 = 1.5×10^5 CFU mL⁻¹

M3 = 3.0×10^5 CFU mL⁻¹

M4 = 4.5×10^5 CFU mL⁻¹

M5 = 6.0×10^5 CFU mL⁻¹

2.2 Procedures

Media Preparation

The fungus *Metarhizium anisopliae* was initially purified on semi-selective media (rose-bengal chloramphenicol agar) and later subcultured onto enrichment media (potato dextrose agar). The media was prepared by mixing with distilled water, cooking at 85°C for 15 minutes using a magnetic stirrer, and sterilizing at 121°C for 15 minutes in an autoclave. After sterilization and cooling to 50°C, 15 mL of the media was poured into sterile petri plates. Once the media solidified, the plates were flipped to prevent contamination.

Purification of the Fungal Culture

Metarhizium anisopliae was purified by inoculating a loopful of sorghum culture onto rose-bengal chloramphenicol agar (RBCA) plates, incubated for seven days at 27±0.5°C. Colonies with typical *M. anisopliae* characteristics were subcultured repeatedly on potato dextrose agar (PDA) until pure cultures were obtained. These pure colonies were transferred to PDA slants and stored at 4°C.

Collection of Fruit Fly Specimens

Fruit flies were collected using a pheromone trap from a 1-gallon plastic container filled with cotton soaked in the commercial methyl-eugenol solution. The trap was hung near the Pest Clinic Laboratory, College of Agriculture, MSU-General Santos. Trapped flies were collected using a fly net and placed in aerated plastic containers.

Treatment Preparation

To prepare the spore solutions, slant cultures of *M. anisopliae* were flooded with 10 mL of physiological saline, and the spores were scraped using an inoculating loop. The resulting suspension was filtered through eight layers of sterile gauze. Serial dilution was performed up to 10^{-5} , and spore concentrations were adjusted to the required levels using a physiological sodium chloride (NaCl) solution. Fifty milliliters of each treatment solution was prepared.

Treatment Application

Sterile 50 mL plastic spray bottles were used to apply the treatment solutions to the fruit fly specimens. Care was taken to avoid excessive dripping.

Processing

The study proceeded with the following stages (see Figure 1):

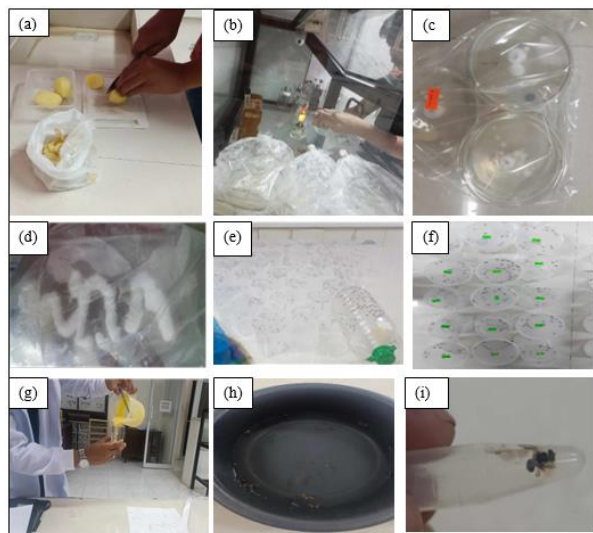


Figure 1. Using culture media and mass production of *Metarhizium anisopliae* led to the assignment and application of treatments.

- a) Media Preparation: Culture media for growing *M. anisopliae* was mixed with agar, dextrose, and water, then sterilized to provide a nutrient-rich environment for the fungus.
- b) Initial Purification: Fungal culture was transferred onto semi-selective agar plates to isolate *M. anisopliae* from other microorganisms.
- c) Slant Cultures and Mass Production: The purified fungus was subcultured on fresh media to produce slants for storage and mass production.
- d) Pure Cultures: After one week, pure cultures of *M. anisopliae* were obtained, ensuring the fungus's growth for experimental use.
- e) Setup of Containers: Containers were prepared and sterilized to house fruit fly specimens.
- f) Treatment Preparation: Spores were diluted to create different spore concentrations for treatment application.
- g) Experimental Setup: Experimental units were organized according to the study's design, with random treatment assignments.
- h) Surface Sterilization: Dead fruit flies were surface-sterilized to ensure accurate postmortem inspection.

- i) Mummification: The study observed the mummification of melon fruit flies due to *M. anisopliae*, documenting this effect as part of the pest control mechanism.

2.3 Data Gathering Procedure

Data collected data were computed as follows:

- a) The final mortality rate (%) was calculated as the proportion of dead fruit fly specimens at the end of the experiment relative to the acclimatized population, as follows:

$$\text{Final Mortality Rate (\%)} = \frac{\text{total number of dead fruit fly}}{\text{acclimatized population}} \times 100 \quad \text{Eq 1}$$

- b) Average time to mummification. The time (in days) until the onset of mummification was recorded for dead fruit fly specimens, given the characteristic shrinkage due to the loss of moisture and nutrients caused by mycosis.
- c) Lethal concentration analysis. Lethal concentrations (LC50 and LC99) of the tubli root extract were projected by regressing the common logarithm (log base 10) of the test concentrations against the probit value of the response percentage (mortality rate). Lethal concentration analysis is expressible using the probit model:

$$P = \alpha + \beta[\log_{10}(\text{Concentration})] \quad \text{Eq 2}$$

where,

$P = 5 + \Phi^{-1}(p)$, given p = corrected mortality rate, and $\Phi^{-1}(p)$ is the probit value of the corrected mortality rate. The corrected mortality rate of the non-uniform population was computed based on Sun-Shepard's formula:

$$\text{Corrected mortality \%} = \frac{\text{Mortality \% in treated plot} \pm \text{Change \% in control plot}}{100 \pm \text{change \% in control plot}} \quad \text{Eq 3}$$

where,

$$\text{Change \% in control plot} = \left(\frac{n \text{ after treatment} - n \text{ before treatment}}{n \text{ before treatment}} \right) \quad \text{Eq 4}$$

Given that,

n = insect population, α = estimated value of the intercept, and β = estimated value of the slope

- d) Lethal time analysis. The lethal timeframes (LT50 and LT99) of tubli root extract were projected by the same log-probit analysis as lethal concentration analysis by regressing the common logarithm (log base 10) of different time periods (in days) against the probit value of the response percentage (mortality rate per day).
- e) The relative toxicity. Relative toxicity was taken as the comparison between the lethal time 50 and the treatment levels employed and computed as follows:

$$\text{Relative toxicity} = \frac{LT_{50}(\text{treatment})}{LT_{50}(\text{control})} \times 100 \quad \text{Eq 5}$$

The fiducial limits (upper and lower) were then computed as,

$$R_{\text{lower}} = \frac{\text{Lower limit}_{\text{treatment}}}{\text{Upper limit}_{\text{control}}} \quad \text{Eq 6}$$

$$R_{\text{upper}} = \frac{\text{Upper limit}_{\text{treatment}}}{\text{Lower limit}_{\text{control}}} \quad \text{Eq 7}$$

2.4 Statistical Analysis

One-way analysis of variance (ANOVA) following a randomized complete block design was performed using STAR software for average mortality rates and time to mummify the five treatments. A comparison of means was performed at the 5% significance level using Scheffe's post hoc test to determine significant differences between treatment means.

3.0 Results and Discussion

3.1 Mortality rate

The data on mortality rate are shown in Table 1. It indicates that higher *Metarhizium anisopliae* concentrations increase mortality in *Bactrocera* fruit flies. The mortality rate grows from 58.33% at 1.5×10^5 CFU/mL to 96.00% at the highest concentration of 6.0×10^5 CFU/mL, signifying a clear dose-response relationship. These findings align with more recent research, which also demonstrates that *Metarhizium anisopliae* significantly increases mortality rates in various insect pests, including fruit flies, supporting its role as a viable biocontrol agent in integrated pest management (Onsongo et al., 2022; Prince et al., 2024; Cai et al., 2023; Mansoor et al., 2023).

Table 1. Effects of different concentrations of *Metarhizium anisopliae* on the mortality rate of fruit flies (from *Bactrocera*)

Treatment Level (CFU/mL)	Mortality Rate
M1 = 0 CFU/mL	46.33 ^d
M2 = 1.5×10^5 CFU mL ⁻¹	58.33 ^{cd}
M3 = 3.0×10^5 CFU mL ⁻¹	73.67 ^{bc}
M4 = 4.5×10^5 CFU mL ⁻¹	85.67 ^{ab}
M5 = 6.0×10^5 CFU mL ⁻¹	96.00 ^a
F test	**
P value	<0.001
%CV	7.42

3.2 Time to Mummification

Table 2 illustrates the impact of varying concentrations of *Metarhizium anisopliae* on the days it takes for *Bactrocera* fruit flies to mummify. As the concentration of *M. anisopliae* increases, the time required for mummification decreases significantly. For instance, mummification occurs at the lowest concentration (0 CFU/mL) in 22.67 days, whereas at the highest concentration (6.0×10^5 CFU/mL), it takes just 6.00 days. This demonstrates a clear inverse relationship between fungal concentration and time to mummification. These findings align with recent research, which has shown that higher concentrations of *M. anisopliae* accelerate the mummification process in various insect species, underscoring its effectiveness as a biocontrol agent in pest management strategies (Hussain et al., 2022; Mansoor et al., 2023; Prince et al., 2024).

Table 2. Effects of different concentrations of *Metarhizium anisopliae* on the number of days until mummification of the fruit fly (*Bactrocera*)

Treatment level (CFU/mL)	Days to Mummification
M1 = 0 CFU mL ⁻¹	22.67 ^a
M2 = 1.5×10^5 CFU mL ⁻¹	15.00 ^b
M3 = 3.0×10^5 CFU mL ⁻¹	11.67 ^c
M4 = 4.5×10^5 CFU mL ⁻¹	9.00 ^d
M5 = 6.0×10^5 CFU mL ⁻¹	6.00 ^e
F test	**
P value	<0.001
%CV	3.01

Means with the same letter are not significantly different according to Scheffe's test at the 5% level.

3.3 Concentration Response Relationships between *Metarhizium anisopliae* and the Mortality Rate

Table 3 shows the relationship between different concentrations of *Metarhizium anisopliae* and the resulting mortality rates in fruit flies, providing estimates for the concentrations needed to achieve 50%, 90%, and 99% mortality. The LC50, or the concentration required to kill half of the fruit fly population, is determined to be 2.65×10^5 CFU/mL. To reach higher mortality levels, such as 90% and 99%, the necessary concentrations increase to 6.59×10^5 CFU/mL and 1.38×10^6 CFU/mL, respectively. These findings are consistent with recent research on using entomopathogenic fungi for pest control. For instance, Hussain et al. (2022) and Mansoor et al. (2023) reported similar dose-response trends, indicating that higher fungal concentrations are required for significant pest mortality. Additionally, Iqbal et al. (2022) demonstrated the efficacy of *M. anisopliae* in managing various insect pests, further supporting its role in targeted pest control strategies. The alignment of these results

with current research emphasizes the importance of lethal concentration estimates in the practical application of biocontrol methods.

Table 3. Projected lethal concentrations of *Metarhizium anisopliae* at the 5% significance level

Lethal Concentration		Slope $\pm$ (standard error)	Chi-Square	P value*
Response Percentage	Concentration (CFU/mL)			
50	2.65×10^5	3.242 ± 0.577	1.677	0.4325
90	6.59×10^5			
99	1.38×10^5			

* Chi-square test for goodness of fit: measures goodness of fit to the weighted regression line with $p > .05$, indicating a good fit of the data to the line

3.4 Time Response Relationships between *Metarhizium anisopliae* and Mortality Rate

Table 4 shows how different concentrations of *Metarhizium anisopliae* affect the time it takes to achieve 50% mortality (LT50) in fruit flies and the associated toxicity index compared to a control group. The control treatment (M1 = 0 CFU/mL) has an LT50 of 4.676 days and serves as the baseline with a toxicity index of 100.00. As the concentration of *M. anisopliae* increases, the LT50 decreases, indicating that higher concentrations kill the fruit flies faster. For instance, at 6.0×10^5 CFU/mL (M5), the LT50 is reduced to 2.106 days, and the corresponding toxicity index rises to 222.03. This pattern demonstrates that higher concentrations of the fungus are more lethal, as reflected in their higher toxicity indices. Although the indices for some treatments overlap, indicating nonsignificant differences, the overall trend suggests that *M. anisopliae* is increasingly effective at higher concentrations. These findings align with recent research indicating that entomopathogenic fungi like *M. anisopliae* exhibit greater efficacy at elevated concentrations, reducing time to significant mortality in insect populations. Recent studies by Mansoor et al. (2023) and Hussain et al. (2022) have similarly reported that the speed of insect mortality increases with higher fungal concentrations, highlighting the effectiveness of *M. anisopliae* as a biocontrol agent in pest management strategies.

Table 4. Time response relationships between different levels of *Metarhizium anisopliae* and mortality rate, and the corresponding toxicity indices relative to those of the control

Treatment	LT50	Toxicity Index
M1 = 0 CFU mL ⁻¹	4.676	100.00 b
M2 = 1.5×10^5 CFU mL ⁻¹	3.400	137.53 ab
M3 = 3.0×10^5 CFU mL ⁻¹	2.735	170.97 ab
M4 = 4.5×10^5 CFU mL ⁻¹	2.275	205.54 a
M5 = 6.0×10^5 CFU mL ⁻¹	2.106	222.03 a

Indices with the same letter indicate overlapping fiducial limits at the 5% significance level, suggesting nonsignificant differences in toxicity.

4.0 Conclusion

The study highlighted the potential of *Metarhizium anisopliae* as an effective biocontrol agent against *Bactrocera cucurbitae* under controlled laboratory conditions. Higher concentrations resulted in greater mortality and quicker mummification of fruit flies, with mortality rates increasing from 58.33% at 1.5×10^5 CFU/mL to 96.00% at 6.0×10^5 CFU/mL. The time required for mummification they decreased significantly from 22.67 days to 6.00 days as the fungal concentration increased. The study also identified an LC50 of 2.65×10^5 CFU/mL, emphasizing the viability of *M. anisopliae* as a sustainable alternative to chemical pesticides in squash cultivation. Recent research reinforces these findings, demonstrating the effectiveness of *M. anisopliae* in increasing mortality rates and decreasing developmental times of various insect pests (Hussain et al., 2022; Mansoor et al., 2023; Prabhakar et al., 2020). Future research should explore its practical application under field conditions, evaluate any potential impact on non-target species, and refine application methods. Collaborating with agricultural stakeholders will be essential to effectively integrate this biocontrol agent into broader pest management strategies for sustainable farming practices.

5.0 Contribution of Authors

The specific contributions of each author are as follows: Author A designed the study and wrote the manuscript; Author B conducted the experiments and analyzed the data; Author C contributed to data interpretation and manuscript revision. All authors have read and approved the final manuscript.

6.0 Funding

This research was self-funded by the author, without any external financial support.

7.0 Conflict of Interests

The authors declare no conflicts of interest or competing interests related to this research.

8.0 Acknowledgment

The researcher expresses deep gratitude to his mother, Guiamila Mangansakan Utto; his father, Datu Mingao Salibo Utto; and his brothers and sisters for their encouragement, support, and assistance, all of which were instrumental in completing this paper to his thesis adviser, Dr. Aurelio Ampo, whose profound understanding of the study and dedication to its development inspired the researcher to pursue this work; to Prof. Dwight L. Mendez of the Agronomy Department and Prof. Musa M. Dicolano of the Agricultural Extension Department for their professional critiques, suggestions, and reading materials that greatly contributed to the improvement of this document; to his batchmates, Prof. Jeanneflor S. Atong and Prof. Shiela Mae A. Dionaldo; and above all, to the Almighty Allah, to whom all blessings and achievements are owed.

9.0 References

- Alfenas, L. J., Ribeiro, E. P., & Monteiro, A. L. G. (2019). The impact of pesticides on insect resistance in agricultural ecosystems. *Pest Management Science*, 75(8), 2212-2222. <https://doi.org/10.1002/ps.5356>
- Cai, W., Hu, L., Zhang, M., & Wang, H. (2023). Global spread and management strategies of *Bactrocera cucurbitae*: A review. *Journal of Pest Science*, 96(1), 15-32. <https://doi.org/10.1007/s10340-022-01498-0>
- Dimbi, S., Maniania, N. K., & Torto, B. (2003). Influence of the host plant on the efficacy of *Metarhizium anisopliae* in controlling the cotton bollworm, *Helicoverpa armigera*. *Journal of Applied Entomology*, 127(2), 104-110. <https://doi.org/10.1046/j.1439-0418.2003.00768.x>
- Ekesi, S., Lux, S. A., & Mworio, R. (2002). Efficacy of *Metarhizium anisopliae* against the melon fly, *Bactrocera cucurbitae* (Coquillett) in Kenya. *African Entomology*, 10(1), 93-97. <https://doi.org/10.4001/003.010.0104>
- El-Gendy, I. R., Zawrah, M. F., & El-Banobi, M. I. (2022). Virulence effect of *Metarhizium anisopliae* (Met.) and *Beauveria bassiana* (Bals.) fungi against the peach fruit fly, *Bactrocera zonata* (Saunders) (Diptera: Tephritidae). *Egyptian Journal of Biological Pest Control*, 32(1), 43. <https://doi.org/10.1186/s41938-022-00525-3>
- Faria, M. R., & Wright, S. P. (2007). Biological control of insects using entomopathogenic fungi. *Theoretical and Applied Entomology*, 108(1), 1-27. <https://doi.org/10.1007/s00426-006-0102-0>
- Gond, S. K., Barik, A., & Bansal, R. (2019). Entomopathogenic fungi for sustainable pest management: A review. *Journal of Insect Science*, 19(5), 15-25. <https://doi.org/10.1093/jisesa/iejz084>
- Goettel, M. S., & Inglis, G. D. (2000). Fungi: Hyphomycetes. In B. J. H. (Eds.), *Encyclopedia of Entomology* (pp. 1039-1051). Springer.
- Hussein, M. A., Khaled, A. S., Ibrahim, A. A., Soliman, N. A., & Attia, S. H. (2018). Evaluation of entomopathogenic fungi, *Beauveria bassiana* and *Metarhizium anisopliae* on peach fruit fly, *Bactrocera zonata* (Saunders) (Diptera: Tephritidae). *Egyptian Academic Journal of Biological Sciences, F. Toxicology & Pest Control*, 10(1), 59-68. <https://doi.org/10.21608/EAJBSF.2018.17213>
- Hussain, S., Marzouk, H. A., & Ahmed, S. (2022). Efficacy of *Metarhizium anisopliae* for biological control of fruit flies: An overview. *International Journal of Pest Management*, 68(1), 45-53. <https://doi.org/10.1080/09670874.2020.1786346>
- Indriyanti, D. R., Damayanti, I. B., Setiati, N., & Mareta, Y. A. (2018). Mortality and tissue damage of *Oryctes rhinoceros* larvae infected by *Metarhizium anisopliae*. *ARPN Journal of Engineering and Applied Sciences*, 13(6), 2279-2286.
- Inglis, G. D., Goettel, M. S., & Butt, T. M. (2001). Use of fungal pathogens for biocontrol of insects. In M. T. (Eds.), *Biological Control of Insects and Mites* (pp. 103-127). CRC Press.
- Iqbal, M., Kahn, M. A., & Ahmed, N. (2022). Assessment of the efficacy of synthetic pesticides and alternatives for pest control in cucurbits. *Journal of Agricultural and Food Chemistry*, 70(23), 7072-7080. <https://doi.org/10.1021/acs.jafc.2c02678>
- Mansoor, M., Latchininsky, A. V., & Makhdoom, R. (2023). Advances in biological control of *Bactrocera cucurbitae* using entomopathogenic fungi. *Biocontrol Science and Technology*, 33(2), 191-206. <https://doi.org/10.1080/09583157.2022.2109676>
- Onsongo, S. K., Mohamed, S. A., Akutse, K. S., Gichimu, B. M., & Dubois, T. (2022). The entomopathogenic fungi *Metarhizium anisopliae* and *Beauveria bassiana* for management of the melon fly *Zeugodacus cucurbitae*: Pathogenicity, horizontal transmission, and compatibility with culture. *Insects*, 13(10), 859. <https://doi.org/10.3390/insects13100859>
- Prabhakar, M., Suresh, S., & Yadav, R. (2020). Host preference and potential impact of *Bactrocera cucurbitae* on cucurbit crops in India. *Entomological Research*, 50(1), 76-82. <https://doi.org/10.1111/1748-5967.12390>
- Prince, M., McKinnon, A. C., Leemon, D., Sawbridge, T., & Cunningham, J. P. (2024). *Metarhizium* spp. isolates effective against Queensland fruit fly juvenile life stages in soil. *PLOS ONE*, 19(1), e0297341. <https://doi.org/10.1371/journal.pone.0297341>
- Shah, P. A., & Pell, J. K. (2003). Entomopathogenic fungi as biological control agents. *Applied Microbiology and Biotechnology*, 61(5), 413-423. <https://doi.org/10.1007/s00253-002-1144>
- Zhang, H., Xu, J., & Lu, Y. (2021). The economic impact of *Bactrocera cucurbitae* infestations on cucurbit production. *Journal of Economic Entomology*, 114(2), 701-709. <https://doi.org/10.1093/jee/toab027>

Clinical Psychology Interns' Lived Experiences With Suicidal Clients

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Date received: September 16, 2024

Date revised: October 5, 2024

Date accepted: October 17, 2024

Originality: 92%

Grammarly Score: 99%

Similarity: 8%

Recommended citation:

Elayda, E., Distor, J.M. (2024). Clinical psychology interns' lived experiences with suicidal clients. *Journal of Interdisciplinary Perspectives*, 2(11), 380-388. <https://doi.org/10.69569/jip.2024.0506>

Abstract. This paper explores the lived experiences of clinical psychology interns who have encountered suicidal clients during their internship. Employing qualitative phenomenological investigation, semi-structured interviews were conducted and analyzed using interpretative phenomenological analysis (IPA). The study employed purposive sampling and gathered valuable data from 8 clinical psychology interns who were all taking a master's degree in Clinical Psychology. The results highlighted that those encounters with suicidal clients triggered various reactions among interns, leading to self-doubt and a sense of unpreparedness in handling such cases. Many interns struggled with managing their emotions, especially when clients' traumas mirrored their experiences. The study emphasized the importance of a robust support system in helping interns cope with the challenges of their work. The results included a heightened need for supervision among interns, as they faced intense emotional challenges when working with suicidal clients. Supervision emerged as a critical component in helping them process these experiences. Regular check-ins with supervisors not only provided emotional support but also offered practical strategies for managing client interactions. This guidance helped interns develop coping mechanisms and build resilience, fostering their professional growth and confidence in handling difficult cases. Despite the challenges, the interns found purpose in witnessing significant client progress and emphasized the importance of self-care and ongoing training to prepare future clinicians for similar experiences.

Keywords: Clinical psychology interns; Emotional coping; Suicidal clients; Supervision; Phenomenological study.

1.0 Introduction

In the Philippines, while the suicide rate is lower compared to many developed and developing nations, it has been increasing (Lagman et al., 2021). In 2019, the suicide rate in the Philippines was 2.5 per 100,000 population. However, during the onset and progression of the pandemic in 2020, there was a notable rise in suicide deaths, as reported by the Philippine Statistics Authority (PSA). The country's suicide rate increased by 57% compared to the previous year. According to the PSA, suicide became the 25th leading cause of death in 2020, up from 31st place in 2019. In 2020, 4,420 individuals died by suicide, compared to 2,810 deaths in 2019 (Philstar, 2020).

Therapists' professional competence plays a critical role in suicide prevention, and when a client dies by suicide, therapists often experience a profound sense of failure associated with it (Rossouw et al., 2011). In a study conducted by Dexter-Mazza and Freeman (2011), the results revealed that around 5% of participants reported a client suicide, while 99% noted they had worked with at least one suicidal client during their graduate training.

Furthermore, in a study conducted by Beevers (2018), the researcher found that their reactions grew more intense and complex as the student therapists anticipated meeting the client for the first time. They expressed a range of emotional responses, with the most powerful feelings being worry and concern regarding the client's history of suicide attempts and the possibility of her current suicidal tendencies. Trainee counselors commonly express the feeling of being inadequately prepared to respond effectively when they encounter clients experiencing suicidal ideation (Elston, 2018). Understanding these emotional impacts is crucial for developing effective support and supervision strategies for interns.

Bennett-Levy's (2006) cognitive model for therapist skill development emphasizes the role of cognitive processes in developing therapeutic skills, making it particularly relevant for clinical psychology interns. It encourages interns to self-reflect, receive supervisor feedback, and manage their emotional responses, enhancing their effectiveness. This structured approach helps trainees build confidence and competence, especially when working with challenging cases like suicidal clients.

Despite growing research into the effects of client suicides on mental health professionals, there remains a significant gap in understanding how clinical psychology interns handle these experiences. Most existing studies focus on experienced professionals, underscoring the need for further investigation into interns' immediate reactions and coping strategies. Addressing this gap could improve training programs and support systems, helping interns manage their emotional challenges and maintain their effectiveness in client care. This research will contribute to better practices for suicide risk assessment and intervention, benefiting both interns and the broader mental health community.

2.0 Methodology

2.1 Research Design

The study aimed to explore the firsthand experiences of clinical psychology interns who have encountered suicidal clients during their internship, using interpretative phenomenological analysis (IPA) as the research method. IPA was selected for its ability to provide deep insights into sensitive and complex experiences by focusing on participants' perspectives and how they make sense of their interactions (Smith & Osborn, 2015). This approach emphasizes detailed descriptions of "lived experiences" (Alase, 2017) rather than theory development or hypothesis testing.

2.2 Research Participants

The researcher used purposive sampling to select participants who met specific criteria. The participants in this study were enrolled in a Master of Arts in Clinical Psychology program and were actively engaged in their internship placements when the data was collected. All participants in the study were also women. Notably, in terminal master's-level psychology programs, women outnumber men, comprising 78 percent compared to 22 percent. In certain subfields, the proportion of women to men at the master's level is even greater than at the doctoral level (Fowler et al., 2018).

2.3 Research Instrument

This study employed a semi-structured interview format with validated open-ended questions to collect in-depth data on participants' experiences managing suicidal clients, centered around the primary question, "How was your experience handling suicidal clients?" An interview guide was used to ensure comprehensive coverage of the research problem and to assist the researcher in probing for further details and clarification. To facilitate the data analysis, the researcher recorded the interviews with participant consent and transcribed and coded the data.

2.4 Data Collection and Analysis

Data were gathered through in-depth online interviews conducted via video conferencing, which allowed participants to discuss their experiences in detail. Participants were recruited through social media, completed a Google form to assess eligibility, and provided informed consent before the interviews. The sessions, lasting 40 to 60 minutes, were guided by questions validated by licensed psychologists, recorded, and transcribed verbatim.

The data analysis for this study followed a structured process beginning with a thorough immersion in the transcribed interviews. The researcher repeatedly read the transcripts, making preliminary notes to gain a deep understanding of the data. Initial codes were generated through open coding, which involved breaking the data into manageable segments and identifying significant units using an inductive, bottom-up approach. These codes were then systematically organized to form overarching themes, reflecting meaningful patterns related to the research question. The process emphasized flexibility in theme definition, allowing codes to be grouped into broader themes and continuously reviewed for alignment with the data.

The study employed several validation techniques to ensure the credibility of the findings. Participant validation involved presenting preliminary analyses to participants for feedback, enhancing the reliability of interpretations. Additionally, validation from qualitative research and IPA experts was sought, including input from registered psychologists and a licensed professional teacher with experience in guidance and counseling. Peer debriefing also played a role, with a colleague reviewing the study to provide alternative perspectives and improve the accuracy of the interpretations. The final analysis was documented in a detailed write-up, incorporating these methodological rigor and validation approaches to ensure a comprehensive and credible understanding of the research topic.

2.5 Ethical Considerations

Prior to commencing data collection, the researcher obtained ethical clearance from the PUP-GS Research Ethics Committee to ensure adherence to established ethical standards in qualitative research. The study also adhered to the principles of research ethics outlined by the American Psychological Association, particularly emphasizing informed consent rules. Participants were provided detailed information about the study, including its objectives, duration, potential risks and benefits, confidentiality measures, their right to decline participation or withdraw without consequences, contact information for queries, and consent to publish study data.

Confidentiality and privacy were maintained by explaining the limits of confidentiality, clarifying data usage and handling, securing participant consent, and assigning pseudonyms to protect identities. Additionally, a distress protocol was implemented to mitigate potential harm if participants became distressed during the interview. Participants were informed of their voluntary participation rights, including the option to withdraw or take breaks as needed. They were encouraged to ask questions and voice concerns about the research procedure before the interview. The consent form also assured access to an on-call psychologist provided by the researcher in case of any challenges arising from discussing participants' experiences.

3.0 Results and Discussion

Theme 1: Personal and Emotional Impact

Interactions with suicidal clients deeply impact clinical psychology interns, extending beyond professional boundaries to affect them personally. These encounters compel interns to reflect on their skills, personal beliefs, and vulnerabilities, fostering greater empathy and self-awareness. The emotional and psychological demands of working with suicidal clients often lead to significant personal growth, prompting interns to reassess their views on life, death, and the human condition. This introspection enhances their understanding of themselves and highlights the interconnectedness of personal and professional identities. Such reflective experiences are crucial for interns' development, enriching their professional practice and nurturing their growth into compassionate and effective mental health practitioners.

Emerging of Caring Behaviors

The interns often face significant discomfort and self-doubt when dealing with clients expressing suicidal ideation, feeling inadequately prepared, and questioning their clinical skills. This discomfort highlights a widespread need for enhanced preparation and support as interns grapple with the complexities of managing such high-stakes situations. A common concern among interns is the fear of providing inadequate interventions to clients experiencing suicidal ideation. This lack of confidence in their ability to deliver effective care indicates a perceived deficiency in their professional competence. As the interns recounted:

"Well, it is the self-doubt and inadequacy because I am just an intern. In counseling sessions, I often think about what I should do in that moment when the client is telling me they want to die." – CAF

Interns dealing with clients who express suicidal ideation often experience significant discomfort and self-doubt due to feelings of inadequate preparation and concerns about their clinical skills. This anxiety stems from the high-stakes nature of these situations, where the fear of providing insufficient interventions can lead to a crisis of confidence and identity. Literature reflects these challenges, with trainees and clinicians alike reporting intense negative emotions—such as anxiety, fear, and self-criticism—when working with suicidal clients. Fogarty and colleagues (2023) documented these adverse emotions, while Jacobson et al. (2004, as cited by Hawgood, 2015) found that female therapists, in particular, experience higher distress, shame, and intrusive symptoms following a client's death. Such findings underscore the emotional toll on interns and the necessity for improved training and support in handling these critical encounters.

Uncovering Interns' Personal Experiences

Some interns experienced unexpected emotional triggers when confronted with their clients' traumas and life stories, especially when these experiences mirrored their own, particularly within family contexts. This mirroring can evoke strong feelings, leading to heightened emotional responses and difficulty maintaining professional boundaries. Hunter (2015) suggests that clinicians' attitudes can be shaped by their encounters with mental health challenges and suicide. One intern narrated how she was able to relate to her client:

"One case is suicidal clients that I relate to more because mine is also family-related. Relating to the most stressful case that I have mentioned, I can now understand the client better because I have been there; I could not trust my family. I do not know if I could get their [family] support, that fear so that I can understand him better." – ME

These interactions stirred profound personal emotions as interns grappled with maintaining professional detachment while resonating personally. Specifically, situations where clients' difficulties mirrored interns' family dynamics significantly affected them, leading to introspection and fostering empathy in their therapeutic methods.

Realizations on Life and Death

Living and dying are complex and multifaceted and can be viewed differently. Since working with suicidal clients, some of the participants have come to see life as something to be cherished and appreciated. When it comes to death, the interns realized that people have different views and that death may seem like an easier option for some. One of the interns felt that life is unfair because some people experience significantly harder and more painful things.

"...in life, I have realized that some people have had such extreme experiences. It is so unfair. Why is it like that? I mean, I have had struggles too, but my life seems so much easier compared to theirs." – BR

This understanding made them more empathetic towards their clients, as they acknowledged the varied and complex reasons behind suicidal thoughts. Hupp (2017) noted that several factors affect how people perceive and respond to death. These include age, just world views, the value of human life, belief in an afterlife, preparedness, and the perceived tragedy of death.

Theme 2: Personal Experience and Client Encounters

Engaging with clients in suicidal crises is a significant occupational challenge for counselors, recognized as one of the most demanding aspects of the profession due to the increasing incidence of suicide and its profound impact on both personal and professional levels (Veilleux, 2011). This challenge is particularly intense for clinical psychology interns, who are still developing their professional skills and confidence. Despite these difficulties, the dedication of interns to their clients can lead to meaningful progress as they observe growth and resilience, even in small steps. These moments of progress offer hope and reinforce the interns' sense of purpose, highlighting the transformative potential of their work and providing powerful affirmations of their commitment.

Facing Complexities in Client Encounters

Clinical psychology interns often face significant emotional and professional challenges when managing suicidal cases, especially during their initial encounters. These first interactions can be particularly daunting, as interns

experience heightened anxiety from the fear of making critical mistakes and uncertainty about appropriate interventions.

"Since it is my first time talking to someone [with suicidal tendencies] directly, it is panic-inducing, like, 'Oh no, what am I going to do?' All I know is how to conduct therapy on a day-to-day basis or handle daily concerns, so I do not know what to do when I receive pictures and videos full of blood." –AP

The gravity of these initial sessions is underscored by the understanding that they represent a crucial opportunity for effective intervention and treatment, as noted by Firestone (2014). Interns approach these sessions with high motivation to instill hope and aid clients in envisioning a positive future (Ignacio & Tudy, 2020). However, given their developing skills and confidence, the responsibility can feel overwhelming. Navigating the balance between providing immediate support and maintaining professional boundaries presents a steep learning curve, making the early experiences of working with suicidal clients especially challenging for interns.

Awareness of the Client's Improved Functioning. People struggling with suicidal thoughts often find it difficult to seek mental health assistance because of the typical reactions they receive from their family and friends. Therapists aim to establish a sense of connection and value in clients, assisting them in cultivating crucial skills for emotional regulation (Firestone, 2014). Interns play a crucial role in this process, and their involvement in their client's progress during a crisis profoundly impacts them. The interns experienced a sense of fulfillment and relief when they witnessed their clients' progress, knowing that their efforts were making a tangible difference in someone's life.

"I guess when they start to be more open about their experiences because at first, they were really resistant and guarded, there is some sort of relief once they begin to open up." – CF

This relief and fulfillment are rooted not only in professional achievements but also in the personal growth and emotional rewards that come from positively impacting someone's life. As they strive to establish a strong therapeutic connection, interns learn to facilitate emotional regulation skills in their clients, which can be challenging and rewarding. Witnessing clients make progress during crises can lead to a profound sense of fulfillment and relief for interns, reinforcing their sense of purpose and competence in their roles.

Theme 3: Clinical Decision-Making and Practice

Bennett-Levy (2006) emphasized that the true measure of counselors' competency lies in their ability to practically apply acquired knowledge and reflective attitudes in real-life client interactions, a process known as the procedural system. For clinical psychology interns, this involves transitioning from theoretical classroom learning to the unpredictable realities of clinical practice, where they must effectively address clients' complex needs. As interns gain experience, their confidence grows, but they often encounter challenges, particularly with difficult cases like clients exhibiting suicidal tendencies. The support of clinical supervisors is crucial in these situations, as they provide both technical and emotional support. This collaborative mentorship helps interns navigate the complexities of their cases, ensuring they can deliver effective and ethical care. Ultimately, this integration of theoretical knowledge, practical application, and supervisory support fosters the development of competent, compassionate, and resilient mental health professionals.

Clinical Supervision and Providing Support

Weaver (2020) emphasizes that supervision is essential in bridging the gap between academic training and professional practice, offering crucial support, mentorship, and constructive challenges. One of the interns said,

"...we also had simulations where our supervising psychologist would ask, aside from the simulation, when a client says something like this, what might we ask them, uh... aside from the very basic questions, how else can we get them to share or elicit their feelings and thoughts." – BR

These sessions help interns navigate their roles and responsibilities, providing a structured environment for processing their experiences and addressing difficulties. The interns frequently value the guidance and feedback from their supervisors, recognizing it as a key component in their growth and effectiveness as mental health

professionals. They also consistently appreciated supervision's role in their professional growth and readiness. The supportive relationships they develop with their supervisors significantly improve their confidence and competence in clinical settings.

Confronting Communication Challenges

Clinical psychology interns often face difficulties when working with clients who are reserved or hesitant to communicate openly, particularly on sensitive topics such as suicidality. Interns report that clients frequently struggle to disclose their problems or emotions, which can pose significant challenges during therapy.

"Many clients are not open to talking about suicidal cases, so they do not all feel comfortable sharing what they have done. There are often many interviews before they open up about it, and that is the main challenge I have faced." – KS

Establishing a trusting and supportive therapeutic relationship is crucial for creating a safe, non-judgmental environment that encourages clients to express their thoughts and feelings more openly. This supportive setting is essential in psychotherapy for helping clients authentically confront and reflect on their difficult life issues (Kolden et al., 2018).

Respecting Confidentiality Boundaries

When working with suicidal clients, professionals, including interns, must handle personal and sensitive information carefully to protect client privacy. Interns emphasized that maintaining confidentiality is crucial as it supports developing and sustaining a strong therapeutic rapport with their clients, aligning with their most significant ethical concern during practice.

"What else, of course, confidentiality? That is really what I always... I only disclose information to the social worker and those directly involved in the case." – BP

The interns have consistently prioritized confidentiality as a crucial ethical consideration. They understand that adhering to confidentiality protocols is fundamental to establishing and maintaining a positive therapeutic relationship with their clients. This commitment underscores their professional responsibility to uphold privacy standards, ensuring that clients feel safe and secure in sharing their concerns without fear of judgment or unauthorized disclosure.

Awareness of Client's Facilitating Factors

The interns frequently incorporate practical techniques to redirect clients' focus away from suicidal thoughts. Strategies such as engaging in physical activities like exercise, practicing relaxation and breathing techniques, or journaling have proven effective in helping clients manage distress. One of the interns said she gives her client another perspective and a healthier approach.

"I sometimes offer them another perspective, like, 'Hey, this is not the only way; maybe this could work too.' It helps them realize, 'Oh, okay, that is an option.' Like us, we often look at things directly, but when someone suggests, 'Hey, you have this option,' it makes you think, 'Ah, that is possible.' So I try to give that to my clients too, letting them know that they are not limited to just one choice and that there are other options they might be overlooking." – CF

These activities not only serve as immediate coping mechanisms but also empower clients to regain a sense of control over their emotions and circumstances. The positive impact of these interventions is often evident during follow-up sessions, where clients demonstrate improved emotional regulation and a reduced intensity of suicidal thoughts. This approach aligns with research findings by Stanley and colleagues (2021), which highlight the efficacy of distraction and positive activity-based strategies in mitigating suicidal ideation.

Theme 4: Support and Self-Care

Amid the dynamic setting of their internship, colleagues' support and self-care emerge as crucial elements in maintaining the well-being of these interns. As they navigate the complex terrain of clinical practice, they derive comfort and resilience from their peers, fostering a culture of mutual support and empathy. Despite the demands

of their internship, they prioritize self-care, acknowledging its significance in enhancing their ability to support clients effectively.

Sources of Social Support Within the Field

A study by Jones and Thompson (2017) underscored the significance of seeking support in coping with the challenges inherent in training and professional development. For the interns, having peers and colleagues who understand their experiences fosters a sense of solidarity and provides a safe space to discuss work-related concerns, emotions, and stressors.

"So, besides the weekly supervision where I discuss my case, I also ask my co-interns, especially after counseling, because I sometimes need to share my experiences with them to debrief myself..." - CF

They have consistently highlighted the importance of feeling supported in their professional environment. This support system acts as a buffer against the negative effects of stress by offering practical solutions, reframing perceptions of challenges, and promoting emotional regulation.

Exploring Self-care Practices

The growing influence of positive psychology has underscored the importance of self-care as a pivotal concept. Recognized for its ability to alleviate stress, improve professional performance, and foster overall well-being among mental health professionals (Dorociak et al., 2017), self-care has become increasingly prominent. Interns prioritize activities related to personal interests and hobbies as part of their self-care regimen. Engaging in activities they enjoy, whether exercising, reading, or creative pursuits, allows interns to recharge mentally and emotionally. These activities are crucial in fostering work-life balance and preventing emotional exhaustion, which is essential for sustained professional engagement.

"...whenever I handle clients, I rest, sleep, or read books afterward. That reading helps me a lot." - KS

Equipping Future Mental Health Professionals

The interns advocated for structured workshops and training programs specifically designed to prepare them for handling suicidal clients. They highlighted the importance of these programs in providing practical skills and strategies for crisis intervention.

"...maybe workshops, more focused on workshops first. We need workshops so that before dealing with clients, they already know how to handle them." - KA

By participating in workshops and trainings focused on suicide prevention, assessment, and management, future interns can gain insight into recognizing warning signs, assessing risk levels, and implementing appropriate interventions to mitigate the risk of suicide. Montague, Cassidy, and Liles (2016) emphasize that such training improves professionals' competence and boosts their confidence in handling crisis situations.

Maintaining Motivation in the Clinical Field

The interns expressed a deep sense of fulfillment in their work. They acknowledged the challenging nature of clinical practice while remaining committed to making a meaningful impact. The interns' dedication is fuelled by the understanding that their skills and compassion are invaluable in addressing mental health issues, particularly those related to suicide prevention.

"It motivates me because people need help, and I want to help them. I want them to understand mental health better, especially now that we are just starting to accept that concept, which is still progressing..." - AP

Witnessing first-hand the profound need for mental health support and realizing the potential to contribute positively to clients' lives reinforces their motivation. The interns' dedication is fueled by the understanding that their skills and compassion are invaluable in addressing mental health issues, particularly those related to suicide prevention. According to Hill and colleagues (2013), motivations such as altruism, the desire to effect positive change in individuals' lives and society at large, and the opportunity to help others who have faced similar

hardships are pivotal in attracting students to careers in clinical psychology. These motivations resonate strongly with the experiences shared by interns during their interviews.

4.0 Conclusion

The study has highlighted the significant impact that working with suicidal clients has on clinical psychology interns, affecting both their personal and professional lives. Through detailed interviews, several key themes emerged, including interns' personal and emotional challenges, how their experiences influence their therapeutic practice, and the importance of clinical decision-making and support systems. Interns often report feeling unprepared when confronted with clients expressing suicidal thoughts, leading to heightened anxiety, fear, and self-doubt. Their personal experiences, especially those related to family dynamics, influence their therapeutic approach, fostering increased empathy and revealing personal biases.

The experiences with suicidal clients have deepened interns' understanding of life's fragility and complexity, making them more sensitive and nuanced in their support. Despite the inherent difficulties, interns play a crucial role in fostering hope and progress through their empathetic and collaborative efforts. The improvement they observe in their clients' lives validates their methods and enhances their professional confidence and fulfillment. Interns use evidence-based strategies to manage crises, build resilience, and support mental health recovery, emphasizing the importance of a comprehensive approach to therapy.

Additionally, the study underscores the critical role of supervision and support systems in the interns' professional development. Supervision provides essential mentorship and helps interns bridge the gap between academic learning and practical application, addressing ethical dilemmas and complexities. Building trusting therapeutic relationships with clients, particularly those who are reserved or difficult to communicate with, is essential for effective therapy. Support networks and self-care practices are vital for managing the stresses of internships, maintaining ethical integrity, and ensuring long-term engagement in their work. The research concludes by emphasizing the importance of thorough training, ongoing education, and robust support systems in preparing interns to navigate the challenges of clinical practice and contribute meaningfully to mental health care.

The study's limitations: It specifically included graduate students in clinical psychology currently undertaking supervised internships as part of their curriculum, without any age restrictions or gender preferences for participants. However, all respondents happened to be women, which could potentially influence the outcomes. Furthermore, by examining the lived experiences of the clinical psychology interns, the interns should engage in continuing professional development to enhance their skills in handling suicidal clients. This includes attending workshops, seminars, and peer supervision to stay updated with evidence-based practices. Clinical psychology professors should also incorporate extensive training on crisis intervention and suicide prevention into their coursework to prepare students for the emotional and ethical challenges of working with suicidal clients. Emphasizing self-care strategies, such as mindfulness, exercise, and boundary-setting, is essential for fostering emotional resilience among future professionals. Training facilities and supervisors are encouraged to enhance intern preparation through specialized workshops and simulations, providing hands-on experience and promoting regular supervision for ongoing support. Additionally, educational institutions should ensure faculty receive continuing education on current best practices in suicide prevention while regularly assessing the effectiveness of training programs using stakeholder feedback. Future research should consider longitudinal studies that combine quantitative measures and qualitative interviews to understand better how interns' experiences and coping strategies evolve.

5.0 Contributions of Authors

Elaine L. Elayda conceived the research question, wrote and drafted the manuscript, collected and analyzed the data, and handled the revisions.

Dr. John Mark S. Distor provided technical support, contributed to interpreting results, and reviewed the manuscript.

6.0 Funding

This work received no specific grant from any funding agency.

7.0 Conflict of Interests

The author declares no conflict of interest.

8.0 Acknowledgment

The author is grateful for the strength and guidance throughout the research journey. Special thanks is given to the thesis adviser for his exceptional support and mentorship. The authors also acknowledge the esteemed panelists, family, and friends whose encouragement has been a vital source of motivation.

9.0 References

- Alase, A. (2017). The interpretative phenomenological analysis (IPA): A guide to a good qualitative research approach. *International Journal of Education and Literacy Studies*, 5(2), 9–19. <https://doi.org/10.7575/aiaa.ijels.v.5n.2p.9>
- Bennett-Levy, J. (2006). Therapist skills: A cognitive model of their acquisition and refinement. *Behavioural and Cognitive Psychotherapy*, 34(1), 57–78. <https://doi.org/10.1017/s1352465805002420>
- Dexter-Mazza, E.L., & Freeman, K.A. (2003). Graduate Training and the Treatment of Suicidal Clients: The Students' Perspective. *Suicide and Life-Threatening Behavior*, 33, 211–218. <https://doi.org/10.1521/suli.33.2.211.22769>
- Dorociak, K. E., Rupert, P. A., Bryant, F. B., & Zahniser, E. (2017). Development of a Self-Care Assessment for Psychologists. *Journal of Counseling Psychology*, 64(3), 325–334. <https://doi.org/10.1037/cou0000206>
- Elston, N. C. (2018). Evaluating Applied Suicide Intervention Skills Training with Counselors-in-Training: Enhancing Sensitivity, Awareness, and Intervention Skills with Suicidal and Non-Suicidal Clients (Dissertation). Georgia State University
- Firestone, L. (2014). Suicide: What therapists need to know. Retrieved from <https://tinyurl.com/3e677mdv>
- Fogarty, B., Houghton, S., Galavan, E., & O'Súilleabháin, P. S. (2023). Clinicians' Experience of Collaboration in the Treatment of Suicidal Clients Within the Collaborative Assessment and Management of Suicidality Framework. *Omega*, 87(2), 424–447. <https://doi.org/10.1177/00302228211020579>
- Hawgood, J. (2015). Working with suicidal clients: Impacts on psychologists and the need for self-care. Retrieved from <https://psychology.org.au/inpsych/2015/february/hawgood>
- Hill, C. E., Lystrup, A., Kline, K., Gebru, N. M., Birchler, J., Palmer, G., Robinson, J., Um, M., Griffin, S., Lipsky, E., Knox, S., & Pinto-Coelho, K. (2013). Aspiring to become a therapist: Personal strengths and challenges, influences, motivations, and expectations of future psychotherapists. *Counselling Psychology Quarterly*, 26(3–4), 267–293. <https://doi.org/10.1080/09515070.2013.825763>
- Hunter, N. (2015). Clinical Trainees' Personal History of Suicidality and the Effects on Attitudes Towards Suicidal Patients. *The New School Psychology Bulletin*, 13(1), 38–46. <https://www.nspb.net/index.php/nspb/article/view/263/157>
- Hupp, A. (2017). A Psychological and Philosophical Understanding of Death: An Analysis of Platonic and Epicurean Philosophy in Modern America. Retrieved from <http://www.exhibit.xavier.edu/hab/32>
- Ignacio, D., & Tudy, I. (2020). Fears, Motivation, and Strategies of Guidance Counselors in Handling Clients with Suicidal Tendencies. *Slongan*, 5. <https://rpo.cjc.edu.ph/index.php/slongan/article/view/26/25>
- Jones, R., & Thompson, D. (2017). Stress and Well-Being in Trainee Clinical Psychologists: A Qualitative Analysis. *European Society of Medicine*, 5(8), 1–19. <https://esmed.org/MRA/mra/article/download/1455/1123>
- Kolden, G. G., Wang, C. C., Austin, S. B., Chang, Y., & Klein, M. H. (2018). Congruence/genuineness: A meta-analysis. *Psychotherapy*, 55(4), 424–433. <https://doi.org/10.1037/pst0000162>
- Lagman, J. G., Gara, M., Baweja, R., & Kim, W. J. (2021). Correlates of Suicide Attempts in Filipino Youths: An Analysis Based on the 2015 Global School-Based Student Health Survey. *Cureus*, 13(9), e18100. <https://doi.org/10.7759/cureus.18100>
- Montague, K., Cassidy, R. R., & Liles, R. G. (2016). Counselor Training in Suicide Assessment, Prevention, and Management. Retrieved from <https://tinyurl.com/2s3ucf7w>
- Philstar. (2021, July 6). Pandemic year sees 57% rise in suicide rate in Philippines. Philstar Global. Retrieved from <https://tinyurl.com/msvneahj>
- Rossouw, G., Smythe, E., & Greener, P. (2011). Therapists' Experience of Working with Suicidal Clients. *Indo-Pacific Journal of Phenomenology*, 11, 1–12. <https://doi.org/10.2989/IPJP.2011.11.1.4.1103>
- Smith, J. A., & Osborn, M. (2015). Interpretative phenomenological analysis as a useful methodology for research on the lived experience of pain. *British journal of pain*, 9(1), 41–42. <https://doi.org/10.1177/2049463714541642>
- Stanley, B., Martínez-Alés, G., Gratch, I., Rizk, M., Galfalvy, H., Choo, T. H., & Mann, J. J. (2021). Coping strategies that reduce suicidal ideation: An ecological momentary assessment study. *Journal of psychiatric research*, 133, 32–37. <https://doi.org/10.1016/j.jpsychires.2020.12.012>
- Veilleux, J. C. (2011). Coping with client death: Using a case study to discuss the effects of accidental, undetermined, and suicidal deaths on therapists. *Professional Psychology: Research and Practice*, 42(3), 222–228. <https://doi.org/10.1037/a0023650>
- Weaver, Amanda, "Clinical Trainees' Experience of Burnout and its Relationship to Supervision" (2020). Dissertations. 482. <https://digitalcommons.nl.edu/diss/482>

Relationship Between Grade 7 Students' Interest and Their Performance in Acid-Base Lessons Using LoLiPap and CIS

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Date received: September 21, 2024

Date revised: October 6, 2024

Date accepted: October 18, 2024

Originality: 94%

Grammarly Score: 99%

Similarity: 6%

Recommended citation:

Benong, C.B., Benong, S., Piñero, B., Futralan, M.C. (2024). Relationship between grade 7 students' interest and their performance in acid-base lessons using LoLiPap and CIS. *Journal of Interdisciplinary Perspectives*, 2(11), 389-394. <https://doi.org/10.69569/jip.2024.0513>

Abstract. This study utilized descriptive, correlational, and cluster-randomized controlled trial (CRT) methods to explore the relationship between the Grade 7 students' interest and their performance in learning acid-base lessons using localized litmus paper (LoLiPap) and a computer interactive simulator (CIS) at a private school in Dumaguete City (SY 2023-2024). Validated questionnaires were used to assess the students' interests and performance. As indicated by the results, the two groups of students exhibited a "very high" interest in using the LoLiPap and CIS methods and attained "fairly satisfactory" performances. It was further unveiled that the interest levels of both groups, with p-values of 0.243 and 0.064, respectively, were not significantly related to their performance. This finding suggests that, besides interest, other factors affect students' learning outcomes. It is advised that the two methods should be combined with effective classroom dynamics, positive teacher behavior, better study habits, and a supportive environment to improve student performance.

Keywords: Localized apparatus; Educational outcomes; Computer interactive simulator; Acids and bases; Level of interest.

1.0 Introduction

Chemistry knowledge is highly crucial for shaping today's world. However, student disinterest and poor performance in the subject have remained persistent issues in chemistry education (Musengimana et al., 2021). Espinosa (2014) and Mangubat and Picardal (2023) noted that chemistry is one of the most feared subjects in science. This fear causes students to struggle often to complete the necessary tasks, resulting in them receiving low grades. Siddique et al. (2022) also revealed that despite their curiosity, secondary school students experienced learning difficulties and disengagement in chemistry. This was attributed to the perceived complexity of the subject, leading to poor attitudes toward learning chemistry.

Like many other countries, the Philippines faces a decline in students' science knowledge, as reflected in the 2018 and 2022 Programme for International Student Assessment (PISA) results, where Filipino students scored very low in science (Bernardo et al., 2023), which showed that their performance has not had considerable improvement since the evaluation in 2018 (Acido & Caballes, 2024). Filipino fourth graders also ranked last internationally in science concepts and principles based on the results of the 2019 Trends in International Mathematics and Science Study (TIMSS) (Martin et al., 2020). Several factors have been found to cause this decline in science knowledge

among Filipino learners. These include negative attitudes toward the subject, scarce learning materials, and ineffective teaching methods (Cheung, 2009; Khan & Ali, 2012; Morabe, 2004; Musengimana et al., 2021). Moreover, the weakening of students' science learning came as a result of the lack of laboratory facilities and equipment, particularly for chemistry, in Philippine schools, according to several scholars such as Estipular and Roleda (2018), Villar (2018), Jin et al. (2018), and Balbinot-Alfaro et al. (2019). Chemistry lab exercises are essential for raising students' comprehension and interest in the subject (Tuysuz, 2010; Orbe et al., 2018). Hence, educators must develop active learning strategies that emphasize the importance of science in a dynamic learning environment to solve the shortage of chemistry labs and boost students' motivation and performance in chemistry (Albarico et al., 2023).

Moreover, in response to this issue, studies like that of Patron and Despojo (2020), and Ayasrah et al. (2024) focused on utilizing inexpensive demonstrations and experiments, such as localized apparatuses, simulations, and augmented reality, to aid in teaching science and mathematics. Several studies also assessed students' post-test performance and interest in using computer interactive simulations in science (Ouahi et al., 2022), specifically in physics (Estipular & Roleda, 2018; Marces & Caballes, 2019; Dionson, 2020; Acabal et al., 2022; Candido et al., 2022), mathematics (Wong & Wong, 2019), and chemistry (Barocio et al., 2021). Other researchers explored students' performance and interest in using localized apparatuses in physics (Onasanya & Omosewo, 2011; Acabal & Mari, 2019; Gainsan, 2021; Balbon, 2019; Duya, 2021; Acabal et al., 2022), and biology (Cabuyoc, 2020). However, no studies have specifically examined the combined use of localized litmus paper (LoLiPap) and computer interactive simulation (CIS) in teaching chemistry. Thus, this study aims to determine the relationship between students' interest in the acid-base lesson using LoLiPap and CIS and their post-test performance after utilizing these two methods.

2.0 Methodology

2.1 Research Design

The study employed descriptive, correlational, and CRT methods. It is descriptive because it describes the level of students' interest in using LoLiPap and CIS. It is correlational because it examines the relationship between students' interest and their post-test performance in acids and bases using LoLiPap and CIS. Additionally, it applied the CRT method because students were not individually randomized; instead, groups were created based on their previous science grades (grade six overall science grade) and were each randomly assigned a method of instruction.

2.2 Research Locale

This study was conducted at a private school situated in Dumaguete City, Negros Oriental.

2.3 Research Participants

A total of 32 Grade 7 students were considered as the participants of the study. These students were enrolled in a private school in Dumaguete City, Negros Oriental. They were grouped based on their prior knowledge of the subject and split into two groups or clusters. The researchers ensured fairness in grouping the participants, and to verify that the two groups had equal knowledge, a t-test for independent data was used. The researchers randomly assigned each group a method of instruction using a one-stage cluster sampling procedure, which led to the formation of the LoliPap Group and the CIS Group. Students in each group participated in the experiment using their assigned method of instruction. Furthermore, both groups of participants gave their consent to participate, with the permission also granted by the school administrators and their respective parents.

2.4 Research Instrument

The study utilized LoLiPap, a CIS, an activity guide, and questionnaires as research instruments. The computer simulator pH Scale Simulation Software, obtained from Phet Colorado (phetcolorado.edu), was employed in conjunction with an activity guide created by the researchers. Additionally, a questionnaire was developed to assess students' posttest performance in acid-base lessons, with test questions formulated using a Table of Specifications (TOS). Questionnaires for measuring students' interest were adapted from Piñero et al. (2023) and validated by four experts in the field, followed by a dry run for item reliability identification.

Indicators for assessing student performance underwent item analysis, while indicators for gauging student interest were evaluated using Cronbach's Alpha Coefficient before the final experiment. The obtained coefficients were 0.874 for LoLiPap and 0.834 for CIS, indicating high reliability (both > 0.70). Statistical tools such as standard deviation, mean, and Spearman's rho were also applied in the analysis.

2.5 Data Gathering Procedure

With the approval of the dean of the Foundation University Graduate School, a request letter to conduct the research was submitted to the University Chancellor for Academic Affairs. Once the request was signed and approved, it was presented to the school principal and the relevant advisers of the grade seven students at the targeted school. During the data collection process, the researchers ensured that the disclosure statement was included with the questionnaires just before the participants began to answer them. Before beginning the research and distributing the test questionnaires, the researchers provided the students with a clear explanation of the study's purpose and significance to facilitate a smooth experiment. The researchers also adhered strictly to the established protocols.

Throughout the three-day experiment, a schedule was followed, allocating one hour for each day. On the first day, the researchers thoroughly covered the lessons on acids and bases. The second day involved explaining the activity's procedure, allowing students to experiment with the localized litmus paper and computer interactive simulator, guided by the activity instructions. On the third day, the post-test questionnaire and Questionnaires for measuring students' interest were distributed to the students, after which the results were analyzed and interpreted.

2.6 Ethical Considerations

The participants in the study were thoroughly informed about its purpose and were allowed to choose whether or not to take part on the research. The confidentiality of information, including the participants' grades and personal details, was rigorously maintained. If a participant decided to withdraw from the study, they were given a month to do so. After this period, all information would remain private and anonymous. Moreover, the researchers guaranteed that no respondent would face any harm while participating in the study.

3.0 Results and Discussion

3.1 Level of Students' Interest

Table 1 shows the level of students' level interest in using both methods of learning acids and bases. The data reveal a composite weighted mean of 4.23 for students who have utilized LoLiPap and 4.22 for students who have used the CIS.

Table 1. Level of students' interest in learning acids and bases with the use of LoLiPap and CIS

Indicators	LoLiPap Group			CIS Group		
	w $\bar{x}$	VD	LoI	w $\bar{x}$	VD	LoI
1. The use of LoLiPap/CIS in science discussion is interesting.	4.56	SA	VH	4.69	SA	VH
2. I enjoyed using the LoLiPap/CIS.	4.50	SA	VH	4.63	SA	VH
3. The concepts of acids and bases are very fascinating to me because of the use of LoLiPap/ CIS.	4.31	SA	VH	4.31	SA	VH
4. It made me realize that with the use of LoLiPap/ CIS, science concepts would be a lot more fun.	4.31	SA	VH	4.25	SA	VH
5. The LoLiPap/c CIS helps me focus on the discussion on the concepts of acids and bases.	4.25	SA	VH	4.13	A	H
6. The use of LoLiPap/ CIS makes me excited about what I'm going to find out, especially in the lesson about acids and bases.	4.25	SA	VH	4.06	A	H
7. The activity in the acids and bases made me realize that science would be more interesting with the use of LoLiPap/ CIS.	4.19	A	H	3.94	A	H
8. Using LoLiPap/ CIS makes me curious about the nature of science.	4.13	A	H	4.13	A	H
9. The activity encouraged me to use my skills in manipulating objects.	4.13	A	H	4.31	SA	VH
10. The activity made me realize that Chemistry is not merely a set of chemical formulas that needs to be memorized.	4.13	A	H	3.75	A	H
11. Using LoLiPap/ CIS makes me listen attentively to the teacher.	4.06	A	H	4.06	A	H
12. I want to use this LoLiPap/ CIS in other concepts of Science.	4.00	A	H	4.44	SA	VH
Composite	4.23	SA	VH	4.22	SA	VH

Note: 4.21 – 5.00 Strongly Agree (SA), Very High (VH) 3.41 – 4.20 Agree (A), High (H), 2.61 – 3.40 Moderately Agree (MA) Moderate (M), 1.81 – 2.60 Disagree (D), Low (L), 1.00 – 1.80 Strongly Disagree (SD), Very Low (VL)

The results further indicate that students using LoLiPap experience positive emotions such as enjoyment, fun, and excitement, which enhance the lesson's appeal and help them concentrate on the discussion and activities, resulting in a "very high" level of interest. These findings align with Piñero et al. (2023), and Acabal et al. (2022), who observed that students displayed excitement and interest, facilitating focused engagement in discussions and experiments.

The data in Table 1 also indicate that using the computer simulator enables the students to manipulate it actively. This experience promotes positive emotions like satisfaction and amusement among the students. Moreover, the level of students' interest became "very high" due to the engaging discussions during the activity. This finding validates the statements of Wong and Wong (2019), Acabal et al. (2022), and Mahawan and Celedonio (2023) that students find it interesting and fun when technology-enhanced learning, such as interactive simulation and computer-aided learning, is applied in Mathematics, Physics, and Chemistry lessons.

Furthermore, in the brief interviews conducted by the researchers, students expressed enjoyment in using the localized apparatus and interactive simulation, describing the activities as highly interesting. They also indicated a willingness to recommend these methods for lesson supplementation. These positive responses correlate with their "very high" level of interest. Moreover, the students said they had developed a better appreciation for and understanding of the acid-base lessons because of their first-hand encounters with LoliPap and CIS.

3.2 Students' Posttest Performance

Table 2 displays the post-test outcomes for CIS and LoLiPap groups. The mean percentages of 77.58% (for the LoLiPap group) and 76.50% (for the CIS group) imply that both groups' post-test performance is "fairly satisfactory." This finding implies that students at this level have met the necessary knowledge, abilities, and comprehension of acids and bases. However, they will still need assistance completing real-world tasks (DepEd Order No. 8, s 2015). Additionally, the standard deviations (SD) for both the LoLiPap (SD = 6.18) and CIS (SD = 5.26) groups indicate that the students' scores deviate significantly from the mean.

Table 2. Posttest performance of the two groups of students

Rating (%)	LoLiPap Group (n=16)		CIS Group (n=16)	
	f	%	f	%
85 - 89	1	6.25	2	12.50
80 - 84	5	31.25	1	6.25
75 - 79	6	37.50	9	56.25
≤ 74	4	25.00	4	25.00
Mean	77.58% (Fairly Satisfactory)		76.50% (Fairly Satisfactory)	
SD	6.18		5.26	

Dionson (2020) and Duya (2021) also observed in their respective studies that the students' performance in grasping difficult scientific concepts improved after the intervention. Likewise, Cabuyoc (2020), Patron and Despojo (2020), and Acabal et al. (2022) emphasize the methods' positive impact on student learning. This is also stated by Siddique et al. (2022), where secondary school students may encounter inherent difficulties in understanding chemistry concepts. That is why strong pedagogical knowledge and skills (Nkundabakura et al., 2023)—along with factors such as classroom dynamics, a supportive learning environment, improved student study habits, and positive teacher behavior (Mangubat, 2023)—should be combined with the implementation of LoLiPap and CIS methods.

3.3 Relationship of Students' Level of Interest and their Posttest Performance

Table 3 illustrates the data regarding the correlation between students' interest levels and their post-test performances. Spearman's Rank Order Correlation found that the p-values for both groups ($p = 0.243$ and $p = 0.064$) are greater than the significance level (0.05). This indicates that no significant relationship exists between (a) students' interest in using LoLiPap and their post-test performance and (b) students' interest in using CIS and their post-test performance. These findings suggest that changes in the independent variable (interest level) do not correspond to changes in the dependent variable (performance).

Table 3. Relationship between the level of students' interest and their post-test performance

Level of Interest and Posttest Performance using:	n	r_s	p-value	Remark
LoLiPap	16	0.311	0.243	Not significant
CIS	16	0.472	0.064	Not significant

Level of significance = 0.05; n = 16 in each group

The results can be further supported by the data presented in Table 1, which show that the level of students' interest does not vary much and that their performances are within the "very high" and "high" classifications. In other words, the students have the same performances regardless of their level of interest. This result affirms the findings of Acabal et al. (2022) that no significant relationship exists between the level of students' interest in using localized apparatus or interactive simulation and their post-test performance, which connotes that the students' interest is not a determinant of their performance. Piñero et al. (2023) also asserted that students' interest in the teacher's use of localized apparatus is unrelated to their performance. Moreover, Viljaranta et al. (2014) and Kaskens et al. (2020) found no evidence proving that a person's interest predicts his or her academic achievement, while Wong and Wong (2019) claimed in their study that students' interest does not correlate with their performance in mathematics. These findings further coincide with those of Macalisang and Bonghawan (2024), suggesting that other factors contributing to students' academic performance, such as motivation, self-efficacy beliefs, and effective learning methods, must be aligned with students' interests when designing effective instructional strategies.

4.0 Conclusion

Students' high level of interest when employing both instructional methods (LoLiPap and CIS) indicates that they found these instructional materials engaging and stimulating. This engagement can create a vibrant learning environment where students are actively involved and motivated to participate. The results also demonstrated the potential value of LoLiPap and CIS as instructional materials that the Department of Education (DepEd) and private basic education teachers could use in teaching acid-base lessons. However, the fact that the student's academic performance remains fairly satisfactory despite their keen interest in the lessons raises questions about the effectiveness of these strategies in translating enthusiasm into academic outcomes. This implies a need for further exploration into the alignment between instructional methods and learning objectives and the identification of potential barriers hindering the translation of interest into academic achievement. Additionally, the lack of a significant relationship between students' interests and academic performance emphasizes the complexity of factors influencing educational outcomes. While interest is undoubtedly important for fostering engagement and motivation, it may not be the sole determinant of academic success. This suggests that educators should adopt a holistic approach to optimal learning and performance of students that encompasses various aspects, including their interests and cognitive abilities, study habits, and external factors such as socioeconomic background. Moreover, future studies should utilize a longitudinal approach to examine students' interest and performance over time with a larger sample size to understand the impact of performance interest better.

5.0 Contributions of Authors

The authors declare that they all contributed equally to this study, and all have reviewed and approved the final paper. Specifically, Mr. Christopher Bernard S. Benong and Mrs. Shery-Ann T. Benong formulated the research framework, methodology, and data collection, ensuring that the study's objectives were clearly defined and were attainable. Mr. Brando A. Piñero was involved in assessing the manuscript drafts and data collection, and Dr. Maria Chona Z. Futralan was responsible for the statistical analysis and data interpretation in this study.

6.0 Funding

No grants or funding were provided for this research.

7.0 Conflict of Interests

The authors clearly state that they have no known competing financial or personal interests that might affect the research reported in this publication.

8.0 Acknowledgment

The authors thank Foundation University and Saint Louis School of Don Bosco for allowing them to conduct this research.

9.0 References

- Acabal, J., Piñero, B., & Futralan, M. C. (2022). Localized Apparatus and Interactive Computer Simulation in Teaching Projectile Motion. *Journal of Higher Education Research Disciplines*, 7(1), 1-17. <http://www.nmsc.edu.ph/ojs/index.php/jherd/article/view/195>
- Acido, J. V., & Caballes, D. G. (2024). Assessing educational progress: A comparative analysis of PISA results (2018 vs. 2022) and HDI correlation in the Philippines. *World Journal of Advanced Research and Reviews*, 21(1), 462-474. <https://doi.org/10.30574/wjarr.2024.21.1.0020>
- Albarico, A. G., Cabaa, N. A., Alipar, A. J. L., & Blas, R. P. (2023). Grade 10 Students' Science Learning Motivation and the Level of Their Science Achievement. *International Research Journal of Modernization in Engineering Technology and Science*, 5(5), 866-879. <https://doi.org/10.56726/IRJMET538012>
- Ayasrah, F., Alarabi, K., Mansouri, M., Fattah, H & Al-Said, K. (2024). Enhancing secondary school students' attitudes toward physics by using computer simulations. *International Journal of Data and Network Science*, 8(1), 369-380. <https://doi.org/10.5267/ijidns.2023.9.017>
- Balbon, A. N. E. (2019). Localized Apparatus in Teaching Geometrical Optics (Doctoral dissertation). Foundation University
- Barocio, Y. R., Obaya Valdivia, A. E., & Vargas-Rodriguez, Y. M. (2021). ICT: Didactic Strategy Using Online Simulators for the Teaching Learning of the Law of Conservation of Matter and Its Relationship to Chemical Reactions in Higher Middle Education. *Online Submission*, 10(2), 56-67. <https://doi.org/10.20448/2003.102.56.67>
- Ben Ouahi, M., Lamri, D., Hassouni, T., Ibrahim, A., & Mehdi, E. (2022). Science Teachers' Views on the Use and Effectiveness of Interactive Simulations in Science Teaching and Learning. *International Journal of Instruction*, 15(1), 277-292. <https://doi.org/10.29333/iji.2022.15116a>
- Bernardo, A. B., Cordel, M. O., Calleja, M. O., Teves, J. M. M., Yap, S. A., & Chua, U. C. (2023). Profiling low-proficiency science students in the Philippines using machine learning. *Humanities and Social Sciences Communications*, 10(1), 1-12. <https://doi.org/10.1057/s41599-023-01705-y>
- Cabuyoc, L. R. F (2020). Localized Apparatus and Interactive Simulations in Enhancing Students' Conceptual Understanding in Diffusion and Osmosis (Thesis). Foundation University, Philippines.
- Candido, K. J. O., Gillesania, K. C. C., Mercado, J. C., & Reales, J. M. B. (2022). Interactive simulation on modern physics: A systematic review. *International Journal of Multidisciplinary: Applied Business and Education Research*, 3(8), 1452-1462. <https://doi.org/10.11594/ijmaber.03.08.08>
- Cheung, D. (2009). Students' attitudes toward chemistry lessons: The interaction effect between grade level and gender. *Research in Science Education*, 39, 75-91. <https://doi.org/10.1007/s11165-007-9075-4>
- Dionson, J. J. (2020). Interactive Simulations in Understanding Concepts of Electricity. *Journal of Applied Science*, 5(10), 1-14. <https://doi.org/10.33107/ubt-ic.2021.440>
- Duya, N. J. I. (2020). Localized Apparatuses in Teaching Electrical Conductivity of Aqueous Solutions. *International Journal For Research In Applied And Natural Science*, 6(5), 23-55. <https://doi.org/10.53555/ans.v6i5.1293>
- Espinosa, A. A. (2014). Strategic intervention material-based instruction, learning approach and students' performance in chemistry. *International Journal of Learning, Teaching and Educational Research*, 2(1), 91-123. <http://ijlter.org/index.php/ijlter/article/view/10>
- Estipular, M. K. L., & Roleda, L. S. (2018). The Use of Interactive Lecture Demonstration with Interactive Simulation in Enhancing Students' Conceptual Understanding in Physics. *DLSU Research Congress 2018*, De La Salle University, Manila, Philippines
- Gainsan, J. M. C. (2021). Locally Made Apparatus in Teaching Law of Acceleration and Projectile Motion (Thesis). Foundation University
- Kaskens, J., Segers, E., Goei, S. L., van Luit, J. E., & Verhoeven, L. (2020). Impact of Children's math self-concept, math self-efficacy, math anxiety, and teacher competencies on math development. *Teaching and teacher education*, 94, 103096. <https://doi.org/10.1016/j.tate.2020.103096>
- Khan, G. N., & Ali, A. (2012). Higher secondary school students' attitude towards chemistry. *Asian Social Science*, 8(6), 165. <http://dx.doi.org/10.5539/ass.v8n6p165>
- Macalisang, D., & Bonghawan, R. (2024). Teachers' learning reinforcement: Effects on students' motivation, self efficacy and academic performance. *International Journal of Scientific Research and Management*, 12(02), 3218-3228. <https://doi.org/10.18535/ijrm/v12i02.el08>
- Mahawan, A.M., & Celedonio, M.A. (2023). Effectiveness of Computer-Aided Instruction on Students' Conceptual Understanding in Life Science. *International Journal of Multidisciplinary: Applied Business and Education Research*, 4(2), 388-401. <https://doi.org/10.11594/ijmaber.04.02.06>
- Mangubat, F. M. (2023). Anecdotes of University Students in Learning Chemistry: A Philippine Context. *Jurnal Pendidikan IPA Indonesia*, 12(1), 24-31. <https://doi.org/10.15294/jpii.v12i1.42120>
- Mangubat, F. M., & Picardal, M. T. (2023). Predictors of chemistry learning among first year university students. *International Journal of Instruction*, 16(2), 15-30. <https://doi.org/10.29333/iji.2023.1622a>
- Marcos, I. I. E., & Caballes, D. G. (2019). Enhancing the academic performance of grade 10 students in physics through interactive simulation laboratory experiments. *Pure and Applied Physics*, 11(4), 65-70. <https://doi.org/10.13140/RG.2.2.12869.60644>
- Martin, M. O., von Davier, M., & Mullis, I. V. (2020). Methods and Procedures: TIMSS 2019 Technical Report. Retrieved from <https://eric.ed.gov/?id=ED610099>
- Morabe, O. N. (2004). The impact of the SEDIBA project on the attitude of participating educators towards chemistry and chemistry teaching (Doctoral dissertation). North-West University
- Musengimana, J., Kampire, E., & Ntawihwa, P. (2021). Factors affecting secondary schools students' attitudes toward learning chemistry: A review of literature. *Eurasia Journal of Mathematics, Science and Technology Education*, 17(1), em1931. <https://doi.org/10.29333/cjmste/9379>
- Nkundabakura, P., Nsengimana, T., Nyirahabimana, P., Nkurunziza, J. B., Mukamwambali, C., Dushimimana, J. C., Uwamariya, E., Batamuliza, J., Byukusenge, C., Nsabayeze, E., Twahirwa, J. N., Iyamuremye, A., Mboniyirivuze, A., Ukobizaba, F., & Ndihekubwayo, K. (2023). Usage of modernized tools and innovative methods in teaching and learning mathematics and sciences: A case of 10 districts in Rwanda. *Education and Information Technologies*, 28(9), 11379-11400. <https://doi.org/10.1007/s10639-023-11666-z>
- Onasanya, S. A., & Omosewo, E. O. (2011). Effect of improvised and standard instructional materials on secondary school students' academic performance in physics in Ilorin, Nigeria. *Singapore Journal of Scientific Research*, 1(1), 68-76. <https://doi.org/10.3923/sjres.2011.68.76>
- Orbe, J. R., Espinosa, A. A., & Datukan, J. T. (2018). Teaching chemistry in a spiral progression approach: Lessons from science teachers in the Philippines. *Australian Journal of Teacher Education (Online)*, 43(4), 17-30. <https://doi.org/10.14221/ajte.2018v43n4.2>
- Patron, B., & Despojo, A. G. B. (2020). Inexpensive Demonstrations and Experiments in Understanding Basic Concepts of Fluid Mechanics. *Journal of Higher Education Research Disciplines*, 5(1). <http://www.nmsc.edu.ph/ojs/index.php/jherd/article/view/168>
- Piñero, B., Yucor, K., & Futralan, M.C. (2023). Effectiveness of Localized Apparatus and Mobile Application in Teaching Cosine Laws. *Journal of Higher Education Research Disciplines*, 8(2), 38-55. <https://www.nmsc.edu.ph/ojs/index.php/jherd/article/view/203>
- Siddique, M., Ahmed, M., Feroz, M., Shoukat, W., & Jabeen, S. (2022). Attitude Towards Learning Chemistry: A Case Of Secondary School Students In Pakistan. *Journal of Positive School Psychology*, 6(12), 1031-1055. <https://www.journalppw.com/index.php/jpsp/article/view/14827>
- Tuysuz, C. (2010). The Effect of the Virtual Laboratory on Students' Achievement and Attitude in Chemistry. *International Online Journal of Educational Sciences*, 2(1), 37-53. <https://tinyurl.com/4pesdf2r>
- Viljaranta, J., Tolvanen, A., Aunola, K., & Nurmi, J. E. (2014). The developmental dynamics between interest, self-concept of ability, and academic performance. *Scandinavian journal of educational research*, 58(6), 734-756. <https://doi.org/10.1080/00313831.2014.904419>
- Villar, M. B. (2017, March 6). Of aging farmers and food security. *Business Mirror*. Retrieved from <https://businessmirror.com.ph/of-aging-farmers-and-food-security/>
- Wong, S. L., & Wong, S. L. (2019). Relationship between interest and mathematics performance in a technology-enhanced learning context in Malaysia. *Research and Practice in Technology Enhanced Learning*, 14(1), 1-13. <https://doi.org/10.1186/s41039-019-0114-3>

Quantitative Evaluation of the Inferential Statistics Integration Skills in Practical Research of Grade 12 Students: As a Basis for a Remediation Program

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Date received: September 22, 2024

Date revised: October 6, 2024

Date accepted: October 20, 2024

Originality: 97%

Grammarly Score: 99%

Similarity: 3%

Recommended citation:

Morata, J.A., & Poblete J.P. (2024). Quantitative evaluation of the inferential statistics integration skills in practical research of grade 12 students: As a basis for a remediation program. *Journal of Interdisciplinary Perspectives*, 2(11), 395-404. <https://doi.org/10.69569/jip.2024.0517>

Abstract. This study evaluated students' perceived versus actual integration skills in statistics on seven central topics of the course concerning so-called 'inferential statistics,' namely: t-tests (independent and dependent), Analysis of Variance (ANOVA), Chi-square tests, Pearson Product Moment correlation coefficient, Spearman rank correlation coefficient and regression analysis. Descriptive statistics indicated that students perceived their skills as developing (mean = 1.62), but their actual performance was lower, categorized as beginning (mean = 1.38). Students performed weakest on Chi-square tests (mean = 1.10) and ANOVA (mean = 1.30). However, correlation analysis showed that most topics had no significant relationship between perceived performance and actual performance ($p = 0.045$), except for the Pearson Product Moment correlation coefficient, which had a moderate positive correlation ($p = 0.260$). Despite this, the actual performances for all topics were still low. Thus, the findings show a gap between perceived and actual skills. These results indicate that a comprehensive remediation program will include all seven inferential statistics topics utilized in this study. The course of study in this regard should be designed to enhance conceptual understanding, practical competency, and the student's capacity for appropriate self-assessment. A structured approach that matches focused workshops with practical work and individual support will help ensure that students develop both the theoretical and practical competence they need to do the statistical analysis, and that is through targeted instructional workshops and interactive statistical software training as the remediation program.

Keywords: Inferential Statistics; Statistical integration skills; Student Performance; Self-Assessment; Remediation Program.

1.0 Introduction

In recent years, much enthusiasm and eagerness have been developed in Grade 12 students about research, especially among schools in the Philippines. The K-12 curriculum was designed to prepare these students for further education and professional life by introducing research skills. It comes with this growing interest in the function of research, emphasizing the developing requirement for statistical literacy, as statistics are at the center of correctly analyzing and interpreting data about quantitative research. The competencies the students are to develop will certainly involve effectively embedding relevant statistical concepts into practical research. This reflects a wider educational trend that emphasizes data-driven decision-making and empirical inquiry.

Despite students' increasing interest and enthusiasm for research, some pressing concerns remain—one most serious being integrating statistical knowledge into their research projects. Among the serious issues identified was the lack of statistical skills on the part of some teachers handling Practical Research 2, particularly in inferential statistics, which is an important input in conducting quantitative research. Blömeke et al. (2020) highlighted that profiles of teachers' competence have a significance to instructional quality, and as linked to this study, most of the teachers, though proficient in other areas of research, may not have the necessary knowledge in statistics to the point of being able to assist the students accordingly. This would make the students poorly apply statistical methods and hence give incorrect results for the research. This gap between students' eagerness to learn, on one hand, and instructional support given, on the other, is the priority area where targeted interventions should focus in their quest to improve teaching and learning. This was supported by Doabler et al. (2022), who claimed that measurement and statistical research are areas of math that are notably overlooked in education-related research, especially when it comes to studies that involve students who have or are at risk of having math problems.

Sonza (2024) showed how students gain a deeper conceptual understanding of statistics when they learn through projects of data gathering, frequency distribution, and interpretation of results. However, statistical literacy research is full of errors, be it cognitive or procedural, according to Putri et al. (2023). Tsaniyah (2020) furthers that this thinking style contributes to differences in field-dependent and field-independent students' statutory thinking skill levels. These studies indicate that while high school students can learn statistical integration skills, there needs to be some focused instruction and support in addressing conceptual and practical gaps in their learning.

Given the focus of the current study, it is important to appreciate what core statistical deficiencies students will have when integrating statistics. According to research, students often encounter difficulties with statistical analysis in both conceptual and procedural senses. Li (2023) points out that many students need help conceptualizing research questions in the literature correctly or applying proper statistics, and they end up with flawed findings. Inferential statistics, which deals with projecting sampled data onto a larger population, requires hypothesis testing and test selection for a result to be meaningful. Masic et al. (2019) examples included small sample sizes and abuse of statistical tests that may significantly compromise the validity of inferential analysis. These issues directly affect Grade 12 students who must apply inferential statistics in practical research, particularly at the theoretical level, to understand data outputs and make conclusions (Sulistiyani, 2019).

In a related study on assessing inferential statistics integration skills in practical research among senior high school (SHS) students, some related local studies in the Philippines supported the idea that learning environments, baseline skills, and teaching strategies have significant effects. For example, Retutas & Rubio (2021) showed that the school type of the students in their study significantly predicts whether or not they will perform well on statistical inferential questions, suggesting that institutional resources and teaching practices could influence student capacity at applying inferential statistics in their research work. This will be part of learning about inferential statistics in the real world. In addition, Reston et al. (2014) examined statistics education research in the Philippines with particular attention to program and teacher training. These findings indicate that the accessible skills of Grade-12 students from inferential statistics could be strongly influenced by overall pedagogical strategies in schools and teachers, potentially influencing the extent to which statistics can be integrated into research projects. Similarly, Verzosa-Quinto and Mabansag (2023) highlighted the necessary skills for effective problem-solving in mathematics that call for basic skills like reading comprehension and analytical reasoning directly related to understanding inferential statistics. These two studies together underline the importance of considering both cognitive development and learning environments in creating a rich environment for developing inferential statistics skills, which research examines within the context of practicum research for Grade 12 students.

Bete (2020) measured scientific and statistical literacy among the students in the eighth grade. The results depicted highly challenging tasks at odds with obtaining appropriate knowledge. These findings emphasize foundational skills and the learning environment as key factors in integrating statistics into research, supporting the focus on Grade 12 students. Testing of intermediate skills, according to Magno and Piosang (2016), suggests poor statistical performance even by Grade 12, which is considered crucial in ensuring successful students. Celiz et al. (2023) established that some students encounter difficulty since they have no past statistical knowledge, which boils down to their research in the statistical tool. Lacson and Dejos (2022) identified the framework for how research

and statistical competencies may be gauged among senior high students and provided insight into how Grade 12 students are statistically integrated into research. It is an important sequence in statistical education since the students go up the academic ladder.

This study aimed to address the challenges related to statistical integration in research practices of Grade 12 students. Results from this study will go a long way toward informing assessment skills in statistical integration among Grade 12 students and serving to highlight perceived versus actual ability in a numeric sense. The study, therefore, will help develop effective instructional pedagogies and complementing resources for the reinstruction of particular statistical areas where the subjects reveal poor competencies. Recommendations from this study will also be made available to teacher training programs concerning how instructors can improve their knowledge of statistics to support students in developing these research skills. This research has as its ultimate goal the filling in of gaps that exist in statistical integration skills, which will, in turn, improve the quality of students' research and better prepare them for subsequent academic and professional challenges.

2.0 Methodology

2.1 Research Design

This study employed a descriptive-correlational research design to evaluate the statistical integration skills of Grade 12 students in their practical research projects. The research design is chosen to effectively capture both the students' self-perceived and actual skills in inferential statistics and examine the relationship between these two variables. The descriptive aspect of the study focused on gathering detailed information about the students' integration skills in inferential statistics.

2.2 Research Participants

This study's participants comprise sixty Grade 12 students who passed the Practical Research 2 course at Louella Gotladera Alcoba National High School. These students are in the final stage of their secondary education, where they are expected to demonstrate proficiency in research skills, including integrating statistical methods. The number of participants is determined using a sample size calculator. The selection of participants involved a stratified random sampling technique to ensure a representative sample across different academic tracks, performance levels, and demographic backgrounds within the Grade 12 cohort. This approach provided a comprehensive understanding of the integration skills of inferential statistics across a diverse group of students.

2.3 Research Instrument

The instruments were used to assess the perceived and actual skills in statistical integration among Grade 12 students in this study. Data was collected using a Self-Assessment Questionnaire and Practical Statistical Skill Test. Self-perceived statistical skills were assessed using the Self-Assessment Questionnaire. It was designed to capture student confidence in using inferential statistics in their research practice. This survey was modified from several instruments used in other educational research with this study sample to ensure the reliability and validity of the final product. Students perceived ability was measured on a 5-point Likert scale format (advanced, proficient, approaching proficiency, developing, and beginning).

On the other hand, the Practical Statistical Skills Test is supposed to objectify what the students know from inferential statistics. These problems also covered key inferential statistical methods, specifically t-test, chi-square test, ANOVA, and correlation analysis. This was designed to be a tough measure of how well the students could complete those steps while searching in research. The two instruments used in all studies were developed based on established instruments that had previously been validated. This has given confidence that the tools the researcher used for measurement were genuinely related to – and provided meaningful information relevant to – the constructs they originally purported to measure. The use of validated tools renders the research findings more credible and provides strong support for the possibility that Grade 12 students in schools would have been able to angle their skills integrative within inferential statistics with scrutiny aligning closer to Practical Research 2.

2.4 Data Gathering Procedure and Analysis

This study followed a step-wise process of structured method for data collection to prevent erroneous data collection and subsequent bias. The researcher sought permission from the relevant authorities in Louella

Gotladera Alcoba National High School to secure information/data. The selected Grade 12 students contributed to the questionnaire in their scheduled class period. Before taking the survey, students had to look at documentation explaining each word's meaning. To maintain the integrity of responses acquired upon completion. On a separate occasion, the students were put to an abilities check to mimic the exam environment so there were no distractions. This test was used to investigate the accuracy of their sophistication inferential statistics style in factorial research situations. Questionnaires and test performance data were securely stored for subsequent analysis. The data collected from questionnaires and scores were recorded in SPSS software as quantitative data for analysis. An in-depth analysis of the data collected was performed to evaluate the students' statistical integrating ability and the difference between what they perceived about their capability and their actual performance to generate some directed self-improvement.

2.5 Ethical Considerations

The study complied with all ethical rules for the care and use of animals to ensure that the research participants lived with well-being and dignity. The purpose was explained, and if the students volunteered, so did their teachers. He needed their written consent to demonstrate that the participants were willing to participate in the study voluntarily. Written informed consent was obtained from parents of students under 18. Confidentiality was maintained for all respondents in this study. No names or personal identifiers were used in this study's research reports or publications. All data were de-identified with coded identification numbers and stored on password-protected files accessible only by the research group. They were told that they could drop out of the study at any time without penalty or explanation. This was done to avoid any compulsion on the participants to continue performing an act they felt otherwise intolerably uneasy. The experimental procedure was consistent with the Declaration of Helsinki after being reviewed and approved by a local Ethics Committee, which stated that it did not expose any risks or discomfort to the participants. The questions and tests were age-appropriate; nothing was identified that could have been revealed. After data collection, a briefing session was held to explain the findings, discuss their meaning and implications, and allow the participants to ask questions or voice concerns.

3.0 Results and Discussion

3.1 Self-Perceived Statistical Integration Skills

Table 1. Descriptive statistics of the self-perceived statistical integration skills of the respondents

Indicators	Mean	SD	Interpretation
1. I can perform t-tests for independent samples.	1.63	0.802	Developing
2. I can perform t-tests for dependent samples.	1.73	0.733	Developing
3. I can perform an Analysis of Variance (ANOVA).	1.77	0.890	Developing
4. I can perform the Chi-square test.	1.55	0.675	Developing
5. I can perform the Pearson Product Moment correlation coefficient.	1.50	0.792	Developing
6. I can perform the Spearman rank correlation coefficient.	1.58	0.645	Developing
7. I can perform regression analysis	1.55	0.699	Developing
Total	1.62	0.748	Developing

Table 1 presents the self-perceived skills of Grade 12 students in performing various statistical techniques based on a 5-point Likert scale. It provides a mean and SD for every indicator and interprets the skill level. The overall mean score was 1.62 with a standard deviation of 0.748, which indicated that students perceived their statistical competencies as developing across all areas. Some of the specific indicators found were the lowest mean score: the ability of students to compute Pearson Product Moment Correlation ($M = 1.50$, $SD = 0.792$), meaning they have less confidence in this than the other areas. A critical finding noted here is that they posted the highest mean score regarding their ability to carry out ANOVA ($M = 1.77$, $SD = 0.890$). However, this is still within the "Developing" range, signifying a further requirement for improvement in understanding and applying ANOVA. Competence in performing t-tests for independent and dependent samples was similarly found to reflect a developing skill level with mean scores of 1.63 ($SD = 0.802$) and 1.73 ($SD = 0.733$), respectively. Consistency in all the statistical methods used, which included Chi-square, Spearman rank correlation, and regression analysis, can be deduced since all the mean scores obtained fall within the range of 1.50 to 1.77. This indicates that the perception regarding students' ability development in these aspects is uniform. Low standard deviations, ranging from 0.645 to 0.890, show that students have consistent responses with very little variability in how they self-assess their competencies.

Overall, the findings show that grade-12 students have a basic understanding of these statistical techniques but are still developing their competence early. More systematic instruction and practice in statistical methodology are needed to improve their confidence and competence. The literature discussed students' difficulties with statistics and applying them to life (Sonza, 2024; Putri et al., 2023). Putri et al. (2023) found widespread cognitive and procedural errors, indicating that students might have an unrealistic perception of their statistical proficiency. The results of the self-perceived skills portion of the study reported if students believed they were better or worse at something than reality favored. To mirror this, the differences identified in the study were consistent with the current literature regarding students' frequent underestimation of their ability to use statistical concepts in practice (Tsaniyah, 2020; Lacson & Dejos, 2022), which emphasizes measuring skill levels appropriately.

3.2 Actual Statistical Integration Skills

Table 2. Descriptive statistics of the actual statistical integration skills of the respondents

Indicators	Mean	SD	Interpretation
1. T-tests for independent samples.	1.42	1.319	Beginning
2. T-tests for dependent samples.	1.73	1.219	Beginning
3. Analysis of Variance (ANOVA).	1.30	1.078	Beginning
4. Chi-square test.	1.10	.838	Beginning
5. Pearson Product Moment correlation coefficient.	1.30	1.169	Beginning
6. Spearman rank correlation coefficient.	1.37	.938	Beginning
7. Regression analysis	1.42	1.319	Beginning
Total	1.38	1.126	Beginning

Table 2 describes the actual statistical integration skills of the respondents, as measured in a test examination consisting of 10 items for each topic, by describing the mean and standard deviation for each indicator and interpreting the students' competence level. The overall mean score of 1.38 with an SD of 1.126 signifies that, on average, the student's skills are at the "Beginning" level. Among the specific statistical techniques, the highest mean score was that for the T-tests on dependent samples ($M = 1.73$ and $SD = 1.219$), thus interpreted as the "Developing" status since students stand better in the presence of competence than the other items. However, that is understandable to be on the low side, showing areas needing further improvement. By contrast, the Chi-square test showed the lowest average score ($M = 1.10$, $SD = 0.838$); this means that in this technique, students have the toughest time and remain at a "Beginning" level. The remaining subjects, independents samples T-tests ($M = 1.42$, $SD = 1.319$), ANOVA ($M = 1.30$, $SD = 1.078$), Pearson Product Moment correlation coefficient ($M = 1.30$, $SD = 1.169$); Spearman rank correlation coefficient ($M = 1.37$, $SD = 0.938$), Regression Analysis ($M = 1.42$, $SD = 1.319$), are below the "Beginning" level of competence. The standard deviations obtained are relatively high, ranging from 0.838 to 1.319, which clearly shows that variability in performance has been observed among the respondents. Whereas some students performed a bit above average, others had very poor performances. This generally points out that the actual competence of the respondents in statistical integration is very limited. Most students scored very low in the items; the majority were within the "Beginning" level on most topics, suggesting a large gap between perceived competence and actual skills for most. This means an urgent need for tailored interventions and instructional support for their mastering of such basic statistical methods.

These results are explained by the research of Masic et al. (2019) and Sulistyani (2019), who claim that students mistakenly interpret their data into whole conditions and misinterpret it to reach inferences for understanding inferential statistics. Returns & Rubio (2021) and Reston et al. (2014) were few to blush the teaching practices, school environment-affiliated characteristics, as well as the initial capacity of students to perform inference. Well, suppose the study found gaps between student competency levels and what the curriculum expects from them. In that case, we might expect this because teaching practices and available resources have a huge role in shaping students' real-world skills.

Some factors hinder a student's capacity to apply inferential statistics. The first factor affecting this ability is the students' prior exposure to and understanding of fundamental concepts. Most students do not know the foundational notions in statistics essential for inferential statistics in their research. This lack of understanding influences their ability to interpret data and correctly make relevant assumptions. Therefore, it affects the overall outcome, and performance in practical research tasks is compromised. On the other hand, some Practical Research 2 teachers teaching quantitative research do not have strong foundations in statistics. Given that they are not

acquainted with the concepts of inferential statistics themselves, they become unable to disseminate this knowledge to the students. As a result, they, too, cannot help the students properly use statistical tools. When teachers do not understand statistics, consistent teaching quality is not promoted, and the variation in student performance increases.

3.3 Relationship between Self-perceived and Actual Statistical Integration Skills

Table 3. Analysis of the relationship between the students' self-perceived and actual statistical integration skills

Indicators	ρ	p-value	Interpretation	Decision to Ho
1. T-tests for independent samples.	0.031	0.815	Not Significant	Accept
2. T-tests for dependent samples.	0.098	0.458	Not Significant	Accept
3. Analysis of Variance (ANOVA).	-.0210	0.107	Not Significant	Accept
4. Chi-square test.	0.039	0.766	Not Significant	Accept
5. Pearson Product Moment correlation coefficient.	0.260	0.045	Significant	Reject
6. Spearman rank correlation coefficient.	-0.042	0.748	Not Significant	Accept

This study addressed how accurately students can judge their general competence in applying statistical concepts (5-point Likert scale) about a partially objective measure on an examination covering seven basic statistical topics. The Spearman's Rank Correlation was used to examine the strength and significance of the relationship between self-assessment and actual test performance on these topics. The results in Table 3 suggest that most statistical tests conducted to assess the connection between students' self-reported and actual statistical integration capabilities were insignificant. In particular, independent and dependent samples t-tests ($\rho = 0.031$, Sig = 0.815; $\rho = 0.098$, Sig = 0.458), ANOVA ($\rho = -0.210$, Sig = 0.107), chi-square test ($\rho = 0.039$, Sig = 0.766), Spearman rank correlation ($\rho = -0.042$, Sig = 0.748), and regression analysis ($\rho = 0.100$, Sig = 0.445) were carried out, demonstrating that there were no significant correlations between self-perception and actual performance. These results suggest that students' statistical competence does not match their confidence within these areas. The causes of such may include students' low familiarity with these methods, teaching that does not support proper practical skills, or students' inability to estimate the skills they command.

In contrast, the Pearson Product Moment correlation coefficient was significant ($\rho = 0.260$, Sig = 0.045), meaning students who see themselves as competent in this subject have an improved performance. Pearson correlation is a common teaching method in statistics courses; its relative simplicity and frequent use in theoretical and practical applications may help students assess their competency correctly. Therefore, the correlation between self-perception and real performance shows that familiarity and reinforcement play an important role in learning statistical concepts.

In conclusion, the one statistically significant relationship, the Pearson Product Moment correlation, about a moderate positive association, suggests that students were primarily accurate for self-assessment in this area. Nevertheless, significant relationships were not found for the other six statistical learning goals, which indicates that students' self-perception of their knowledge and actual performance is not uniform. Though these results give evidence that on certain dimensions (Pearson correlation), students may be able to judge their capabilities more accurately, they indicate possible over- and underestimation of mastery across different learning goals. Few statistical tools are considered more introductory than Pearson correlation, a metric introduced early in statistics education, particularly within academic settings. The fact that we use it to test the relationships between variables that we investigate in everyday research may render it more familiar and easier to grasp for students. As it is an already familiar concept, it could be that students have the sense of a higher self-perception of skill when asked about Pearson correlation times compared to other measures, and this is likely because they encountered Pearson correlation multiple times during both theoretical lessons and practical exercises. Also, for students, Pearson correlation may seem like a simple statistical method since it is based on the linear relationship between two variables and might be misperceived as less complex than regression or ANOVA. This must also contribute to their confidence and is part of why they are so good at this test.

The results of this study suggest that students' self-perceived statistical integration skills are not strong predictors of their test performance, apart from scores on knowledge-based questions about Pearson correlation. Few significant correlations resulted for most topics at that level, suggesting there may be a gap between perceived and actual ability, where feedback or instructional methods targeting improved self-assessment in understanding

statistical terms should focus. As for its causes, first, teaching methods play a huge role in building confidence in students. When the focus is on theory as far as possible without enough practical exercise, students are prone to overestimating their abilities. For example, they may feel comfortable about a t-test or an ANOVA after lecturers but flounder when they must apply this knowledge to real data sets. Students will likely acquire an inflated sense of their abilities if not given opportunities to exercise these techniques. In addition, some practical research teachers teaching quantitative research do not possess strong foundations in inferential statistics. Second, past mathematics or statistics performances also influence students' self-assessment. Thus, a student who performs badly in quantitative subjects may think of himself as weak in statistics when his performance improves. On the other hand, students receiving A's or close on their earlier coursework tend to be overconfident and inflate self-perception where understanding is still developing. Lastly is the cognitive bias, such as the Dunning-Kruger effect, where lower-ability students overestimate their competence. However, the more capable ones are forced to underperform because of self-doubt or anxiety. This explains why some say they possess depth in places where they do not or why others, despite performing exceptionally, do not know their abilities.

That is, misconceptions in self-assessment are mostly based on poor teaching, previous experiential learning, and cognitive bias. The course can rectify most problems through much more experiential learning and constructive feedback so that the students can better perceive themselves in their statistical skills. For instance, Li (2023) argued that students made mistakes by not conceptualizing research questions properly, and they used incorrect types of statistics to make the results questionable. This is consistent with the study's results in that there appeared to be discrepancies between how competent participants thought they were and their actual skill levels. Magno and Piosang (2016) report the discrepancy between what students believed to know and absolute competency – that is, students felt good about themselves as they undertook number crunching that required thought yet lacked understanding. This deficit underscored the importance of enhanced instructional interventions to achieve not just perceptions of capacity but competencies in understanding statistical analysis.

3.4 Basis for Remediation Program Plan

Many studies identified difficulties experienced by students in statistical synthesis specifically. The significance of skills in reading comprehension and analytical reasoning as they contribute to understanding and using inferential statistics was also highlighted by Verzosa-Quinto and Mabansag (2023). The study also corroborated the assertions of Celiz et al. (2023) by identifying hypothesis testing and data interpretation as areas requiring remediation. It also corresponds with comments made by Bete (2020) concerning students needing more prior knowledge or statistical literacy. However, together, these studies highlighted that both cognitive and practical gaps needed to be addressed through targeted support, which complemented the focus of the fourth objective of this study.

This study aimed to explore the relationship between students' self-perceived statistical integration skills and performance in hopes of informing a specific, targeted remediation program. Results indicate substantial discrepancies in assessing students' abilities and performance competency relative to seven essential statistical topics. These results underscore a call for educational intervention to enhance student competence.

Descriptive statistics for students' self-perceived skills are summarized in Table 1, with students tending to rate themselves as a 'Developing' level of competence across all statistical topics by wish list number. The average self-perceived score was 1.62, and students ranked lower on their t-test together with ANOVA analysis Chi-square tests plus correlation methods performance capabilities instead of teaching and learning levels. Students rated themselves through the self-perceived options (mean in Analysis of Variance = 1.77 and mean in Pearson Product Moment correlation = 1.50). While the self-assessment indicates that students consider their understanding of these subjects adequate, they know they are not proficient.

The results using the actual performance data from Table 2 clearly show that students have 'Beginning' skills in all seven statistical topics, with an unweighted mean score of 1.38. The results show a large gap in the ability of students to apply statistical theory. In the students' actual performance, the weakest areas for both Rubber- and Coffee-matriculated students were the Chi-square test (mean = 1.10) followed by ANOVA (mean = 1.30), where there are large gaps in their ability to perform these analyses. In short, students are also not good at putting what

they learn via book knowledge into practical skills, as seen by the very poor testing of topics like t-tests and correlation methods.

Seemingly, what students know is not what they can do. The comparison in Table 3 reinforces the distance separating self-perceptions of proficiency from objective performance. There were only very low and non-significant correlations between self-perception and actual performance of almost any topic considering independent t-test, dependent t-test, ANOVA, Chi-square tests, Spearman rank correlation, and regression analysis. Students who believe skills are not important scores generally knew how skilled they were in those areas since the correlation was negative, which shows that students tend to think too high or too low of their competence in these fields. One relationship reached statistical significance ($r = 0.260$, $p = 0.045$): that between students' self-assessment and their results for topics—which indicated a moderate positive correlation between students' scheduled skills vs actual performance in this topic. However, with such a high correlation, students still performed poorly, indicating much to be desired in an area that seems relatively stronger.

These studies highlight that remediation efforts must extend the range of statistical topics. The part where the remediation is required was found to be in all the seven inferential statistics topics covered in this study, namely the T-tests for independent samples, T-tests for dependent samples, Analysis of Variance (ANOVA), Chi-square test, Pearson Product Moment correlation coefficient, Spearman rank correlation coefficient, and Regression analysis, since the result of the skill test evaluation on the mention topics is all hanging in low scores and interpreted as 'Beginning in terms of skills.' These topics are to be focused on in the remediation program since they have become areas of struggle with higher occurrence both in understanding and application. Further, most topics are associated with trivial or no correlation between self-perception and actual performance, suggesting that students may not need to be fully aware of their weaknesses. Accordingly, the remediation program should likewise enhance students' self-assessment skills with more realistic understanding through formative assessments and reflective learning exercises.

To ensure that students benefit from practical research and relate theoretical concepts with real-world examples, it is important to conduct targeted instructional workshops as the remediation program to improve their inferential statistics skills. In this way, students learn how to use these statistical methods in practice by focusing on such issues as hypothesis testing, confidence intervals, and real-life data. First, in the case of hypothesis testing workshops, it is possible to help each student formulate and test his hypothesis, which is related to real life. Second, in the case of confidence intervals, it is possible to introduce the concept of estimating the interval's confidence level containing a population parameter. Thus, improving students' skills in interpreting the data is possible. Finally, students study how to use real-life data to solve research questions. As a result, students gain new ideas about how to apply inferential statistics in their work and learn that these methods are significant in a researcher's career.

The remediation program can also be an interactive statistical software training in SPSS, Jamovi, or Python. Using statistical software helps students learn to handle data and make finer analyses. Interactive statistical software training helps students avoid common mistakes when handling large datasets. Students get hands-on tutorials, meaning they input their data, choose which test to run, and interpret results. In doing so, students learn theory and then apply it to real data, giving them a comprehensive understanding. With simulations, students can make different changes to that data so that they can see how it influences the results obtained. The chance to work on real data gives the learners the relevant experience and expertise in what they do. Students can use their statistical software comfortably and interpret the results by being more guided. Unlike simulations, where the software is only used to calculate and test figures, interacting with real-world data confirms to the students that the software can be used to analyze data. It also helps to break the notion that learning to analyze data is only for theory; it helps to apply their knowledge in different areas, which is greatly beneficial.

4.0 Conclusion

The remediation should include focused workshops on the advanced topics that are difficult and scored low in the statistical skill test conducted in this study, concluding that all seven topics in inferential statistics that are utilized are to be included in a comprehensive remediation program to consolidate the understanding of concepts and applications. The remediation will be done through targeted instructional workshops and interactive

statistical software training as part of the remediation program. Hands-on will be essential for students to successfully go from theory to more practice in which teachers can teach students how to apply statistical methods to real-world data. In addition, a pretest and posttest examination will be indispensable to check the aptitude of students as well as assess their attained skill set from the remediation program, thus assuring that the remediation mentioned above program has worked. Individualized tutoring or small groups can also be offered for students struggling with certain topics.

In summary, the data show strong evidence from this study stage that a remediation program concentrating on integrating statistical information is essential for supporting usability as an effective strategy. The substantial gaps between the self-perceived and observed performance, mainly in Chi-square tests, ANOVA methods, and Correlation, represent the implementation of intervention measures targeting these deficiencies. An extensive remediation task combining didactic teaching, application to problems, and practice self-assessment will help students gain more realistic expectations of their capability, leading to better statistical performance.

These findings and recommendations could be applied to broader educational settings or inform curriculum changes. In the curriculum, more time should be allocated to complex topics such as ANOVA and chi-square tests, while those should be interspersed with real-world applications and copious amounts of hands-on practice. Scaffolding over time allows competence and confidence to build over time. From applied psychology to health sciences and economics, workshops, hands-on learning, and feedback loops can be used as an ideal approach in training to improve students' skills in statistics application. Policymakers can update education standards to emphasize statistics' practical and real-life applications in preparing students for careers based on data.

5.0 Contributions of Authors

Mr. Jan Angelo G. Morata edited, wrote, supervised, analyzed, and encoded the data. Mr. John Paulo H. Poblete designed the study and collected the data. Both authors revised, reviewed, and approved the final work.

6.0 Funding

This study received no specific grant from any funding agency

7.0 Conflict of Interests

There is no conflict or no conflict of interest.

8.0 Acknowledgment

The author would like to thank the students and administrators of Louella Gotlader Alcoba National High School for allowing him to conduct the study, especially the school head of the mentioned school, Ms. Juvy F. Garduque. The authors are extremely grateful to their academic mentors, whose guidance and expertise were invaluable in shaping this research. Of course, they would like to give special thanks to Mr. Prisco L. Gracilla for his support and constructive feedback throughout the development of the study. Appreciation is also extended to the anonymous reviewers whose insightful comments and suggestions helped improve the manuscript. Finally, our heartfelt thanks go to our peers and colleagues, particularly Mr. Miel Ryan Senson and Mr. Dennis Gorpe, for their encouragement and thoughtful discussions, which contributed significantly to completing this work.

9.0 References

- Bete, A. O. (2020). Students' knowledge and process skills in learning grade-8 chemistry. *Journal of Research, Policy & Practice of Teachers and Teacher Education*, 10(1), 1–16. <https://doi.org/10.37134/JRPPTTE.VOL10.1.1.2020>
- Blömeke, S., Kaiser, G., König, J., & Jentsch, A. (2020). Profiles of mathematics teachers' competence and their relation to instructional quality. *ZDM*, 52(2), 329–342. <https://doi.org/10.1007/s11858-020-01128-y>
- Celiz, J. P., Sagge Jr., R. G., & Bacio Jr., S. P. (2023). Statistics for teachers' action research (STAR) module: A developmental study. *International Journal of Innovative Science and Research*, 5(11), 5427 – 5434. <https://tinyurl.com/4nyvmj7y>
- Doabler, C. T., Clarke, B., Kosty, D., Sutherland, M., Turtura, J. E., Firestone, A. R., Kimmel, G. L., Brott, P., Brafford, T. L., Fien, N. J. N., Smolkowski, K., & Jungjohann, K. (2022). Promoting understanding of measurement and statistical investigation among second-grade students with mathematics difficulties. *Journal of Educational Psychology*, 114(3), 560–575. <https://doi.org/10.1037/edu0000711>
- Hasim, S. M., Rosli, R., & Halim, L. (2024). A quantitative case study of secondary school students' level of statistical thinking. *Eurasia Journal of Mathematics, Science and Technology Education*, 20(2), 1-12. <https://doi.org/10.29333/ejmste/14358>
- Lacson, E., & Dejos, E. (2022). Research skills scale for senior high school students: Development and validation. *Psychology and Education: A Multidisciplinary Journal*, 2(4), 329-334. <https://doi.org/10.5281/zenodo.6727946>
- Li, X., Li, Q., & Wang, Q. (2023). Analysis of College Students' Misconceptions of Quantitative Research in Social Sciences in China: Implications for Teaching. *Journal of Education and Educational Research*, 2(3), 28-31. <https://doi.org/10.54097/jeer.v2i3.7140>
- Llanillo, L. C., Pauya, C. D., Villafior, J. R. S., & Ruaya, F. B. (2023). Modular learning platform implementation and cognitive skills development of senior high school students. *Sumerianz Journal of Education, Linguistics and Literature*, 6(4), 86-92. <https://doi.org/10.47752/sjell.64.86.92>
- Magno, C. & Piosang, T. (2016). Assessment Schemes in the Senior High School in the Philippine Basic Education. *Educational Measurement and Evaluation Review*, 7(1), 66-87. <https://ejournals.ph/article.php?id=11223>
- Masic, I., Jankovic, S. M., & Begic, E. (2019). PhD students, and the most frequent mistakes are made during data interpretation by statistical analysis software. *Studies in Health Technology and Informatics*, 261, 12-17. <https://doi.org/10.3233/SHIT190028>
- Putri, C. K., Juandi, D., Kurniawan, S., & Sukri, S. (2023). High school students' errors in solving statistical literacy test similar to minimum competency assessment. *Edumatica: Jurnal Pendidikan Matematika*, 13(2), 179-190. <https://doi.org/10.22437/edumatica.v13i02.26153>
- Reston, E., Krishnan, S., & Idris, N. (2014). Statistics education research in Malaysia and the Philippines: A comparative analysis. *Statistics Education Research Journal*, 13(2), 218–231. <https://doi.org/10.52041/serj.v13i2.292>
- Retutas, M. J., & Rubio, M. T. (2021). Multivariate analysis on performance in statistics, self-efficacy and attitudes of senior high school students. *JRAMathEdu (Journal of Research and Advances in Mathematics Education)*, 6(4), 352–367. <https://doi.org/10.23917/jramathedu.v6i4.14368>

- Sonza, A. P. (2024). Introduction to the study of statistics in high school through research. Proceedings of the Multi-Science International Conference on Seven Pillars (pp. 662-671). <https://doi.org/10.56238/sevenmulti2024-096>
- Sulistiyani, N. (2019). Error analysis in solving inferential statistics problems for psychology students. Journal of Physics: Conference Series, 1180, 012006. <https://doi.org/10.1088/1742-6596/1180/1/012006>
- Tsaniyah, R. (2020). Statistical thinking profile of field independent and field dependent senior high school students in problem-solving. MATHEdunesa, 9(1), 185-193. <https://doi.org/10.26740/MATHEDUNESA.V9N1.P185-193>
- Verzosa-Quinto, E. M., & Mabansag, A. B. (2023). Error analysis in solving word problems among Grade-8 students. International Journal of Current Science Research and Review, 6(10), 6585-6599. <https://doi.org/10.47191/ijcsrr/v6-i10-10>

Influence of Effective School Leadership on Teachers' Performance: A Systematic Literature Review

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Date received: September 25, 2024

Date revised: October 7, 2024

Date accepted: October 20, 2024

Originality: 95%

Grammarly Score: 99%

Similarity: 5%

Recommended citation:

Punzalan, A., & De Jesus, L. (2024). Influence of effective school leadership on teachers' performance: A systematic literature review. *Journal of Interdisciplinary Perspectives*, 2(11), 405-410.

<https://doi.org/10.69569/jip.2024.0522>

Abstract. This systematic literature review examines the impact of effective school leadership on teachers' performance, focusing on various leadership styles and practices. It has been demonstrated that good leadership has a favorable impact on teachers' performance. This leadership is typified by establishing clear ideas and goals, offering assistance, cultivating a positive school culture, implementing effective communication, and inspiring respect and trust. A dearth of longitudinal studies, contradictory results, and little research conducted in various circumstances are among the notable gaps in the literature that the review points out. Research gaps can be filled, and the scope of the study can be widened so that stakeholders in education have a deeper knowledge of how various leadership methods and styles impact teachers' effectiveness. Using this knowledge, methods to improve school leaders' efficacy will be developed, ultimately improving student learning results.

Keywords: School leadership; Teachers' performance; Leadership styles; Systematic review.

1.0 Introduction

The foundation of organizations lies in their leaders, who are accountable for bringing together team members, inspiring them, addressing difficult challenges in high-pressure situations, and staying composed during tough circumstances (Adminhr, 2023). School leaders, especially principals, need to keep their teachers motivated to have high-performing teachers (Cruickshank, 2017). In addition, to effectively lead and manage a school, leaders must possess a wide range of knowledge beyond their formal education. This includes expertise in curriculum and instruction, fiscal management, human resources, public relations, effective communication skills, and more. (Hansen, 2016).

Moreover, Leithwood et al. (2019) highlighted that being a leader goes beyond having a clear vision, mission, and goal; a leader must know how to create a working environment that fosters collaboration, which results in opportunities for personal and professional growth among teachers. Although previous studies have already provided significant insights into different aspects of how school leaders are influencing teachers' performance, some findings contradict each other. Even though numerous studies mentioned that effective leadership has a direct influence on teachers' performance, Imig et al. (2014, as cited in Naim & Dabash, 2018) suggest that effective leadership alone may not be sufficient to improve teacher performance if the teachers themselves lack the necessary skills or abilities.

The aim of this systematic review is to collate and summarize the results of recent studies about how or in what way leaders influence their teachers' competence and performance and answer the question: Which leadership styles have a significant influence on teachers' performance?

2.0 Methodology

This study used a systematic literature review to determine the influence of effective leadership on teachers' performance. A systematic literature review, or simply systematic review, is a methodologically rigorous approach to synthesizing research evidence on specific educational questions. This method involves meticulously identifying and analyzing relevant research studies to gather significant data. It also involves systematically combining all the existing research findings to identify what was already known and to answer specific research questions (Gough et al., 2017).

According to Munn et al. (2018), a systematic review uses clear and systematic methods that are selected to minimize bias, thus providing more reliable findings from which conclusions can be drawn and decisions made. This literature review was conducted using different academic databases, namely Google Scholar and other databases, and using the keywords school leadership, principal effectiveness, teacher performance, and effective leadership style. This literature review used studies published from 2016 to date focusing on the influence of effective school leadership on teachers' performance. Table 1 shows the inclusion and exclusion criteria.

Table 1. Inclusion and exclusion criteria

Parameters	Inclusion Criteria	Exclusion Criteria
Type of Research	Studies that are published in peer-reviewed journals and scholarly publications	Book reviews, editorials, literary work analysis, and evaluation
Result of the Study	Research articles, journals, or scientific papers that investigate the correlation between effective leadership practices and their influence	Research articles, journals, or scientific papers that have no connection to the influence of effective leaders
Language	Research articles, journals, or scientific papers about the influence of leaders in the English Language	Research articles, journals, or scientific papers about the influence of leaders that are not in the English Language
Data Base	Access to Google Scholar and other databases	Databases that the researcher does not have access to
Time Frame	Research articles, journals, or scientific papers about the influence of leaders published from 2016 to 2024	Research articles, journals, or scientific papers about the influence of leaders that are not published from 2016 to 2024

Articles from valid publications are the primary factor taken into account when choosing which ones to include in the inclusion criteria in conversations with other experts regarding the methodology and importance of research projects. Table 2 below shows the research articles included in this systematic literature review and the author's name and publication date.

Table 2. Research articles included in the systematic review of the literature

Research No.	Authors	Research Title	Publication Year
1	Greatheart, S.	Perceptions of Leadership Influence on Teachers' Professional Development	2023
2	De Castro & Jimenez	Influence of School Principal's Attributes and 21st-Century Leadership Skills on Teachers' Performance	2022
3	Bradford, W.	The Impact of Highly Effective Leadership Practices on School Culture	2023
4	Herring, A.E.	The Impact of Effective and Ineffective Principal Leadership on Teacher Morale	2023
5	Paige, M.	The Influence of School Leadership that Cultivates Teachers' Instructional Capacity.	2023
6	Kartini, et al.	The Influence of Principal's Leadership, Academic Supervision, and Professional Competence toward Teachers' Performance	2020
7	Hansen, K.	Effective School Leadership Practices in Schools With Positive Climates in the Age of High-Stakes Teacher Evaluations	2016
8	Voelkel et al.	Effective Principal Leadership Behaviors That Enhance Teacher Collective Efficacy	2024
9	Chalikias, et al.	The school principal's role as a leader in teachers' professional development: the case of public secondary education in Athens	2020
10	Nasra, M.A.	Leadership style and teacher performance: mediating role of occupational perception	2020
11	Sarwar, et al.	Principals' leadership styles and its impact on teachers' performance at college	2022

		level	
12	Elkhder & Onia	The Effect Of Principals' Management Styles on Teachers' Performance in Private Primary Schools in Omdurman Locality in Sudan	2021
13	Andriani, et al.	The Influence Of The Transformational Leadership And Work Motivation On Teachers Performance	2018
14	Hsieh et al.	Impact of school leadership on teacher professional collaboration: evidence from multilevel analysis of Taiwan TALIS 2018	2018
15	Badrun et al.	The Influence of Principal's Leadership Style on Teacher Performance	2022
16	Ath, C.S.	Impact of School Principals' Leadership on Teaching Quality and Students' Achievement: A Case Study of Primary Schools in Phnom Penh, Cambodia	2022
17	Karatas et al.	Teachers' Perceptions Regarding Effective School Features and Effective Leadership Qualifications of School Principals in Turkey	2024
18	Farooq et al.	A Study of Leadership Styles and Teachers' Performance	2022
19	Kavitha et al.	Transforming Education: Exploring Leadership Dynamics And Teachers' Performance In 21st Century Schools	2024
20	Loretta et al.	Influence of School Leadership Styles on Teachers' Performance in Public Secondary Schools in Anambra State, Nigeria	2023

3.0 Results and Discussion

3.1 Ways in Which Effective School Leadership Impacts Teachers' Performance

Effective leadership is crucial to an organization's success. Leaders' roles extend beyond leading and managing. They are also responsible for creating a work climate where everyone is on the same page and where creativity and innovation can flourish. There are different ways in which effective school leadership impacts teachers' performance. Table 3 represents the research findings that effective school leaders influence teachers' performance. It summarizes several leadership categories that demonstrate significant impacts on teachers' performance.

Table 3. Ways in which effective school leadership impacts teachers' performance	
Effective School Leadership	Research Article/s
Setting a Clear Vision and Goals	2, 3, 16
Providing Support	1, 4, 5, 6, 1, 5
Creating a Positive School Culture	3, 5, 8
Implementing Effective Communication	2, 4, 7, 9, 4, 5, 7
Building Trust and Respect	1, 2, 7, 8

In terms of setting a clear vision and goals, according to Day, et al. (2020), school leaders who have a clear vision, goals, and set of values for their school have a significant impact on their actions and the actions of other people around them creating a sense of direction and purpose most especially if these are well communicated and understood.

In terms of providing support, research shows that teachers who receive support and guidance from their leaders or principals are inclined to do better as teachers see it as a motivation to strive for the best (Kristiawan et al., 2020). Other research findings also suggest that teachers' performance is significantly influenced by school leaders who constantly initiate developmental opportunities, like seminars, workshops, and professional learning communities, highlighting strategies to improve the teaching and learning process (Greatheart, 2023).

Leaders play an important role in creating a positive school culture and a positive working environment. Voelkel et al. (2024) stated that leaders who promote a healthy, collaborative, and supportive environment increase the chance of having teachers who strive to do better.

In terms of implementing effective communication, Bucăța & Marius (2017) stated that effective communication is a significant key to a harmonious relationship between leaders and subordinates. Moreover, it highlighted that effective communication is crucial for a high-performing team. The research emphasized that teachers with a leader who initiates conversations through different channels like feedback or simply having a simple dialogue show a big improvement in classroom management and practices. It also highlighted that effective communication is not just about leaders giving personalized feedback to teachers but also the other way around (Hansen, 2016).

Regarding building trust and respect, research findings state that teachers' confidence is significantly connected to their level of trust toward their leaders. According to the studies, a teacher's sense of empowerment in their professional positions is correlated with their faith in their principals. The results also imply that teachers' opinions of the success of their peers and leaders are correlated with their self-confidence. As a result, principals are essential in helping teachers develop a sense of trust and empowerment in order to increase their individual and group efficacy (Voelkel et al., 2024).

3.2 Leadership Styles / Practices

As shown in Table 4, influential leaders also use different leadership styles and practices to help teachers.

Table 4. Leadership practices of school leaders that have impacted teachers' performance

Leadership Practices	Research Article/s
Democratic Leadership	4, 11, 12, 15, 16, 17, 18
Transformational Leadership	4, 10, 13, 19, 20
Autocratic Leadership	4, 11, 18
Laissez-faire style	11, 12, 18

Democratic leadership refers to leaders distributing tasks or workloads to other members of the team and involves sharing decision-making. Studies found that leaders who use this kind of leadership positively affect their teachers' performance. It is also revealed that there is a positive correlation between democratic leadership and good progression in teachers' performance (Sarwar et al., 2022). This result was also supported by the study conducted by Farooq et al. (2022), which found that democratic leadership benefits teachers' performance. Despite that, studies determined that this leadership style does not significantly affect teachers' performance.

Transformational leadership is a leadership style in which leaders lead their teachers by emphasizing what they need to focus on in their profession. Leaders who use this style also emphasize motivational maturity and help their teachers be more conscious of what is right and beneficial for them and the school (Okeke et al., 2023). Moreover, according to Andriani et al. (2018), transformational leadership positively correlates with teachers' performance as it shows better leadership and improved performance.

Autocratic leadership is where leaders give instructions and a list of things their members need to accomplish. Leaders who execute this kind of leadership do not let their team members participate in decision-making or give out suggestions. Although this kind of leadership is authoritative, studies also show that this leadership style has been successful since their followers or members find it encouraging, and it gives them a sense of motivation because things get done speedily due to decision-making (Sarwar et al., 2022). However, this result contradicted what Elkhder and Onia (2021) stated in their study, which stated that autocratic leadership has no significant effect on teachers' performance as it shows no correlation.

Laissez-faire style is a type of leadership in which team members also have the power to make decisions. They have the choice of how they will set goals and the power to decide how to solve problems if they arise. This style also highlights the independence of the followers or team members from the leader (Sarwar et al., 2022). As a result, studies have shown that this type of leadership was not significantly related to improving teachers' performance (Farooq et al., 2022).

3.3. Gaps in the Research Articles

The research on the influence of good school leadership on teachers' performance indicates several limitations. There are conflicting results: although some research points to the benefits of leadership, others show that if teachers lack the necessary abilities or drive, leadership is insufficient (Imig et al., 2014, as referenced in Naim & Dabash, 2018). Generalizability is limited because research frequently concentrates on particular areas or systems. Further research in various cultural, socioeconomic, and educational situations is required.

Many current research studies are cross-sectional, providing a simple moment in time. Longitudinal research is necessary to comprehend the long-term consequences of leadership philosophies. Furthermore, most studies ignore other leadership figures like department heads and instructional coaches instead of focusing only on principals. Lastly, while some leadership philosophies have been studied, others—like dispersed and servant

leadership—have received less attention. Closing these gaps will improve our understanding of how various leadership philosophies affect instructors' effectiveness.

4.0 Conclusion

This systematic review of the evidence emphasizes how crucial good school leadership is in influencing teachers' effectiveness. Teachers clearly benefit from a variety of leadership philosophies and techniques, such as establishing clear objectives and goals, offering assistance, cultivating a pleasant school climate, putting effective communication into practice, and establishing a climate of trust and respect. Nevertheless, the literature reveals notable gaps, such as inconsistent findings, limited research across diverse contexts, and a scarcity of longitudinal studies, highlighting critical areas for future investigation. Addressing these gaps and broadening the research scope will enable educational stakeholders to develop a more nuanced and comprehensive understanding of how leadership styles and practices affect teachers' performance. This enhanced knowledge is essential for devising strategies to bolster the effectiveness of school leaders, ultimately contributing to improved educational outcomes for students.

To address the identified gaps, future research should include longitudinal studies to track the long-term impact of leadership styles on teachers' performance, enhancing understanding of the sustainability of various leadership practices. Studies should also expand to diverse cultural, socio-economic, and educational contexts to improve the generalizability of findings and provide a global perspective on leadership's influence. Additionally, research should investigate a broader range of school leadership roles, including department heads, vice principals, and instructional coaches, to offer a nuanced understanding of how different leadership figures contribute to teachers' performance.

Moreover, exploring additional leadership styles, such as servant leadership, instructional leadership, and distributed leadership, can help identify the most effective approaches. Addressing inconsistent findings requires further research to reconcile the varied impacts of leadership on performance, considering factors like teachers' initial competencies, motivation, and existing support systems. This comprehensive approach will clarify how leadership influences teachers' performance and guide the development of effective leadership strategies in education.

5.0 Contributions of Authors

The systematic review was carried out by a single author, with the guidance of Dr. Leonora De F. Jesus, currently the Associate Dean of Graduate School at Bulacan State University. The review process included conceptualizing the study, searching the literature, screening and choosing studies, gathering data, analyzing the data, and summarizing the results. Critical thinking and careful attention to detail were crucial to ensure a comprehensive and transparent analysis at every review stage.

6.0 Funding

The research did not obtain dedicated grant funding from any government agency, public institution, or private sector.

7.0 Conflict of Interests

The author declares that no financial conflicts of interest are associated with this study. Nevertheless, it is important to acknowledge that the author's perspective regarding the impact of strong leadership on teachers' performance may have indirectly influenced the research. The author has made every effort to conduct the review impartially and thoroughly, guaranteeing that personal prejudices do not undermine the analysis's quality.

8.0 Acknowledgment

The author is extremely grateful to her family for their constant support and motivation during this research. The author also wants to thank Dr. Leonora F. de Jesus for her invaluable advice, mentorship, and knowledge. Dr. de Jesus' input has been crucial in completing this systematic review.

9.0 References

- Abu Nasra, M., & Arar, K. (2020). Leadership style and teacher performance: Mediating role of occupational perception. *International Journal of Educational Management*, 34(1), 186–202. <https://doi.org/10.1108/IJEM-04-2019-0146>
- Andriani, S., Kesumawati, N., & Kristiawan, M. (2018). The influence of transformational leadership and work motivation on teachers' performance. *International Journal of Scientific & Technology Research*, 7(7), 19–29. <https://tinyurl.com/9npbcskm>
- Arslan, S. (2024). Teachers' perceptions regarding effective school features and effective leadership qualifications of school principals in Turkey. *SAGE Open*. <https://doi.org/10.1177/21582440241233978>
- Ath, C. S. (2022). Impact of school principals' leadership on teaching quality and students' achievement: A case study of primary schools in Phnom Penh, Cambodia (Doctoral dissertation). Nagoya University
- Badrun, B., Mustahiqurrahman, M., Indra, I. M., Fakhurrizi, F., & Akbar, M. A. (2022). The influence of principal's leadership style on teacher performance. *Jurnal At-Tarbiyat: Jurnal Pendidikan Islam*, 5(1), 22–30. <https://doi.org/10.37758/jat.v5i1.394>
- Bradford, W. C. (2023). The impact of highly effective leadership practices on school culture (Dissertation). Northern Kentucky University
- Bucăța, G., & Răzescu, A. M. (2017). The role of communication in enhancing work effectiveness of an organization. *Land Forces Academy Review*, 22(1), 49–57. <https://doi.org/10.1515/raft-2017-0008>
- Chalikias, M., Raftopoulou, I., Kyriakopoulos, G. L., & Zakopoulos, V. (2021). The school principal's role as a leader in teachers' professional development: The case of public secondary education in Athens. *Problems and Perspectives in Management*, 18(4), 461. [http://dx.doi.org/10.21511/ppm.18\(4\).2020.37](http://dx.doi.org/10.21511/ppm.18(4).2020.37)

- Cruickshank, V. (2017). The influence of school leadership on student outcomes. Retrieved from <https://doi.org/10.6084/m9.figshare.5312806.v1>
- Day, C., Sammons, P., & Gorgen, K. (2020). Successful school leadership. ERIC.
- De Castro, G. B., & Jimenez, E. (2022). Influence of school principal's attributes and 21st-century leadership skills on teachers' performance. Retrieved from <https://doi.org/10.36079/lamintang.jhass-0402.374>
- Elkhder, E. E., & Onia, S. I. (2021). The effect of principals' management styles on teachers' performance in private primary schools in Omdurman locality in Sudan. *MANAGERE: Indonesian Journal of Educational Management*, 3(1), 62-74. <https://doi.org/10.52627/ijeam.v3i1.89>
- Farooq, A., Dilshad, S. A., & Qadir, S. (2022). A study of leadership styles and teachers' performance. *Competitive Education Research Journal*, 3(1), 373-385. <https://cerjournal.com/index.php/cerjournal/article/view/86>
- Hallinger, P., Hosseingholizadeh, R., Hashemi, N., & Kouhsari, M. (2018). Do beliefs make a difference? Exploring how principal self-efficacy and instructional leadership impact teacher efficacy and commitment in Iran. *Educational Management Administration & Leadership*, 46(6), 800-818. <https://doi.org/10.1177/1741143217700283>
- Hansen, K. (2016). Effective school leadership practices in schools with positive climates in the age of high-stakes teacher evaluations (Master's thesis). Northern Michigan University
- Herring, A. E. (2023). The impact of effective and ineffective principal leadership on teacher morale. ProQuest LLC
- Hsieh, C.-C., Chen, Y.-R., & Li, H.-C. (2024). Impact of school leadership on teacher professional collaboration: Evidence from multilevel analysis of Taiwan TALIS 2018. *Journal of Professional Capital and Community*, 9(1), 1-18. <https://doi.org/10.1108/JPC-01-2023-0002>
- Kartini, D., Kristiawan, M., Fitria, H., Negeri, S., & Sugihan, M. (2020). The influence of principal's leadership, academic supervision, and professional competence toward teachers' performance. *International Journal of Progressive Sciences and Technologies*, 20(1), 156-164. <https://doi.org/10.52155/ijpsat.v20i1.1730>
- Leithwood, K., Harris, A., & Hopkins, D. (2020). Seven strong claims about successful school leadership revisited. *School Leadership & Management*, 40(1), 5-22. <https://doi.org/10.1080/13632434.2019.1596077>
- Loretta, O. N., Obilor, P. U., Nwogbo, M. O., & Ubah, C. G. (2023). Influence of school leadership styles on teachers' performance in public secondary schools in Anambra State, Nigeria. *African Journal of Educational Management, Teaching and Entrepreneurship Studies*, 9(2), 69-77. <https://ajemates.org/index.php/ajemates/article/view/272>
- Paige, M. (2023). The influence of school leadership that cultivates teachers' instructional capacity (Doctoral dissertation). University of Georgia
- Sarwar, U., Tariq, R., & Yong, Q. Z. (2022). Principals' leadership styles and its impact on teachers' performance at college level. *Frontiers in Psychology*, 13, 919693. <https://doi.org/10.3389/fpsyg.2022.919693>
- Voelkel, R. H., Prusak, K. J., & Van Tassell, F. (2024). Effective principal leadership behaviors that enhance teacher collective efficacy. *Education Sciences*, 14(4), 431. <https://doi.org/10.3390/educsci14040431>

Impacts of Seasonal Nature of Employment on the Income Stability of the Farm Laborers' Household

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Date received: August 29, 2024

Date revised: October 7, 2024

Date accepted: October 21, 2024

Originality: 93%

Grammarly Score: 99%

Similarity: 7%

Recommended citation:

Paninsoro, D., Augusto, M.P., Pacilan, J.F., Francis, M., Villapaña, I., Narvasa, L., Cane, R.M., Ebo, M.J. (2024). Impacts of seasonal nature of employment on the income stability of the farm laborers' household. *Journal of Interdisciplinary Perspectives*, 2(11), 411-421. <https://doi.org/10.69569/jip.2024.0455>

Abstract. Farm workers or laborers are essential as they provide the critical labor needed to cultivate, harvest, and sustain the agricultural processes that ensure food security and drive the agricultural economy. However, in the Philippine agriculture landscape, farm laborers are heavily affected by the seasonality of their employment. The study on the impact of seasonal employment on the income stability of the farm laborer's household remains under exploration. This participatory action research (PAR) aimed to explore the impact of the seasonal nature of employment on the income stability of the farm laborer's household in Mapurog, Sapad, Lanao del Norte, through resource-flow activity with one-on-one interviews and observations. This is analyzed using the reflexive thematic analysis. The study revealed a complex impact of this developmental issue, including a significant reduction in income during off-peak seasons and increased reliance on informal credit sources. Children stop attending school to engage in labor and help their parents, essential daily needs remain unmet, access to healthcare is deprioritized, and mental distress pervades the community. Furthermore, the research identifies reliance on loans, credit institutions, and extended family arrangements as coping mechanisms for income instability. While these strategies demonstrate the resourcefulness and resiliency of the farm laborers, they exacerbate financial distress rather than alleviate it. The findings suggest that government policies should improve access to education, such as scholarship programs that allow children to attend school without the economic pressure to work. Additionally, financial policies could include the development of alternative and sustainable economic support systems that reduce dependence on loans and debt. Lastly, comprehensive social protection programs should be implemented to provide safety nets for vulnerable families, addressing the root causes of income instability and promoting long-term community resilience.

Keywords: Farm laborers; Income stability; Agriculture; Seasonal employment.

1.0 Introduction

Agriculture is pivotal in the Philippines' economy, employing a significant portion of the population. It is the key driver of the economy in the rural areas where most Filipinos live, but poverty remains high (Andriesse, 2017). Agriculture remains one of the major sources of employment; the proportion of people employed in the agriculture sector accounted for 23.1 percent of the total employment in the Philippines in 2022 (Statistic Research Department, 2023). However, a substantial demographic of farm laborers experience irregular and unstable incomes within the agricultural sector. Briones (2012) stated that in 2012, many individuals living in poverty (66%) were employed in the agricultural sector.

In the Philippine agricultural landscape, farm laborers are essential for the planting, tending, and harvesting crops. Their employment is often characterized by seasonality and risky work arrangements, leaving them susceptible to income instability. Several factors contribute to this instability, such as the effect of climate change on agriculture, crop seasonality, casual labor, and low wages (Devereux et al., 2012). Additionally, the perception of seasonal employment as less meaningful can marginalize workers, positioning them on the periphery of the labor market (Ćorluka & Landvogt, 2022). It leads to economic instability for workers, affecting their livelihoods and community integration, as demand fluctuations create uncertainty in job security and income levels (Baum et al., 2023)

Relatively, income instability due to seasonal employment is a common issue farm laborers face in many rural areas (Kareemulla et al., 2013). This issue affects their economic well-being, overall livelihoods, and quality of life. Agricultural laborers face challenges as their wages do not cover basic needs, leading to vulnerability during food price increases (Lanzona, 2024). Seasonality of labor markets is crucial for rural livelihoods, yet often overlooked in economic models (Feuerbacher & Grethe, 2018).

Income instability refers to the uncertainty in income levels individuals or households face, resulting from irregular employment, limited job opportunities, and unpredictable income sources (Western et al., 2012). Farm workers are essential resources in the agriculture industry due to their significant contributions and impact. They are important in ensuring a steady and secure food supply (Lusk & Chandra, 2021). Farm workers are crucial in agriculture for labor-intensive tasks such as planting and harvesting, ensuring farm jobs are completed efficiently (Martin, 2014). Comparatively, farm laborers form the foundation of the agriculture industry's success and development as they contribute to economic growth (Singh, 2023). Despite their significant contribution to the sector, they often do not receive a fair share of the income from agriculture as their work is characterized by seasonality, which contributes to their experiencing income instability (Surender, 2022).

On the other hand, while some studies have explored the general challenges faced by farmers in the country, more research is needed that specifically examines the impacts of the seasonal nature of employment on household income stability among farm laborers, as this remains underexplored. Exploring the impacts of seasonal jobs on income stability among this vulnerable group could provide valuable insights for designing more targeted and effective initiatives and policies to support their resilience and well-being. With that, the main objective of this study is to explore the impacts of the seasonal nature of employment on the income stability of the farm laborer's household in Mapurog, Sapad, Lanao del Norte.

2.0 Methodology

2.1 Research Design

The study utilized participatory action research. This approach empowers community members to engage as co-researchers, aiming that their lived experiences and insights directly inform the research process. PAR emphasizes marginalized groups' involvement, allowing farm laborers to share their experiences regarding seasonal employment and its effects on income stability (Brown, 2024). This methodology is rooted in social justice, aiming to address structural inequalities that affect farm laborers (Mcintyre, 2022). Additionally, the action-oriented nature of PAR allows for the immediate implementation of findings, which enables participants to adapt strategies in real time to enhance their income stability (Zeller-Berkman, 2024). Lastly, PAR facilitates the development of strategies that can directly improve the economic conditions of these households and promote sustainable change (Hünefeldt, 2022).

2.2 Research Locale

The study was carried out in Mapurog, Sapad, Lanao del Norte. This is a farming community focused on cultivated crops, including rice, corn, and vegetables. One of the major sources of income in the community is farm labor. According to the Annual Development Plan of Barangay Mapurog (2022), farm labor constitutes almost 80 percent of the total households in the community.

2.3 Research Participants

The total population of farm laborers in Mapurog constitutes almost 80% of the community's households. Among this 80%, there were 20 diverse household participants, including perspectives from a mother, father, child, and a couple. Among the participating households were 3 single fathers, 2 single mothers, and 1 gay couple.

2.4 Research Instrument

This study utilized the resource flow activity with one-on-one interviews and observations. Resource flow activity is a method in which the participants will draw or list every asset that comes into a household and how those assets are spent. It served as an effective research instrument for exploring the impact of seasonal employment on the income stability of farm laborers' households due to its ability to capture the dynamic interactions between labor, resources, and economic outcomes. This approach provided a comprehensive understanding of how seasonal employment influences household income stability (Idea Org, n.d.).

2.5 Data Gathering Procedure

The study ensured accurate data collection and participant confidentiality through voluntary, in-person interviews using the resource flow activity, which involves questionnaires on assets and expenses. Interviews were recorded to prevent bias and securely store accurate transcription and personal information. Participants' privacy was prioritized, and follow-up questions were used to explore the impact of seasonal employment on farm laborers' income stability. Findings informed the research writing and will be used for future reports to the Mindanao Young Leaders Programme partner organizations, including UnionAID, Interfacing Development Interventions for Sustainability, Victoria University of Wellington, and Ministry of Foreign Affairs and Trade of Aotearoa New Zealand.

2.6 Ethical Considerations

This research study followed ethical guidelines. Participant information sheets and consent are given to the participants. The document discussed the study's rationale, privacy, and confidentiality of their participation, involving a "Not harm" approach during the interview, maintaining fairness and equity, and debriefing. This research has been approved by the Mindanao Young Leader Programme's ethics panel.

3.0 Results and Discussion

Following the reflexive thematic analysis, the study recognized six overarching themes: Children stop attending school, unmet basic needs, dependency on loans and credits, extended family of their parents, deprioritized healthcare, and mental distress.

Theme 1: Children Stop Attending School

The first theme that emerged in the study is that children stop attending school. Stopping attending school refers to the act of discontinuing formal education, typically before completing a designated course or program of study. Children make the decision to discontinue their formal education to engage in labor activities to support their family's financial needs. Four children of farm laborers who were interviewed expressed that they tend to help their parents by looking for income through working on the farm and other working sites such as grocery stores.

Child 3, a senior high school graduate who never pursued a college degree, revealed that *"after my senior high school, I started working in the field and never thought of going to college."* A comparative explanation behind why children do not pursue tertiary education or even finish their studies was also shared by Child 4, who mentioned,

"I stopped studying in elementary, I guess. . . in grade 4 or 5 because I was working in the rice field as a rice seedling planter to earn income and help my mom with the expenses in the house".

Child 2 also described the reason why he stopped studying in the meantime and mentioned that,

"I stopped attending school (secondary level) because of the lack of financial support, but at this moment, I continue studying in the Alternative Learning System program of the Department of Education while working or self-sustaining in the hope of finishing my studies."

Another fascinating context is revealed by Child 5, a young farm laborer and high schooler. He expressed his sentiments when it comes to income instability and mentioned that,

"My father's income is not enough to sustain the needs of our family since I have plenty of siblings; I tend to work sideline in the rice field as a rice seedlings planter even if that means I will be absent. . . to have a personal income because if I do not have money, I cannot buy even my foods."

On the other hand, Child 1, who stopped studying in junior high school, provided a different perspective and said,

"Before I stopped going to school, I was absent many days because I was in trouble fighting with my classmate (boy)."

This scenario further underscores the challenges stemming from financial instability. When confronted with such educational hurdles, parents may contemplate relocating their child to an alternative educational institution to ensure continuity in their academic pursuits. Nevertheless, due to economic insufficiency, parents cannot afford to transfer their child to another school. This financial strain proves unsustainable in the long term, exacerbating their inability to sustain such expenditures.

Theme 2: Unmet Basic Needs

The second theme is unmet basic needs. Unmet means unable to meet the current need. Most participants expressed that not meeting their daily needs, such as food for their meals, is one of the impacts of income instability because of seasonal employment, which negatively makes them so vulnerable. The lack of food led them to look for alternative food just to keep up a day of starvation. These alternatives are root crops such as bananas and cassava. They even cook rice soup and corn-soya soup to make the day pass.

Half of the household participants mentioned the lack of basic needs because of income instability due to the seasonal nature of their employment. Mother 5 blatantly expressed,

"We are so vulnerable because if we do not have work, (we are) one day, one eats."

This was further supported by the statement of Father 4, along with the experience of Father 5

"It is very hard because I cannot afford to buy food and meet my child's needs." It is a crisis because I cannot afford to buy groceries for my family. "

Although the households could buy rice, their other problem was that they could not afford to buy additional ingredients, such as fresh fish, to pair with the rice. Father 3 mentioned,

"I cannot buy fish because I can only afford rice, dried fish, and fermented and salted fish."

Couple 1's statement further supports this situation.

"You cannot save money because that is our only source of income. It is crucial. Sometimes, we will not have vegetables because we prioritize rice. There are also instances when we eat root crops such as bananas as an alternative to our rice."

It can be observed that despite allocating a significant portion of their earnings towards procuring food, which is deemed indispensable, numerous families frequently encounter food shortages and resort to consuming root crops as a substitute meal.

Child 2 disappointedly mentioned,

"Sometimes, we eat bananas, tacos, and cassava and cook soup out of the corn soya."

This situation was also experienced by Child 1, who said,

"I remember at the age of 4, we ate bananas and tacos to survive the day. We also cooked rice soup to suffice the whole family."

The same experience was also mentioned by Father 2, who expressed that,

"Sometimes, if we run out of rice, we eat root crops. Budgeting what is left of the income is very hard, and we cannot buy delicious foods because there is nothing left."

Despite the farm laborer's ability to provide food for their children, certain crucial needs, such as clothing, are not being prioritized; for example, Mother 1 revealed that:

"It is very weary because I cannot afford to buy my child's basic needs, such as clothes. After all, the income is only enough for the food."

Sometimes, their child's allowance will be deducted in exchange for food. As Mother 3 stated,

"As a single mom, I cannot afford to purchase all my child's needs, such as food and allowances. Sometimes, my child's allowance will be deducted if I buy food."

Theme 3: Deprioritized Healthcare

The third theme that emerged is deprioritizing healthcare, which refers to assigning lower importance or less attention to medical or health-related needs. This often results in reduced access to healthcare services or resources. Various factors, such as limited financial resources and competing priorities, may lead the family to neglect or delay seeking necessary medical care.

Child 1 and Father 6 articulated similar views regarding the purchase of medications amidst income instability. Child 1 said,

"With income insecurity, I cannot buy medicines if I get sick or have an illness."

The same statement was also shared by Father 6, who mentioned, *"I cannot buy medicine for our health and hospitalization"*. This situation also reflects the experience of Couple 2, who mentioned, *"It is hard for us to buy necessities like medicine because of the insecurity of income."* This case was further elaborated by Mother 2, who expressed,

"Whenever one of my family gets sick, we cannot afford to buy medicine or get them hospitalized. I usually do the treatment and physical therapy myself."

Due to insufficient income for procuring medication, these households are deprioritizing access to medicine and healthcare services, leading them to resort to self-administered treatments.

Theme 4: Mental Distress

Mental distress is the next emerging theme in exploring the impacts of income instability due to seasonal employment opportunities for farm laborers. Mental distress refers to a state of emotional or psychological discomfort, often characterized by feelings of anxiety, sadness, or agitation. It may manifest as a response to various stressors, challenges, or traumatic events, impacting an individual's well-being and functioning (Amlak et al., 2022).

Nine (9) out of 20 participants shared that income instability was rooted in the causes of a couple's argument, an individual's headache, bitter life, disappointments, and traumatic experiences. Mother 1 shared that *"no income means no rice, viand, or coffee. It is very hard, and I get a headache."* Child 4 also shared a similar experience, saying, *"I get headaches, especially if we have emergencies like hospitalization."*

On another note, Father 1 has an interesting perspective on income instability within the household and shared, *"If I do not bring food like rice into my family, my wife will nag at me."* This condition reflects the experience of Couple 4, who mentioned:

"It is difficult to buy the things we want because the income is budgeted already; it leads to high blood pressure, and we, (the couple) will argue because of the short budget."

This is a comparable situation with Mother 4, who stated,

"hard to budget because of insufficiency; we always fight (with my husband) because my husband cannot bring food to the table and goes home drunk and has no money."

This is such a saddening feeling because income instability has made Father 3 more mentally distressed and said,

"I am feeling disappointed; my income is seasonal, and I cannot find another stable job because I did not finish my studies and I am a Person with a disability."

In a related narrative, another story illustrates how seasonal employment led to income instability, which exacerbated the distressing suffering endured by Child 1 and Child 2, both of whom were recruited to work at the same employment site. They shared,

"It is a very traumatic experience because we (Child 1 and 2) look for work in another place for us to have income and help our parents because we do not have income here, and when we arrive at the (supposed) working place, we are scammed."

Aside from having a traumatic experience and being disappointed, income instability due to seasonal employment makes the life of Child 3 bitter and said,

"It is a bitter, very bitter life because I cannot purchase food because the income is unstable, and I have seasonal work."

Theme 5: Extended Family to Their Parent

The fifth theme is extended family to their parents. An extended family comprises relatives beyond the nuclear family unit, encompassing married offspring and their own children (Neupert, 2019). Among the participants, four individuals currently reside with their parents despite being married and having their children. However, only three of these participants elaborated on their experiences living in an extended family arrangement with their parents, primarily attributing this situation to economic constraints.

Mother 5 has one child, and a single mother mentioned,

"It is very hard because it (the income) cannot sustain my child's needs. That's why I relied on my parents".

This was also experienced by Father 3, who has one child, is a single father, and is a Person with Disability. Stated that:

"It is very draining because I cannot buy the things I want, and sometimes, we are starving because we do not have food, and that is the reason why I'm living with my parents and my daughter."

Furthermore, the circumstances of Mother 4, who has a partner with 6 children, are notably more complicated than the other participants residing with their parents, as her entire family cohabits with her mother, a senior citizen, and a widow. She shared that *"because of the no earnings and income insecurity, I live with my mom, my whole family."* Drawing from her sharing, the family faces significant vulnerability due to the unstable financial situation of her mother, who is also employed as a farm laborer. Adding to the distress is the fact that her mother is an elderly widow, which exacerbates their difficulty.

Theme 6: Reliance on Credit and Loan

The last emerging theme is the reliance on credit and loans. Reliance denotes the state of dependence upon a particular entity or resource. In farm laborers' households, this reliance manifests through their dependency on loans and credit facilities when immediate funds are unavailable to procure essential commodities such as food

and clothing, build a house, and address urgent needs such as medical expenses and hospitalization. Five participants mentioned loaning and crediting to sustain expenses needed for the day.

Couple 5 mentioned that:

"It is very hard because every day we have to purchase for our daily needs, for example, allowance for our kids. That's why we tend to have loans even with interest, and we pay it every cropping".

Mother 2 also mentioned owning food in the neighboring store because of the shortage of budget,

I am always having a hard time budgeting. As a mother, it's troublesome to budget the family's money, especially when it is lacking. That is why we are in debt to the store just to bring food to the table.

Sometimes, these farm laborers will owe money to their siblings. For example, Couple 5 mentioned that:

"In case of emergency when we do not have money or spare money to buy food, we ask or owe money to our sibling."

On the other hand, when it comes to emergencies, loaning has been the usual means of Child 4 and said,

"When it is an emergency, I am involved in loan credit to sustain the hospitalization of my sister's child."

Relatively, this budget shortage has led Couple 5 to borrow money from a credit institution to finance the building of their house because they can't save enough money from their income to build and renovate it. They mentioned that *"since we can't afford our house with our income, we loaned the construction of our house."*

5.8 Summary of Findings and Critical Reflection

Previous studies showed that seasonal employment has negatively affected the income stability of farm laborers (Olakojo, 2016 & Koroğlu, 2023), which significantly affects farm workers in the Philippines (Santoalla, 2011 & Shatkin, 2009). It has substantial repercussions on their healthcare, education, food, and mental health, as well as their dependency on credit institutions, and continues beyond being an extended family to their parents.

Other research shows that views of economic instability can lead to unattained educational pursuits and decreased school enrolment and attendance among children (Mudege et al., C. (2008). Drawing from the study's findings, children from farm laborer households face specific educational challenges due to income instability because of the seasonal employment of their parents, leading them to stop attending school. The participants' narratives vividly illustrate how financial constraints compel children to prioritize immediate income generation over education, leading to unattained educational goals and decreased school attendance. This situation reflects the study of Sudarto et al. (2022) that economic misuse often forces children into child labor, hindering their education and development. Moreover, income shocks negatively impact child schooling outcomes, leading to delayed educational attainment (Wongmonta, 2023). This highlights the pervasive impact of income instability on educational outcomes, including delayed educational attainment and the risk of stopping attending school. Likewise, the inability to address school-related challenges, such as interpersonal conflicts due to economic constraints, further aggravates these children's hardship.

This economic vulnerability resulting from the seasonal nature of farm workers' employment suggestively impacts their ability to meet daily needs. Seasonal instabilities in agricultural employment led to heightened vulnerability to food and nutrition instability (Devereux & Tavener-Smith, 2019 & Hasan, 2014). Families often face shortages despite efforts to allocate earnings towards food that resorted to alternative meals like root crops and soups. The seasonal nature of farm work worsens economic vulnerability, which leads to severe food shortages during low employment periods. For example, studies show that during low employment periods, such as winter, farm workers experienced severe food insecurity, with up to 88% facing challenges in accessing adequate food (Charlton, 2021 & Hasan, 2014). This instability is exacerbated by the lack of alternative coping mechanisms like savings or social security, forcing individuals to skip meals and endure extended periods of starvation (de Janvry et al., 2022). The reliance on seasonal labor in agriculture without adequate buffering systems

has contributed to malnutrition and food insecurity among marginalized households. This situation highlights the critical link between income instability and meeting daily nutritional needs (Feuerbacher & Grethe, 2018). Limited coping mechanisms further compound the challenges the farm laborers face, leaving households vulnerable to hunger and malnutrition.

Seasonal farmworker households grappling with income instability have limited access to healthcare (Rosenbaum et al., P., 2005; Devereux & Tavener-Smith, 2019). Despite the availability of government-sponsored medical assistance programs like the Malasakit Center, families may not prioritize seeking healthcare due to cost-preventing care-seeking barriers, such as associated costs for medication, as highlighted by Sandoval-Rosario et al. (2016). Hospitalization further exacerbates financial strain due to additional expenses such as food and transportation. Moreover, the imperative for farm laborers to continue working in the fields to sustain income and meals impedes their ability to attend to their health needs or seek hospitalization, as White, Moss, and McGann's study (2012) observed. This emphasizes how income instability stemming from seasonal work can lead to adverse health outcomes as workers may opt to endure sickness or injury rather than prioritize their health.

Seasonal employment within farm worker households often results in income instability, which in turn can have adverse effects on mental health due to financial stress. This further impacted the gendered nature of seasonal work, potentially exacerbating these challenges (Devereux & Longhurst, 2010). While it is commonly believed that income instability predominantly affects the mental health of male farmworkers, research indicates that females also experience significant mental distress (Zeynep Simsek et al., 2017). Studies by Mendoza and Donoso (2011) suggest that prolonged exposure to the challenges of the agricultural sector contributes to mental health problems among female workers as well. This mental distress may manifest as depression characterized by feelings of bitterness and downplaying of hardships, anxiety for being disappointed with the situation, and increased substance use, which stems from a couple arguing, as observed by Mora et al. (2022) and Rockler et al. (2023). Notably, psychological distress may also arise from food shortages, which further complicates the mental health challenges faced by farm worker households (Rockler et al., 2023).

Engaging in extended family living arrangements can be driven by various factors. Findings revealed the importance of extended family support amidst economic constraints, making economic hardships one of the reasons. It may prompt families to move together for financial support and stability (Charsley et al., 2020). Extended family members can serve as valuable resources, offering practical, emotional, and financial assistance that enables individuals to endure hardships (Gürmen et al., 2018). Similarly, participants residing with parents despite being married highlight the role of such arrangements in alleviating financial burdens. For example, in the African American community, the extended family structure is seen as beneficial for economic support (Armstrong, 2012). Extended family arrangements can protect against poverty (Reyes, 2019). These findings align with existing literature recognizing extended family networks as crucial for coping with economic challenges and accessing vital resources. The perspectives of these farm laborers emphasize the significance of leveraging support systems like extended family networks to address income instability and foster resilience among vulnerable populations. However, this coping mechanism further exacerbates the financial instability of the family in this community as their families are also experiencing financial distress.

Lastly, the seasonal nature of agricultural work and limited employment protections lead to prevalent economic instability among farmworkers, making them vulnerable to debt accumulation (Akdogan et al., 2019). The narrative shared by the participants highlights the profound impact of income instability among families relying on agricultural work. The inability to sustain in procuring essential commodities such as food and clothing, the building of houses, and addressing urgent needs such as medical expenses and hospitalization creates significant challenges to the farm laborers, which leads them to a dependency on credit and loans as observed by Karacimen (2014), Padilla et al. (2014), Agarwal et al. (2022) and Rockler et al. (2023). Despite recognizing the importance of these aspects, families struggle to withstand them amidst financial constraints and resort to borrowing even with interest rates. This highlights the cyclical nature of income instability and debt accumulation, perpetuating agricultural communities' socioeconomic vulnerabilities.

While the findings of this study paint a bleak picture of the challenges faced by farm laborers, it is important to acknowledge that some individuals and households may have developed coping mechanisms to mitigate the

negative impacts of seasonal employment. For example, engaging in an extended family living arrangement depicts that parents are the safety nets of their children. Prioritizing budgeting for food and allowances for their children shows their ability to spend their income wisely. Lastly, eating root crops and soup was used as a meal substitute. These mechanisms demonstrate the resourcefulness and resiliency of the farm laborers.

4.0 Conclusion

The study explores the impact of seasonal employment on the income stability of the farm laborers' households in Mapurog, Sapad, and Lanao del Norte, where this developmental issue affects various aspects of their lives. Upon delving into this issue, the study has unveiled the following emerging themes: children stop attending school, unmet basic needs, deprioritized healthcare, and mental distress while relying on credit and loan institutions and engaging in the extended family arrangement serves as the coping mechanisms of the farm laborers relative to income instability.

Firstly, children from farm laborer households often face educational challenges due to their parents' seasonal employment, which leads to stop attending school due to work on the farm and help their parents financially. Moreover, the seasonal nature of agricultural work results in unmet daily needs such as food, forcing families to resort to alternative meals like root crops and soup and endure periods of starvation. However, limited access to healthcare further compounds the challenges faced by farm laborers as financial constraints prevent them from both male and female farmworkers, which stems from various stressors, including food shortages and financial strain.

Interestingly, income instability compels families to rely on credit and loans to purchase necessities such as food, clothes, and house building. Extended family living arrangements often serve as a coping mechanism for economic hardship that provides crucial support to alleviate financial burdens but further exacerbates financial distress. Although these coping mechanisms further exacerbate their financial struggles, they show the resiliency and resourcefulness of the farm laborers' households through the budget allocation of their daily needs, alternative meals, and support from their parents during financial struggles. In conclusion, the study highlights the persistent impact of income instability resulting from seasonal employment, which stresses the need for comprehensive actions to address the complicated challenges farm laborer households face.

Additionally, this study provides recommendations based on the findings to strengthen the income stability of the farm laborer's household due to the seasonality of their employment, to wit: Create additional income-generating activities; Look for other stable employment opportunities; Provide mental health symposium activities that involve the family, Provide financial literacy training that focuses on managing finances vis-à-vis loans and credits, Create an advocacy campaign related to the establishment of a scholarship program for the farm laborers' children with the host organization, youth council, and the barangay council of Mapurog, Sapad, Lanao del Norte to lessen children withdrawing from school because of financial constraints; Lobby with the Barangay Council to discuss the result of the study and recommend policies, programs, and activities that will strengthen the income stability of the farm laborers.

Nevertheless, the researchers recommend future studies to explore the impact of seasonal employment on farm laborers. Conduct further participatory action research that covers a wider number of farm worker participants and focuses on their coping mechanisms to address income insufficiency and the mental health of the farm laborers. A study examined how targeted mental health interventions (e.g., counseling, group therapy, or community-based mental health programs) influence farm laborers' overall well-being and productivity, and whether these programs improve coping mechanisms for income instability.

It is suggested that the viability of various alternative income-generating activities should be researched, such as agribusiness ventures, small-scale food processing, or cooperative-based enterprises, and assess how these initiatives can mitigate the income instability caused by the seasonal nature of farm work. A study on the effectiveness of financial literacy training among farm laborers in managing household budgets and debts. Explore how such training impacts their ability to cope with financial instability and reduces reliance on loans and credit. Explore the gendered impacts of seasonal employment on male and female farm laborers, examining how each

group copes differently with income instability and what gender-specific support mechanisms could be developed to address their unique needs.

5.0 Contributions of Authors

The authors confirm the equal contribution in each part of this work. All authors reviewed and approved the final version of this work. Dhevine C. Paninsoro led the writing of the manuscript. Michelle, Fe, Madelyn, Irish, Lorelyn, Rechel, and Mary were responsible for gathering, co-analyzing, and validating the data.

6.0 Funding

This research received funding from UnionAID as part of the Mindanao Young Leaders Programme, which it manages in partnership with Interfacing Development Interventions for Sustainability and Victoria University of Wellington. It is supported by the New Zealand Ministry of Foreign Affairs and Trade as part of its Aotearoa New Zealand's International Development Cooperation program |Nga Hoe Tuputupu-Mai-Tawhiti.

7.0 Conflict of Interests

All authors declare that they have no conflicts of interest.

8.0 Acknowledgment

The co-authors of this study extend their heartfelt gratitude to the people and organizations who rallied behind the successful completion of this study. To name, the farm laborers of Mapurog who participated in this research, Mindanao Young Leaders Programme Team, UnionAID, Victoria University of Wellington, Interfacing Development Interventions for Sustainability, New Zealand Ministry of Foreign Affairs and Trade through its Aotearoa New Zealand's International Development Cooperation programme, Mapurog Farmers Association, and Barangay Council of Mapurog.

9.0 References

- Akdogan, K., Karacimen, E., & Yavuz, A. A. (2019). Cross-country evidence on the link between job security and housing credit. *Journal of Housing and the Built Environment*, 34(4), 947–963. <https://doi.org/10.1007/s10901-019-09647-1>
- Amlak, B. T., Bitew, M. S., Getnet, A., Yitayew, F. M., Terefe, T. F., Tarekegn, T. T., Mihret, A. G., Geleta, O. T., Alemu, G. G., Gebreyesus, F. A., & Tsegaye, D. (2022). The magnitude of mental distress and associated factors among a school of medicine and college of health sciences students at Debre Markos University, 2021. *PLOS ONE*, 17(9), e0275120. <https://doi.org/10.1371/journal.pone.0275120>
- Andam, K., Chiang, C., & Okyere, K. A. (2011). Interactions between health and farm-labor productivity. Washington, DC International Food Policy Research Institute
- Armstrong, N. (2012). The importance of extended families in the African American community: A qualitative analysis using social learning theory. In *Proceedings of 2012 NCUR*.
- Baum, T., Duncan, T., & Forsyth, D. (2023). Seasonal employment in tourism. In P. Goulding (Ed.), *Tourism: A Temporal Analysis* Advance online publication.
- Briones, R. M. (2017). Characterization of agricultural workers in the Philippines. Retrieved from <https://hdl.handle.net/10419/173608>
- Brown, T. M. (2024). Participatory Action Research. Retrieved from <https://doi.org/10.1093/acrefore/9780190264079.013.838>
- Burnette, J. (2018). Seasonal Patterns of Agricultural Day-Labour at Eight English Farms, 1835–1844. Springer eBooks, 195–225.
- Chandra, A., McNamara, K. E., Dargusch, P., Caspe, A. M., & Dalabajan, D. (2017). Gendered vulnerabilities of smallholder farmers to climate change in conflict-prone areas: A case study from Mindanao, Philippines. *Journal of Rural Studies*, 50, 45–59. <https://doi.org/10.1016/j.jrurstud.2016.12.011>
- Charlton, D. (2021). Seasonal farm labor and COVID-19 spread. *Applied Economic Perspectives and Policy*, 44(3), 1591–1609. <https://doi.org/10.1002/aep.13190>
- Charsley, K., Bolognani, M., Ersanilli, E., & Spencer, S. (2020). Family relations: Extended family living, gender and 'traditionalism.' In K. Charsley, M. Bolognani, E. Ersanilli, & S. Spencer, *Marriage Migration and Integration* (pp. 197–226). Springer International Publishing.
- Chiong-Javier, Ma. E. (2013). Health Consequences of Rural Women's Productive Role in Agriculture in the Philippines and Other Developing Countries. *Journal of International Women's Studies*, 10(4), 95–110. <https://vc.bridgew.edu/jiws/vol10/iss4/7>
- Corluka, G., & Landvogt, M. M. M. (2022). *Hotel Seasonality* (pp. 612–615). Elgar Online.
- De Janvry, A., Duquenois, C., & Sadoulet, E. (2022). Labor calendars and rural poverty: A case study for Malawi. *Food Policy*, 109, 102255. <https://doi.org/10.1016/j.foodpol.2022.102255>
- Devereux, S., & Longhurst, R. (2010). Incorporating Seasonality into Agricultural Project Design and Learning*. *IDS Bulletin*, 41(6), 88–95. <https://doi.org/10.1111/j.1759-5436.2010.00186.x>
- Devereux, S., & Tavener-Smith, L. (2019). Seasonal Food Insecurity among Farm Workers in the Northern Cape, South Africa. *Nutrients*, 11(7), 1535. <https://doi.org/10.3390/nu11071535>
- Feuerbacher, A., & Grethe, H. (2018). Implications of the seasonality of labour for rural livelihoods and agricultural supply response. *International Association of Agricultural Economists*, 7, 1–34. <https://doi.org/10.22004/ag.econ.276009>
- Gürmen, M. S., Anderson, S. R., & Brown, E. (2021). Relationship with extended family following divorce: A closer look at contemporary times. *Journal of Family Studies*, 27(1), 48–62. <https://doi.org/10.1080/13229400.2018.1498369>
- Hasan, M. (2014). Seasonality Induced Marginality: Vulnerability of Wage Earners' Food and Nutrition Security in Southern Bangladesh. *American Journal of Agriculture and Forestry*, 2(4), 121. <https://doi.org/10.11648/j.ajaf.20140204.14>
- Hünefeldt, C. (2022). Participatory Action Research - Towards Don't Make History: Orlando Fals Borda and the Origins of Participatory Action Research. Durham and London: Duke University Press.
- Inwood, S., & Stengel, E. (2020). Working households: Challenges in balancing young children and the farm enterprise. *Community Development*, 51(5), 499–517. <https://doi.org/10.1080/15575330.2020.1800772>
- Karacimen, E. (2014). Interlinkages between credit, debt and the labour market: evidence from Turkey. *Cambridge Journal of Economics*, 39(3), 751–767. <https://doi.org/10.1093/cje/beu016>
- Kareemulla, K., Ramasundaram, K., & Rao, C. (2013). Impact of National Rural Employment Guarantee Scheme in India on Rural Poverty and Food Security. *Current Agriculture Research Journal*, 1(1), 13–28. <http://krishi.icar.gov.in/jspui/handle/123456789/47674>
- Kehinde, T., & Favour, E. (2020). Food Insecurity and Nutrition Status of Farm Households in Northwestern Nigeria. *Journal of Food Security*, 8(3), 98–104. <https://doi.org/10.12691/jfs-8-3-3>
- Köroğlu, M. A. (2023). Sociocultural problems of seasonal migrant agricultural workers in Manisa region (Turkey): a qualitative study. *Humanities and Social Sciences Communications*, 10(1), 1–13. <https://doi.org/10.1057/s41599-023-01832-6>
- Lanzona, L. A. (2024). The Effect of Fragility on Labour Market Employment and Wages in the Philippines. *Millennial Asia*, 15(1), 24–50. <https://doi.org/10.1177/09763996221097877>
- Mcintyre, A. (2022). Participatory Action Research. New York University Press.
- Mantouvalou, V. (2022). The UK Seasonal Worker Visa. *European Law Open*, 1(3), 711–719. <https://doi.org/10.1017/elo.2022.39>
- Mendoza, A., & Donoso, A. (2011). Trabajo agrícola de Temporada y su impacto en la Salud. *Society and Equity: Journal of Humanities, Social Sciences, Arts and Communications*, 1, 12. <https://doi.org/10.5354/rse.v0i1.10610>
- Mora, A. M., Lewnard, J. A., Rauch, S., Kogut, K., Jewell, N., Cuevas, M., & Eskenazi, B. (2022). Impact of covid-19 pandemic on california farmworkers' mental health and food security. *Journal of Agromedicine*, 27(3), 303–314. <https://doi.org/10.1080/1059924X.2022.2058664>
- Mudege, N. N., Zulu, E. M., & Izugarba, C. (2008). How Insecurity impacts on school attendance and school drop out among urban slum children in Nairobi. *International Journal of Conflict and Violence*, 2(1), 98–112. <https://doi.org/10.4119/ijcv-2777>
- Murata, A., & Miyazaki, S. (2014). Ex-post risk management among rural Filipino farm households. Retrieved from <https://ideas.repec.org/p/jic/wpaper/67.html>
- Neupert, R. F. (2019). *Extended Households: A Survival Strategy in Poverty*. Routledge.
- Nieva, R. (2017). Health hazard exposure and healthcare-seeking behavior among child farmers in the livestock farms in Bukidnon, Philippines. *Journal of Public Health and Development* | วารสารสาธารณสุขและการพัฒนา, 15(1), 33–48. <https://he01.tci-thaijo.org/index.php/AIHD-MU/article/view/86030>
- Oduehie, T. C., Ifenkwe, Godwin, E., Shu'aibu, H., & Adolphus, G. (2023). Prevalence and consequences of insecurity on livelihood of rural households in enugu state: Implication for e-extension in nigeria. *Journal of Agricultural Extension*, 27(1), 27–34. <https://doi.org/10.4314/jae.v27i1.3>
- Olakojo, A. (2016). Seasonal labour market rigidities: Impact on farm employment and wages in Nigeria. *Ekonomika Poljoprivrede*, 63(4), 1123–1140. <https://doi.org/10.5937/ekopolj604123o>
- Padiella, Y. C., Scott, J. L., & Lopez, O. (2014). Economic insecurity and access to the social safety net among latino farmworker families. *Social Work*, 59(2), 157–165. <https://doi.org/10.1093/sw/swu013>

- Reyes, A. M. (2019). Mitigating Poverty through the Formation of Extended Family Households: Race and Ethnic Differences. *Social Problems*, 67(4), 782–799. <https://doi.org/10.1093/socpro/spz046>
- Rockler, B. E., Grutzmacher, S. K., Garcia, J., Braverman, M. T., & Smit, E. (2023). Something to eat: Experiences of food insecurity on the farm. *Agriculture and Human Values*, 40(4), 1419–1436. <https://doi.org/10.1007/s10460-023-10448-0>
- Rosenbaum, S. J., & Shin, P. (2005). Migrant and seasonal farmworkers: health insurance coverage and access to care. *Health Policy And Management Faculty Publications*.
- Sæther, I. (2022). "Du må bare leve med det" – om strukturelle føringer, handlingsrom og strategier blant sesongmigranter i landbruket. Retrieved from <https://doi.org/10.23865/noasp.181.ch7>
- Sandoval-Rosario, M., Hunter, T. M., Durnham, A., Holt, A., Pontones, P., & Perry, G. (2016). Chronic conditions and barriers to care: Exploring the health of migrant and seasonal farmworkers in Indiana. *International Journal of Human Rights in Healthcare*, 9(4), 229–234. <https://doi.org/10.1108/IJHRH-06-2016-0009>
- Santoalla, E. L. (2011). Food-price hikes and the situation of farm workers in the Philippines. *Development in Practice*, 21(4-5), 732–740. <https://doi.org/10.1080/09614524.2011.562282>
- Shatkin, G. (2009). The Geography of Insecurity: Spatial Change and the Flexibilization of Labor in Metro Manila. *Journal of Urban Affairs*, 31(4), 381–408. <https://doi.org/10.1111/j.1467-9906.2009.00449.x>
- Simsek, Z., Keklik, A. Z., Demir, C., & Munir, K. M. (2017). Prevalence and predictors of mental health among farmworkers in Southeastern Anatolia of Turkey. *International journal of environmental & agriculture research*, 3(1), 21–29. <https://pubmed.ncbi.nlm.nih.gov/28393128/>
- Sudarto, A., Mustofa, M. B., & Malik, A. (2022). Economic exploitation of children: Returning child labor to the world of education through interpersonal communication towards equal education. *HUMANISMA : Journal of Gender Studies*, 6(2), 212. <https://doi.org/10.30983/humanisme.v6i2.5870>
- Surender. (2022). Agricultural Labour Status and Problems in India: An Analytical Study. *RESEARCH REVIEW International Journal of Multidisciplinary*, 7(7), 94–100. <https://doi.org/10.31305/rrjm.2022.v07.i07.012>
- Warwick, M. K. (2018). Making growth work for the poor : a poverty assessment for the Philippines. Retrieved from <https://tinyurl.com/2r6k3hen>
- Western, B., Bloome, D., Sosnaud, B., & Tach, L. (2012). Economic insecurity and social stratification. *Annual Review of Sociology*, 38(1), 341–359. <https://doi.org/10.1146/annurev-soc-071811-145434>
- White, K., Moss, J., McGann, M. (2012). Health hazards of insecure work. Retrieved from <https://tinyurl.com/k7fwmhv8>
- Wongmonta, S. (2023). Income Shocks, Borrowing Constraints, and Household Child Schooling: Evidence from Rural Thailand. *Asian Development Review*, 40(01), 247–275. <https://doi.org/10.1142/s011611052350004x>
- Zeller-Berkman, S. (2024). Youth-led participatory action research. Elsevier.
- Zhang, Y., Wang, X., Brümmer, B., Yu, X. (2012). The impact of land security and input allocation on farm household income. *RePEC: Research Papers in Economics*. International Association of Agricultural Economists (IAAE) Triennial Conference, Foz do Iguaçu, Brazil.

Client Service Satisfaction and Challenges Faced by the Seal of Good Local Governance Awardees

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Date received: September 13, 2024

Date revised: October 8, 2024

Date accepted: October 24, 2024

Originality: 97%

Grammarly Score: 99%

Similarity: 3%

Recommended citation:

Barangai, O., Barangai, O. (2024). Client service satisfaction and challenges faced by the Seal of Good Local Governance awardees. *Journal of Interdisciplinary Perspectives*, 2(11), 422-429.

<https://doi.org/10.69569/jip.2024.0494>

Abstract. This study assessed the level of implementation of the Seal of Good Local Governance (SGLG), the challenges encountered, and client satisfaction in the municipalities of Taraka and Madamba, Lanao del Sur, in 2019. A descriptive-correlational design was employed, involving 220 respondents. The Municipality of Taraka, an SGLG awardee, received a rating of "Qualified" with a mean score of 91.96. At the same time, Madamba, a non-awardee, was rated "Reconsidered/Not Qualified" with a mean score of 57.76 across seven SGLG criteria. The challenges encountered were rated "Moderate" with a mean score of 1.76, while client satisfaction was rated "Satisfied" with a mean value of 3.39. The most common challenges included monitoring public officials, resolving issues through dialogue and socioeconomic conditions, and promoting equal opportunities. Significant relationships were found between the SGLG implementation level, the challenges encountered, and client satisfaction. These findings suggest that client satisfaction and challenges significantly influence SGLG implementation.

Keywords: Client service satisfaction; Local Government Unit; Seal of Good Local Governance.

1.0 Introduction

The Seal of Good Local Governance (SGLG) represents a critical benchmark for assessing the integrity and performance of local government units (LGUs) in the Philippines. This initiative underscores the importance of continuous improvement in governance, urging LGUs not only to meet but exceed service delivery standards and public accountability. Rooted in the principles established by its predecessor, the Seal of Good Housekeeping (SGH), the SGLG expands the scope of evaluation, integrating key performance areas such as financial transparency, social protection, disaster preparedness, and environmental management, among others.

Through the SGLG assessment, the municipalities successfully identified its strengths and weaknesses, enabling targeted interventions and continuous improvement in governance. However, the municipalities faced challenges during the SGLG participation. Limited financial resources and inadequate training and staffing hindered its ability to meet the SGLG requirements effectively. Additionally, the complex requirements and extensive documentation of the SGLG program demanded significant time and effort, often exceeding available timeframes and affecting the quality of submissions. Balancing regular duties with the additional workload of the SGLG assessment posed time constraints and challenges in managing priorities. To address these challenges, recommendations have been proposed. Enhancing financial resources, investing in capacity building programs, and improving data management systems are crucial to support the municipality's SGLG participation. Allocating

dedicated resources and time specifically for the SGLG assessment process is essential to ensure thorough self-assessment, data gathering, and documentation. Furthermore, fostering stakeholder engagement and promoting a culture of continuous improvement will enhance the municipality's governance practices and overall SGLG performance. Implementing these recommendations will strengthen the Municipality of Cardona's participation in the SGLG program, leading to sustainable development and improved services for its constituents.

As a progressive assessment tool, the SGLG aims to institutionalize governance reforms and drive LGUs to adopt a results-oriented approach in their administrative and operational functions. Since its inception in 2014, the SGLG has become a hallmark of effective governance, encouraging LGUs to demonstrate excellence across multiple dimensions of public administration.

Despite the SGLG's success in fostering a culture of good governance, there remains a need to explore its impact on citizen satisfaction with local government services. While the SGLG evaluates LGUs based on objective criteria, citizens' subjective experiences and perceptions, the primary beneficiaries of government services, are not systematically integrated into the assessment framework. Previous studies have shown that citizen satisfaction is closely linked to perceptions of government efficiency, transparency, and responsiveness (Wilson et al., 2020). However, the extent to which the SGLG influences these perceptions has not been fully examined. Existing literature on performance evaluation in local governments has generally focused on institutional outcomes rather than the lived experiences of citizens. This gap in the literature suggests a need for further research into the relationship between formal governance assessments, like the SGLG, and the public's perception of service quality.

This study aims to address this gap by examining the relationship between citizen satisfaction and the quality of local government services, with particular emphasis on the SGLG framework. It seeks to identify the key factors influencing citizen perceptions of service delivery and assess how these perceptions align with the performance metrics established by the SGLG. By focusing on a specific geographic area – Madamba and Taraka in Lanao del Sur – this research will provide localized insights into the broader dynamics of governance and public satisfaction. The study is particularly significant given the growing emphasis on citizen-centered governance and the need for local governments to meet technical performance standards and foster a sense of trust and satisfaction among their constituents.

This research aims to evaluate the influence of the SGLG on citizen satisfaction with local government services and identify gaps between institutional performance and public perception. By doing so, the study hopes to contribute to a more comprehensive understanding of how governance reforms impact the operational efficiency of LGUs and citizens' quality of life. The findings will be of value to policymakers, local government officials, and researchers interested in the intersections between governance, performance evaluation, and public satisfaction, ultimately informing efforts to enhance public service delivery and strengthen local governance in the Philippines.

2.0 Methodology

2.1 Research Design

This study employed a descriptive-correlational research design, aiming to identify and evaluate the level of implementation of the Seal of Good Local Governance (SGLG), the challenges encountered, and the level of client satisfaction in the municipalities of Taraka and Madamba, Lanao del Sur. The descriptive aspect of the study aimed to characterize the implementation of the SGLG across the following components: Financial Administration, Disaster Preparedness, Social Protection, Peace and Order, Business Friendliness and Competitiveness, Environmental Protection, Tourism, Culture, and the Arts. Meanwhile, the correlational aspect sought to establish relationships between these variables and client satisfaction, employing a triangulation research method for a more comprehensive analysis.

2.2 Research Participants

The research was conducted in Madamba and Taraka, Lanao del Sur, which were selected as the research settings. Madamba is one of the 32 municipalities of Lanao del Sur, known for its picturesque landscapes, cool climate, and rich natural resources. The municipalities of Madalum, Bayang, Ganassi, and Lake Dapao, a site of cultural significance, border it. The municipality of Taraka, on the other hand, is historically notable for its role in the

spread of Islam in the region, having hosted the construction of the first mosque in Lanao del Sur. It also plays a significant cultural role in confirming the royal title "Sultan sa Masiu." The study examined these municipalities' unique socio-cultural context, governance, and service delivery efforts.

The study targeted two groups of participants: the local government units (LGUs) and the general citizens of the two municipalities. The first group included 55 representatives from the LGUs of Taraka and 55 from Madamba, totaling 110 LGU participants. These participants were key stakeholders in the implementation of the SGLG. They included representatives from the Department of the Interior and Local Government (DILG), Department of Budget and Management (DBM), Department of Finance (DOF), Department of Health (DOH), Department of Social Welfare and Development (DSWD), and other relevant agencies. The second group comprised 55 randomly selected citizens from each municipality, providing a representative general population sample. A total population sampling technique was employed for LGUs and citizens, yielding 220 respondents across the two municipalities.

2.3 Research Instruments

The primary data collection instrument was a standardized and modified survey questionnaire. The first section focused on measuring client satisfaction. It included 26 questions, while the second section explored the challenges faced in implementing the SGLG, emphasizing transparency, accountability, and social responsibility. The second section consisted of 20 questions adapted from instruments developed by the World Bank and other reliable sources (e.g., samplequest.com). Respondents were asked to rate each item using a Likert-type scale to quantify their perceptions and experiences.

2.4 Data Gathering Procedure

The data collection process began with submitting a formal letter of request, duly noted by the Dean of the Graduate School of IMCC, to the Taraka and Madamba municipal offices. Upon approval, the researcher administered the surveys to the identified LGU participants and random citizens. Data collection occurred over five consecutive days, after which the researcher retrieved the completed questionnaires. In addition to the survey, interviews with key municipal officials were conducted to gain further insight into the municipalities' governance strategies. After gathering the data, the researcher classified the responses and used descriptive and inferential statistical techniques to examine the information.

2.5 Data Analysis

The following statistical tools were employed for data analysis:

Frequency and Percentage Distribution

This tool was used to analyze the distribution of responses, particularly regarding the level of implementation of the SGLG across the two municipalities.

Weighted Mean

This was used to compute the average responses from the participants regarding the level of client satisfaction and the challenges met during the implementation of the SGLG.

Pearson Product-Moment Correlation

This statistical technique was used to assess the strength and direction of the linear relationship between the variables under study, particularly the correlation between the level of SGLG implementation and client satisfaction.

The data were processed and analyzed using SPSS software, with the assistance of a statistician, to ensure accuracy and reliability in interpreting the results.

2.5 Ethical Considerations

Confidentiality and Anonymity

To protect the privacy of the respondents, all collected data, including personal information, academic records, and responses, are only for the researchers to see, and no third party shall see or read the data.

analysis. The recorded data should be treated with strict confidentiality and only accessible to authorized researchers. The data analysis should be conducted in a way that ensures the anonymity of the respondents.

Health and Safety Protocols:

This research study was sensitive to the health and safety of anyone involved. The mental, emotional, and physical health of those involved was considered. Concepts in this study and statements in the questionnaire were ensured to have no negative effect on those associated with them.

3.0 Results and Discussion

3.1 Implementation of Seal of Good Local Governance

Table 1. Descriptive statistics of the implementation of the Seal of Good Local Governance

Areas	Mean	Interpretation
1. Financial Administration;	92.02	Qualified or met the criteria
2. Social protection	95.07	Qualified or met the criteria
3. Peace and Order	96.00	Qualified or met the criteria
4. Business Friendliness and Competitiveness	74.02	Reconsidered LGU condition
5. Environmental Protection	86.20	Qualified or met the criteria
6. Tourism, Culture and arts	93.00	Qualified or met the criteria
7. Disaster Preparedness	89.05	Qualified or met the criteria

Note: 75.01 to 100% - Qualified or meet the criteria (Rank 1), 50.01 to 75% - Reconsidered LGU condition (Rank 2), 25.01 to 50% - Not qualified (Rank 3), and 0 to 25% - Not Applicable (Rank 4)

Table 1 presents the ratings of the Seal of Good Local Governance 2019 for the Municipality of Taraka, Lanao del Sur, which qualified the municipality in the national search for good practices in good governance. It shows that (6%) or 85.81 percent of the criteria were rated as “qualified or met the criteria.” While (1%) or 14.28 percent of the criteria was rated “reconsidered of LGU condition.” The criteria on peace and order were rated the highest (96) points, while the business friendliness and competitiveness were rated relatively lower. It implies that the seal of good local governance generally works for the Taraka, Lanao del Sur municipality. The continuing efforts from all LGU stakeholders must be pursued, and more improvements must be made to the business's friendliness and competitiveness.

The Seal of Good Local Governance in Digos City: Challenges and Opportunities. It was found that the areas of financial administration, business friendliness, and competitiveness have garnered very high levels of perception. Based on these findings, it was inferred that the challenges for Digos City for better implementation of the SGLG law in the future are risk management and increasing spaces for participation, while the opportunities are implementation of e-governance and increasing capacity for decentralization (Cagas et al., 2022).

3.2 Challenges Met

In terms of Transparency

Table 2. Descriptive statistics of the challenges met in terms of transparency

Indicators	Mean	Interpretation
1. Having public meetings/ dialogue as a venue for resolving issues;	1.82	Moderate as a Challenge
2. Established monitoring system for public officials;	1.83	Moderate as a Challenge
3. Open to media/broadcast system for information to the public;	1.54	Moderate as a Challenge
4. Adopted a public feedback/participation	1.77	Moderate as a Challenge
5. Checking mechanisms for unethical practices	1.77	Moderate as a Challenge
Overall Mean	1.75	Moderate as a Challenge

Note: 3.50 – 4.00 (Very Much of a Challenge), 2.50 – 3.49 (Much of a Challenge), 1.50 – 2.49 (Moderate as a Challenge), 1.00 – 1.49 (Not a Challenge)

Table 2 shows a mean percentage (1.75 or Moderate as a Challenge) of respondents' general transparency ratings. However, it shows a moderate rating of (1.54) under the media broadcast system for information to the public. The Checking mechanism on unethical practices and adopted public feedback/participation shows a moderate challenge rating of (1.77). This implies that the Municipality of Taraka and Madamba Lanao del Sur encountered a “Moderate Challenge” regarding Transparency.

Seal of Good Housekeeping (SGH) to measure financial transparency and institute public reporting of budget and expenditures of local governments. The SGH evolved into the Seal of Good Local Governance (SGLG) in 2014. It was launched as part of the Philippine Open Government Partnership Commitment. It raised the bar by upscaling the performance measurements of LGUs to include financial transparency and citizen engagement. Becoming the guide to improve local governance, the SGLG became the most sought-after recognition of local government units nationally.

In terms of Accountability

Table 3. Descriptive statistics of the challenges met in terms of accountability

Indicators	Mean	Interpretation
1. Having a citizen council to monitor and check on public officials;	1.79	Moderate as a Challenge
2. Adopted local legislation to check public accountability;	1.66	Moderate as a Challenge
3. Having a citizen charter for every office in the LGUs	1.67	Moderate as a Challenge
4. Allowing open discussion on certain issues.	1.77	Moderate as a Challenge
5. Legislative provisions with sanctions to erring officials	1.76	Moderate as a Challenge
Overall Mean	1.72	Moderate as a Challenge

Table 3 depicts a mean percentage (1.73 or Moderate as a Challenge) of respondents rating under Accountability. On Legislative provisions with sanctions to erring officials, Having a citizen charter for every office in the LGUs, Adopting local legislation to check public accountability, and having a citizen council to monitor and check on public officials, it is rated (1.67 to 1.76) or moderate as a challenge. This implies that the client of the Municipality of Taraka and Madamba Lanao del Sur is Moderate as a Challenge in terms of Accountability in Challenges Met in their Local Government Units.

The Performance Challenge Fund (PCF), established by the DILG in 2010, is a performance-based incentive program that gives financial subsidies to local government units (LGUs) that are awarded the Seal of Good Local Governance (SGLG) (DILG MC No. 2017-160). In addition, some LGUs were either consistently or not consistent recipients of the PCF. Policymakers must consider these results, especially with the recent passage of the Seal of Good Local Governance (Diokno-Sicat et al., 2020).

In terms of Responsibility

Table 4. Descriptive statistics of the challenges met in terms of responsibility

Indicators	Mean	Interpretation
1. Promotion of equal opportunities to all citizens	1.78	Moderate as a Challenge
2. Giving the citizen council to initiate social welfare	1.94	Moderate as a Challenge
3. Integration of volunteerism for social programs	1.78	Moderate as a Challenge
4. Low-income income choose to purchase inexpensive services.	1.80	Moderate as a Challenge
5. Occupation and the economic situation.	1.81	Moderate as a Challenge
Overall Mean	1.82	Moderate as a Challenge

Table 4 presents that there was a mean percentage (1.82 or Moderate as a Challenge) of respondents who belonged to the Social Responsibility under the Occupation and the economic situation, low income chooses to purchase inexpensive services, Integration of volunteerism for social programs, Giving the citizen council to initiate social welfare and Promotion of equal opportunities to all citizens. This implies that the client of the Municipality of Taraka and Madamba Lanao del Sur is Moderate as a Challenge in terms of Social Responsibility in Challenges Met in their Local Government Units.

Studying the Seal of Good Local Governance is imperative because of two important policies: Republic Act 11292, or the SGLG Law of 2019, and Executive Order No 138, the Mandanas-Garcia ruling. Based on these national mandates, the SGLG is no longer a voluntary assessment for municipal, city, and provincial governments but for compulsory implementation. The recent Mandanas-Garcia ruling devolves most of the national government functions to the local government units, increasing their autonomy and responsibility. Another compelling directive is the Participatory Governance Cluster Resolution, which is a flagship program of the DILG that reinforces the achievement of the SGLG by identifying pathways for local participatory governance (Capuno, 2005).

3.3 Clients' Service Satisfaction

In terms of Quality Services

Table 5. Descriptive statistics of client service satisfaction in terms of quality services

Indicators	Mean	Interpretation
1. Personnel give immediate attention to clients.	3.15	Agree/Satisfied
2. Provide a faster process of getting problems solved.	3.02	Agree/Satisfied
3. Personnel show a positive attitude in dealing with clients.	3.43	Agree/Satisfied
4. Show sincerity in listening to customers.	3.41	Agree/Satisfied
5. Personnel are courteous and cheerful.	3.42	Agree/Satisfied
6. Offer friendly and pertinent advice to clients.	3.37	Agree/Satisfied
Overall Mean	3.30	Agree/Satisfied

Note: 3.50 – 4.00 Strongly Agree/Highly Satisfied, 2.50 – 3.49 Agree/Satisfied, 1.50 – 2.49 Somewhat Disagree/Satisfied, 1.00 – 1.49 Strongly Disagree/Not Satisfied

Table 5 above shows that generally, there was satisfaction with the quality of services that the personnel provided, with a mean average rating of (3.30) or Agreed/Satisfied. On participants' responses on the personnel giving immediate attention to clients, the rating was (3.15) or agreed/satisfied. It also showed that the personnel provided a faster process of getting problems solved; they showed a positive attitude in dealing with clients. Personnel also showed sincerity in listening to customers; they are courteous and cheerful and offer friendly and pertinent advice to clients. This implies that the client of Municipalities Lanao del Sur is Agree or Satisfied in terms of Quality service in their Local Government Units Services.

In terms of Knowledge

Table 6. Descriptive statistics of client service satisfaction in terms of knowledge

Indicators	Mean	Interpretation
1. The Personnel: shows mastery in their area of work	3.40	Agree/Satisfied
2. Offers a wide range of services needed	3.33	Agree/Satisfied
3. Gives clear instructions with details	3.45	Agree/Satisfied
4. Discusses and give suggestions to clients	3.51	Strongly Agree/ Highly Satisfied
5. Explain clearly the information being sought for	3.48	Agree/Satisfied
6. Makes proper advice and suggestions	3.46	Agree/Satisfied
Overall Mean	3.44	Agree/Satisfied

Note: 3.50 – 4.00 Strongly Agree/Highly Satisfied, 2.50 – 3.49 Agree/Satisfied, 1.50 – 2.49 Somewhat Disagree/Satisfied, 1.00 – 1.49 Strongly Disagree/Not Satisfied

Table 6 above shows that the clients were generally satisfied with implementing the seal of local good governance, with a mean rating (of 3.44) or Average/Satisfied. Respondents gave proper advice and suggestions and explained the information being sought clearly, giving clear instructions with details and offering a wide range of services needed. The rating was (3.43. to 3.45) within the rate of Agree/Satisfied. In order words, the personnel showed mastery in their work area. This implies that the Municipalities of Lanao del Sur clients agreed or were satisfied with their knowledge of their Local Government Unit's functions and responsibilities in their work.

In terms of Friendliness

Table 7. Descriptive statistics of client service satisfaction in terms of friendliness

Indicators	Mean	Interpretation
1. The clients are treated with utmost courtesy	3.51	Strongly Agree/ Highly Satisfied
2. Being informed of new office development	3.53	Strongly Agree/ Highly Satisfied
3. Feel comfortable and ease	3.45	Agree/Satisfied
4. The personnel show a positive attitude	3.48	Agree/Satisfied
5. Are responsive in dealing with their clients	3.46	Agree/Satisfied
6. Are sincere in listening to clients' concerns	3.45	Agree/Satisfied
Overall Mean	3.48	Agree/Satisfied

Note: 3.50 – 4.00 Strongly Agree/Highly Satisfied, 2.50 – 3.49 Agree/Satisfied, 1.50 – 2.49 Somewhat Disagree/Satisfied, 1.00 – 1.49 Strongly Disagree/Not Satisfied

Table 7 above shows that generally, there was a satisfactory rating on the indicator of friendliness with a mean rating of (3.48) or Agree/Satisfied) of respondents. On being informed of new office development, it was rated (3.53) strongly agreed/Highly satisfied. Also, treating customers courteously was rated Highly Satisfactory (3.51). They are also responsive when dealing with their clients. The personnel showed a positive attitude and felt

comfortable and at ease. Being informed of new office developments and the clients being treated with utmost courtesy is strongly Agree/Highly Satisfied with the mean percentage of (3.51-2.53) or Agreed/Satisfied. This implies that the Municipalities of Lanao del Sur client is Agree or Satisfied in terms of Friendliness in serving the clients in their Local Government Units.

In terms of Timeliness

Table 8. Descriptive statistics of client service satisfaction in terms of timeliness

Indicators	Mean	Interpretation
1. The personnel show a sense of urgency in their work	3.00	Agree/Satisfied
2. Observe on time in reporting to their station	3.40	Agree/Satisfied
3. Give prompt feedback to customers	3.52	Strongly Agree/ Highly Satisfied
4. Ensure that clients do not wait so long	3.38	Agree/Satisfied
5. Make availability of needed forms to avoid delays	3.45	Agree/Satisfied
6. The client feels that waiting is reasonable	3.40	Agree/Satisfied
Overall Mean	3.36	Agree/Satisfied

Note: 3.50 – 4.00 Strongly Agree/ Highly Satisfied, 2.50 – 3.49 Agree/Satisfied, 1.50 – 2.49 Somewhat Disagree/Satisfied, 1.00 – 1.49 Strongly Disagree/Not Satisfied

Table 8 shows that there was a mean percentage (3.45-3.00 or Agree/Satisfied) of respondents who belonged to the Timeliness under the Client feel that waiting is reasonable, make availability of needed forms to avoid delays, ensures that clients do not wait so long, observe on time in reporting to their station and The Personnel: show sense of urgency in their work. While giving prompt feedback to customers is much more strongly agreed upon/highly satisfied, with a mean percentage of 3.52, this implies that the clients of Municipalities of Lanao del Sur Agree or are Satisfied in terms of Timeliness in serving the clients in their Local Government Units.

3.4 Relationship Between Variables

Table 9. Relationship between variables

	R	p-value	Decision
Clients' Service Satisfaction and Implementation of SGLG	0.800	0.000	Reject H ₀
Clients' Service Satisfaction and Challenges Met	-0.774	0.000	Reject H ₀

Table 9 reflects the relationship between the level of client satisfaction and the implementation of the Seal of Good Local Governance and the challenges met. The correlation between the two variables was computed using Pearson Product Moment Coefficient Correlation. As manifested in Table 8, the variable level of clients' satisfaction with Local Government Services obtained an r of (0.800) and a p-value of (0.000). In contrast, the met variable challenges obtained an r of (-0.774) and p-value of (0.000), which showed a significant relationship. Hence, the hypothesis is rejected. This implies that the level of client satisfaction and the challenges that are met have a bearing on the implementation.

4.0 Conclusion

The study's findings reveal a balanced representation of respondents across different Local Government Units (LGUs), all actively involved in their respective municipalities. Clients expressed moderate satisfaction with the services provided by local governments, particularly regarding implementing the Seal of Good Local Governance (SGLG) in 2019. Many respondents strongly agreed that LGUs effectively utilized the SGLG program to enhance local governance. The study also identified a significant relationship between client satisfaction and challenges, particularly in knowledge, timeliness, and transparency. These challenges directly influence satisfaction levels, with notable variations across different LGUs. This highlights the importance of addressing these issues to improve service delivery and client satisfaction across municipalities.

5.0 Contribution of Authors

The authors divided the work and completed the writing, editing, encoding, data analysis, and supervision. They also evaluated and approved the completed manuscript as a group. Both authors conceived and designed the study, formulated the research questions, and designed the study protocol. Author 1 collected and encoded the data. Author 2 helped with the analysis and interpretation of the data. Author 1 wrote the first draft, while Author 2 helped revise the manuscript. Both authors gave final permission for publishing.

6.0 Funding

This study did not receive any specific grant or money from any agencies; it was carried out independently.

7.0 Conflict of Interest

Concerning publishing this paper, the authors state that they have no conflicts of interest.

8.0 Acknowledgment

The researchers sincerely thank the Almighty Allah for His constant direction and favor during this research.

9.0 References

- Anderson, J. C., & Gerbing, D. W. (1988). Structural equation modeling in practice: A review and recommended two-step approach. *Psychological Bulletin*, 103(3), 411–423. <https://doi.org/10.1037/0033-2909.103.3.411>
- Cagas, J. F., & Balacy, G. M. V. (2022). The Seal of Good Local Governance in Digos City: Challenges and Opportunities. *International Journal of Research and Innovation in Social Science*, 6(11), 130–139. <https://tinyurl.com/dtbwfrfv>
- Capuno, J. J. (2005). The quality of local governance and development under decentralization in the Philippines. Retrieved from <http://hdl.handle.net/10419/4662>
- Chen, Y. C., & Hsieh, T. C. (2014). Big data for digital government: Opportunities, challenges, and strategies. *International journal of public administration in the digital age*, 1(1), 1–14. <https://tinyurl.com/mr45a2zb>
- Cleary, J. J. (1985). On the terminology of 'abstraction' in Aristotle. *Phronesis*, 30(1), 13–45. <https://doi.org/10.1163/156852885X00165>
- Diokno-Sicat, C. J., Mariano, M. A. P., Castillo, A. F., & Maddawin, R. B. (2020). Assessment of the performance challenge fund and the seal of good local governance: Perceptions from municipalities. Retrieved from <https://www.econstor.eu/handle/10419/240994>
- Hermocilla, M. C. (2024). Exploring Experiences in Participating in the Seal of Good Local Governance (SGLG) Program 2022: A Case Study of the Municipality of Cardona. *Journal of Exceptional Multidisciplinary Research*, 1(1), 1–7. <https://journals.stecab.com/index.php/jemr/article/view/28>
- Kim, S., & Lee, J. (2012). E-participation, transparency, and trust in local government. *Public Administration Review*, 72(6), 819–828. <https://doi.org/10.1111/j.1540-6210.2012.02593.x>
- Magno, F. A. (2015). Public participation and fiscal transparency in the Philippines. Retrieved from <https://tinyurl.com/bdsas72k>
- Muriu, A. R. (2013). Decentralization, citizen participation and local public service delivery: A study on the nature and influence of citizen participation on decentralized service delivery in Kenya. Retrieved from <https://nbn-resolving.de/urn:nbn:de:kobv:517-opus-65085>
- Ragragio, J. M. (2013). A study on civil society-local government engagement towards transparency, accountability and responsiveness in governance draft for The Asia Foundation. Retrieved from <https://tinyurl.com/sraz8n5r>
- Shaw, T. (2009). Earthquake risk management, local governance, and community participation in Manila. In *Urban risk reduction: An Asian perspective*. Emerald Group Publishing Limited.
- Cuyco, R. (2023). Capacities and constraints of the local government unit of lavezares, northern samar in complying with the criteria of the Seal of Good Local Governance(SGLG). Retrieved from <https://doi.org/10.13140/RG.2.2.15019.62246>
- Yang, S. B., & Torneo, A. R. (2016). Government performance management and evaluation in South Korea: History and current practices. *Public Performance & Management Review*, 39(2), 279–296. <https://doi.org/10.1080/15309576.2015.1108767>
- Wilson, A., Zeithaml, V. A., Bitner, M. J., & Gremler, D. D. (2020). *Services marketing: Integrating customer focus across the firm* (4th ed.). McGraw-Hill UK Higher Ed.
- Wilson, D., & Game, C. (2011). *Local government in the United Kingdom*. Bloomsbury Publishing.

The Interplay of Extrinsic and Intrinsic Motivational Factors on Teachers' Continuance and Affective Commitment

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Date received: August 17, 2024

Date revised: October 8, 2024

Date accepted: October 24, 2024

Originality: 96%

Grammarly Score: 99%

Similarity: 4%

Recommended citation:

Mañoza, V., Cruz, Y. (2024). The interplay of extrinsic and intrinsic motivational factors on teachers' continuance and affective commitment. *Journal of Interdisciplinary Perspectives*, 2(11), 430-440.

<https://doi.org/10.69569/jip.2024.0422>

Abstract. This study aimed to evaluate the motivational levels of junior high school teachers in Dumaguete City, focusing on extrinsic and intrinsic motivation and their affective and continuance commitment. A descriptive correlational survey was employed, and statistical analysis was performed using weighted mean, frequency distribution, percentage, Pearson r, and Kruskal-Wallis test. The findings indicate that teachers' extrinsic and intrinsic motivational levels are high. Additionally, their commitment to their job is also high in terms of affective and continuance commitment. The study found a strong significant relationship between motivational levels and affective commitment, while the relationship with continuance commitment was weak but still significant.

Keywords: Affective commitment; Continuance commitment; Extrinsic motivation; Intrinsic motivation.

1.0 Introduction

A nation's progress and overall growth depend on its educational system, where teachers base their instructional delivery. Many factors affect teachers' motivation toward their jobs, which may affect their commitment. Given the importance of teachers in the educational system, identifying the motivational factors is crucial in education. Teachers' motivation is one of the most pressing problems our educational institutions face today, which may influence their commitment to their jobs. However, the effort and motivation of teachers determine the quality of education in a nation and play a major role in the successful learning outcomes that students will achieve (Mustari & Muhammad, 2023). In Bhutan, it is often accepted that the primary element affecting the quality of education is the standard of the teachers. It is reasonable to assume that teachers have a relatively low level of motivation, given the present trend of teachers quitting the profession (Drukpa, 2021). This study's findings have practical implications for addressing these issues, providing a roadmap for improving teacher retention and educational quality.

In the educational setting, teachers' motivation directly affects student learning since it directly affects the quality of instruction. These aspects include the working environment, the school's physical and interpersonal milieu, and other considerations. Christian and Sayed (2023) claimed that teachers in Thailand lack commitment and drive due to professional concerns; likewise, teachers in Nigeria lack motivation because they are unhappy with their working environment. According to Asiati (2023), certain secondary school teachers in Kampala, Uganda, lack motivation and commitment, negatively impacting their well-being and the accomplishment of educational goals

and community processes. Implementing the K-12 curriculum in the Philippines has strengthened the demand for teachers.

Recently, it has experienced a shortage of teachers that affects the students' performance (Cabigas, 2019). Palis (cited in Cabigas, 2019) conducted a qualitative study where teachers claimed that their motivation and commitment to teaching had lessened. Additionally, Cagayan de Oro teachers' motivating elements were shown to be substantially connected with job satisfaction in the El Salvador City Division (Cabaron & Oco, 2023). In the study of Comighud (2021), teachers in the Bawayan City Division were motivated toward a job by factors like adequate salary, rewards, and other incentives.

In addition, teachers are motivated to do their duties and obligations if they have a positive attitude toward teaching. Leaders must be conscious of teachers' needs to assist their professional and organizational commitment to their job. Filipino teachers are profoundly respected in the teaching field, making them in demand in schools worldwide. These factors motivate Filipino teachers to practice abroad and look for better individual and professional growth opportunities. The efficiency of teachers' work helps an institution to achieve organizational objectives and boost performance (Sanchez, 2023), and two of the elements that affect how well employees perform at work are motivation and commitment (Dempa & Epradi, 2023). It must have been painful for teachers who moved overseas to leave behind their families and the Filipino students they had sworn to serve. Teaching has always been considered a noble profession, but the moving out of the system is quite alarming. Filipino teachers consider working abroad for economic reasons (Sumalinog, 2022).

Several studies have been conducted on the motivational level of teachers, but very few have focused on the influence of these motivational factors on their commitment. Determining extrinsic and intrinsic motivational factors will help the educational system address teacher performance and commitment issues. To bridge the gap, this research is being conducted to examine the different motivational factors that influence teachers' affective and continuance commitment. The Department of Education's top priority is ensuring that each teacher contributes to achieving learning objectives. For this reason, to provide high-quality educational services nationwide, teachers must possess a strong sense of motivation and commitment to their jobs. Thus, this research may provide information to improve teachers' commitments and job motivation, which will determine teachers' desire to remain in the institution.

2.0 Methodology

2.1 Research Design

This study utilized a descriptive–correlational method of research. It is descriptive because it identified the (a) teachers' motivational level toward their job in terms of intrinsic and extrinsic motivation and (b) teachers' commitment in terms of affective and continuance toward their job. It is also correlational as data obtained from descriptive statistics were explicitly correlated with the teachers' motivational factors and affective and continuance commitment toward their jobs.

2.2 Research Participants

The respondents of this study are 128 public junior high school teachers in the Dumaguete City Division. This study was conducted in the different junior high schools in Dumaguete City. Dumaguete City Division has seven junior high schools. The focus of this study was Dumaguete City National High School, Junob National High School, Camanjac National High School, Piapi High School, and Taclobo High School. All of these schools are located within the Dumaguete City area. To identify the respondents in every school, the systematic sampling technique was applied, wherein teachers who belonged to even numbers in the list were picked as the respondents.

2.3 Research Instrument

The primary tool used in the study is a questionnaire. Part I ensures informed consent and confidentiality, a standard and necessary practice. Part II collects demographic information and uses a self-made questionnaire to assess extrinsic and intrinsic motivation. Part III assesses motivational levels using a scale based on Herzberg's Two-Factor Theory. Part IV uses a standardized questionnaire by Allen and Smith to measure affective and continuance commitment. The dry run with a coefficient stability of 0.96 indicates very high reliability, which is

excellent. Also, the questionnaire underwent expert validation and was refined based on feedback, enhancing its credibility.

2.4 Data Gathering Procedure

A letter requesting to conduct the study, signed by the Dean of the Graduate School of Foundation University, was sent to the Schools Division Superintendent of the Division of Dumaguete City with a copy of the refined questionnaire attached. Upon approval, a letter of request was sent to the school head. The retrieval was done right after the respondents had completed the questionnaire.

2.5 Ethical Considerations

The researcher followed the ethical protocols stipulated by the Ethics Committee of Foundation University to ensure that the research topic was significant, evidently sound, and ethically correct. Procedures were correctly followed before the questionnaires were distributed. The researcher also took necessary ethical considerations when dealing with the data revealed by the respondents. The data were encrypted to ensure that the confidentiality of information was properly observed and the privacy of the respondents was protected.

3.0 Results and Discussion

3.1 Demographic Profile

Table 1 shows the teachers' profiles, including age, educational qualifications, teaching experience, and plantilla position. The profile items mentioned were based on the background of literature and studies that had proven their significance regarding teachers' extrinsic and intrinsic motivational factors in continuance and affective commitment.

Variable	Frequency (f)	Percentage (%)
Age		
Below 30	22	18.6
30-39	37	31.4
40-49	33	28.0
50 up	26	22.0
Educational Qualification		
Baccalaureate	48	40.68
With M.A.	55	46.61
M.A. Full-Fledged	15	12.71
Teaching Experience		
Below 10 years	44	37.3
10-19 years	43	36.4
20-29 years	21	17.8
30 years-up	10	8.5
Plantilla Position:		
Teacher 1	43	36.4
Teacher 2	21	17.8
Teacher 3	47	39.8
Master Teacher	7	6.0

3.2 Teachers' Motivational Level Toward Their Job

Extrinsic Factors

Table 2 reveals that teachers' motivational level toward their job in terms of extrinsic factors is "high," as shown by the average weighted mean ($w\bar{x} = 3.99$). Furthermore, results show that teachers are "very highly" motivated toward their job because of the following: (a) they receive cash benefits for teaching ($w\bar{x}=4.59$); (b) they enjoy the security of tenure and are paid regularly ($w\bar{x}=4.58$); and c) they have a life-term pension plan ($w\bar{x}=4.28$). This aligns with the results of Layek and Koodamara (2024), who revealed that external factors, such as salary and other cash benefits, influence teachers' job satisfaction. As emphasized by Santiago et al. (2022), teachers claimed that compensation is the most critical factor determining their stay or leave in their teaching profession.

Table 2. Teachers' motivational level toward their job in terms of extrinsic factors (n=118)

Indicators	Mean	Interpretation
1. I receive cash benefits for teaching	4.59	Very High Influence
2. I enjoy the security of tenure and a permanent job position.	4.58	Very High Influence
3. I am paid regularly.	4.58	Very High Influence
4. The superior-subordinate camaraderie is present in the organization.	4.49	Very High Influence
5. I have a life-term pension plan (i.e., GSIS).	4.28	Very High Influence
6. I have a good rapport with co-teachers.	4.24	Very High Influence
7. Trust and confidence are being manifested among co-workers.	4.16	High Influence
8. Supervision is preventive and constructive.	4.04	High Influence
9. Being a teacher is a distinctive mark of one's societal place.	4.00	High Influence
10. I gain social praise, respect, and support in the organization.	3.92	High Influence
11. I can provide for my family's needs.	3.91	High Influence
12. I want to achieve a higher position.	3.86	High Influence
13. Being a teacher makes me a person of authority.	3.85	High Influence
14. My incentives are granted through merit increases and a reward system.	3.83	High Influence
15. Promotion is based on competence, performance, and educational qualification.	3.79	High Influence
16. Ranking procedures are strictly followed.	3.71	High Influence
17. I am satisfied with the income I receive from teaching.	3.69	High Influence
18. The teaching profession can elevate my socio-economic status.	3.66	High Influence
19. I have sufficient resources to do my job.	3.41	High Influence
20. I have the privilege of enjoying long vacation leaves.	3.31	Moderate Influence
Average Mean	3.99	High Influence

The table also exhibits that teachers are “very highly” motivated toward their job, specifically in the presence of superior-subordinate camaraderie ($w\bar{x}=4.49$) and establishing a good rapport with co-teachers ($w\bar{x}=4.24$). A similar finding was also manifested in the study of Murwanashyaka et al. (2024), which found that teachers are extrinsically motivated by a conducive working environment. Having a strong working environment and quality supervision could elevate motivation in the job. This also affirms the study of Rivaldo and Ratnasari (2020), which states that quality supervision and establishing a harmonious relationship with co-teachers can increase productivity and develop high performance in the workplace.

On the other hand, data revealed that teachers declare “highly” motivated toward their jobs on most indicators (13 out of 20). The four leading extrinsic motivational factors are as follows: manifesting trust and confidence with co-workers ($w\bar{x}=4.16$); having constructive and preventive supervision ($w\bar{x}=4.04$); believing that being a teacher is a distinctive mark on one's place in society ($w\bar{x}=4.00$); and gaining social praise and respect as well as support ($w\bar{x}=3.92$). The results of this study also corroborate those of Octoviani et al. (2022), who found that interpersonal relationships, supervision, and work environments significantly influence the achievement to improve teachers' performance. Extrinsic motivators like working environment have a positive significant impact on achieving better performance.

Moreover, the other indicators of extrinsic motivation with “high influence” ratings are similar to Sala's (2020) study, which showed that teachers' motivational level regarding external benefits, like salary, cash benefits, and other incentives granted, can highly motivate teachers in their job performance. This signifies that teachers are motivated and satisfied in the presence of other extrinsic factors like interpersonal relationships, job security, working conditions, and job status. It is also important to highlight that aside from monetary benefits, the respondents believe they are extrinsically motivated when there is support from the working environment (i.e., supervision, promotion, trust, and confidence among co-workers, and provision of sufficient resources to do their jobs). This finding relates to Silvestre's (2022) argument that motivation, such as material things, rewards, and state benefits, correlates with a high level of job outcome and increased effectiveness in work. Having the privilege of enjoying long vacation leaves ($w\bar{x}=3.31$) was the only indicator of extrinsic motivation rated to have a “moderate influence.” This could mean that long vacation leaves as incentives may not contribute to extrinsic motivation among teachers.

Overall, the findings exposed that the different extrinsic factors had influenced teachers' motivational level toward a job to a “high” extent, with a weighted mean of 3.99. Results disclosed that teachers' extrinsic motivational factors significantly influence job performance. The presence of these motivators could lead to general satisfaction and prevention of dissatisfaction, which are essential in developing teachers' performance in school. Therefore, a highly motivated teacher will try to reach his objectives and finish the assignments at a given time (Kumar, 2023).

Intrinsic Factors

As illustrated in Table 3, the teachers' motivational level toward their job regarding intrinsic factors is "high," with a weighted mean of 4.17. Factors that were disclosed to have a "very high" influence on teachers; motivation toward their job are the feeling of seeing their students ($w\bar{x}=4.55$), enjoyment and love being with them ($w\bar{x}=4.39$) lead the list. It shows that the sense of personal achievement is the topmost motivational factor of teachers toward their job. This result is evident in the study of Ismail, Zubairi, and Paramboor (2023), wherein they disclosed that teachers were motivated toward their jobs if they were in good relations and were happy to be with their students.

Table 3. Teachers' motivational level toward their job in terms of intrinsic factors (n=118)

Indicators	Mean	Interpretation
1. I feel a sense of fulfillment whenever I see my students learn.	4.55	Very High Influence
2. I feel teaching is a significant profession.	4.52	Very High Influence
3. I love and enjoy being with my students.	4.39	Very High Influence
4. I find my job interesting and challenging.	4.36	Very High Influence
5. I am always curious and eager to discover and explore things to improve my job.	4.32	Very High Influence
6. I feel that working with my colleagues gives me a sense of belongingness.	4.30	Very High Influence
7. I enjoy my job.	4.29	Very High Influence
8. I feel driven to do my best each day.	4.26	Very High Influence
9. I take pride in the nobility of the teaching profession.	4.25	Very High Influence
10. I have professional connections with colleagues to enhance the teaching provided.	4.23	Very High Influence
11. I have an opportunity to join professional groups and associations.	4.18	High Influence
12. My supervisor encourages me to pursue my career goals.	4.02	High Influence
13. When given responsibility, my decisions and suggestions are respected.	4.01	High Influence
14. I am excited to go to work every day.	4.00	High Influence
15. I feel that the school administration truly supports my needs and those of other teachers.	4.00	High Influence
16. A certificate of recognition is given for outstanding performance.	3.96	High Influence
17. I gain social praise, respect, and support in the organization.	3.95	High Influence
18. My achievement is being recognized by my superiors.	3.93	High Influence
19. Incentives serve as credit for work done	3.92	High Influence
20. My leadership abilities for administration and advancement are taken into consideration.	3.89	High Influence
Average Mean	3.99	High Influence

Furthermore, another factor declared by teachers to have a "very high" influence is the feeling that teaching is a very meaningful profession ($w\bar{x}=4.52$); they find teaching challenging and interesting ($w\bar{x}=4.36$); they enjoy their job ($w\bar{x}=4.29$); and they take pride in the nobility of the profession ($w\bar{x}=4.25$). The work itself signifies that teachers are intrinsically motivated and satisfied in their jobs. This will lead teachers to perform their tasks effectively and build a strong commitment to their jobs. Based on the indicators rated with "very high influence," it can be deduced that these public junior high school teachers are motivated toward their jobs due to contentment, satisfaction, self-expression, personal challenge, and passion for one's profession (Robin & Judge, quoted in Silvestre, 2022). This finding is congruent with the study of Cajurao et al. (2023), wherein teachers are highly intrinsically motivated toward their jobs. Intrinsically motivated teachers manifest enthusiasm, passion, fulfillment, and enjoyment in their tasks and responsibilities.

Other intrinsic factors declared by the teachers to have highly influenced them are the feeling of belongingness ($w\bar{x}=4.30$); feeling driven to do their best each day ($w\bar{x}=4.26$); and having professional connections with colleagues ($w\bar{x}=4.23$). This aligns with Santiago et al.'s (2022) finding that working relationships are essential in the workplace. Teachers who feel a strong sense of camaraderie and belonging to the organization are also less inclined to look for a job elsewhere. In addition, factors such as professional growth, as well as the opportunity for advancement, were reflected to have a high influence on teachers' motivation because teachers are motivated when they find curiosity and eagerness to explore things ($w\bar{x}=4.32$); they receive encouragement from their supervisor to pursue their career goals ($w\bar{x}=4.02$); have an opportunity to join professional groups and associations ($w\bar{x}=4.18$); and leadership abilities and advancement are being considered ($w\bar{x}=3.89$). This is congruent with Malinao's (2023) citation that leadership plays an important role in motivating teachers to work. Leaders influence and motivate teachers by encouraging and helping them to do their tasks toward achieving educational goals.

It should be noted that teachers are "highly" motivated because they are given recognition for outstanding performance ($w\bar{x}=3.96$); gaining social praise, respect, and support ($w\bar{x}=3.95$); being recognized by superiors ($w\bar{x}=3.93$); and incentives are credited for every work done ($w\bar{x}=3.92$). Being recognized in the workplace makes

many teachers feel important in the institution. Reward or recognition might boost their productivity and loyalty toward their job. This finding also aligns with the study of Malinao (2023), which states that teachers who feel satisfied in their profession and are part of the organization are involved in activities, guided, and supported by superiors. Co-workers respect these teachers and inspire them to achieve job satisfaction. The current finding is also in consonance with the study of Duru et al. (2023), which found that factors such as being commended for a job well done, advancing professionally, growing personally, and receiving praise and recognition have a “high” influence on teachers’ motivation. Furthermore, this result affirms Ege’s (2020) statement that teachers are highly motivated if they receive recognition for the task accomplished by their superiors, which is an intrinsic indicator.

Summing up, teachers’ motivational level regarding intrinsic factors is “high,” as indicated by the average weighted mean of 4.17. These results illustrate that motivation will enable teachers to do their teaching profession and set goals to deliver learning, adding quality to our educational system. Highly motivated teachers have a passion for teaching. Genuinely motivated teachers are said to focus on the advantages of the school activities that are directly relevant to teaching, highlighting the intrinsic fulfillment that comes from their profession (Kumar, 2023). The data also validates Herzberg’s Theory (as cited in Management Study Guide, n.d.), which argues that work is a motivator. It is an intrinsic motivator that adds real satisfaction to the teaching profession. This implies that intrinsically motivated teachers are likelier to engage in the workplace. They are motivated by the inherent satisfaction and the enjoyment of fulfilling their responsibilities rather than the external rewards — the passion of teaching in the field of knowledge and the feeling that you are part of your learners’ success. This is one of the reasons why many teachers last longer in teaching and stay teachers for the rest of their lives.

3.3 Teachers’ Level of Commitment Toward Their Job

Affective Commitment

Table 4 reveals teachers’ level of affective commitment toward their jobs. The study's findings revealed that teachers’ affective commitment is “above average,” as indicated in the mean score of 35.15. Notably, most teachers, comprising 51 or 43.22 %, have a “high” level of affective commitment. Forty (40) teachers (33.90%) rated their affective commitment as “above average,” 17 (14.40%) with a “below average” level of affective commitment, and 9 or 7.63% rated their affective commitment as “average.” Sad to note that one teacher (0.85%) has a “low level” of affective commitment. Data show that most of this study's public junior high school teachers have high and above-average affective commitment toward their jobs. According to Sanchez (2023), highly committed teachers have emotional attachments and feel contented with their jobs and work. Moreover, Tore (2020) argued that teachers may exhibit a high affective commitment through collaboration, involvement, and empowerment toward organizational goals.

Table 4. Teachers’ level of affective commitment toward their Job (n=118)

Level of Commitment	Range	Frequency	Percentage
High	Above 37	51	43.22
Above Average	32–36	40	33.90
Average	28–31	9	7.630
Below Average	20–27	17	14.40
Low Level	Below 20	1	0.850
Average		33.15	

This result, however, contradicts the study of Perez et al. (2024), which stated that teachers have a moderate extent of affective commitment to their organization. In addition, the study of Dwiyantri et al. (2022) indicates that affective commitment has shown a low effect on teachers’ motivation. It is important to note that some teachers have below-average and low levels of affective commitment. Hence, there is a need to consider examining the factors causing this low level of affective commitment. According to Onukwu’s (2020) study, the low level of teachers’ affective commitment affects students’ learning outcomes. The low result on the affective commitment could be associated with the norms and values gap within the organization and limited opportunities for teachers’ professional advancement. Teachers’ needs, expectations, and principles may differ from school goals and policies. The lack of personal connection, feelings, and attachment indicates that teachers are at their lowest point.

Continuance Commitment

Table 5 discloses teachers’ level of continuance commitment toward their jobs. Results showed that teachers' continuance commitment is “above average,” as shown in the mean score of 35.15. Data reveal that most teachers,

comprising 61 teachers or 51.70%, have a “high” level of continuance commitment. Thirty-five(35) teachers, or 29.66%, have an “above average” level of continuance commitment. There were 16 teachers, or 13.56%, with an “average” level of continuance commitment. There were only six teachers, or 5.08%, with a “below average” level of continuance commitment.

Table 5. Teachers’ level of continuance commitment toward their Job (n=118)

Level of Commitment	Range	Frequency	Percentage
High	Above 32	61	51.70
Above Average	26-31	35	29.66
Average	21-25	16	13.56
Below Average	13-20	6	5.08
Low Level	Below 12	0	0
Average		31.42	

As shown in Table 5, most of the respondents have a “high” level of continuance commitment, which means that these public junior high school teachers are likely to stay in their workplace. Their “high” level of continuance commitment proves the point made by Daswari (2022), who noted that the continuance commitment of an employee is when there is an existing situation and staying in the job is the best course of action. Employees frequently conclude that they should remain in the organization because their chances for advancement depend on their current work and believe that leaving would be costly. This may apply to many teachers in the Philippines who prefer to stay teaching in public schools due to the benefits, such as salaries, bonuses, pensions, and others. Aside from the benefits gained, teachers may also stay in their jobs because they already have a strong sense of connection to their place of employment and have invested a lot in the organizational structure, which prevents them from leaving (Nguyen, 2023).

This finding corroborates with the study of Perez et al. (2024), which shows that teachers have a high degree of continuance commitment to their jobs. Teachers want their jobs and are more likely to stay for financial reasons. Leaving the workplace will cause them to lose their benefits if they leave the institution. In addition, Kasogela (2019) mentioned that employees’ continuance commitment in developing countries is determined by their pay and salary, with the payment size having the most significant influence on individuals’ attraction, retention, and motivation to perform at a higher level toward the job. This observation may be validated by the result of this study, in which no respondent had a “low” level of continuance commitment.

3.4 Relationship Between Teachers’ Motivational Level and Job Commitment Level

To examine if there is a significant relationship between teachers’ motivational level and their commitment level, the researcher used the Pearson Product-Moment Correlation. Table 6 reveals a significant relationship between the overall motivational and affective commitment levels as indicated by the r-value of 0.4889, which is greater than its table value of 0.1946, at 0.05, with 116 degrees of freedom. The relationship between the motivational level and affective commitment can be interpreted as strong. Furthermore, the test reveals a significant relationship between the overall motivational level and continuance commitment, as signified by the obtained r-value of 0.2158. This value is greater than the significant level of 0.1946, at 0.05, with 116 degrees of freedom. Hence, the null hypothesis earlier stated that no relationship exists between teachers’ motivational level and job commitment is rejected.

Table 6. Correlation between teachers’ motivational level and job commitment Level (n = 118)

Variables	r	Decision Rule	Remark
Extrinsic and Affective	0.3917	Reject H_0	Significant
Extrinsic and Continuance	0.1663	Do not reject H_0	Not Significant
Intrinsic and Affective	0.5208	Reject H_0	Significant
Intrinsic and Continuance	0.2403	Reject H_0	Significant
Motivational Level and Affective Commitment	0.4889	Reject H_0	Significant
Motivational Level and Continuance Commitment	0.2158	Reject H_0	Significant

This means that the more motivated teachers are, the more committed they are to their jobs. Highly motivated teachers will put more effort into their jobs and contribute more to the schools or districts they belong to help achieve the department’s goals. Commitment is powered by motivation to succeed in a task. When we commit to anything, it becomes a lifelong obligation rather than a choice. These findings on the relationship between

motivation and commitment validate the argument of Popoola (2003), who contended that motivation and commitment are intertwined and rejuvenating forces. As shown in the findings earlier, teachers have “high” levels of extrinsic and intrinsic motivation and “high” levels of affective and continuance commitment. These establish evidence for the statement of Popoola (2003), who described motivation and commitment as significantly and favorably affecting employees’ organizational satisfaction. Motivation increases commitment by making work more relevant and engaging, increasing productivity, and enhancing job performance.

This finding is consistent with Demir's (2020) study, which revealed that motivation has a strong and positive impact on organizational commitment. Motivation is the driving factor toward action. When action goes beyond, that is commitment. Motivation and commitment are necessary to achieve the organizational goals. Teachers are more likely to remain resilient in the face of adversity in teaching, retain a high level of motivation, and continue to work for professional growth and development (DeRueda, 2024). Furthermore, the significant strong relationship between motivational level and affective commitment aligns with the study by Winda et al. (2022), which showed that a high level of desire for one’s work might result in a high level of work commitment. Motivation has an impact on commitment, which plays a major mediating function. When individuals feel that the organization has met all their wants and aspirations, the most dominating factor is expressed by the affective commitment. They will consciously raise the amount of commitment already present in them.

It is also important to highlight the other data shown in Table 3. When examining the relationship between specific motivation levels and commitment (e.g., extrinsic vs. affective or intrinsic vs. continuance), one interesting result reveals that extrinsic motivation is not significantly related to continuance commitment. This is the only test between two specific variables that did not result in a significant relationship. This could mean that financial incentives (an example of extrinsic motivation) do not influence or affect the commitment of teachers to stay in their jobs (continuance commitment). On the other hand, there was a significant relationship between intrinsic and affective motivation with an R-value of 0.5208, interpreted as a strong relationship. The relationship between intrinsic motivation and continuance was also significant, though it can be described as weak. An intrinsically motivated teacher will continue their work and be satisfied without the influence of external factors. They do their task because they feel happy and interested and want to stay committed rather than because of the rewards and incentives they might receive. This means that when teachers are intrinsically motivated, they are more likely to create a positive learning environment and set high expectations for themselves and their students; thus, they tend to stay and continue in the service. These results validate Winda et al.’s (2022) observation that motivation has a strong positive relationship with affective and continuance commitment.

Moreover, these present findings correspond with the study of Jannah and Widyastuti (2023), implying a significant relationship between teachers’ motivational levels and affective commitment. The teachers with high affective commitment have an emotional attachment to the school and feel rewarded. Cajurao (2023) further stated that the impact of intrinsic motivation on millennial teachers was statistically significant. This suggests that a key factor influencing affective commitment is their enjoyment, passion, energy, and interest in improving work performance. Similarly, Manalo et al. (2020) presented that secondary school teachers have a high level of affective commitment. Their sense of belongingness and positive feelings that they are part of the organization greatly influence their commitment. The study of Tore (2020) revealed the relationship between intrinsic motivation and affective commitment. It disclosed that intrinsically motivated teachers are highly engaged in tasks and have high affective commitment. Then again, the degree of organizational commitment exhibited by the teachers is mainly described by their affective commitment since the organization’s values will positively affect the teachers’ desires. In addition, the study of Burmansah, Bedjo, and Mukhneri (2019) demonstrated that teachers’ motivation is related to affective commitment, which improves the standard and quality of work among teachers.

Martin et al.'s (2020) study found a similar conclusion: a well-established learning system strengthens a teacher's continuance commitment. Establishing a learning environment that meets teachers’ demands and creating a modern, safe, creative, collaborative platform with high-quality interactions between students and teachers are all important goals for educational institutions. The current finding, however, is not similar to the study by Onukwu (2020), which stipulates that teachers’ commitment is low, indicating a lack of enthusiasm for their work and hindering educational attainment. Thus, it can be asserted that teachers’ early career choices were motivated more by the chance to earn a monthly salary than by a genuine love of work.

3.5 Difference in Teachers' Motivational Levels when Grouped According to their Profile

Table 7 shows significant differences in teachers' motivational levels when grouped according to their profile. Using the Kruskal-Wallis Test, the researcher found that teachers' motivational levels do not differ significantly regardless of their profiles, such as age, educational qualification, teaching experience, and plantilla position, as manifested in the p-value of 0.0966 (age), 0.6473 (educational qualification), 0.2758 (teaching experience), and 0.2625 (plantilla position). These values are more significant compared to the 0.05 level of significance. Evidence is insufficient to reject the null hypothesis that no significant difference exists in teachers' motivational levels when grouped according to their profiles.

Table 7. Kruskal-Wallis Test of difference in teachers' motivational level when grouped according to their profile

Variable	H	df	p-value	Decision	Remarks
Age	6.33	3	0.0966	Do not reject $H_{02.1}$	No significant difference
Educational Qualification	0.87	2	0.6473	Do not reject $H_{02.2}$	No significant difference
Teaching Experience	3.87	3	0.2758	Do not reject $H_{02.3}$	No significant difference
Plantilla Position	3.99	3	0.2625	Do not reject $H_{02.4}$	No significant difference

Significant level = 0.05

The study of Comighud (2021) supports the findings that teachers' profiles cannot account for the differences in teachers' motivational levels. Similarly, the study of Yildiz (2021) concurs with the current finding that teachers' profiles, in terms of age, educational attainment, and length of work, cannot account for the differences in teachers' disposition in work. Ugar (2019) also discovered no significant difference in teachers' motivation when grouped according to their educational qualifications, teaching experience, and plantilla position.

3.6 Difference in Teachers' Affective Commitment when Grouped According to their Profile

Table 8 reveals that educational qualification and plantilla position cannot account for the differences in teachers' affective commitment as indicated in the p-values of 1.00 (educational qualification) and 0.2982 (plantilla position), values of which are greater compared to its 0.05 level of significance. This indicates that when grouped according to educational qualification and plantilla position, teachers' affective commitment does not differ. Hence, the null hypothesis that no significant difference in teachers' affective commitment exists when grouped according to their educational qualification and plantilla position is not rejected. This result is consistent with Agrawal and Jain's (2020) study, which disclosed that educational qualifications cannot account for the differences in teachers' affective commitment.

Table 8. Kruskal-Wallis Test of difference in teachers' affective commitment when grouped according to their profile

Variable	H	df	p-value	Decision	Remarks
Age	6.33	3	0.0466	Reject $H_{03.1}$	Significantly different
Educational Qualification	8.67	2	1.0000	Do not reject $H_{03.2}$	No significant difference
Teaching Experience	6.52	3	0.0389	Reject $H_{03.3}$	Significantly different
Plantilla Position	3.68	3	0.2982	Do not reject $H_{03.4}$	No significant difference

Significant level = 0.05

On the other hand, the result of the test revealed that age and teaching experience could affect or influence teachers' affective commitment as manifested in the p-values of 0.0466 (age) and 0.0389 (teaching experience), values of which are lesser compared to its 0.05 level of significance. This indicates that teachers' age and teaching experience profiles can account for the differences in teachers' affective commitment. Data revealed that age and teaching experience can warrant the rejection of the null hypothesis. Data show that older and experienced teachers have a higher level of affective commitment than those who are young and less experienced.

The findings of Mangundjaya (2023) align with the current study, which disclosed that the older the teachers are, the higher their affective commitment is. However, it also indicated that the higher the educational qualification, the higher their affective commitment becomes, contrary to the present study's result. Meanwhile, Shah et al. (2020) reveal a connection between teachers' experience and their affective commitment. This finding further means that teachers are more committed when they have a longer service in the institution. Furthermore, Agrawal and Jain (2020) discovered that educational qualification has no significant difference with affective commitment.

3.7 Difference in Teachers' Continuance Commitment when Grouped According to their Profile

Table 9 reflect the test on significant differences in teachers' continuance commitment when grouped according to their profile. It presents that age, educational qualification, teaching experience, and plantilla position cannot explain teacher continuance commitment differences. Data are insufficient to reject the null hypothesis, which states no significant difference exists in teachers' continuance commitment when grouped according to their profile. Results of the test showed no significant difference in teachers' continuance commitment when grouped according to their profile, as evident in the p-values of 0.5399 (age), 0.4253 (educational qualification), 0.166 (teaching experience), and 0.208 (plantilla position), values of which are much greater compared to 0.05 significance level.

Table 9. Kruskal-Wallis Test of difference in teachers' continuance commitment when grouped according to their profile

Variable	H	df	p-value	Decision	Remarks
Age	2.61	3	0.5399	Do not reject $H_{03.1}$	No significant difference
Educational Qualification	1.71	2	0.4253	Do not reject $H_{03.2}$	No significant difference
Teaching Experience	5.08	3	0.166	Do not reject $H_{03.3}$	No significant difference
Plantilla Position	4.62	3	0.2018	Do not reject $H_{03.4}$	No significant difference

Significant level = 0.05

This result, however, contradicts Tadesse's (2019) study, which revealed that the teachers' continuance commitment goes higher as they get older; they tend to stay in the teaching profession for an extended time, and the sense of belongingness will be valued. Additionally, experienced teachers felt that leaving the institution or profession would come at a low cost. It implies that they may resign from their job and go if there is an opportunity for higher pay or compensation. On the other hand, this current finding does not also agree with Erdogan and Cavli's (2019) statement, which contends that the longer teachers' experience, the lower their continuance commitment level becomes. Continuance commitment decreases with an increase in years of experience in teaching.

4.0 Conclusion

This study aimed to investigate the impact of various motivational factors on teachers' decisions to remain in or leave their positions and to understand how these factors influence their commitment to teaching. The study found that teachers reported high levels of extrinsic and intrinsic motivation toward their job, with a majority also showing high levels of affective and continuance commitment. Teachers' highest motivational factors in terms of extrinsic were salaries, wages, and other benefits. In intrinsic motivation, the highest was in the sense of professional achievement. This means that teachers value their students' learning in school. Teachers' motivational factors are relevant to their job satisfaction, resulting in a high commitment to their profession. Based on the findings of this study, the following conclusions are drawn: (a) The teachers value their students' learning in school, and (b) Teachers' motivational factors are relevant to their job satisfaction, resulting in a high commitment to their profession. Hence, highly motivated teachers are more likely to employ creative teaching techniques, foster a supportive learning atmosphere, give each student individualized attention, and set high standards for themselves, their colleagues, and their students. Therefore, increasing teachers' motivation could lead to retention and commitment to achieving educational goals.

5.0 Contributions of Authors

The authors confirm their equal contribution to every part of this research. All authors reviewed and approved the final version of this paper.

6.0 Funding

This research did not receive funding from any funding agency.

7.0 Conflict of Interests

This study has no conflict of interest of any sort.

8.0 Acknowledgment

The authors express their gratitude to everyone who has inspired and helped them to finish this study, especially to the school heads and respondents.

9.0 References

- Asiati, M. (2023). Evaluation of Teachers' Job Performance, Appraisal and Motivation in some selected Secondary Schools in Kampala, Uganda. *IAA Journal of Education*, 9(1), 11-16. <https://tinyurl.com/2s4x6f8e>
- Burmansah, B., Sujanto, B., & Mukhtar, M. (2019). The teachers' affective commitment through the effects of quality of work life and job involvement in the school. *Asia Proceedings of Social Sciences*, 4(1), 17-20. <https://doi.org/10.31580/apss.vi1.535>
- Cabaron, G. J., & Oco, R. M. (2023). Teachers' level of motivation and job satisfaction. *Asian Journal of Education and Social Studies*, 45(1), 1-9. <https://doi.org/10.9734/ajess/2023/v45i1971>
- Cabigas, L. M. (2019). Who let the teachers out: Exploring the main factors contributing to teacher attrition in Philippine schools. Retrieved from <https://www.academia.edu/39721541>
- Cajurao, G., Bungay, A., Cruz, R., & Solis, M. (2023). The effect of intrinsic, extrinsic motivation and organizational commitment on millennial educator's job performance, 3(5), 46-63. <https://doi.org/10.47760/cognizance.2023.v03i05.005>
- Comighud, S. M. T., & Arevalo, M. J. (2021). Motivation in relation to teachers' performance. In UBT International Conference.
- Christian, D., & Sayed, Y. (2023). Teacher motivation to teach in challenging school contexts on the Cape Flats, Western Cape, South Africa. *Education Sciences*, 13(2), 165. <http://doi.org/10.3390/educsci3020165>
- Demir, S. (2020). The role of self-efficacy in job satisfaction, Organizational commitment, motivation, and job involvement. *Eurasian Journal of Education Research*, 20(85), 205-224. <https://dergipark.org.tr/en/pub/ejer/issue/52308/686061>
- DeRueda, M. C. (2024). Organizational commitment and teacher burnout assessment: Inputs to self-leadership enhancement program development. *Psychology and Education: A Multidisciplinary Journal*, 19(4), 506-523. <https://doi.org/10.5281/zenodo.11094393>
- Dompak, T., & Epiadi, D. (2023). The influence of discipline and leadership on the performance of employees of Badan Pengusahaan (BP) Batam. *Jurnal Ilmiah Manajemen Universitas Putera Batam*, 11(1), 156-163. <https://doi.org/10.33884/jimupb.v11i1.6638>
- Drukpa, G., (2021). A study on motivational levels of teachers in Lhuentse District, Bhutan. *International Journal of Humanities and Education Development*, 3(5), 6-19. <https://doi.org/10.22161/jhed.3.5.2>
- Dwiyanti, R., Rozana, M., Na'imah, T., & Rafiyana, G. (2022). Turnover intentions on teachers in Indonesia: The role of affective commitment, continuance commitment, and normative commitment. *Social Values & Society*, 4(2), 30-36. <http://doi.org/10.26480/svs.02.2022.30.36>
- Erdogan, E., & Cavli, E. (2019). Investigation of organizational commitment levels of physical education and classroom teachers. *Universal Journal of Educational Research*, 7(1), 259-265. <https://doi.org/10.13189/ujer.2019.070133>
- Jannah, A., & Widyastuti, W. (2023). Relationship between job satisfaction and affective commitment in Kindergarten Teachers. *Indonesian Journal of Innovation Studies*, 21. <https://doi.org/10.21070/ijins.v21i1.797>
- Kasogela, O. K. (2019). The impacts of continuance commitment to job performance: A theoretical model for employees in developing economies like Tanzania. *Advanced Journal of Social Science*, 5(1), 93-100. <https://doi.org/10.21467/ajss.5.1.93-100>
- Kumar, J. (2023). Influence of motivation on teachers' job performance. *Humanities and Social Sciences Communications*, 10(1), 111. <https://doi.org/10.1057/s41599-023-01662-6>
- Malinao, C. W., & Agustin, J. (2023). Retention, Satisfaction, and Motivation Enablers of a Higher Education Institution in the Philippines amidst Teacher Migration. *Puissant*, 4, 716-735. <https://puissant.stepacademic.net/puissant/article/view/137>
- Murwanashyaka, P., Bikorimana, D., Berabose, V., Tuyishimire, L., Turatsinze, J., & Tuyizere, G. (2024). Teachers' extrinsic motivation on quality education in Nyamasheke District, Rwanda. *East African Journal of Education Studies*, 7(1), 377-388. <https://doi.org/10.37284/eajes.7.1.1796>
- Mustari, M., & Muhammad, I. (2023). Analysis of classroom management in learning quality, affective support, and cognitive activation at Junior High School. *AL-ISHLAH: Jurnal Pendidikan*, 15(3), 3776-3784. <https://doi.org/10.35445/alishlah.v15i3.2928>
- Nguyen, P. N.-D., Tran, V. D., & Le, D. N.-T. (2022). Does organizational citizenship behavior predict organizational commitment of employees in higher educational institutions? *Frontiers in Education*, 7, 909263. <https://doi.org/10.3389/feduc.2022.909263>
- Octoviani, E., Ahmad, S., & Kesumawati, N. (2022). The Effect of School Environment and Extrinsic Motivation on Teacher Performance. *Journal of Social Work and Science Education*, 3(1), 8-17. <https://doi.org/10.52690/jswse.v3i1.261>
- Onukwu, J. N., Tiebebedigha, P. F., & Okojide, A. C. (2020). Teachers' and job commitment: Conceptualizing Meyer and Allen's multidimensional model in Bayelsa State public secondary schools. *African Journal of Contemporary Education Studies*, 15(1), 73-84. <https://www.researchgate.net/publication/342765058>
- Pérez, J. A. E., Figueroa, J. M. M., Cortés, K. C. M., Loa, R., & Bacolod, M. S. (2024). Extent of teachers' organizational commitment among university school teachers. *Kurdish Studies*, 12(1), 2368-2380. <https://doi.org/10.58262/ks.v12i1.165>
- Popoola, S. O., Fagbola, O.O (2023). Work motivation, job satisfaction, work-family balance, and job commitment of library personnel in Universities in North-Central Nigeria. *The Journal of Academic Librarianship*, 49(4), 10274. <https://doi.org/10.1016/j.acalib.2023.102741>
- Rivaldo, Y., & Ratnasari, S. L. (2020). Pengaruh Kepemimpinan Dan Motivasi Terhadap Kepuasan Kerja Serta Dampaknya Terhadap Kinerja Karyawan. *Jurnal Dimensi*, 9(3), 505-515. <https://doi.org/10.33373/dms.v9i3.2727>
- Sala, M. (2020). Motivational factors in relation to teachers' performance. *IJRDO-Journal of Social Science and Humanities Research*, 5(5), 84-109. <https://doi.org/10.53555/sshr.v5i5.3700>
- San-Martin, S., Jiménez, N., Rodríguez-Torrico, P. (2020). The determinants of teachers' continuance commitment to e-learning in higher education. *Educ Inf Technol* 25, 3205-3225. <https://doi.org/10.1007/s10639-020-101173>
- Sanchez, G. C. (2023). The role of work motivation on the performance of FU's support personnel (Thesis). Foundation University, Dumaguete City, Philippines
- Santiago, N., Santos, T., & Centeno, A. K. S. (2022). Factors affecting teachers' turnover: Basis for a proposed retention program. *International Journal of Multidisciplinary: Applied Business and Education Research*, 3(9), 1791-1797. <https://doi.org/10.11594/ijmaber.03.09.19>
- Shah, N. H., Ishaq, M., Nawaz, A. (2020). Demographic variables effect the organizational commitment of Teachers: Myth or reality. *Sir Syed Journal of Education & Social Research*, 3(3), 293-300. [https://doi.org/10.36902/sjesr-vol3-iss3-2020\(293-300\)](https://doi.org/10.36902/sjesr-vol3-iss3-2020(293-300))
- Silvestre, A. (2022). Personality traits, motivation, and performance of employees in a pharmaceutical company in the Philippines: Basis for performance improvement plan. *Psychology and Education: A Multidisciplinary Journal*, 2(2), 2-28. <https://10.5281/zenodo.6547994>
- Sumalinog, G. G. (2022). Lived experiences of the Filipino English Teachers abroad: The drawbacks in focus. *International Journal of Science and Research*, 11(2), 41-47. <https://doi.org/10.21275/SR211113010609>
- Tadesse, E. F. (2019). Teachers' organizational commitment at secondary school in Addis Ababa, Ethiopia. *International Journal of Education and Research*, 7(4), 55-68. <https://www.researchgate.net/publication/358869415>
- Winda, M., Susanti H, P., & Trarinya, M. (2022). The role of commitment to mediate the effect of motivation on the performance of Waste Bank managers in the City of Denpasar. *International Journal of Social Science, Education, Communication and Economics*, 1(2), 115-130. <https://doi.org/10.54443/sj.vi2.12>