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Original Article

Disaster Recovery Strategies and Resilience of Resorts in Antique, Philippines

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Abstract. Despite the high vulnerability of Antique Province, Philippines, to recurring natural disasters, limited empirical evidence exists on how resort enterprises implement recovery strategies and sustain organizational resilience. This study aimed to examine disaster recovery strategies and resiliency among resorts and determine the relationship between these constructs. Using a quantitative, descriptive–correlational design, data were collected via total enumeration from 265 respondents across 56 resorts. A structured questionnaire was administered, and data were analyzed using descriptive statistics, analysis of variance, and Pearson correlation. Results revealed that resorts demonstrated a very high level of implementation of recovery strategies and a very high level of organizational resilience. Operational adjustment emerged as the most prominent strategy, while environmental capacity was identified as the strongest dimension of resilience. Significant differences were observed based on resort characteristics, including accreditation, ownership, and workforce size. Furthermore, recovery strategies were found to have significant positive relationships with all dimensions of resilience, with operational flexibility showing the strongest association with economic stability. These findings highlight that resilience in tourism enterprises is driven by integrated strategic practices rather than isolated interventions. The study contributes to the growing body of literature on disaster resilience by providing empirical evidence from a small- and medium-enterprise–dominated tourism context. Practically, the results emphasize the need for adaptive operational systems, continuous risk assessment, financial preparedness, and employee-centered approaches to strengthen disaster resilience. The findings also inform policymakers and local government units in developing targeted support mechanisms and sector-specific disaster management frameworks to enhance the sustainability of tourism-dependent communities.

Keywords: *Natural disasters; Recovery strategies; Resort industry; Resilience; Tourism disaster management.*

The increasing frequency and intensity of natural disasters have significantly challenged the sustainability of tourism industries worldwide, particularly in developing countries, where small and medium-sized enterprises (SMEs) dominate the sector. Tourism-dependent economies are especially vulnerable to environmental disruptions, as disasters not only damage infrastructure but also interrupt operations, reduce tourist inflow, and threaten long-term business viability. In this context, disaster resilience, defined as the capacity of organizations to anticipate, withstand, and recover from shocks, has become a critical factor for sustaining

tourism development and protecting livelihoods (Li et al., 2026).

The Philippines, located within the Pacific typhoon belt, is among the most disaster-prone countries globally, experiencing an average of 20 tropical cyclones annually. Within this context, Antique Province represents a highly vulnerable yet underexplored setting. Known as the place "where the mountains meet the sea," Antique's geography exposes it to multiple hazards, including storm surges, flooding, and landslides (Pacific Disaster Center, 2021). Climate change has further intensified these risks, resulting in more frequent and severe hydrometeorological events (ASEAN, 2023). Given that the province's economy is heavily anchored in ecotourism, particularly through attractions such as the Tibiao River and Mararison Island, these environmental threats pose persistent disruptions to local economic activity.

Recent disaster events highlight the magnitude of this vulnerability. A Rapid Damage Assessment and Needs Analysis following Severe Tropical Storm *Crising* (Habagat) in 2025 reported approximately ₱626 million in damages to infrastructure, property, and agriculture in Antique (Panay News, 2025). Similarly, typhoon-related disruptions have displaced thousands of residents and interrupted transportation and commerce, indirectly affecting tourism flows and resort operations (Mabaquiao, 2025). These recurring disruptions underscore the urgent need for effective disaster recovery and resilience strategies within the local tourism sector. The tourism industry plays a vital role in the Philippine economy, contributing significantly to gross domestic product and employment. Recent estimates indicate that tourism generated trillions of pesos in economic value and supported millions of jobs nationwide (World Travel & Tourism Council, 2025, 2026; AMRO Asia, 2025). Given this economic importance, strengthening disaster resilience in tourism enterprises is not only a local concern but also a national priority.

From a theoretical perspective, resilience in tourism organizations is increasingly understood through the lens of dynamic capabilities. Tourism enterprises operating in turbulent environments rely on adaptive strategies such as resource reconfiguration, operational flexibility, and continuous learning to sustain performance during crises (Jiang et al., 2022). Similarly, service organizations enhance resilience through strategic transformation and internal capability development (Nair et al., 2024). Empirical evidence further suggests that organizational resilience positively influences both short-term recovery and long-term performance outcomes (Li et al., 2026).

Among SMEs, resilience is closely linked to entrepreneurial competencies, financial preparedness, and risk management practices. Studies indicate that financial literacy and entrepreneurial capability significantly enhance SME sustainability, particularly in disaster-prone environments (Maravilla Jr. & Flores, 2025). However, many SMEs face structural constraints, including limited access to financing, low insurance uptake, and inadequate risk management systems (Gai et al., 2023; Lubasi, 2025). In tourism settings, community-based studies further emphasize the role of stakeholder knowledge, adaptive practices, and coordinated recovery efforts in sustaining local enterprises (Manalo et al., 2024). In addition, employee-centered approaches and internal communication systems have been identified as critical drivers of organizational resilience. Workforce stability, trust, and effective communication enhance adaptive capacity and recovery efficiency during crises (Low et al., 2023; Anthony, 2025). Environmental sustainability practices also contribute to resilience by reducing vulnerability to climate-related risks and supporting long-term operational continuity (Guarino, 2025).

Despite these global and national insights, a significant gap remains in the literature regarding the specific disaster recovery practices of resort enterprises in geographically isolated and SME-dominated provinces such as Antique. Existing disaster frameworks in the Philippines, such as Republic Act No. 10121, primarily focus on community-level disaster risk reduction and provide limited sector-specific guidance for tourism enterprises (Office of Civil Defense, 2015). Moreover, many studies aggregate data from smaller provinces with more developed tourism hubs, potentially overlooking contextual differences, including limited infrastructure, restricted access to capital, and reliance on informal coping mechanisms. As a result, empirical evidence on how resort characteristics influence the implementation of recovery strategies and resilience outcomes in Antique remains scarce.

To address this gap, this study aims to examine the natural disaster recovery strategies and organizational resiliency of resorts in Antique Province. Specifically, it seeks to: (1) determine the level of implementation of disaster recovery strategies in terms of risk assessment, operational adjustment, financial recovery, and communication and employee support; (2) assess the level of resiliency across physical, economic, social, and environmental dimensions; (3) identify significant differences in recovery strategies and resiliency based on resort

characteristics; and (4) examine the relationship between disaster recovery strategies and organizational resiliency.

The findings of this study are expected to contribute to the growing body of knowledge on tourism resilience by providing empirical evidence from a disaster-prone, SME-dominated context. Practically, the results offer valuable insights for resort operators, policymakers, and local government units in designing targeted interventions, strengthening disaster preparedness, and promoting sustainable tourism development in vulnerable regions.

Methodology

Research Design

This study employed a quantitative research method, collecting primary data directly from respondents via a structured survey questionnaire. The quantitative approach was appropriate for measuring the levels of disaster recovery strategies and organizational resiliency and for examining the relationships between these variables. A descriptive–correlational research design was utilized to describe the extent of recovery strategy implementation and resiliency levels, as well as to determine the degree of association between these variables. This design is suitable as it allows the analysis of relationships without manipulating the study variables.

Participants and Sampling Technique

The study included respondents from registered resorts in Antique Province. Using total enumeration sampling, all eligible resorts were included to ensure comprehensive coverage of the population. From an initial list of 61 resorts provided by the Provincial Tourism Office, five were excluded due to temporary or permanent closure, and one declined participation. Thus, 56 resorts were included, yielding 265 respondents, consisting of owners, managers, and selected employees. Participants met the following inclusion criteria: (1) resorts must have been operating for at least three years; (2) respondents must be owners, managers, or employees with at least three years of service; and (3) respondents must be at least 18 years old.

Research Instrument

Data were collected using a researcher-made questionnaire aligned with the study variables. The instrument consisted of three parts: (1) resort characteristics; (2) disaster recovery strategies (risk assessment, operational adjustment, financial recovery, and communication and employee support); and (3) organizational resiliency (physical, economic, social, and environmental dimensions). The questionnaire items were developed based on existing literature on disaster resilience and tourism management (e.g., Jiang et al., 2022; Nair et al., 2024) to ensure content relevance. Content validity was established through expert evaluation by three specialists (tourism, management, and disaster risk reduction). Reliability testing was conducted through pilot testing with 30 respondents, yielding a Cronbach's alpha of .82, indicating acceptable internal consistency.

Data Gathering Procedure

Data collection was conducted from January to December 2025 through face-to-face survey administration. Permission was secured from local government units and resort management prior to data collection. Respondents were informed of the study's purpose and provided with an informed consent form. Questionnaires were distributed and completed on-site, and responses were immediately retrieved and checked for completeness. Each respondent was assigned a code to ensure anonymity.

Data Analysis Procedure

Data were analyzed using IBM SPSS (Version 26). Descriptive statistics (mean and standard deviation) were used to assess levels of recovery strategies and resiliency. Inferential statistics, including t-test and ANOVA, were applied to determine differences based on resort characteristics. The Pearson product–moment correlation coefficient (r) was used to examine relationships between recovery strategies and resiliency dimensions. A 5-point Likert scale was used, with predefined interpretation ranges for levels of implementation and resiliency.

Ethical Considerations

This study involved human participants and adhered to established ethical standards. Participation was voluntary, and written informed consent was obtained from all respondents. Participants were informed of their right to withdraw at any time without penalty. Confidentiality was ensured by assigning codes instead of recording names, and all data were reported in aggregate form. The study complied with the Data Privacy Act of

2012 (Republic Act No. 10173), ensuring that all collected data were used solely for academic purposes. Data were securely stored in a locked storage cabinet (locker) for physical documents and in password-protected digital files accessible only to the researcher. All data will be retained for one year and securely disposed of thereafter. The study received ethical clearance from the institutional review board with Protocol Number: CPU-SGS-2025-REC-056.

Results and Discussion

Table 1 presents the levels of disaster recovery strategies and organizational resiliency among resorts in Antique Province. Overall, resorts demonstrated a very high level of implementation of recovery strategies and a very high level of resiliency, indicating that tourism enterprises in the province have developed strong adaptive capacities despite frequent exposure to natural hazards. Among the recovery strategies, operational adjustment emerged as the most prominent, suggesting that resorts prioritize flexibility and rapid response in post-disaster situations. This finding supports the dynamic capabilities perspective, which emphasizes the role of operational adaptability in enabling firms to respond effectively to environmental disruptions (Jiang et al., 2022; Nair et al., 2024). In resource-constrained SME settings, such flexibility becomes a critical survival mechanism, allowing businesses to sustain operations despite external shocks.

Table 1. *Natural disaster recovery strategies and disaster resiliency of resorts in Antique Province*

Dimension	Variables	Mean	SD	Interpretation
A. Disaster Recovery Strategies				
	Risk Assessment	4.36	.418	Very High Level of Implementation
	Operational Adjustment	4.49	.354	Very High Level of Implementation
	Financial Recovery	3.80	.441	High Level of Implementation
	Communication and Employee Support	4.36	.402	Very High Level of Implementation
	Overall (Recovery Strategies)	4.25	.404	Very High Level of Implementation
B. Disaster Resiliency				
	Physical Infrastructure	4.44	.444	Very High Resiliency
	Economic Stability	4.24	.322	Very High Resiliency
	Social Well-being	4.40	.356	Very High Resiliency
	Environmental Capacity	4.47	.345	Very High Resiliency
	Overall (Resiliency)	4.39	.367	Very High Resiliency

In contrast, financial recovery was relatively lower than that of other strategies, indicating potential structural constraints among resorts. This aligns with existing literature suggesting that SMEs often face limited access to financial resources, insurance, and formal risk financing mechanisms (Maravilla Jr. & Flores, 2025; Gai et al., 2023). While financial preparedness contributes to resilience, it may not be as strongly institutionalized as operational and managerial practices in small tourism enterprises.

In terms of resiliency dimensions, environmental capacity was the strongest, followed closely by physical infrastructure and social well-being. This pattern reflects the ecological nature of resort operations, where environmental sustainability and hazard awareness are integral to business continuity. The finding is consistent with studies emphasizing that environmental management and climate adaptation practices enhance long-term resilience in tourism destinations (Manalo et al., 2024; Guarino, 2025). The consistently high ratings across all resiliency dimensions suggest that resorts perceive themselves as generally well-prepared for disaster events. Strong performance in social well-being further indicates the importance of employee support and internal communication, which are recognized as key drivers of organizational resilience (Low et al., 2023; Anthony, 2025).

Table 2 presents the correlations between disaster recovery strategies and organizational resiliency dimensions. All relationships were positive and statistically significant, indicating that stronger implementation of recovery strategies is associated with higher levels of resiliency. The most notable finding is the strong relationship between operational adjustment and economic stability, highlighting the critical role of adaptive operational practices in sustaining financial performance during and after disasters. This supports previous studies demonstrating that operational flexibility enhances both short-term recovery and long-term firm performance (Jiang et al., 2022; Li et al., 2026). In the context of tourism SMEs, the ability to modify services, reallocate resources, and respond to changing conditions appears to be a key driver of economic resilience.

Table 2. *Correlations between the natural disaster recovery strategies and resorts' resiliency*

Recovery Strategies	Physical Infrastructure		Economic Stability		Social Well-Being		Environmental Capacity	
	r	Sig.	r	Sig.	r	Sig.	r	Sig.
Risk Assessment	.610	.000*	.602	.000*	.452	.000*	.561	.000*
Operational Adjustment	.453	.000*	.716	.000*	.613	.000*	.599	.000*
Financial Recovery	.354	.000*	.398	.000*	.421	.000*	.443	.000*
Communication and Employee Support	.448	.000*	.532	.000*	.474	.000*	.447	.000*

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

** Strength of correlation: 0.00-0.09 Negligible / Very Weak Positive; 0.10 - .29 Weak Positive; 0.30- 0.49 Moderate Positive; 0.50- 0.99 Strong Positive (Gignac & Szodorai,2016)*

Risk assessment also showed strong associations with multiple resiliency dimensions, particularly physical infrastructure and environmental capacity. This suggests that proactive risk identification enables resorts to strengthen their structural preparedness and environmental management practices. Such findings reinforce the importance of systematic risk management in enhancing resilience outcomes among SMEs (Lubasi, 2025). Although financial recovery exhibited a comparatively moderate relationship with resilience, it remained a significant contributing factor. This indicates that financial strategies serve as supportive mechanisms rather than primary drivers of resilience, particularly in contexts with limited access to formal financing (Gai et al., 2023). Similarly, communication and employee support demonstrated meaningful associations with resiliency, underscoring the role of workforce stability and internal coordination in disaster recovery. Effective communication fosters organizational cohesion, thereby enhancing firms' capacity to adapt and recover (Anthony, 2025; Low et al., 2023).

Conclusion

This study contributes to the growing body of knowledge on disaster resilience in tourism by demonstrating that recovery strategies function as integrated drivers of organizational resilience among resort enterprises in a disaster-prone setting. The findings highlight that resilience is not solely dependent on financial capacity but is primarily shaped by adaptive operational practices, proactive risk assessment, and employee-centered approaches. Operational flexibility emerged as the most critical factor in sustaining economic stability, reinforcing the relevance of the dynamic capabilities perspective in tourism SMEs.

The results provide clear directions for strengthening disaster preparedness and resilience in tourism-dependent communities. At the enterprise level, resort operators should institutionalize standardized disaster response protocols, including regular risk assessments, contingency planning, and flexible operational systems that allow rapid adaptation during crises. Establishing emergency financial reserves and business continuity plans is also essential to reduce vulnerability to disruptions.

At the policy level, local government units (LGUs) and disaster management agencies should implement sector-specific resilience programs for tourism SMEs, such as:

- capacity-building initiatives on disaster preparedness and business continuity planning,
- financial literacy and risk financing programs (e.g., insurance access and emergency funding mechanisms), and
- the integration of tourism enterprises into local disaster risk reduction and management (DRRM) frameworks.

Strengthening partnerships between government agencies, tourism stakeholders, and local communities can further enhance coordinated disaster response and recovery efforts. These targeted interventions are critical for safeguarding livelihoods and sustaining local economic stability in hazard-prone destinations.

The study reinforces the dynamic capabilities framework by providing empirical evidence that resilience in tourism SMEs is constructed through coordinated strategic practices rather than isolated interventions. It extends resilience research by focusing on small-scale, resource-constrained enterprises in geographically isolated contexts. In education, the findings support integrating disaster risk management, sustainability, and adaptive leadership into tourism and hospitality curricula to better prepare future industry practitioners.

This study is subject to several limitations. First, the use of a cross-sectional design limits the ability to capture changes in resilience over time. Second, the findings are based on self-reported data, which may be influenced by response bias. Third, the study is geographically limited to Antique Province, which may affect the generalizability of results to other regions with different socio-economic and environmental conditions. Lastly, while total enumeration was employed, the sample remains confined to a specific sector and locality.

Future studies may build on these findings by employing longitudinal designs to examine how resilience evolves before, during, and after disaster events. Comparative research across provinces or tourism destinations could provide deeper insights into contextual differences in resilience strategies. Additionally, qualitative approaches may be used to explore decision-making processes, leadership dynamics, and organizational culture in disaster recovery. Advanced statistical techniques, such as regression analysis or structural equation modeling, may further identify predictive relationships among recovery strategies and resilience outcomes.

Contributions of Authors

Author 1: conceptualization, data gathering, data analysis
Author 2: data analysis, data gathering
Author 3: proposal writing, data gathering

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Conflict of Interests

The authors declare that they have no conflict of interest related to this research.

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