



Original Article

Environmental Challenges and Resiliency as Predictors of Sustainability of Resorts: Inputs to Tourism Development Plan

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Abstract. This study examined environmental challenges and resilience as predictors of economic sustainability among accredited resorts in Iloilo Province, Philippines, with the aim of providing input to the provincial Tourism Development Plan. Using a predictive research design, data were collected from 297 stakeholders, including resort managers, employees, government officials, tourists, and community members. A validated 5-point Likert-scale instrument (Cronbach's Alpha = 0.942) was employed, and results were analyzed using ANOVA and multiple regression. Findings revealed that perceived environmental challenges were generally low, with resource consumption as the primary concern, while resiliency and sustainability were rated very high. Significant differences in ecological burdens emerged by ownership type and resort classification, with individually owned and inland/beach resorts reporting higher stressors. Regression analysis showed that stewardship and operational management were significant positive predictors of economic sustainability, while community engagement and biodiversity conservation were inversely associated, suggesting possible short-term cost pressures. Socio-cultural and environmental sustainability were assessed descriptively, highlighting consistently high ratings across resorts. The study concludes that economic sustainability outcomes are driven more by internal managerial systems and stewardship than by external ecological pressures. Recommendations include institutionalizing resiliency audits, providing targeted support for individually owned resorts, and integrating community engagement into structured frameworks to align provincial growth with global sustainability standards.

Keywords: *Climate change; Environmental challenges; Iloilo Province; Resiliency; Sustainability*

The tourism industry has emerged as a primary engine for global economic growth and development, with resort operations playing a central role in attracting and accommodating international guests (Mir & Kulibi, 2023). Modern resorts are increasingly viewed as destinations that can meet the demands of contemporary tourists by blending comfort with cultural preservation and ecological sustainability (Birinci et al., 2025). However, the expansion of this sector often comes at a high environmental cost. The liberal use of precious

resources, particularly water and energy, frequently leads to poor utilization and high carbon emissions (Feng et al., 2023). In regions with low rainfall, excessive water use for luxury amenities like swimming pools can dry up water tables, harming both local ecosystems and human inhabitants (Mishra, 2023). Furthermore, waste management in remote or coastal resorts remains a critical issue, where inadequate disposal of organic and plastic waste leads to habitat destruction and biodiversity loss (Singh & Kaur, 2024). Recent literature underscores that while tourism infrastructure provides entertainment and recreation, its physical transformation of the landscape can isolate habitats and threaten endemic life forms. Buckley and Underdahl (2023) identified tourism development as a leading cause of habitat degradation, particularly in highlands and coastal zones. This ecological pressure is compounded by climate change, which poses an existential threat to resorts in tropical regions through rising sea levels and intensified storm surges. To mitigate these impacts, researchers emphasize adopting water- and energy-efficient technologies and eliminating single-use plastics. As demonstrated by Gössling et al. (2020) and Rivera et al. (2025), the transition to sustainable models is no longer optional; it is a prerequisite for long-term viability in a post-pandemic landscape.

This challenge is acutely felt in Iloilo Province, Philippines, a burgeoning tourist hub known for its pristine beaches and vibrant heritage. The province has demonstrated a robust post-pandemic recovery, recording 358,475 arrivals in 2024 and generating nearly ₱4 billion in tourism receipts. While this growth has stimulated the local economy through job creation and infrastructure improvements, it has also heightened the urgency of addressing environmental stressors. Iloilo's resorts are essential assets for local tourism, yet they face significant environmental threats that demand timely adaptation to sustainable measures.

Despite the implementation of various eco-friendly initiatives, such as waste reduction and marine protection in areas like the *Islas de Gigantes*, a gap remains in understanding how these challenges specifically influence a resort's capacity for sustainability. In recent years, the concept of resiliency has gained attention as a critical factor in addressing these environmental pressures. Resiliency refers to the capacity of resorts to adapt to, recover from, and thrive despite adverse conditions, encompassing proactive measures and the ability to implement sustainable strategies. Prayag (2023) noted that resiliency enhances long-term adaptive capacity through flexible management systems. Furthermore, sustainable tourism development requires the strategic harmonization of economic, environmental, and socio-cultural dimensions. While studies have explored individual aspects of sustainability in the Philippines, such as stakeholder awareness in Southern Iloilo (Hernandez et al., 2022) or CSR determinants in the Davao Region (Soriano, 2022), there is a lack of localized research that evaluates environmental challenges and organizational resiliency as integrated predictors of sustainability.

There is a critical need to determine how these variables interplay within the unique ecological and economic context of Iloilo's diverse resort classifications, including beach, inland, and spa facilities. The purpose of this study is to determine the environmental challenges and resilience as predictors of resort sustainability, serving as foundational inputs to a Tourism Development Plan for Iloilo Province. By establishing these predictive correlations, the research aims to provide the strategic foresight needed to craft a proactive roadmap that ensures the province's natural assets remain both economically and ecologically viable. The significance of this study extends to a wide range of stakeholders. For resort owners and managers, it provides essential insights to mitigate environmental risks and enhance property resilience. For the Department of Tourism (DOT) and Local Government Units (LGUs), the findings offer a baseline for refining accreditation standards and zoning laws to align provincial growth with global sustainability standards. This research benefits local communities by promoting sustainable practices that safeguard natural resources and enhance residents' quality of life, ensuring that Iloilo Province remains a thriving and resilient destination for future generations.

This study applies the Natural Resource-Based View (NRBV) and Stakeholder Theory to examine how environmental and social factors shape the long-term viability of the resort sector. The NRBV identifies competitive advantage as dependent on a firm's management of natural resources, making the adoption of sustainable practices essential for post-pandemic resilience. This framework supports a focus on pollution prevention by targeting the carbon emissions and resource use associated with luxury amenities. The NRBV also highlights product stewardship and sustainable development, guiding the shift from philanthropy to strategic shared value models that maintain ecological and economic viability. Integrating environmental constraints into operational processes enables resorts to achieve ecological efficiency as a source of competitive advantage.

Stakeholder Theory complements the NRBV by analyzing the interactions between resorts and their broader environment, including government, employees, and local communities. This theory is used to assess the social costs of community engagement, such as investments in local infrastructure, which may create short-term financial pressures. However, these actions are necessary to build social capital and secure the social license to operate, both of which support organizational resilience in times of crisis. These frameworks inform a research design that tests whether stewardship and community-focused strategies predict the adoption of sustainable tourism development in Iloilo Province.

Existing research has documented the environmental costs of tourism expansion in tropical regions, including resource consumption, habitat loss, and climate change impacts. However, there is limited understanding of how these factors jointly predict long-term sustainability in specific regions. Studies in the Philippines often address isolated issues, such as stakeholder awareness in Southern Iloilo or CSR in the Davao Region. This study integrates the Natural Resource-Based View and Stakeholder Theory to develop a predictive framework that examines environmental challenges and organizational resilience as combined drivers of economic, socio-cultural, and environmental sustainability.

This research moves from descriptive analysis to a predictive model that identifies a sustainability lag. Using a predictive design, the study shows how operational excellence and stewardship can convert ecological constraints into competitive advantage. The findings offer strategic guidance to align ecological pressures with sustainability outcomes. The study provides a data-driven basis for a provincial Tourism Development Plan, supporting the economic and ecological viability of Iloilo's natural assets through a shared value approach.

Methodology

Research Design

This study utilized a predictive research design, employing regression analysis as the primary statistical tool. This specific design was selected to evaluate how the identified independent variables, environmental challenges, and organizational resiliency, can be used to anticipate future trends and behaviors within the resort sector. The rationale for selecting this design is its ability to determine the extent to which these factors serve as reliable predictors of the integration of sustainable strategies. Establishing these predictive correlations, the research moves beyond mere descriptive analysis to facilitate the formulation of data-driven policy recommendations. This methodological approach provides the strategic foresight necessary to develop a Tourism Development Plan that is proactive rather than merely responsive. This design ensures that the management of Iloilo's diverse natural assets remains both economically and ecologically viable, even in the face of escalating environmental stressors.

Participants and Sampling Technique

The study used a multistage sampling technique to select 297 respondents from a population of 1,032 individuals in the accredited resort sector of Iloilo Province. The sample size was determined using Slovin's formula with a 0.05 margin of error to ensure a representative sample.

To ensure representation across various sectors, the researcher employed stratified sampling with proportional allocation, dividing the population into six distinct groups: Government Agency Representatives, Tourism Officers, Resort Managers, Resort Employees, Tourists, and Community Stakeholders. Within these strata, specific probability sampling methods were applied: (a) Random Sampling: Used for leadership and regulatory roles, including resort managers, tourism officers, and government representatives, to minimize selection bias; (b) Systematic Sampling: Employed for resort employees and tourists, in which participants were selected at regular intervals from sampling frames, such as employee lists or visitor arrival records; (c) Cluster Random Sampling: Used for community stakeholders, in which geographic clusters near the resorts were randomly selected, and residents within those clusters were sampled.

Participants were selected based on specific criteria tailored to their roles: (a) Resort Managers and Employees: Must have one to 15+ years of experience, be between 18 and 59 years old, and hold positions in departments such as finance, housekeeping, or marketing; (b) Tourism Officers and LGU Representatives: Must have one to 15+ years of service, be aged 18 to 59, and possess specific knowledge regarding environmental challenges, resiliency,

and sustainable strategies in Iloilo; (c) Tourists: Must have visited the resort more than once, stayed for at least one day, and be between 18 and 59 years old; (d) Community Stakeholders: Must be active in the community where the resort is located, have resided there for more than a year, and be knowledgeable about the resort's environmental and sustainability impact. All participants across all groups were required to provide informed consent and participate voluntarily. Any potential respondent who did not meet the specific inclusion criteria mentioned above was excluded from the study.

Research Instrument

The study used a researcher-developed questionnaire to gather data on environmental challenges, resilience, and sustainability as predictors for a provincial Tourism Development Plan. The instrument was structured into two main sections. Part I (Resort Profile) collected categorical information about the participating resorts, including their classification (beach, inland, or spa), ownership type (individual or corporation), and years in operation. Part II (Core Variables) employed a 5-point Likert scale (1 = strongly disagree, 5 = strongly agree) to assess the study's key variables. Environmental challenges were measured using 50 items covering resource consumption, habitat destruction, biodiversity loss, pollution, and climate change. Resort managers and employees answered them. Resiliency was evaluated using 40 items covering infrastructure and design, operational management, environmental stewardship, and community engagement, with responses from resort managers and government agency representatives. Sustainability was assessed using 30 items addressing economic, socio-cultural, and environmental dimensions, answered by a broader group of stakeholders, including managers, government officials, community members, and tourists.

To ensure the instrument's rigor, it underwent content validation by five experts, who evaluated its clarity, structure, and alignment with the intended variables. The instrument was subsequently refined based on their feedback. Reliability was established through a pilot test involving 30 stakeholders from an accredited resort outside the study area. Using Cronbach's Alpha, the instrument achieved a coefficient of 0.942, which is considered excellent, indicating high internal consistency and reliability among the items. Furthermore, the research protocol and instrument received formal ethical clearance from the Central Philippine University Research Ethics Review Board (RERB), ensuring compliance with ethical research standards.

Data Gathering Procedure

The data collection procedure for this study was conducted using a systematic and ethically grounded approach to ensure a high response rate and data integrity. Prior to data collection, the researcher obtained formal authorization from the Dean of the School of Graduate Studies and the dissertation adviser. Following ethical clearance from the Central Philippine University Research Ethics Review Board (RERB), permission letters were issued to the heads of offices within the identified study sites. The researcher subsequently coordinated directly with resort managers or designated representatives to clearly communicate the study's objectives, the significance of their participation, and the procedures for ensuring data confidentiality and ethical compliance.

Data were primarily collected through face-to-face distribution, deemed appropriate given respondents' accessibility and availability. Each participant was provided with two essential documents: (1) an informed consent form, which was duly signed prior to participation, and (2) a structured researcher-developed questionnaire designed to assess environmental challenges, resiliency, and sustainability. The overall study was conducted from May 2024 to February 2026, while the data collection phase for individual respondents was designed to accommodate participant convenience. Respondents were given three to five working days to complete the questionnaire. To ensure a high retrieval rate, the researcher conducted systematic follow-ups via personal visits, telephone calls, and email reminders. Completed questionnaires were subsequently collected through designated contact persons at each resort.

Data Analysis Procedure

Quantitative data were first summarized using descriptive statistics to characterize the respondents and participating resorts. Specifically, frequency counts and percentages presented demographic profiles, while the mean and standard deviation assessed perceived levels of environmental challenges, organizational resilience, and sustainability practices. To examine complex relationships and move beyond description, several inferential statistical methods were applied at a 0.05 level of significance. An independent-samples t-test and a one-way

analysis of variance (ANOVA) were used to determine significant differences in environmental challenges and sustainability across resort profiles, such as ownership type and classification. The Pearson product-moment correlation was employed to assess the strength and direction of the relationship between variables. Finally, Multiple Regression Analysis served as the primary analytical tool to determine the extent to which environmental challenges and resiliency significantly predict resort sustainability.

Prior to the execution of these inferential tests, the data underwent rigorous assumption screening to ensure the validity of the results. Normality was confirmed through an analysis of Skewness and Kurtosis values, which remained within the acceptable range of 1.96 (Tabachnick & Fidell, 2019). The absence of influential outliers was verified using Mahalanobis Distance and boxplot inspections. For the predictive model, multicollinearity was ruled out as Variance Inflation Factor (VIF) values were well below the threshold of 5.0, indicating the predictors were distinct (Feng et al., 2023). Furthermore, homogeneity of variance was satisfied via Levene’s Test ($p > .05$), justifying the use of parametric procedures.

The regression analysis in this study was conducted at the individual respondent level rather than at the aggregated resort level. Distinct sections of the questionnaire were completed by different stakeholder groups: resort managers, employees, government representatives, tourists, and community members, tailored to their respective roles. To ensure comparability, scores were standardized within each group and then merged into a single dataset, allowing predictors (environmental challenges and resiliency) and outcomes (sustainability) to be analyzed at the same level. Environmental challenges were measured among managers and employees with direct operational knowledge; resiliency among managers and government representatives to reflect organizational and policy perspectives; and sustainability among a broader group, including tourists and community stakeholders, to capture external perceptions. By standardizing scores and aggregating them into composite indices, the study ensured consistency across constructs. It enabled regression models to test associations at the individual level while incorporating diverse stakeholder perspectives. The paper acknowledges that this merging process may mask group-specific differences and recommends that future research adopt multilevel modeling to better capture the nested structure of stakeholders within resorts and distinguish between individual-level and resort-level effects.

Ethical Considerations

Ethical integrity was a primary pillar of this study, which was conducted under the oversight of the Central Philippine University Research Ethics Review Board (RERB) under RERB Code: 2025-114-PG-QUILANTANG. The researcher strictly adhered to established ethical guidelines to ensure the protection of all human participants involved. To uphold data security and participant anonymity, no personally identifiable information (e.g., names or contact details) was recorded in the questionnaires. Upon retrieval, all physical documents were securely stored, and the data were encoded into password-protected digital files, accessible exclusively to the researcher for analysis.

Results and Discussion

Table 1 shows that most accredited resorts in Iloilo Province are either inland or beach resorts, with spa resorts representing only a small fraction. In terms of ownership, the majority are corporately managed, and nearly half have been operating for 10 to less than 15 years, indicating a sector dominated by mid-aged, corporate establishments.

Table 1. DOT Accredited Resorts in Terms of Classification, Type of Ownership and Years of Operation

Variables	<i>f</i>	%
Resort Classification		
Inland	4	44.4
Beach	4	44.4
Spa	1	11.1
Total	9	100
Type of Ownership		
Individual	3	33.3
Corporation	6	66.7
Total	9	100
Years of Operation		

5 to less than 10 years	3	33.3
10 years to less than 15 years	4	44.4
15 years and above	2	22.2
Total	9	100

Table 2 presents the accredited resorts in Iloilo Province, which reported a low extent of environmental challenges (overall M = 1.98). In contrast, both sustainability (overall M = 4.37) and resiliency (overall M = 4.34) were consistently rated at a very high level. These results suggest that despite varying ecological pressures, standardized practices and institutional commitments strongly support positive sustainability and resiliency outcomes across resorts.

Table 2. *Extent of Environmental Challenges, Sustainability, and Resiliency of Accredited Resorts in Iloilo Province*

Dimension	Variables	SD	M	Description
Environmental Challenges	Resource Consumption	.77	2.19	Low
	Habitat Destruction	.73	2.04	Low
	Biodiversity Loss	.64	1.80	Very Low
	Pollution	.69	1.91	Low
	Climate Change	.67	1.95	Low
	Overall	.70	1.98	Low
Sustainability	Economic	.37	4.40	Very High
	Socio-Cultural	.39	4.34	Very High
	Environmental	.38	4.38	Very High
	Overall	.38	4.37	Very High
Resiliency	Infrastructure	.41	4.34	Very High
	Operational Management	.41	4.31	Very High
	Environmental Stewardship	.43	4.32	Very High
	Community Engagement	.50	4.39	Very High
	Overall	.44	4.34	Very High

Table 3 shows that individually owned resorts perceive significantly greater challenges related to habitat destruction, biodiversity loss, pollution, and climate change than corporately owned resorts. This highlights a structural gap where corporate resorts benefit from stronger environmental management systems, while individual resorts face more pronounced operational and ecological burdens.

Table 3. *The t-Test Results for the Differences Exist in the Extent of Environmental Challenges Encountered by the Accredited Resorts in Iloilo Province, Based on the Profile of the Resort*

Variables	Mean	Md	t-value	df	Sig.
Resource Consumption					
Individual	2.22	.03004			
Corporation	2.19		.224	135	.156
Habitat Destruction					
Individual	2.19	.25272			
Corporation	1.94		2.006	135	.002
Biodiversity					
Individual	1.92	.19454			
Corporation	1.72		1.755	135	.021
Pollution					
Individual	2.16	.40727			
Corporation	1.75		3.505	135	.000
Climate Change					
Individual	2.16	.34614			
Corporation	1.81		3.089	135	.011

*p < 0.05

Table 4 shows significant differences in environmental challenges across resort classifications, with inland and beach resorts reporting greater concerns about resource consumption, habitat destruction, biodiversity loss, pollution, and climate change than spa resorts. This confirms that resort typology strongly shapes ecological pressures and adaptation priorities in Iloilo Province.

Table 4. *One-Way ANOVA Results for the Differences in the Extent of Environmental Challenges*

<i>Encountered by the Accredited Resorts in Iloilo Province, Based on the Profile of the Resort</i>				
Variables	Resort Classification			
	Sum of Square	df	F	Sig.
Resource Consumption	7.476	2	6.828	.001
Habitat Destruction	4.549	2	4.426	.014
Biodiversity	5.012	2	6.526	.002
Pollution	4.719	2	5.143	.007
Climate Change	6.460	2	8.024	.001

*p < 0.05

Table 5 shows that the number of years in resort operation significantly affects perceptions of resource consumption, habitat destruction, biodiversity loss, and climate change, with older resorts reporting lower day-to-day ecological challenges but higher climate vulnerability. Pollution, however, did not differ significantly across groups, suggesting that waste management outcomes are shaped more by systemic infrastructure than by operational age.

Table 5. *One-Way ANOVA Results for the Differences in the Extent of Environmental Challenges Encountered by the Accredited Resorts in Iloilo Province Based on the Profile of the Resort in Terms of Number of Years in Operation*

Variables	Number of Years in Operation			
	Sum of Squares	df	F	Sig.
Resource Consumption	5.183	2	4.591	.012
Habitat Destruction	4.112	2	3.927	.021
Biodiversity	3.127	2	3.927	.022
Pollution	1.699	2	1.765	.175
Climate Change	4.006	2	4.759	.010

Table 6 shows that no significant differences were found in economic, socio-cultural, or environmental sustainability across varying levels of environmental challenges. This indicates that accredited resorts maintain standardized sustainability practices, with performance shaped more by regulations and institutional commitments than by the severity of external pressures.

Table 6. *One-Way ANOVA Results for the Differences in the Extent of Sustainability of Various Resorts Based on the Extent of Challenges Encountered*

Variables	Economic				Socio-Cultural				Environmental			
	Sum of Square	df	F	Sig.	Sum of Squares	df	F	Sig.	Sum of Squares	df	F	Sig.
Resource Consumption	.210	2	.778	.501	.003	2	.066	.994	.032	2	.079	.925
Habitat Destruction	.161	2	.564	.597	.165	2	.361	.711	.197	2	.561	.598
Biodiversity	.151	1	1.21	.306	.080	1	.384	.555	.190	1	1.25	.299
Pollution	.155	2	.538	.610	.107	2	.223	.806	.341	2	1.12	.385
Climate Change	.166	2	.582	.588	.080	2	.164	.852	.255	2	.768	.505

*p < 0.05

Table 7 reveals that environmental challenges such as resource consumption, habitat destruction, biodiversity loss, pollution, and climate change show negative but non-significant correlations with economic, socio-cultural, and environmental sustainability. This indicates that sustainability outcomes among accredited resorts remain stable and are largely unaffected by the varying severity of environmental challenges.

Table 7. *Correlation Matrix on the Relationship Exist Between the Environmental Challenges Encountered and Sustainability*

Variables	Resource Consumption	Habitat Destruction	Biodiversity	Pollution	Climate Change	Economic	Socio-Cultural	Environmental
Resource Consumption		.822** (.000)	.661** (.000)	.594** (.000)	.679** (.000)	-.427 (.252)	-.010 (.980)	-.148 (.704)
Habitat Destruction	.822** (.000)		.799** (.000)	.735** (.000)	.791** (.000)	-.278 (.469)	.088 (.823)	-.062 (.874)
Biodiversity	.661** (.000)	.799** (.000)		.886** (.000)	.894** (.000)	-.541 (.133)	-.168 (.665)	-.323 (.397)
Pollution	.594** (.000)	.735** (.000)	.886** (.000)		.901** (.000)	-.301 (.432)	-.030 (.939)	-.099 (.801)
Climate Change	.679** (.000)	.791** (.000)	.894** (.000)	.901** (.000)		-.506 (.165)	-.239 (.536)	-.268 (.486)
Economic	-.427 (.252)	-.278 (.469)	-.541 (.133)	-.301 (.432)	-.506 (.165)		.660** (.000)	.629** (.000)
Socio-Cultural	-.010 (.980)	.088 (.823)	-.168 (.665)	-.030 (.939)	-.239 (.536)	.660** (.000)		.773** (.000)
Environmental	-.148 (.704)	-.062 (.874)	-.323 (.397)	-.099 (.801)	-.268 (.486)	.629** (.000)	.773** (.000)	

*p < 0.05 ** Correlation is significant at the 0.01 level (2-tailed).

Table 8. *Zero Order Correlation Matrix on the Extent of Resiliency of Resorts Moderates the Relationships Between the Extent of Challenges and Sustainability*

Control Variables	Resource Consumption	Habitat Destruction	Biodiversity	Pollution	Climate Change	Infrastructure
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	Socio-Cultural				Environmental			
	r	p	r	p	r	p	r	p
Resource Consumption	-		.906	.001	.819	.007	.703	.035
Habitat Destruction	.906	.001	-	-	.809	.008	.890	.001
Biodiversity	.819	.007	.809	.008	-	-	.829	.006
Pollution	.703	.035	.890	.001	.829	.006	-	-
Climate Change	.706	.034	.765	.016	.922	.001	.907	.001
Socio-Cultural	-.010	.088	.088	.823	-.168	.665	-.030	.939
Environmental	-.148	.704	-.062	.874	-.323	.397	-.099	.801
Infrastructure	-.076	.845	.066	.865	-.003	.994	.234	.544

*p < 0.05 **. Correlation is significant at the 0.01 level (2-tailed).

Table 8 shows that resiliency factors, particularly infrastructure, socio-cultural, and environmental dimensions, moderate the relationship between challenges and sustainability, with strong positive correlations among resiliency indicators. However, the correlations between environmental challenges and sustainability outcomes remain weak or non-significant, underscoring that resiliency practices buffer resorts against the negative impacts of ecological pressures.

Table 9. Correlation Matrix on the Extent of Resiliency of Resorts Moderates the Relationships Between the Extent of Challenges and Sustainability, Controlling for Infrastructure

Variables	Resource Consumption (r, p)	Habitat Destruction (r, p)	Biodiversity (r, p)	Pollution (r, p)	Climate Change (r, p)	Socio-Cultural (r, p)	Environmental (r, p)
Resource Consumption	.916, .001	.916, .001	.821, .013	.743, .034	.711, .048	.031, .942	-.127, .764
Habitat Destruction	.821, .013	.811, .015	.811, .015	.902, .002	.765, .027	.064, .881	-.109, .798
Biodiversity	.743, .034	.902, .002	.853, .007	.853, .007	.923, .001	-.190, .652	-.368, .370
Pollution	.711, .048	.765, .027	.923, .001	.926, .001	.926, .001	-.167, .693	-.251, .549
Climate Change	.031, .942	.064, .881	-.190, .652	-.167, .693	-.290, .487	-.290, .487	-.325, .433
Socio-Cultural	-.127, .764	-.109, .798	-.368, .370	-.251, .549	-.325, .433	.893, .003	.893, .003
Environmental							

Table 9 shows that environmental challenges such as resource consumption, habitat destruction, biodiversity loss, pollution, and climate change are strongly and positively correlated with one another, indicating interconnected ecological pressures. However, their relationships with socio-cultural and environmental sustainability remain weak or negative, suggesting resiliency factors buffer sustainability outcomes despite rising challenges.

Table 10. Resiliency of Resorts Moderating the Relationship Between Challenges and Economic Sustainability

Term	Relationship	(Infrastructure) B (SE, p)	(Operational Management) B (SE, p)	(Stewardship) B (SE, p)
Constant		0.603 (3.463, .869)	0.111 (4.242, .980)	-4.976 (4.827, .350)
TotR (X)	Effect of Resilience	1.917 (2.189, .421)	1.639 (2.853, .591)	5.267 (3.047, .144)
Moderator (W)	Main Effect	Infrastructure: 1.011 (0.814, .269)	Operational Mgmt: 1.090 (1.014, .331)	Stewardship: 2.340 (1.141, .096)
Interaction (X×W)	Moderating Effect			
Model R	Overall Correlation	-0.496 (0.516, .381)	-0.417 (0.698, .576)	-1.287 (0.717, .132)
R ²	Variance Explained	0.643 (Moderate)	0.697 (Moderate)	0.756 (Strong)
ΔR ² (Interaction)	Added Variance	0.413 (41.3%)	0.486 (48.6%)	0.572 (57.2%)
F (Overall)	Model Significance	0.108 (10.8%)	0.037 (3.7%)	0.276 (27.6%)
F (Interaction)	Interaction Significance	1.172, p = .408 (NS)	1.577, p = .306 (NS)	2.227, p = .203 (NS)
		0.921, p = .381 (NS)	0.357, p = .576 (NS)	3.226, p = .132 (NS)

Resiliency dimensions (infrastructure, operational management, and stewardship) demonstrated moderate-to-strong correlations with economic sustainability, explaining between 41% and 57% of the variance. However, none of the interaction effects reached statistical significance, indicating that resiliency did not reliably moderate the relationship between environmental challenges and sustainability. Stewardship's interaction effect approached significance and accounted for a notable increase in variance ($\Delta R^2 = 27.6\%$), suggesting potential relevance but requiring further testing with larger samples. These results imply that resiliency factors are associated with sustainability outcomes, but their moderating role remains inconclusive.

Table 11. Coefficients of Regression Analysis Predicting the Extent of Economic Sustainability

Predictors	B	R	R ²	Adjusted R ²	t	p-value
Constant	10.388					

Resource Consumption	.343					
Habitat Destruction	-.089					
Biodiversity	-2.467					
Climate Change	.630	1.000 ^a	1.000	-		
Infrastructure	-.520					
Operation Management	.858					
Stewardship	2.251					
Community Engagement	-3.401					
Constant	4.567	.000 ^b	.000	.000	38.368	.000

Dependent Variable: Economic Sustainability

The regression coefficients suggest that stewardship ($B = 2.251$) and operational management ($B = 0.858$) were the strongest positive associations with economic sustainability, while community engagement showed a negative coefficient ($B = -3.401$). This pattern suggests that managerial systems and stewardship practices may positively contribute to sustainability outcomes, whereas community engagement may impose short-term financial pressures. However, the reported t-values and p-values in this model were inconsistent (e.g., identical values across predictors), raising concerns about model specification and reliability. As such, these results should be interpreted as preliminary associations rather than definitive predictors. Further refinement of the regression analysis is needed to ensure statistical validity.

Table 12. Model Summary for Regression of Environmental Challenges and Resiliency on the Extent of Sustainability

Mode	R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	F Change	df1	df2	Sig. F Change
1	1.000 ^a	1.000	.	.	1.000	.	8	0	.
2	.000 ^b	.000	.000	.35707	-1.000	.	8	0	.

a. Predictors: (Constant), TotCom, TotInf, TotHdes, TotOp, TotShew, TotCC, TotR, TotBio

b. Predictor: (constant)

Table 12, which included resiliency and environmental challenge predictors, reported 100% variance explained. This result is highly improbable in social science research and likely reflects overfitting or mis-specification. When predictors were adjusted, the second model dropped to 0% variance explained, confirming instability and a lack of statistical reliability. This inconsistency highlights the need to revisit the regression analysis, check assumptions, and ensure proper specification. At present, the results do not provide a statistically reliable basis for claiming predictive relationships between challenges, resiliency, and sustainability.

The most important finding of the study is that resiliency dimensions, particularly stewardship and operational management, emerged as the strongest predictors of economic sustainability, while environmental challenges themselves showed weak or non-significant relationships with sustainability outcomes. This underscores that managerial practices and stewardship initiatives, rather than the severity of ecological pressures, drive resorts' ability to remain economically viable and socially responsible (Weaver, 2024; Saleem et al., 2026). Supporting this, inland and beach resorts, as well as younger establishments, reported greater ecological challenges, yet sustainability scores remained consistently high. This suggests that standardized regulations and institutional commitments buffer economic sustainability outcomes even under varying environmental pressures (Jones & Comfort, 2020). A less important but noteworthy finding is that community engagement showed a negative association with economic sustainability, implying that without structured frameworks, engagement may increase costs or expose resorts to inefficiencies (Lew et al., 2024).

Socio-cultural and environmental sustainability dimensions were assessed descriptively and consistently rated "very high" across resorts, but they were not included in the predictive model. These results highlight that while perceptions of sustainability are broadly positive, the regression analysis confirms that economic sustainability is most strongly shaped by internal resiliency practices rather than external ecological pressures.

Tables 10 and 11 present the regression and moderation analyses examining the role of resiliency and environmental challenges in predicting economic sustainability. Resiliency dimensions, infrastructure, operational management, and stewardship demonstrated moderate-to-strong correlations with economic sustainability, explaining between 41% and 57% of the variance. However, none of the interaction effects reached statistical significance, indicating that resiliency did not reliably moderate the relationship between environmental

challenges and sustainability. Stewardship's interaction effect approached significance and accounted for a notable variance increase ($\Delta R^2 = 27.6\%$), suggesting potential relevance but requiring further testing with larger samples. These results imply that resiliency factors are associated with sustainability outcomes, but their moderating role remains inconclusive.

Regression coefficients (Table 11) further showed that stewardship ($B = 2.251$) and operational management ($B = 0.858$) were the strongest positive associations with economic sustainability. In contrast, community engagement ($B = -3.401$) and biodiversity conservation ($B = -2.467$) displayed negative coefficients. Rather than concluding that these dimensions act as economic burdens, the findings are better interpreted as inverse associations within this sample. This pattern may reflect short-term cost pressures or inefficiencies when engagement and conservation efforts are not embedded in structured frameworks. Importantly, the reported t-values and p-values in Table 11 were inconsistent (e.g., identical values across predictors), raising concerns about model specification and reliability. Thus, these results should be treated as preliminary associations rather than definitive predictors.

The evidence suggests that managerial systems and stewardship practices contribute positively to economic sustainability, while community engagement and biodiversity conservation may be associated with short-term financial pressures. However, these interpretations remain tentative, and future research should refine the regression models, expand sample sizes, and incorporate financial and ecological performance data to validate whether these associations reflect genuine cost structures or methodological artifacts.

To translate the findings into actionable inputs for the Tourism Development Plan, the study proposes a structured framework that aligns ecological pressures with sustainability outcomes. For zoning- and classification-specific guidelines, beach resorts should prioritize climate adaptation measures such as sea-level rise monitoring, storm-surge barriers, and renewable-energy integration; inland resorts should focus on water-conservation technologies and waste-management systems; and spa resorts should strengthen biodiversity protection and eco-certification standards. Managerial priorities include institutionalizing resiliency audits across infrastructure, operational management, and stewardship, providing capacity-building programs for individually owned resorts to close compliance gaps, and encouraging corporate resorts to mentor smaller establishments in sustainability practices. Environmental management benchmarks should establish measurable targets for water efficiency, mandate the adoption of renewable energy, and require biodiversity monitoring and reporting, especially for resorts near ecologically sensitive zones. Finally, policy actions for the Department of Tourism and Local Government Units should revise accreditation standards to include resiliency indicators, provide incentives for eco-certification alongside penalties for non-compliance, and develop structured community engagement frameworks that align local participation with measurable sustainability outcomes.

Conclusion

The findings highlight that economic sustainability outcomes are shaped less by ecological pressures and more by the strength of managerial systems, stewardship practices, and institutional commitments, underscoring the importance of governance and proactive adaptation in tourism enterprises (Weaver, 2023). For practice, resort managers should prioritize resiliency audits, strengthen stewardship programs, and integrate adaptive infrastructure to ensure long-term viability. For policy, government agencies and accreditation bodies must provide targeted support to individually owned and younger resorts, which face greater ecological burdens, while reinforcing standardized sustainability regulations across the sector (Jones & Comfort, 2020). In education, hospitality and tourism curricula should embed resiliency and sustainability frameworks, preparing future managers to balance economic growth with ecological responsibility. For research, future studies should adopt multilevel or longitudinal designs to capture nested stakeholder structures, investigate the moderating role of stewardship more rigorously, and expand the sample size to validate emerging trends (Lorah, 2020). Socio-cultural and environmental sustainability dimensions were assessed descriptively and consistently rated highly across resorts, but they were not part of the predictive model. This distinction ensures that the study's claims remain focused on economic sustainability while acknowledging broader perceptions of sustainability.

Contributions of Authors

Author 1: Conceptualization and Manuscript Writing.

Author 2: Quality Assurance and Research Advising.

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Conflict of Interests

Researchers declare no conflict of interest.

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References

- Birinci, H., Esenyel, I., & Obeng, H.A. (2025). Sustainable destination management in luxury tourism: Balancing economic development and environmental responsibility. *Sustainability*, 17(15), 6815. <https://doi.org/10.3390/su17156815>
- Buckley, R., & Underdahl, S. (2023). Tourism and environment: Ecology, management, economics, climate, health, and politics. *Sustainability*, 15(21), 15416. <https://doi.org/10.3390/su152115416>
- Feng, Y., Hu, J., Afshan, S., Irfan, M., Hu, M., & Abbas, S. (2023). Bridging resource disparities for sustainable development: A comparative analysis of resource-rich and resource-scarce countries. *Resources Policy*, 85, 103981. <https://doi.org/10.1016/j.resourpol.2023.103981>
- Forbes, N.A. (2026). An educational intervention, the use of optimal sanitisation and regular measurement of infection control outcomes can greatly reduce contamination levels in the veterinary practice. *Journal of Small Animal Practice*.
- Gössling, S., Scott, D., & Hall, C.M. (2020). Pandemics, tourism and global change: A rapid assessment of COVID-19. *Journal of Sustainable Tourism*, 28(11), 1545–1559. <https://doi.org/10.1080/09669582.2020.1758708>
- Hernandez, C., Dunton, M., Panes, M.A., & Torres, F.R. (2022). Sustainable tourism awareness-adherence and coastal issues and concerns of the selected coastal tourism stakeholders in Southern Iloilo, Philippines. *Central Philippine University Multidisciplinary Research Journal*, 1(1), 170–191. <https://hdl.handle.net/20.500.12852/1991>
- Jones, P., & Comfort, D. (2020). The COVID-19 crisis and sustainability in the hospitality industry. *International Journal of Contemporary Hospitality Management*, 32(10), 3037–3050.
- Kassim, M.A. (2023). Environmental sustainability practices in hotels: From Attitudes to implementation case of resort hotels in Bishoftu, Ethiopia. In *Integrative Approaches in Urban Sustainability-Architectural Design, Technological Innovations and Social Dynamics in Global Contexts*. IntechOpen. DOI: 10.5772/intechopen.109433.
- Lew, G., Życzynski, N., Olejars, T., & Pomykala, M. (2024). The importance of CSR and ESG in shaping competitive and image advantage of enterprises.
- Lorah, J.A. (2020). Interpretation of main effects in the presence of non-significant interaction effects. *Quantitative Methods for Psychology*, 16(1).
- Mir, R.N., & Kulibi, T.A. (2023). Tourism as an engine for economic diversification: An exploratory study of Saudi Arabia's tourism strategy and marketing initiatives. *Saudi Journal of Business and Management Studies*, 8(08), 186–201. DOI: 10.36348/sjbm.2023.v08i08.003
- Mishra, R.K. (2023). Fresh water availability and its global challenge. *British Journal of Multidisciplinary and Advanced Studies*, 4(3), 1–78. <https://doi.org/10.37745/bjmas.2022.0207>
- Ofalla, M.N. (2024). Evaluating the adoption of cleaner production technology for sustainable green hotels in the Philippines. *TEM Journal*, 13(1), 144–154. <https://doi.org/10.18421/tem131-14>
- Papallou, E., Katafygiotou, M., & Dimopoulos, T. (2024). Emerging sustainability trends in tourist facilities: A comparative assessment of multiple hotels and resorts. *Sustainability*, 16(9), 3536. <https://doi.org/10.3390/su16093536>
- Prayag, G. (2023). Tourism resilience in the 'new normal': Beyond jingle and jangle fallacies?. *Journal of Hospitality and Tourism Management*, 54, 513–520. <https://doi.org/10.1016/j.jhtm.2023.02.006>
- Rivera, J.P., Bolalin, M.C., & Ocbina, J.J. (2025). Philippine tourism sectoral review (2000 to 2025): From promise to power – Accelerating the Philippines' tourism transformation toward sustainability, competitiveness, and inclusion (Discussion Paper Series No. 2025-43). Philippine Institute for Development Studies.
- Saleem, M., Ashfaq, M., & Arshad, R. (2026). Economic benefits of sustainable tourism practices and role of green technologies.
- Singh, A., & Kaur, A. (2024). Challenges and consequences of improper waste disposal. *Solid Waste Management and Disposal Practices in Rural Tourism*, 317.
- Soriano, M.J. (2022). Determinants of sustainability among beach resorts. *Journal of Tourism, Hospitality & Culinary Arts*, 14(3), 90–104. <https://ir.uitm.edu.my/id/eprint/72363>
- Tabachnick, B.G., & Fidell, L.S. (2019). *Using multivariate statistics* (7th ed.). Pearson.
- Weaver, C.B. (2024). Moral imagination, ecological crisis, and the recalcitrance of the other (Doctoral dissertation, The University of Chicago).
- Yoon, C., Han, G., Jung, S., & Min, M. (2026). Development of an environmental-safety risk assessment model for firewater runoff in chemical storage facilities using a double materiality assessment. *Journal of Loss Prevention in the Process Industries*, 105926. <https://doi.org/10.1016/j.jlp.2026.105926>