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Suitability and Need Assessment of Barangay Beneficiaries for R&D and Extension Projects

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Abstract. The selected five barangays in Roxas, Isabela, exhibit significant disparities in social services, infrastructure, and economic opportunities. This study identifies these gaps and explores targeted development strategies to promote inclusive and sustainable growth. The research addresses the need for a barangay-specific approach by examining key indicators such as demographics, economic activities, infrastructure, and environmental sustainability. Data were collected through surveys, interviews, and official records, with responses from local government representatives and community stakeholders. Findings reveal that barangays with larger populations, such as Nuesa, Rizal, and Bantug, require expanded healthcare, education, infrastructure and environmental interventions, while those with limited land and resources must develop alternative income-generating activities. Economic indicators highlight the need for agricultural diversification, improved financial accessibility, and stronger local trade networks. Infrastructure gaps, particularly in irrigation, road connectivity, and post-harvest facilities, impact productivity and market access. The study recommends interventions in four key areas: (1) economic growth—expanding financial services, market access, and agricultural productivity; (2) social development—improving healthcare, education, and welfare programs; (3) infrastructure expansion—enhancing agricultural facilities such as farm to market roads, irrigation, and postharvest and public facilities; and (4) environmental resilience—implementing disaster preparedness and sustainable land-use planning. Strengthening partnerships among local governments, non-government organizations, state universities, and private sector stakeholders is crucial to ensuring long-term development. By adopting a data-driven, stakeholder-supported, and sustainable approach, barangays can achieve greater economic resilience, improved social services, and long-term community development.

Keywords: Barangay-specific interventions; Barangay suitability as beneficiary; Need assessment; Research and development extension and training services (RDET).

1.0 Introduction

The state universities and colleges (SUCs) in the Philippines have been actively engaged in research and extension initiatives in collaboration with government and non-government organizations to assist impoverished areas in response to the growing need for community development (Mojares et al., 2020). However, despite numerous efforts, many extension programs face challenges in sustainability and effectiveness due to inadequate assessment and integration with community issues and needs. One such initiative is the Adopt-a-Barangay Program, an extension effort aimed at transforming selected barangays into independent, empowered, and progressive communities. Research outputs of SUCs are being extended through this program. While this initiative has demonstrated benefits, a critical gap exists in systematically selecting barangays and designing interventions based on comprehensive local assessments. Existing research does not adequately address how extension

programs can effectively match their interventions with community-specific needs and conditions. Addressing this concern requires a structured approach that ensures interventions align with local realities.

Research indicates that many development projects fail because they are based on external assumptions rather than the actual needs of the communities they aim to support (Mosse, 2005). Conducting thorough needs and suitability assessments ensures that programs remain responsive, relevant, and sustainable, ultimately leading to more impactful and lasting community development. By doing so, extension implementers from SUCs and other organizations are enabled to become a catalyst of positive change as they may deliver solution-oriented or need-driven interventions for needy communities. Strategic beneficiary selection significantly improves the longevity and overall success of social programs (Bebbington et al., 2004). A rigorous selection process ensures that resources are allocated efficiently, prioritizing areas where interventions will have the greatest impact and are most likely to yield sustainable benefits.

A suitability evaluation examines a community's infrastructure, development needs, and socioeconomic circumstances, helping identify barangays that require the most significant support. This process ensures that intervention activities are strategically directed to areas where they will have the greatest impact which means that a well-executed suitability or appropriateness evaluation maximizes the result of development initiatives while preventing the misallocation of limited resources (Chambers, 1994). Moreover, integrating local expertise and fostering active community engagement help align programs with genuine needs rather than externally imposed priorities, ultimately enhancing the effectiveness and sustainability of development efforts (Abdullah et al., 2012). Encouraging inclusive and participatory development approaches strengthens community involvement in the planning and assessment phases. When local stakeholders actively engage in decision-making, interventions become more meaningful, sustainable, and seamlessly integrated into the community's realities (Pretty, 1995).

On the other hand, a need assessment, also known as an environmental scan (Sydorenko, 2023), is a systematic process for identifying the gap between desired and actual circumstances. This assessment helps determine the necessary actions to achieve project objectives. According to the U.S. Department of Education, a needs assessment follows a continuous five-step cycle: identifying local requirements, selecting evidence-based interventions, organizing implementation strategies, executing programs, and evaluating their effectiveness (O'Donnell, n.d.). Adherence to this structured approach will help extension programs to have effective resource management and ensure long-term positive outcomes. By identifying gaps between present conditions and ideal outcomes, needs assessments play a crucial role in enhancing strategic planning, optimizing resource allocation, and improving project results (Cuiccio & Husby-Slater, 2018). When project managers develop a deeper understanding of community issues, they can design more effective interventions tailored to the specific needs of communities (Songhori, 2008).

Conducting suitability evaluations and needs analyses ensures that research and development (R&D) and extension services align with the principles of fair development and social justice. These assessments help guarantee that disadvantaged barangays receive the necessary support to foster economic growth, improve infrastructure, and achieve self-sufficiency. They will contribute to refining extension program methodologies, enhancing their effectiveness and sustainability over the long term. A multi-stakeholder collaboration—including SUCs, governmental organizations, businesses, and non-governmental organizations—is a key factor in enhancing the legitimacy and effectiveness of development programs (Shoultz, et al., 2006). By pooling diverse resources and expertise, these partnerships help create more impactful and sustainable initiatives.

Aiming to provide barangay-specific initiatives, the researcher conducted the study, generally, to evaluate suitability and needs of the selected barangays in Roxas, Isabela. Specifically, it aimed to profile them in terms of demography, economic indicators (agriculture, commerce/trade, and industry), social indicators (health and nutrition, education, social welfare, and protective services), infrastructure indicators (existing roads and water system), determine their budget appropriation and top ten (10) unmet needs, and lastly, determine their suitability level based on the composite index. Results from this study may guide project implementers around Region 02 in decision-making as to what specific barangay must benefit and what particular development aspect must be focused on.

2.0 Methodology

2.1 Research Design

To assess the suitability of barangays for R&D and Extension programs/projects by SUCs in partnership with government and non-government organizations, this study employed a descriptive research design. This approach is particularly appropriate as it provides an objective depiction of the barangays' existing conditions without manipulating any variables. Given the study's aim to profile barangays—examining demographic, infrastructure, economic, social, and budget appropriation, identifying unmet needs, and determining suitability levels—a descriptive design ensures structured and comprehensive data collection. By systematically gathering quantifiable data from barangay officials and government records, this approach facilitates the identification of development gaps and deficiencies, which are crucial for effective planning and designing of project/program proposals on research and development, extension, and training services.

2.2 Research Locale

Originally, ten selected barangays of Roxas, Isabela, Philippines—comprising the top five (5) low-income and top five (5) high-income barangays were covered in the study's implementation. The Department of the Interior and Local Government (DILG) provided secondary data on barangay income, which served as the basis for the categorization of barangays. Initially, the study aimed to analyze both low- and high-income barangays to compare their needs and challenges. However, during the data collection process, respondents from the low-income barangays did not articulate specific needs or challenges, stating that they did not perceive significant difficulties. This lack of reported concerns limited the depth of analysis for low-income barangays. Consequently, the study focused on the high-income barangays, where respondents actively identified organizational needs and challenges. This shift ensured that the research captured meaningful insights rather than forcing conclusions where no issues were reported.

2.3 Research Participants

The study's respondents are 1) barangay officials and 2) staff from the Department of the Interior and Local Government (DILG). Fifty barangay authorities served as respondents who provided the primary data necessary for the study while a staff from the office of DILG provided the secondary data necessary to supplement the data acquired directly from the barangay officials. Data from this office was used to validate the informations provided by the primary respondents.

2.4 Research Instrument

The DILG's Barangay Profile Sheet (BPS) Form was used to collect data from barangay authorities. This form covers the general information of the barangays, demography, local government administration, economic indicators (agriculture and commerce/trade and industry), social indicators (health and nutrition, education, social welfare and protective services, local fiscal administration, and unmet minimum basic needs. Since it covers all the necessary information for the study, no modifications were made.

2.5 Data Gathering Procedure and Analysis

Formal communications of requests for the data gathering to be conducted were sent to the Department of the Interior and Local Government office. A focused group meeting was also requested, approved, and scheduled by the office of the Barangay Captain for the collection of primary data from the Barangay Officials. During the meeting, the primary data provided to fill out the BPS form was validated by requesting supporting documents. Additionally, the secondary data from the DILG was compared with barangay records to ensure accuracy.

The data was analyzed using descriptive statistics. Percentages, frequencies, and measures of central tendency were applied to profile demographics, key indicators, and unmet needs across various aspects. The suitability level was assessed using a composite index. Each indicator—social (education, health, welfare, and safety), economic (agriculture, trade, and industry), infrastructure/technology, environmental, and unmet needs—was assigned an equal weight of 20%, totaling 100%. The composite index allowed the researcher to rank the barangays based on their assessment scores.

The use of a composite index to assess barangay suitability benefits from a descriptive approach, as it enables the systematic organization and analysis of multiple indicators. This ensures that findings are data-driven and

evidence-based, supporting informed policymaking and resource allocation. Since the study focuses on observing and documenting barangay conditions rather than manipulating variables, a descriptive research design offers the most accurate and objective representation of their current status, making it the most suitable methodology for achieving the study's objectives.

2.6 Ethical Considerations

Before the group meeting commenced, respondents were oriented about what the research was all about. The rationale, objectives, and expected outcome of the study were discussed. With an understanding of the research purposes, the respondents signed an informed consent form. The researcher completely abides by ethical research and publication norms as an author by making sure that her work is accurately reported, objectively analyzed, and sufficiently detailed for repeatability. The author pledges to be transparent by supplying and keeping data as needed. Her work is original, and any information that is used is cited. Private information shall not be utilized without express written agreement, and plagiarism or misrepresentation of any kind is strictly prohibited. The author preserves academic research's credibility and integrity by adhering to these guidelines.

3.0 Results and Discussion

3.1 Barangay Profile

Demographics

As shown in Table 1, the demographic distribution of the five barangays presents significant implications for local governance, resource allocation, and development planning. With 70% of the population concentrated in Nuesa, Rizal, and Bantug, these barangays will likely require more extensive infrastructure, social services, and economic support. The higher demand for education, healthcare, and employment opportunities in these areas necessitates targeted policy interventions to ensure sustainable development and equitable resource distribution.

Table 1. *Demographic Profile of the High-Income Barangays*

Barangay	Total Population	%	Female	%	Male	%	Total land area (has)	%
Nuesa	6,867	24.38	3,379	23.79	3,451	24.72	533,370	61.93
Vira	4,285	15.21	2,265	15.95	2,020	14.47	51,479.16	5.98
Rizal	6,636	23.56	3,403	23.96	3,233	23.15	236,342.40	27.44
Bantug	6,180	21.94	3,061	21.55	3,119	22.34	38,576.13	4.48
Simimbaan	4,198	14.9	2,096	14.76	2,140	15.33	1,478.98	0.17
Total	**28,166**	**100**	**14,204**	**100**	**13,963**	**100**	**861,246.67**	**100**

Proximity to transportation and healthcare infrastructures plays a crucial role in population growth and service accessibility (Tripathi, 2017). Additionally, research indicated that the cost and effectiveness of providing public services are greatly impacted by population density. Higher population densities escalate the costs of delivering essential services, reinforcing the need for adequate facilities and efficient urban planning (Ladd, 1992). This underscores the necessity of strategic urban planning in high-density communities to enhance service delivery and overall quality of life. Given these findings, local policymakers must prioritize investments in infrastructure, healthcare, and education in the most populated barangays. Expanding public facilities, improving transportation networks, and strengthening social programs will be critical in addressing the growing needs of these communities. At the same time, ensuring balanced development across all barangays will require adaptive policies that consider both population size and land availability.

Gender distribution across barangays can significantly influence local labor force participation and necessitate tailored policy interventions. In the Philippines, labor force participation remains gendered, with men having a higher participation rate (72.4%) compared to women (47.1%) (Philippine Statistics Authority, 2023). This disparity suggests that barangays with a higher male population, such as Simimbaan, may experience different labor force dynamics, requiring employment programs suited to male-dominated industries. Conversely, barangays like Rizal, with a greater number of females, may benefit from targeted interventions in healthcare services, child welfare programs, and initiatives for the financial freedom of women. The Philippine government's enactment of Republic Act 9710, known as the Magna Carta of Women, underscores the need for gender-sensitive policies by ensuring substantive equality between women and men (Philippine Commission on Women, 2009). Implementing tailored approaches in employment and social services aligns with national efforts to promote gender equality and address specific community needs effectively.

The stark disparity in land area distribution also carries important development implications. Nuesa and Rizal, which occupy the largest land areas, present opportunities for agricultural expansion, urbanization, or conservation initiatives. The vast land holdings in these barangays could be leveraged for agribusiness, housing developments, or environmental protection programs. Meanwhile, the limited land area of Simimbaan—constituting only 0.17% of the total—suggests constraints in land-based economic activities, potentially requiring alternative income-generating initiatives such as service-oriented industries or small-scale enterprises. Given these demographic and spatial variations, a differentiated approach to planning and policy-making is essential. High-population barangays should receive priority in social service delivery, while land-rich areas should be assessed for sustainable land use and development projects. Addressing gender differences and economic opportunities in each barangay will ensure that policies are equitable and responsive to local needs.

3.2 Economic Indicators

Agriculture

Farmers participate in various revenue-generating activities to increase food security and lessen income instability (Pede, et al., 2024). As shown in Table 2, diversified farming in Roxas greatly supports households and increases households' income. The area's participation in a range of agricultural pursuits, including the rearing of fish, pigs, goats, and poultry, points to a flexible strategy for addressing both environmental and economic issues. Diversity in Roxas protects against monetary losses brought on by unstable markets or the climate and aids in the survival of lower-income households.

Table 2. *Economic Indicator in Terms of Agriculture*

Barangay	Major Crops					Livestock				Poultry	Fishery	
	Ric.	Cor.	Tob.	Vg.	Cw	Car.	Pig	Gt.	Shp.	Chic.	Til.	Phil. Cf.
Sotero Nuesa	/	/	/	/		/	/	/		/		
Vira	/	/				/	/			/		
Rizal	/	/		/		/						
Bantug	/					/						
Simimbaan	/	/	/	/	/	/	/	/	/	/	/	/

Ric.=rice; Cor.=corn; Tob.=tobacco; Vg.=vegetables; Cw=cow; Car.=carabao; Gt.=goat; Shp.=sheep; Chic.=chicken; Til.=tilapia; Phil. Cf.=Philippine catfish

Crop production. Rice and corn dominate agricultural production across most barangays, underscoring their importance as staple food sources and economic drivers. However, Simimbaan stands out for its highly diversified crop production, including rice, corn, tobacco, and vegetables. This level of agricultural diversity enhances the barangay's resilience to market volatility and environmental stressors, ensuring a stable food supply and economic sustainability. Conversely, the limited crop variety in Bantug and Vira suggests a greater dependency on external food sources or other agricultural sectors, highlighting the need for targeted interventions to promote agricultural expansion and self-sufficiency.

Livestock production. Livestock production serves as a vital income stream and food source, with some barangays demonstrating significant engagement in animal husbandry. Sotero Nuesa and Simimbaan exhibit the most diversified livestock operations, providing farmers with multiple revenue sources that enhance financial stability. Simimbaan, in particular, leads in poultry and livestock farming, reflecting a well-rounded agricultural economy. In contrast, the lower engagement in livestock production in Vira, Rizal, and Bantug may indicate limited access to resources, land constraints, or a stronger reliance on crop production. Understanding these disparities is essential for policymakers to support agricultural diversification and economic resilience in barangays with less livestock activity.

Fishery. While fisheries exist in some barangays, they remain a secondary agricultural activity compared to crop and livestock farming. Simimbaan has the most active fisheries sector, suggesting that it benefits from better access to water resources or a community preference for aquaculture.

The variations in agricultural activities across barangays highlight the need for localized development strategies. Barangays with diverse farming activities, such as Simimbaan and Sotero Nuesa, can serve as models for integrated agricultural systems, while those with limited crop or livestock production may benefit from targeted support, such as improved access to agricultural inputs, technology, and training programs. Strengthening

fisheries in barangays with water resources could also help diversify income sources and improve food security. By addressing these disparities through policy interventions and agricultural investments, local governments can enhance economic resilience and ensure sustainable agricultural growth.

Commerce/trade and industry. Barangays Rizal and Bantug serve as key economic centers in the Mallig Plains Region, supported by the presence of various banking, finance, and credit institutions (see Figure 1). The availability of financial services, ranging from microfinance groups to major commercial banks, plays a critical role in stimulating local economic activity. Access to credit and banking services enables small businesses, farmers, and entrepreneurs to secure capital, expand operations, and improve livelihoods, thereby fostering inclusive economic growth.

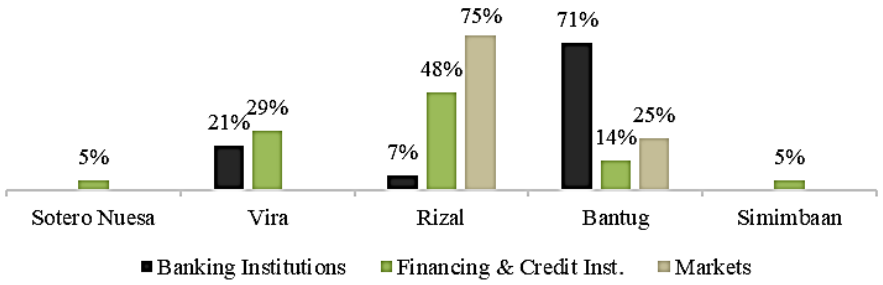

Figure 1. *Economic Indicator in terms of Commerce/Trade and Industry*

Public marketplaces further strengthen economic activity in barangays Rizal and Bantug, creating hubs for trade and commerce. Meanwhile, Barangay Vira, with financial institutions such as the Land Bank of the Philippines, highlights the expanding reach of banking services in the area. The accessibility of financial networks in other barangays, including Nuesa and Simimbaan, suggests a well-integrated financial system that supports investment in agriculture, small enterprises, and local trade.

The economic infrastructure of Roxas, Isabela, aligns with broader national trends in rural banking and microfinance, which are essential in providing financial services to underserved areas. By offering loans and credit options to small-scale entrepreneurs and farmers, these financial institutions contribute to reducing economic disparities and fostering long-term community resilience. Strengthening the financial sector in rural areas not only enhances economic opportunities but also promotes financial inclusion, ensuring that both businesses and individuals can participate in the region's economic growth.

3.3 Social Indicators

Health and Nutrition

Because of the decentralized structure of the Philippine healthcare system, Barangay Health Workers (BHWs) are dispersed throughout several barangays (see Figure 2). The Local Government Code granted barangays the power to run their healthcare systems in compliance with local needs and available resources by shifting primary healthcare duties from the federal government to local government units (LGUs) in 1991 (Lakshminarayanan, 2003). As a result of this decentralization, the number of BHWs in a barangay is determined by a variety of factors, including population size, health priorities, local government funding, and the incidence of certain health disorders.

For instance, despite having a smaller population, Simimbaan employs more BHWs for health and nutrition services than Rizal, one of the most populous barangays (Figure 2). This suggests that specific health conditions and local leadership may impact the deployment of medical staff. Research indicates that training, support systems, and governance frameworks affect BHW's success (Taburnal, 2017). Additionally, because LGUs' ability to employ and retain medical staff depends on their internal revenue allocation and local income, healthcare quality differs between barangays (Tejero et al., 2022). The viability and efficacy of BHWs depend on continuous financial support and capacity-building from national and local government agencies.

Potable water access is essential for sanitation and public health, especially in rural areas. Due to their low maintenance costs, affordability, and lack of reliance on power, hand pumps continue to be the most popular source of drinking water in many underdeveloped nations, according to studies (Kumpel & Nelson, 2013). Hand pumps are the primary and widely used source of drinkable water in all barangays in Roxas, Isabela (Figure 3). Faucets and free-flowing water systems, which need electricity or a water provider subscription, are only available in more developed barangays. Centralized water distribution systems are frequently limited to areas with larger population densities and economic activity (Montgomery, et al., 2009). This discrepancy is apparent in Roxas since barangays away from the commercial center, such as Simimbaan, cannot access highly mechanized water supplies. Jetmatic pumps—renowned for their effectiveness in extracting groundwater—are among the rarest, only found in Bantug and Rizal.

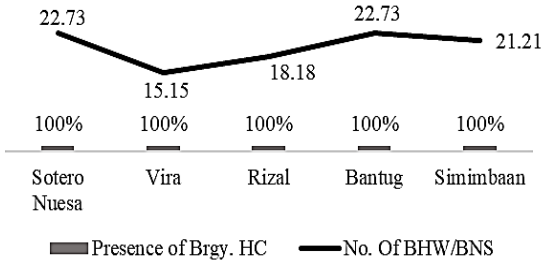

Figure 2. *Barangay Health Centers and BHWs/BNS*

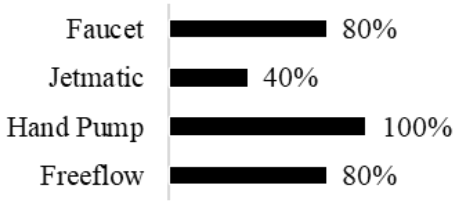

Figure 3. *Source of Potable Water*

Education

Various schools offering different degrees/levels of formal education, from nursery to secondary education, are found in the high-income barangays (Figure 4). Most common schools in the high-income barangays are public schools focused on primary education, followed by private schools offering vocational courses.

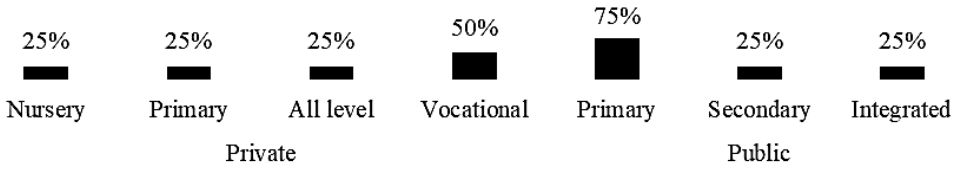

Figure 4. *Social Indicator in terms of Education*

In the Philippines, the distribution of educational facilities indicates larger national patterns in the delivery of formal education. Public schools mainly provide primary education, although private institutions frequently offer higher education and vocational training. Kindergarten, elementary school (grades 1–6), junior high school (grades 7–10), and senior high school (grades 11–12) comprise the county's mandated basic education program. Basic education is overseen by the Department of Education (DepEd); the Commission on Higher Education (CHED) is in charge of higher education; and the Technical Education and Skills Development Authority (TESDA) is in charge of technical and vocational education. The intention of giving official basic education to the residents is evident in the proliferation of public elementary schools that exist in the barangays. Private schools are also very important in accomplishing different learning goals by providing specialized courses, including vocational training. There is a cohesive and balanced educational system that results from the collaboration between the public and private sectors.

Social Welfare and Protective Services

Daycare Centers. To address the developmental needs of young children, particularly those from vulnerable populations, daycare centers have been strategically established across the five barangays (Figure 5). Early Childhood Education And Care (ECCD) programs support children's mental abilities and physical, emotional, and social development to guarantee that vulnerable children receive the proper care and education early (De Los

Angeles-Bautista, 2001). Access to adequate healthcare, nutrition, responsive care, a safe environment, and high-quality early education must all be part of these programs (Ulep et al., 2024).

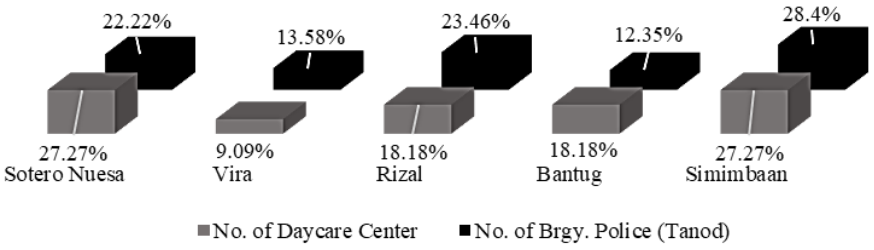

Figure 5. *Social Indicators in terms of Social Welfare and Protective Services*

Nuesa and Simimbaan have the highest number of daycare centers, reflecting a strong commitment to accessible early childhood education. The pattern of how these centers is distributed suggests a concerted effort to ensure that children in these neighborhoods are provided with the early learning experiences they need for long-term intellectual and social development. Barangays with lots of childcare centers are consistent with national policies that promote ECCD, which recognize the vital role that ECCD plays in shaping children's learning, overall development, and well-being in the future.

Protective Services. Barangay police officers, locally known as *Tanods* have a crucial part in the peace and order maintenance. Each barangay provides necessary services to promote social welfare and ensure the protection of its people. With 28.40% of the total number of barangay police officers, Simimbaan has the most among the five barangays despite having the smallest population (Figure 5). *Tanods* and other barangay officials are paid honoraria under the Local Government Code of 1991, and local government entities can change the rates (Department of Budget and Management, 2012). Geographical location and perceived vulnerability are essential elements that influence the number of Barangay Tanods, which fluctuates depending on particular requirements and situations. Because of their remote location and possible hazards, barangays further from the municipality's core, like Simimbaan, could place a higher priority on security. Initiatives like the *Revitalized Pulis sa Barangay* (R-PSB) program, which seeks to improve police presence and community interaction in rural areas, align with this tactical use of *Tanods*. Under this initiative, police officers are assigned to barangays to immediately address community problems and collect information on peace and order (Philippine News Agency, 2024).

3.4 Infrastructure Indicators

Simimbaan stands out as the primary hub for rice milling infrastructure, accounting for 75% of all rice milling stations (Figure 6). It is also the only barangay with a flatbed dryer, a system that improves post-harvest processing, ensuring better grain quality and reducing losses. By lowering reliance on sun drying, which can be ineffective and highly weather-dependent, access to mechanical post-harvest devices such as flatbed dryers improves rice quality. These dryers are also economical and eco-friendly for smallholder farmers.

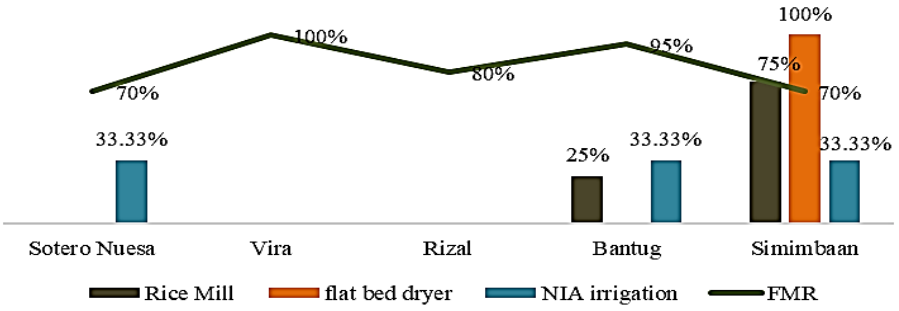

Figure 6. *Infrastructure Indicator*

Irrigation infrastructure is vital in sustainable rice cultivation, particularly in agriculturally dependent communities. National Irrigation Administration (NIA) ensures adequate water supply for crop production in Simimbaan, Bantug, and Nuesa. Increased access to irrigation enhances smallholder farmers' production and food security (Food and Agriculture Organization of the United Nations (FAO) Sub-Regional Office for East and Southern Africa (SAFR), 2000). Reliable irrigation systems help stabilize crop yields, making them essential for sustaining agricultural productivity in rural communities. The Infrastructure for Rural Productivity Enhancement Sector (InfRES) initiative has also demonstrated that improved irrigation and road systems can significantly reduce poverty in agricultural areas.

Farm-to-market highways increase market accessibility and lower transportation costs, further boosting agricultural productivity. While all barangays have such roads, their conditions vary. Vira has fully concrete farm-to-market roads, Bantug's infrastructure is 95% complete, Nuesa and Simimbaan have 70% concrete roads, and Rizal has achieved 80% completion. Well-developed road networks facilitate the efficient movement of goods, benefiting producers and consumers. Improved road connectivity boosts agricultural trade, lowers post-harvest losses, and enhances rural economic growth. Rural road networks have been greatly improved by the Philippine Rural Development Project (PRDP), which helps agricultural producers access markets (World Bank, 2023).

Farm-to-market roads, irrigation systems, flatbed dryers, and rice milling facilities all work together to highlight how crucial comprehensive agricultural infrastructure is to rural development. Farmers may process and transport their harvests more efficiently due to these facilities, which reduces costs and increases total production. Market accessibility and poverty reduction in agricultural regions have been greatly aided by investments in rural infrastructure, such as those made under PRDP and InfRES. The presence of these infrastructures in barangays like Simimbaan highlights their crucial role in supporting sustainable farming and economic growth.

3.5 Local Fiscal Administration

Budget allocation is a critical factor in shaping local development, as it determines how financial resources are distributed among economic, social, infrastructure, and environmental initiatives. The disparities in allocation among the barangays of Roxas, Isabela, reflect strategic financial planning that aligns with specific local needs and priorities (Table 3). Rural communities investing in economic initiatives experience increased local revenue and business expansion (Vera & Kim, 2003). Simimbaan's significant allocation to economic development underscores its focus on agricultural and business growth. On the other hand, Bantug, which recorded the lowest social development indicators, directed the highest budget toward social services to enhance healthcare, education, and welfare. Studies suggest that local governments with lower social indices prioritize social investments to reduce disparities and improve community well-being (Serageldin et al., 2006).

Table 3. *Local Fiscal Administration of the High-Income Barangays of Roxas, Isabela (2023)*

Barangay	Annual budget	20% Development Fund Distribution				
		Econ. Devt	Soc. Devt.	Infra. Devt	Envr. Devt.	Total
Nuesa	$127,075.27	$4,230.01	$12,718.72	-	$8,466.33	$25,415.05
Vira	$95,000.97	$2,539.90	$10,703.20	-	$5,757.10	$19,000.19
Rizal	$132,682.76	$2,878.55	$5,607.80	$12,699.49	$5,350.72	$26,536.55
Bantug	$138,618.95	$1,015.96	$20,436.74	-	$6,271.10	$27,723.79
Simimbaan	$91,377.08	$5,625.03	$7,062.61	-	$5,587.77	$18,275.42

Infrastructure development remains a key focus in Rizal, the only barangay that explicitly allocated funds for this sector. Investments in infrastructure enhance land value, improve economic linkages, and facilitate efficient transportation, which is critical for long-term development (National Economic and Development Authority, 2021). Meanwhile, Nuesa's substantial environmental development budget reflects a proactive approach to disaster risk reduction, particularly given its vulnerability to flooding. Barangays in high-risk areas often prioritize environmental resilience to mitigate climate-related risks and ensure sustainable growth (Pulhin & Tapia-Villamayor, 2022). The variations in budget distribution illustrate how barangays align their financial resources with their most pressing concerns. Some prioritize economic stimulation, while others emphasize social welfare, infrastructure improvements, or environmental sustainability. Ensuring balanced financial planning and maximizing budget impact will foster long-term resilience and inclusive development across these communities.

3.6 The Barangay's Unmet Needs

Outstanding needs are the discrepancy between a community's actual level of life and the services it needs (Carandang et al., 2019). Addressing these needs is crucial for improving social welfare, economic stability, and community resilience. The availability of medical facilities and services is one of the most urgent unmet needs in the social sector. The need for healthcare is higher in the five barangays (Figure 7). However, issues such as staffing shortages, drug supply concerns, and limited access to primary healthcare facilities, particularly for older residents, further exacerbate the problem. Educational aid is another critical necessity to support community development.

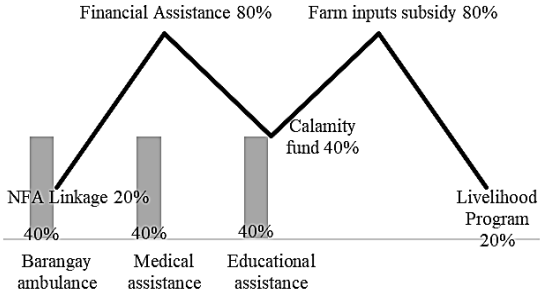

Figure 7. *Socio-Economic Unmet Needs*

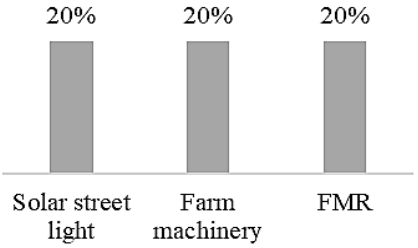

Figure 8. *Infrastructure and Technological Unmet Needs*

Economically, financial assistance, calamity funds, farm input subsidies, and livelihood development programs remain insufficient. Rice producers have faced economic hardships following the implementation of the Rice Tariffication Law, mainly due to declining prices. Increased rice imports led merchants to lower prices within the first year of the law's enactment, costing Filipino farmers an estimated 90 billion pesos (Eco-Business, 2024). Farmers emphasize the need for stronger linkages with the National Food Authority (NFA) to mitigate these effects, which offers more favorable rice-buying rates. As shown in Figure 8, technological needs include improved access to farm equipment and solar-powered street lights. Infrastructure gaps, such as the construction of farm-to-market roads and the completion of evacuation centers, remain unaddressed. Closing these disparities is essential for raising living standards and ensuring the sustainable development of these barangays.

3.7 The Suitability of the Barangays on Projects/Programs funded by SUCs, GOs, and NGOs

Strategic resource allocation based on barangays' distinct requirements and capabilities is vital because of their crucial part in local economic growth and service delivery. The Cities and Municipalities Competitiveness Index highlights infrastructure, resilience, government efficiency, and economic dynamism as key pillars guiding barangay development (Department of Trade and Industry, n.d.). By directing investments where they are most needed, barangays can enhance living standards and promote sustainable growth. Simimbaan, with the highest economic indicator (6.75%), presents strong potential for projects that support local industries, entrepreneurship, and agricultural value chains (see Table 4). Investments in microfinance and business development would reinforce economic self-sufficiency and generate employment. Conversely, Vira, which has the lowest economic indicator (4.65%), requires foundational support, including financial assistance and skill-building programs, to stimulate economic activity. Strengthening Vira's economic base through targeted interventions can create long-term, sustainable growth opportunities (Lavado et al., 2009).

Table 4. *Perceived Suitability Level of the Barangays for Adopt-a-Barangay Programs*

Barangay	EI (20%)	SI (20%)	T/I (20%)	Envr. (20%)	UN (20%)	CI	R
Nuesa	5.06	6.23	6.00	5.39	3.81	26.49	4.00
Vira	4.65	4.48	6.67	3.66	1.90	21.37	5.00
Rizal	5.07	6.63	12.00	3.40	4.76	31.87	1.00
Bantug	4.86	7.78	7.67	3.99	5.71	30.01	3.00
Simimbaan	6.75	5.31	11.33	3.56	3.81	30.76	2.00

EI=economic indicator; SI=social indicator; T/I=Technological/Infrastructure; Envr.=environmental; UN=unmet needs; CI=composite index; R=rank

Social development programs also play a crucial role in improving community welfare. Bantug, with the highest social development indicator (7.78%), is well-positioned for initiatives focused on education, healthcare, and social welfare. Expanding access to education, community health programs, and protection services would reinforce its

existing strengths. However, if the goal is to assist the most underserved, Vira, which ranks lowest in social development (4.48%), should be prioritized for basic social service programs to ensure marginalized communities receive essential support. The Support to Barangay Development Program (SBDP) has demonstrated the effectiveness of targeted social interventions in addressing community needs (National Task Force to End Local Communist Armed Conflict, 2024). Addressing infrastructure gaps is equally essential, as it directly impacts economic activity and connectivity. Rizal, the only barangay with a dedicated infrastructure budget, and Simimbaan, which has the highest indicator for completed infrastructure projects, are ideal for further investments in transportation, communication, and energy facilities. Expanding road networks, constructing multipurpose halls, and enhancing internet connectivity in these barangays would strengthen economic linkages and facilitate business expansion. Infrastructure investment plays a vital role in enhancing resilience, productivity, and overall economic activity (Gido, 2021).

Environmental sustainability must also be prioritized to ensure long-term resilience. Nuesa, with the highest environmental development indicator (5.39%), is best suited for climate adaptation initiatives, reforestation, and disaster risk reduction programs. Investments in flood control, waste management, and renewable energy projects would strengthen its environmental sustainability. Integrating ecological strategies into development plans ensures long-term environmental protection and disaster resilience (National Barangay Operations Office-Department of the Interior and Local Government, 2020).

Furthermore, addressing unmet needs is crucial for holistic development. Bantug, with the highest indicator for unmet needs (5.71%), is the most suitable beneficiary for multi-sectoral programs that address infrastructure deficits, social service gaps, and economic constraints. A comprehensive approach targeting these deficiencies would create more equitable development outcomes. Rizal, having the highest composite index score, is well-positioned for large-scale, fully funded initiatives that integrate economic, social, and infrastructure development. By aligning resources with each barangay's specific needs, policymakers can ensure long-term, inclusive progress across various sectors.

Strategic investment in barangays based on their development indicators ensures that resources are directed where they have the highest impact. Economic growth, social services, infrastructure, and environmental sustainability must be balanced to create inclusive and resilient communities. Tailored interventions that address barangay-specific challenges and opportunities will drive long-term, sustainable progress, fostering economic stability and improved quality of life for residents.

4.0 Conclusion

This study highlights significant disparities in demographics, economic activities, social services, infrastructure, and environmental sustainability across the five barangays. While Nuesa, Rizal, and Bantug require enhanced infrastructure, healthcare, and education services to accommodate their larger populations, barangays with limited land and resources must explore alternative economic activities. Economic indicators emphasize the importance of agricultural diversification, financial accessibility, and localized trade networks, while social indicators reveal gaps in healthcare distribution, education, and social welfare services. Infrastructure remains a crucial driver of economic growth, with disparities in irrigation systems, road connectivity, and post-harvest facilities affecting productivity and market access.

One of this study's main contributions is its barangay-specific approach to development planning. By identifying priority areas for investment—whether in economic growth, social development, infrastructure, or environmental resilience—this study provides a data-driven foundation for targeted policy interventions. The findings underscore the importance of aligning budget allocations with barangay needs, ensuring financial resources are directed toward the most pressing community concerns. According to the results, tackling disparities across the five barangays necessitates focused, barangay-specific approaches that concentrate on the following four key issues: environmental resilience, infrastructure expansion, social development, and economic growth.

Initiatives should improve agricultural production, increase market accessibility, and fortify financial services to promote economic growth. In barangays with limited land, diversification should be prioritized. To empower marginalized communities, social development initiatives must provide access to healthcare, broaden educational

opportunities, and strengthen social welfare services. In order to increase productivity and enhance market connection, infrastructure expansion is essential and calls for investments in public amenities, road networks, and irrigation systems. To protect communities, putting environmental resilience first entails putting disaster preparedness plans, climate adaption strategies, and sustainable land use planning into action. By using these focused strategies, we can make sure that every barangay gets the help it needs to overcome its unique obstacles.

The success of these development projects depends on the active collaboration between state universities, business sector partners, local government entities, and non-governmental groups. Establishing long-term partnerships through joint funding, capacity-building programs, and policy integration will help ensure that barangay-specific strategies are effectively implemented and maintained over time. Future research should assess the long-term impact of current barangay policies, particularly on agricultural sustainability, financial inclusion, and disaster risk reduction. Additionally, evaluating public-private partnerships can provide insights into sustainable funding models and resource-sharing mechanisms. By adopting a data-driven, stakeholder-driven, and sustainable approach, barangays can achieve inclusive growth, enhanced community resilience, and long-term development. Prioritizing strategic interventions today will create stronger, more self-sufficient communities in the future.

5.0 Contributions of Author

The author was responsible for creating the research proposal to managing the data collection process, consolidation, analysis, and interpretation. She concluded by synthesizing the data into a thorough discussion and offering recommendations for sustainable development.

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7.0 Conflict of Interests

The author affirms that there are no conflicts of interest. The study was carried out on its own, free from outside interference that may have impacted the analysis, conclusions, or objectivity.

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