



Resilience of Micro Enterprises in Disaster-Prone Areas

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Abstract Micro enterprises form the backbone of many local economies, providing essential goods and services while contributing to poverty reduction and regional development. This study examined the resilience of micro enterprises operating in disaster-prone areas of Malaybalay City, Bukidnon, Philippines. The study aimed to create an overlay map of micro enterprises near disaster-prone areas, assess their disaster preparedness, knowledge, and business resilience, determine the relationships between these factors, identify key predictors of business resilience, and develop an extension program to enhance resilience management for micro enterprises. A quantitative research approach was employed, involving data collection through surveys administered to micro enterprise owners. Geo-Information System (GIS) tool was utilized to generate the overlay map, pinpointing the proximity of micro enterprises to disaster-prone areas. The findings of the study revealed that micro enterprises are extremely prepared for disaster and are knowledgeable about disaster-related knowledge. In terms of business resilience, micro enterprises are highly resilient in communication and media, and resilient on institutional control, planning and preparedness, philosophy and integrity, and external support and linkages. The study further indicated that there is a significant relationship between disaster preparedness and business resilience, including disaster-related knowledge and business resilience. The results of the regression analysis showed that business resilience is strongly influenced by both disaster preparedness and disaster-related knowledge, with the latter having a stronger impact. The study concluded that while micro enterprises exhibit some level of resilience, there is a critical need for improved disaster risk reduction management practices and stronger support systems to ensure sustainable business operations in the face of recurrent natural disasters.

Keywords: business resilience, disaster preparedness, disaster-related knowledge, GIS, micro enterprises

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1. INTRODUCTION

Globally, 387 natural disasters and hazards were documented by the Emergency Event Database in 2022, leaving 185 million people affected and 30,704 people dead with total economic damages of US\$ 223.8 billion. A disaster is considered an unplanned, frequently unexpected event that results in insignificant harm, devastation, and human suffering (Centre for Research on the Epidemiology of Disasters, 2022). In the Philippines, between 2000 and 2016, natural disasters caused over 23,000 deaths and affected roughly 125 million people, with socioeconomic damage of US\$ 20 billion with average annual damages of US\$ 12 billion. Businesses also experienced severe failures as a result of disasters. Business owners find it difficult to recover, which causes growth to be sluggish, unemployment to rise, and welfare spending to decline. Natural disaster-related business losses are estimated to be between 1% to 20% of GDP (Jha et al., 2018).

Micro enterprises form the backbone of many local economies, providing essential goods and services while contributing to poverty reduction and regional development. The Philippine business sector is mainly composed of micro enterprises (90%) with low capitalization and the majority are informal (Ballesteros & Domingo, 2015). In the informal sector of most developing nations, family-run micro businesses provide millions of people's livelihoods and serve as the backbone of many local economies. However, these entities may fail due to the volatility that arises up or down their particular supply chains after a calamity (Prasad et al., 2014).

According to the Fairfax County Department of Emergency Management and Security (2020), 52% of small business owners needed three months for catastrophe recovery. Businesses that experience interruptions in their business operations of any type and are unable to resume operations in 10 days, will likely not succeed. Micro enterprises are more susceptible to shocks connected to disasters, particularly in their supply chains. This vulnerability arises because micro enterprises are less likely to have access to formal credit and insurance markets, have fewer internal resources than larger organizations, and are unable to obtain official support when needed (Prasad et al., 2014). They typically operate from a single site and have more localized supply and sales networks, making them less equipped to handle the financial effects of natural disasters (Harries, 2021).

According to UN-Habitat (2022), Bukidnon is susceptible to several dangers in geology and meteorological/hydrological hazards because of its terrain and land features. These natural disasters include floods, landslides, and erosion that have been occurring frequently in certain parts of the province which had a serious impact on the population's lives and catastrophically damaged roads, drainage, agriculture, villages, and various facilities. Bukidnon's flooding and landslides are growing more dangerous due to poor drainage, climate change, and the growth of the agricultural sector, including in the cities of Malaybalay and Valencia (Dales et al., 2020).

Malaybalay City, the capital of Bukidnon also experienced flooding and landslides which necessitates strengthening disaster risk reduction management. It is identified in the study of Dales et al. (2020) as one of the cities that are “at-risk” for flood hazards, especially in barangays located near the banks of the Pulangi River. In terms of disaster preparedness, the risk management implemented by the residents and the local government unit (LGU) in Bukidnon follows a top-down approach. The strategies employed included risk communication and relief assistance provided by the local government unit. For disaster-related knowledge, the Department of Trade and Industry - Bukidnon conducts information dissemination regarding business continuity planning for the recipients of their Shared Service Facilities. However, micro enterprises are not covered in this program, only associations and cooperatives.

The study of Ballesteros and Domingo (2015) revealed that the impact of disasters on businesses is not typically emphasized because reports concentrate on the number of households or individuals affected. Businesses in the country lack preparedness for natural disasters and have limited access to a wide range of coping mechanisms. Occasionally, they relied on loans from family members, unofficial money lenders, and remittances from overseas workers to finance their post-disaster rehabilitation; nonetheless, the least resilient businesses ceased operations. Major cities and international corporations have measures in place to increase resilience; however, micro enterprises are often overlooked, despite being the primary driver of employment growth and the creation of new jobs (Sands, 2019).

Resilience as defined in the UN International Strategy for Disaster Reduction is the ability to resist, absorb, and recover from the effects of a hazard in an efficient manner. This definition applies to all sectors including households, communities, and government. When applied to the business sector, resilience is associated with business continuity, such as the preparedness of the business sector for emergencies whereby disruption in business operations is at a minimum, and resumption of the normal operation of the business is done in the shortest time.

This study is strategically aligned with several Sustainable Development Goals (SDGs), particularly SDG 1: No Poverty, SDG 8: Decent Work and Economic Growth, SDG 9: Industry, Innovation, and Infrastructure, SDG 11: Sustainable Cities and Communities, and SDG 13: Climate Action. These goals are aimed at reducing poverty, fostering economic growth, building resilient infrastructure, promoting climate action, and ensuring sustainable communities. By focusing on enhancing disaster preparedness, strengthening business resilience, and developing innovative solutions for managing disaster risks, the study not only addresses immediate challenges but also contributes to the long-term sustainability of both businesses and communities.

One of the least explored areas in disaster risk is the impact of disasters on Micro, Small, and Medium Enterprises (MSMEs) and the effect on the resilience of these enterprises. There is now a pressing need to understand the condition of micro enterprises in disaster-prone

areas. These micro enterprises often lack the resources and capacity to withstand and recover from the economic shocks induced by natural calamities. The study aims to contribute not only to academic knowledge but also to the development of practical and actionable recommendations for fostering business resilience among micro enterprises in disaster-prone areas. The resilience of micro enterprises to natural disasters is not only critical for their survival but also for the stability and prosperity of the local economy.

2. OBJECTIVES OF THE STUDY

The study aims to:

1. make use of existing flood-hazard map in Malaybalay City, Bukidnon, and overlay the data covering the proximity of micro enterprises to disaster-prone areas;
2. determine the level of disaster preparedness, disaster-related knowledge, and the business resilience of micro enterprises;
3. ascertain the relationship of disaster preparedness and business resilience and disaster-related knowledge and business resilience;
4. predict which independent variables influence business resilience; and
5. craft an extension program that covers the enhanced resilience management of micro enterprises.

3. FRAMEWORK OF THE STUDY

The study was anchored on the Resilience Theory of Garnezy (1991) which refers to the ability to bounce back and continue acting appropriately in the face of emotional adversity. It is asserted that organizations possess the inherent capacity to adapt, recover, and transform positively in the face of adversity. This theory provides a conceptual lens to understand how micro enterprises in disaster-prone areas can develop mechanisms to absorb shocks, maintain business continuity, and even thrive following disruptive events. Businesses can safeguard themselves against monetary losses, legal liabilities, and reputational harm by implementing risk management (Payne, 2022).

Resilience Theory is especially relevant for micro enterprises, which often operate with limited resources, making them particularly vulnerable to the effects of disasters. However, by enhancing their disaster preparedness and knowledge, these enterprises can mitigate risks and improve their ability to recover from adverse events. This study applies Resilience Theory to examine how proactive preparedness measures and disaster-related knowledge contribute to the resilience of micro enterprises. The theory suggests that businesses that adopt resilience-building strategies are better equipped to maintain operational continuity, even in disaster-prone environments.

The conceptual framework of this study integrates disaster preparedness and disaster-related knowledge as the independent variables and business resilience as the dependent variable. These elements work together to examine how proactive disaster preparedness and knowledge affect the capacity of micro enterprises to withstand and recover from natural disasters. Businesses that invest in preparedness measures and actively engage in knowledge dissemination are more likely to withstand and recover from disasters, ensuring long-term sustainability and continuity.

Disaster preparedness refers to the proactive measures and strategies that individuals, businesses, and communities undertake to minimize the adverse effects of natural disasters. It includes actions aimed at reducing vulnerability and enhancing the ability to respond to and recover from emergencies. For micro enterprises, particularly those located in disaster-prone areas, disaster preparedness is crucial for ensuring long-term survival and business continuity. According to Najafi et al. (2017), disaster preparedness encompasses activities that ensure the availability of resources necessary for an effective response before a disaster strikes. These resources include emergency plans, staff training, and stockpiles of essential supplies, all of which enable businesses to better cope with potential disruptions.

Research by Hashim et al. (2021) highlights that risk perception is a key factor influencing disaster preparedness measures. Enterprises that have previously experienced disasters, particularly floods, demonstrate higher levels of preparedness, as past experiences shape their risk perception and encourage proactive engagement. Furthermore, facilitating businesses' capacity to anticipate, prepare for, and recover from disasters is a core component of disaster risk reduction (Paton, 2019). Businesses that develop formal business continuity plans (BCPs) or contingency measures are more capable of reducing operational disruptions and financial losses during crises. However, as Dushie (2014) notes, many businesses fail to adequately prepare due to factors such as poor prioritization, apathy, perceived high costs, and insufficient knowledge of preparedness strategies.

In addition to preparedness, disaster-related knowledge plays a vital role in reducing the potential for losses from natural disasters. This form of knowledge encompasses understanding risks, past disaster events, and the necessary response strategies. Sharing disaster-related knowledge is one of the most effective ways to enhance readiness, particularly by cultivating a culture of disaster prevention within communities (Fauziyah et al., 2022). The Sendai Framework for Disaster Risk Reduction 2015–2030 emphasizes the importance of knowledge dissemination in disaster risk reduction efforts (Weichselgartner & Pigeon, 2015). By learning from past disasters, businesses and communities can better prepare for future events, equipping them with strategies to mitigate potential impacts.

The relationship between disaster preparedness and business resilience is well-documented. Mawili and Bautista (2021) found that perceptions of organizational preparedness are positively correlated with assessments of business resilience and sustainability during crises. Business resilience refers to a business's ability to absorb, adapt, and recover from disruptions,

including natural disasters. Resilient businesses can better withstand shocks, maintain operations, and recover more swiftly from disruptions, which is particularly crucial for micro, small, and medium enterprises (MSMEs) operating in disaster-prone regions. Resilience is often bolstered by resilience-building initiatives that include emergency planning and preparedness drills (Calleja et al., 2020), which allow businesses to anticipate and respond to crises more effectively.

Prasetyo et al. (2024) also emphasized the importance of comprehensive communication strategies in disaster preparedness. Effective communication during crises, both within the organization and externally with key stakeholders, is critical to ensuring swift and coordinated responses. Additionally, businesses that are more familiar with disaster-related knowledge are better equipped to make informed decisions that reduce potential damages. Benson et al. (2007) emphasized that increased awareness of the importance of disaster risk reduction is beneficial in achieving sustainable development and poverty alleviation.

Furthermore, businesses with robust knowledge management systems demonstrate greater resilience, as they are better able to foresee, plan for, respond to, and recover from challenging circumstances like natural disasters (Armidor & Sulayon, 2024). Knowledge management systems enable businesses to continuously update their understanding of disaster risks and integrate this information into their decision-making processes, thereby enhancing their overall resilience.

The indicators of business resilience used in this study are based on the work of Campos (2016), which identifies key factors including institutional control, planning and preparedness, philosophy and integrity, external support and linkages, and communication and media. These elements are integral to the development of resilient businesses, as they provide a framework for organizations to anticipate, adapt to, and recover from disruptions. Cutillas et al. (2022) further validated these indicators, showing that they are essential components when developing a post-disaster recovery and resilience framework for businesses. Business resilience, therefore, encompasses the ability to avoid, anticipate, and adjust to environmental shocks, allowing enterprises to recover and continue operating in the aftermath of a disaster.

Figure 1 presents the schematic diagram of the study covering disaster preparedness, disaster-related knowledge and business resilience.

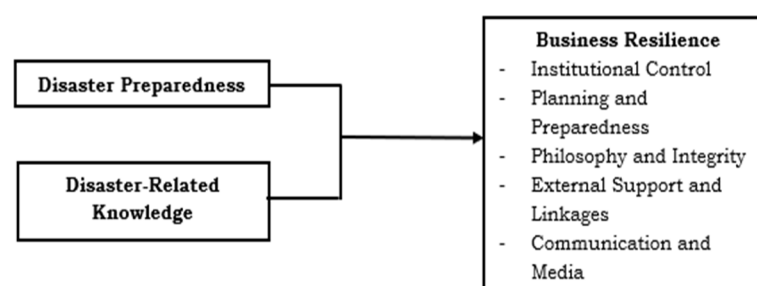


Figure1. Schematic Presentation Showing the Interplay of Variables in the Study

4. METHODOLOGY

A quantitative approach was employed in this study. The researchers coordinated with the Local Disaster Risk Reduction and Management Office of Malaybalay City to seek data intended to determine the disaster-prone areas in the city. This enabled the researchers to map the areas in Malaybalay City, Bukidnon that are vulnerable to disasters. Malaybalay City and its surrounding areas in Bukidnon are prone to various natural hazards, including floods, landslides, earthquakes, and typhoons. This susceptibility to disasters makes it an ideal site for studying the resilience of micro enterprises in coping with and recovering from adverse events. A list of micro enterprises from the City Economic Enterprise Development and Management Office (CEEDMO) was obtained to determine the location of the micro enterprises and their proximity to disaster-prone areas.

The study employed a purposive sampling technique to ensure the representation of micro enterprises in disaster-prone locations. Purposive sampling is an appropriate technique to target specific individuals who possess the characteristics relevant to the study. There were 150 participants in this study which is accordingly considered strong and meaningful sample size (Mooi et al., 2018). The selection criteria include owners or proprietors of micro enterprises; the micro enterprise is currently operating during the conduct of the study; and the micro enterprises are located in disaster-prone areas in Malaybalay City, Bukidnon.

A survey was conducted among micro enterprise owners in disaster-prone areas specified by the city planning and development office report on 1:10,000 scale geohazard mapping and assessment of parts of Malaybalay City. Quantitative data was gathered on disaster preparedness, disaster-related knowledge, and business resilience. The duration of this study commenced from January 2024 to May 2024.

During the data collection phase, both high-risk and low-risk areas were treated uniformly in terms of the gathering of data and its interpretation. The same survey instrument was administered to all micro enterprises, regardless of their geographical risk levels. This approach ensured that the data collection process was standardized, allowing for consistent evaluation across all participating micro enterprises.

The instrument for the quantitative data was composed of four sections covering the study's objectives, confidentiality, participation, and the researcher's contact details, disaster preparedness, disaster-related knowledge, and business resilience. The instrument was modified, validated by three experts in the field, and underwent a reliability test with a Cronbach Alpha of .967 which is reliable. The researchers secured permission from the authors to use and modify the questionnaires. The indicators of disaster preparedness and disaster-related knowledge were based on the study "Assessment of Disaster Preparedness and Related Knowledge Among Senior High Students in Del Pilar National High School, Cabadbaran City, Agusan Del Norte, Philippines" of Cabuga and Cañete (2023) which was adopted from the study of Tuladhar et al. (2014) and the business resilience questionnaire

was based on the paper of Campos (2016) in the study “Dimensions of Business Resilience in the Context of Post-Disaster Recovery in Davao City, Philippines”.

A four-point Likert scale was utilized in this study covering the three variables. The scores for disaster preparedness were interpreted as 4 = extremely prepared, 3 = prepared, 2 = somewhat prepared, and 1 = not prepared. For disaster related knowledge, the four-point rating were 4 = highly knowledgeable, 3 = knowledgeable, 2 = somewhat knowledgeable, and 1 = not knowledgeable. Business resilience as the dependent variable has a scoring of 4 = highly resilient, 3 = resilient, 2 = somewhat resilient, and 1 = not resilient.

A Geographic Information System tool was utilized to map the geographic distribution of micro enterprises and assessed their proximity to disaster-prone areas. GIS expert was consulted during and after the conduct of the study. Descriptive statistics, Pearson’s correlation, and multiple regression were used to analyze the quantitative data.

5. ETHICS STATEMENT

Research protocols were strictly observed to ensure the quality and reliability of the paper. Before the collection of data, permission was secured and consent forms were also distributed to the participants. The anonymity and confidentiality were strictly maintained, and the roles of the researchers were explained. There was strict adherence to the necessary disclosure and ethical obligations and participants may decide not to participate or withdraw from the study at any time, and there were no risks involved in doing so. Sensitive business information was protected and dealt with confidentiality. The necessary certifications, including content validity and reliability of research instruments and Grammarly and Plagiarism tests, were secured to ensure quality research. The results of the scholarly works cited in the study received due recognition through citation. Adherence to Data Privacy was strictly observed, the participant's specimen and data gathered were stored in a plastic box. Also, it shall be disposed of after ten years and data can be reused for further studies.

Furthermore, the participants of this study were the proprietors of micro enterprises and above 18 years old, and businesses are located in disaster-prone areas. No financial benefits were given to the participants and no conflict of interest from the investigators was associated with the study or the researchers made sure that the outcome of the study will not lead to any personal advantage.

6. RESULTS AND DISCUSSION

In this study, geographical overlay maps were generated to visually represent the spatial distribution of micro enterprises across different barangays in Malaybalay, Bukidnon, namely

Barangay Aglayan, Barangay Apo Macote, Barangay Cabangahan, Barangay Managok, Barangay Miglamin, and Barangay Poblacion 1 to 11. These maps are essential for identifying the proximity of micro enterprises to disaster-prone areas, such as flood zones and landslide-prone regions. By overlaying the location of these enterprises onto disaster risk maps, it becomes possible to assess which businesses are situated in risk areas thereby guiding our analysis of their disaster preparedness, disaster related knowledge and overall business resilience.

Figure 2 to 7 below present the overlay maps covering the proximity of micro enterprises to disaster-prone areas in Malaybalay City, Bukidnon. The participants in this study are micro enterprises that are located in the barangays that experienced floods based on the data from the Local Government of Malaybalay, specifically the Report on the MGB 1:10,000 Scale Geohazard Mapping and Assessment of Parts of Malaybalay City, Bukidnon in 2014.

These micro enterprises are located in Barangays Aglayan, Apo Macote, Cabangahan, Managok, Miglamin, and Barangay 1 to 11. The Geographical Information System application was utilized in capturing the images of the micro enterprises, in which the coordinates were recorded to specifically identify their proximity to disaster-prone areas in Malaybalay City. The study also utilized an updated map on the flood vulnerability of Sawaga Watershed in Malaybalay based on the study of Jondonero et al. (2024) and overlay the coordinates of the location of the micro enterprises.

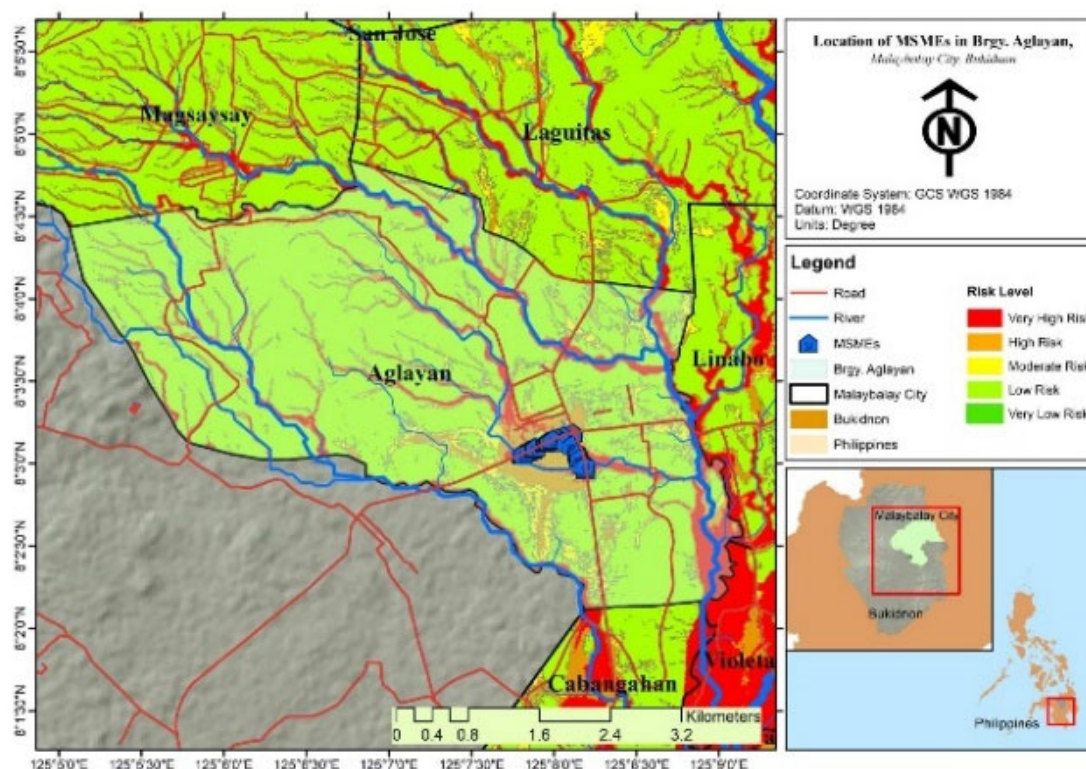


Figure 2. Map of micro enterprises in Barangay Aglayan

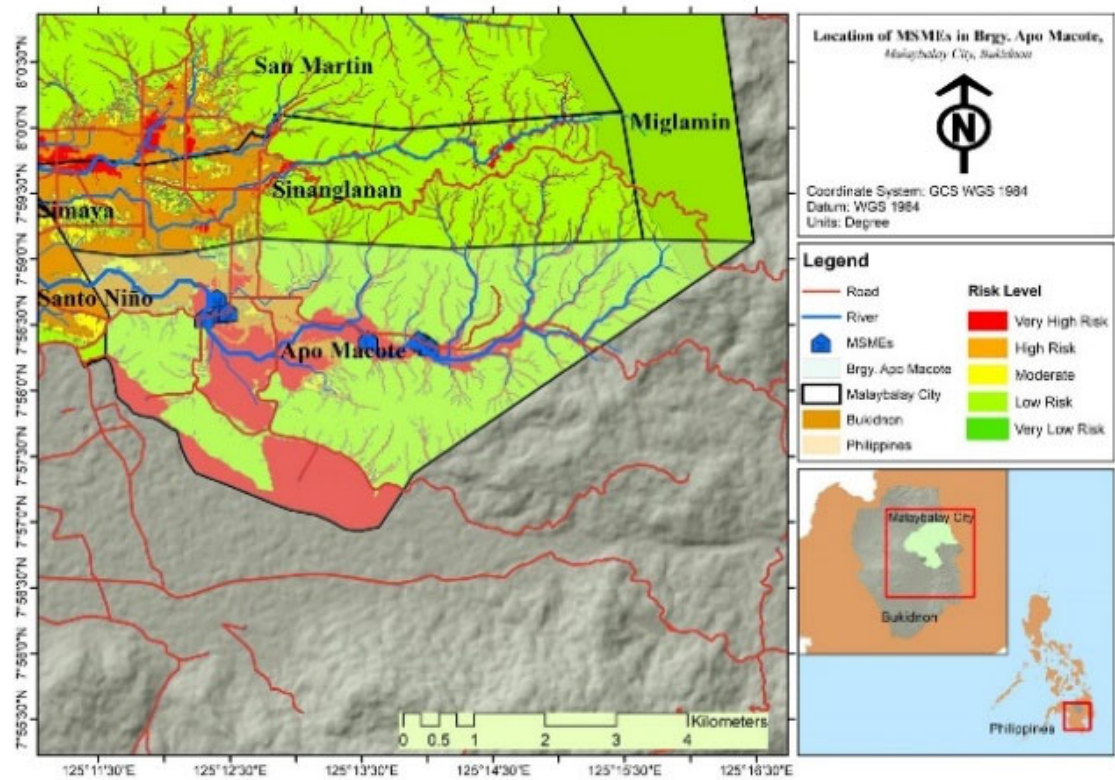


Figure 3. Map of micro enterprises in Barangay Apo Macote

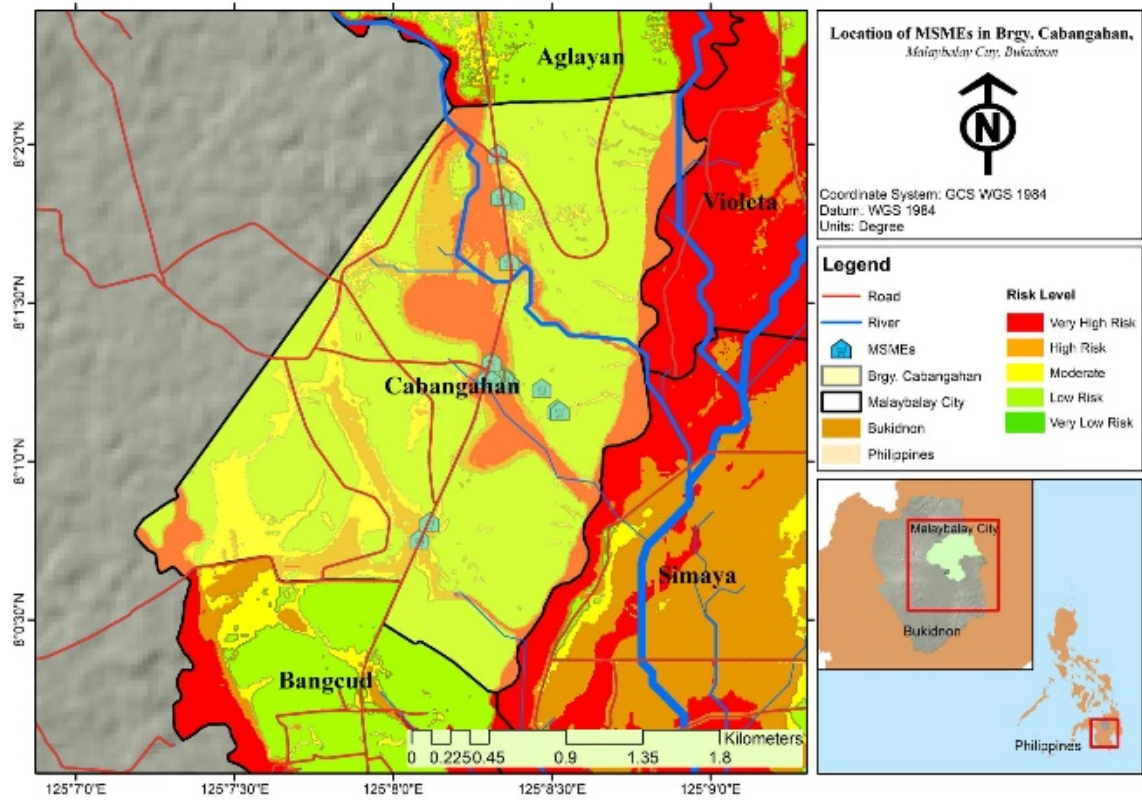


Figure 4. Map of micro enterprises in Barangay Cabangahan

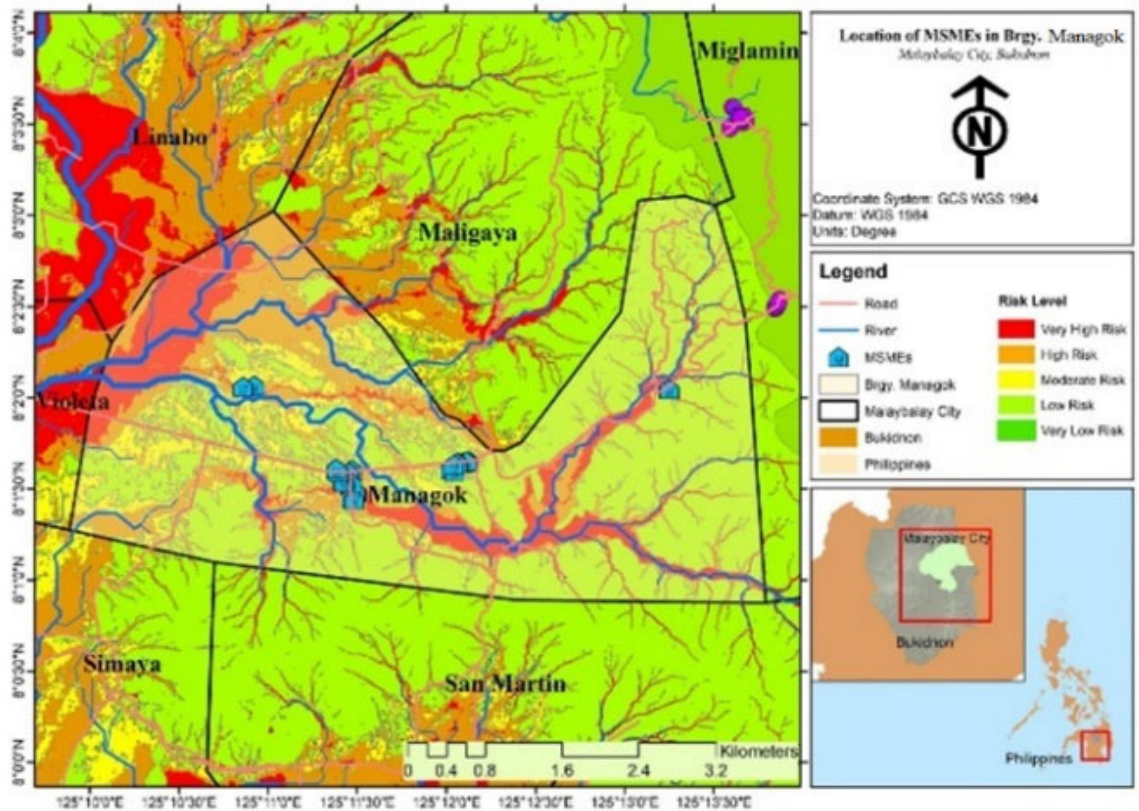


Figure 5. Map of micro enterprises in Barangay Managok

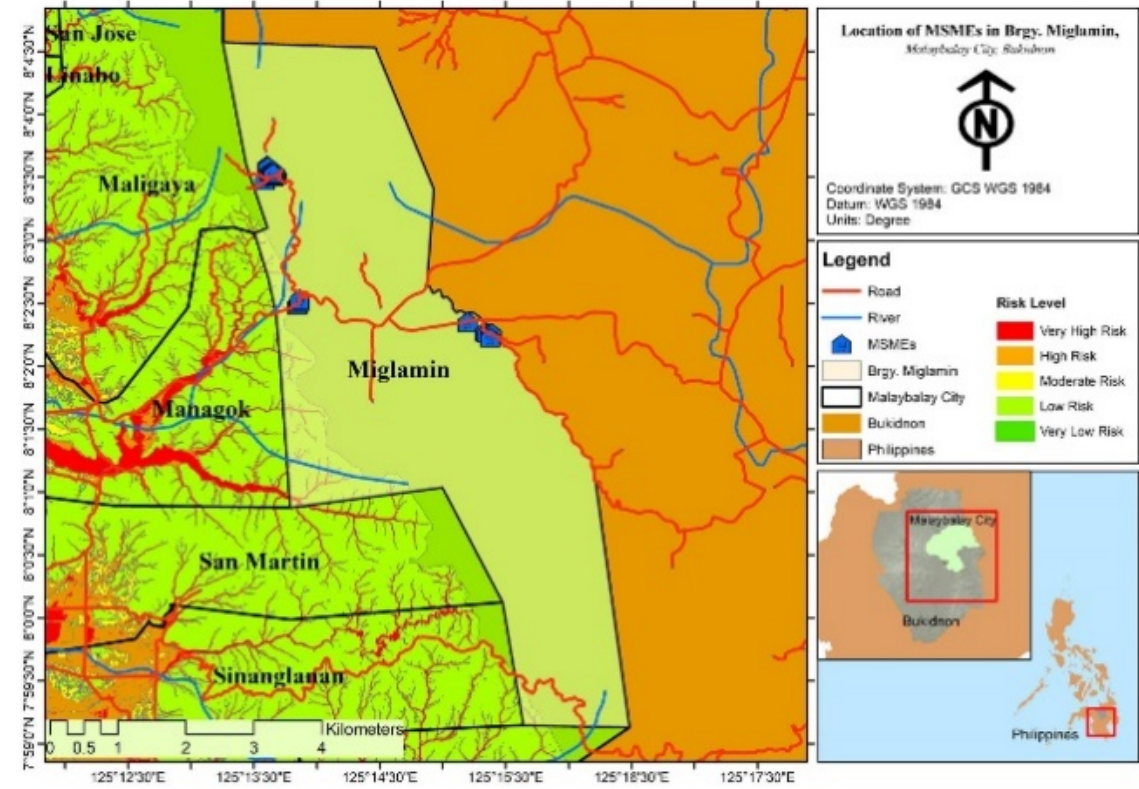


Figure 6. Map of micro enterprises in Barangay Miglamin

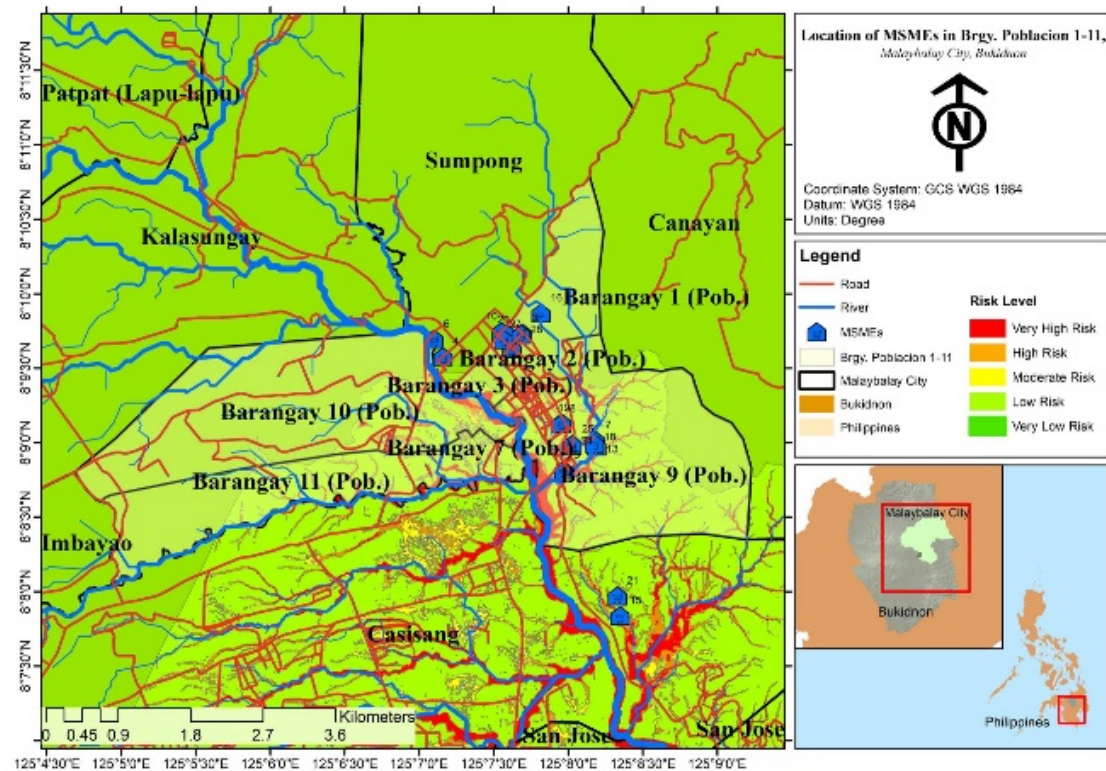


Figure 7. Map of micro enterprises in Barangay Poblacion 1 to 11

Micro enterprises located in Barangay Aglayan, Apo Macote, Cabangahan and Managok are considered as “high risk”. These barangays are situated in areas prone to natural disasters such as floods, landslides, and typhoons. The terrain includes steep slopes, riverbanks, or low-lying areas susceptible to flooding. These enterprises have high risk of structural damage to business premises, leading to costly repairs or reconstruction, potential loss of inventory and reduced sales during and after disaster events. Micro enterprises in Poblacion and Miglamin are in “low risk” areas. These barangays are located in areas that are less prone to natural disasters. They are situated on higher ground, away from major water bodies, and have stable soil conditions.

Table 1 presents the mean and standard deviation of disaster preparedness.

Table 1. Micro enterprise’s assessment on disaster preparedness

No.	Disaster Preparedness	Mean	SD	Qualifying Statement
1.	I know the significance of sharing knowledge and experiences of disaster.	3.71	.45	Extremely prepared
2.	I recognize the importance of making conversations about disasters with family members, neighbors, relatives, friends, and colleagues.	3.69	.49	Extremely prepared
3.	I know the government is ready to assist with a disaster such as community evacuation, procedures and early warning signals.	3.65	.52	Extremely prepared
4.	I gained enough knowledge about disasters from experts who work or conduct activities for disaster reduction and management.	3.43	.52	Extremely prepared
Overall		3.62	.51	Extremely prepared

The findings presented in Table 1 suggest that micro enterprises consider themselves "extremely prepared" for disasters, with a mean (M) score of 3.62 and a standard deviation (SD) of .51. This indicates a generally high level of self-assessed preparedness with relatively low variability among the responses. The highest scoring indicator, *"I know the significance of sharing knowledge and experiences of disaster,"* with a mean of 3.71 and SD of .45, highlights the importance placed on knowledge sharing. Conversely, the indicator *"I gained enough knowledge about disasters from experts who work or conduct activities for disaster reduction and management"* has the lowest mean score of 3.43 and a higher variability (SD = .52), suggesting variability in respondents' perceptions of preparedness gained through expert-led disaster education.

Studies affirm the critical role of knowledge sharing in disaster preparedness. The study by Inan et al. (2016) emphasizes that timely dissemination of necessary knowledge is essential for disaster management. Similarly, Oktari et al. (2020) mentioned that acquiring the necessary knowledge at the right place and time is known as knowledge management specifying goals of information creation, sharing, and utilization. The researchers note that while it is impossible to completely eliminate the negative effects of disasters, there are steps that can be taken to lessen their effects. Knowledge of disaster management techniques, best practices, and lessons learned will surely help with this effort by enabling well-informed preparedness plans and mitigation measures.

Bukidnon's predominantly rural setting, reliance on agriculture, and vulnerability to natural disasters such as floods and landslides shape the realities of business operations in this region. The finding that micro enterprises in Malaybalay City, Bukidnon are extremely prepared for disasters is significant. This level of preparedness reflects the proactive efforts of the enterprises, particularly those in disaster-prone areas, to mitigate risks and safeguard their operations.

Table 2 presents the mean and standard deviation of disaster-related knowledge. The data in Table 2 provides insights into the disaster-related knowledge of micro enterprises, indicating a moderate overall knowledge level with a mean (M) score of 3.10 and a standard deviation (SD) of .83. This suggests that while there is a general awareness of disaster-related information among these enterprises, the knowledge is not uniformly high. The highest mean score is *"I know already that disaster can cause damage that will harm anyone"* which is for the awareness of the potential harm caused by disasters (M=3.51, SD=.62), indicating that micro enterprises recognize the risks and damages associated with disasters. On the other hand, the lowest mean score pertains to *"I know when a disaster will happen"* which is predicting when a disaster will occur (M=2.62, SD=1.06), reflecting a significant uncertainty or lack of knowledge in this area.

According to Paton and Johnston (2020), the majority of small firms are aware of the general effects of disasters, especially with regard to the financial and physical damage they cause. This broad knowledge is frequently fueled by media coverage and prior disaster

experiences that draw attention to the short- and long-term risks associated with such occurrences. Nonetheless, research by Kapucu and Özerdem (2022) emphasizes the difficulties small enterprises face in understanding disaster prediction. They contend that although some businesses may have access to predictive data, the data's technical complexity and dependability frequently act as obstacles to its efficient application.

Table 2. Micro enterprise's assessment on disaster-related knowledge

No.	Disaster-Related Knowledge	Mean	SD	Qualifying Statement
1.	I know when a disaster will happen.	2.62	1.06	Knowledgeable
2.	I know there is no prevention for the occurrence of a disaster.	3.26	.83	Highly Knowledgeable
3.	I have been a participant in a disaster risk reduction seminar and training.	2.89	.91	Knowledgeable
4.	I know already that disaster can cause damage that will harm anyone.	3.51	.62	Highly Knowledgeable
5.	I know the specific actions to do to inform others by disseminating the information about disaster-related knowledge.	3.24	.71	Knowledgeable
Overall		3.10	.83	Knowledgeable

The micro enterprises are knowledgeable in terms of disaster-related knowledge which suggests that they are well-informed about the risks they face and the necessary response strategies. This knowledge likely stems from local initiatives focused on disaster education, such as community-based DRR programs and the involvement of local disaster councils in disseminating early warning systems and risk information.

Table 3 presents the mean and standard deviation of business resilience in terms of institutional control.

The results from Table 3 indicate that micro enterprises exhibit a moderate level of business resilience in terms of institutional control, with an overall mean (M) of 3.04 and a standard deviation (SD) of .79. This suggests that these enterprises have a fairly stable but not exceptionally high resilience capacity when considering institutional factors. The highest scoring indicator, "*I do disaster preparedness and drills for earthquakes, fires and typhoons,*" with a mean of 3.32 and SD of .71, reflects a strong commitment to regular disaster preparedness activities. In contrast, the lowest scoring indicator, "*I hire a disaster and risk mitigation officer,* " with a mean of 2.63 and a higher variability (SD = .93).

The result emphasizes the value of routine disaster preparedness exercises in reducing the effects of natural catastrophes on small and medium-sized businesses (SMEs). Furthermore, the findings of Agrawaal (2016) demonstrated that MSMEs typically face a wide range of risks due to their small size, limited resources, and limited expertise. In MSMEs, risk management is mostly under the control of the owner-managers, and there are no structural connections between risk management and planning, and even hiring of a risk mitigation officer.

Table 3. Micro enterprise's assessment on business resilience based on institutional control

No.	Business Resilience – Institutional Control	Mean	SD	Qualifying Statement
1.	I maintain a sense of control about what happens to the business.	3.29	0.63	Highly Resilient
2.	I generate fund sources to revitalize business operations.	3.17	0.71	Resilient
3.	I do disaster preparedness and drills for earthquakes, fires and typhoons.	3.32	0.71	Highly Resilient
4.	I maintain adequate number of staffs.	2.99	0.90	Resilient
5.	I adapt well to differing conditions.	3.09	0.75	Resilient
6.	I invest in training my personnel on disaster and crisis management.	2.91	0.88	Resilient
7.	I keep a stock of supplies and materials that can be used in times of emergencies.	3.17	0.68	Resilient
8.	I will surely conduct post-disaster assessments on the extent of damages that will hit the business.	3.11	0.74	Resilient
9.	I invest for insurance of the building and of the products and inventor in it from possible earthquake, fire or force majeure.	3.04	0.79	Resilient
10.	I prepare post-disaster plans to see the weaknesses of the establishment after the damage.	3.03	0.73	Resilient
11.	I have a mentor or consultant who discusses business preparedness with me.	2.91	0.88	Resilient
12.	I provide a resource manual for risk reduction and management.	2.92	0.82	Resilient
13.	I take business risk management to a new level	3.04	0.75	Resilient
14.	I hire a disaster and risk mitigation officer.	2.63	0.93	Resilient
15.	I store a contact list of all personnel to establish a disaster control group.	2.91	0.90	Resilient
Overall		3.04	0.79	Resilient

The resilience of micro enterprises in terms of institutional control reflects the capacity of businesses in Malaybalay, Bukidnon to manage internal operations effectively during crises. This suggests that these enterprises have established organizational structures and processes that allow them to maintain stability during disaster events. Many micro enterprises in Bukidnon are part of cooperatives that provide not only financial support but also organizational guidance, which enhances their ability to navigate disruptions.

Table 4 presents the mean and standard deviation of business resilience in terms of planning and preparedness.

The overall mean (M) of 3.16 and standard deviation (SD) of .71 suggests that micro businesses exhibit a modest level of resilience with regard to planning and preparedness. This implies that even if these businesses are reasonably prepared, they may still do better. With a mean score of 3.47 and SD of .59, the highest scoring indication, "*I have a long-term plan to strengthen the business*," demonstrates a strong dedication to strategic long-term planning. On the other hand, the indicator with the lowest score, "*I initiate researches relative to*

disaster risk reduction and management," indicates a considerable gap in proactive research activities connected to disaster risk reduction.

Table 4. Micro enterprise's assessment on business resilience based on planning and preparedness

No.	Business Resilience – Planning and Preparedness	Mean	SD	Qualifying Statement
1.	I have a long-term plan to strengthen the business.	3.47	0.59	Highly Resilient
2.	I have a plan to address governance and compliance issues.	3.35	0.67	Highly Resilient
3.	I have a sound financial management plan.	3.25	0.67	Resilient
4.	I have risk and vulnerability assessments.	3.09	0.71	Resilient
5.	I initiate researches relative to disaster risk reduction and management.	2.91	0.80	Resilient
6.	I have a business continuity plan.	3.23	0.64	Resilient
7.	I ensure that transport vehicle is prepared at all times in case disaster sets in.	3.17	0.79	Resilient
8.	I can improvise when usual resources are not available.	3.08	0.69	Resilient
9.	I have a workplace health and safety plan.	3.11	0.79	Resilient
10.	I conduct pre-disaster assessments on the extent of damages that will hit the business.	3.01	0.73	Resilient
11.	I ensure that readiness for disaster and emergency is observed at all times.	3.19	0.67	Resilient
12.	I encourage all personnel to get insurance for future claims.	3.07	0.73	Resilient
Overall		3.16	0.71	Resilient

Recent literature supports the importance of long-term planning in enhancing business resilience. An organization's direction is shaped by long-term strategy planning which is forecasting an organization's actions over a number of years (Steen et al., 2023). Businesses with well-developed long-term plans are better positioned to withstand and recover from disruptions. Long-term planning allows businesses to allocate resources more effectively, anticipate potential risks, and develop strategic responses to various challenges. Businesses with a long-term focus are seen to be more resilient and may be better equipped to handle unanticipated circumstances (Fietz et al., 2021). However, the relatively low mean score is supported by research from Samantha (2018), that small and micro businesses lack risk management procedures and have fewer financial and technological means to mitigate risk. They lack the resources and expertise to conduct detailed research on disaster risk reduction. This often leads to a reactive rather than proactive approach to disaster management.

In terms of planning and preparedness, micro enterprises demonstrate resilience in which they have taken proactive steps to ensure business continuity in the face of disasters. This resilience is critical for businesses in a place that frequently experiences natural hazards. The resilience in planning and preparedness also suggests that micro enterprises are leveraging available resources from local governments that provide disaster management training and support.

Table 5 shows the assessment micro enterprises on business resilience based on philosophy and integrity.

Table 5. Micro enterprise's assessment on business resilience based on philosophy and integrity

No.	Business Resilience – Philosophy and Integrity	Mean	SD	Qualifying Statement
1.	I emphasize a culture of putting in the best effort in the business.	3.20	0.67	Resilient
2.	I believe with a compassionate corporate philosophy of taking care of the other before self-interest.	3.07	0.72	Resilient
3.	I show compassion to others who are victimized by calamities.	3.36	0.56	Highly Resilient
4.	I will compensate the efforts of volunteers to rebuild the business.	3.27	0.60	Highly Resilient
5.	I indicate readiness of external forces in its vision and/or mission statement.	3.22	0.58	Resilient
6.	I maintain the philosophy of "business as usual".	3.21	0.62	Resilient
7.	I understand that risks are existing.	3.37	0.60	Highly Resilient
8.	I ensure that everyone in the organization takes responsibility for business continuity.	3.29	0.67	Highly Resilient
9.	I must be confident in our future activities.	3.29	0.59	Highly Resilient
Overall		3.25	0.62	Resilient

The findings from Table 5 suggest that while micro enterprises have a good understanding of the risks they face, there is variability in their commitment to a compassionate business philosophy. This indicates that while these enterprises are resilient in recognizing and managing risks, they may find it challenging to consistently integrate altruistic values into their business practices. The study of Aven and Renn (2010) emphasize that recognizing and understanding risks is fundamental for businesses to develop effective risk management strategies. Awareness of potential risks allows businesses to prepare and respond proactively, enhancing their resilience to adverse events. For bigger-sized businesses, the integrator orientation focuses on senior leaders using corporate social responsibility (CSR) to advance the interests of various corporate stakeholders, and the strategist orientation suggests organizing and utilizing CSR programs to directly target return on investment (Waldman et al., 2020).

The results from Table 5 indicate that micro enterprises exhibit a moderate level of resilience in terms of philosophy and integrity, with an overall mean (M) of 3.25 and a standard deviation (SD) of .62. This suggests a reasonable foundation in ethical practices and philosophical understanding, although there is variability in specific areas. The highest scoring indicator, "*I understand that risks are existing*," with a mean of 3.37 and SD of .60, shows a solid awareness of the inherent risks in their operations. Conversely, the lowest scoring indicator, "*I believe with a compassionate corporate philosophy of taking care of the other before self-interest*," with a mean of 3.07 and a higher variability (SD=.72), suggests some hesitation or inconsistency in adopting a strongly altruistic philosophy.

The finding that micro enterprises exhibit resilience in philosophy and integrity indicates a strong commitment to their core values, even in times of crisis. This resilience could be

driven by the cultural values in Bukidnon, where businesses often operate within tight-knit communities that prioritize collaboration, transparency, and mutual support. The ability of MSMEs to uphold their philosophies and ethical practices during challenging times strengthens their social capital and contributes to the sustainability of their operations in the long run.

Table 6 presents the mean and standard deviation of business resilience in terms of external support and linkages.

Table 6. Micro enterprise's assessment on business resilience based on external support and linkages

No.	Business Resilience – External Support and Linkages	Mean	SD	Qualifying Statement
1.	I have a strong relationship with its customers/clients.	3.50	0.60	Highly Resilient
2.	I source expert assistance concerning disaster response in times of need.	3.07	0.72	Resilient
3.	I coordinate with local planners, emergency managers, and public works officials to prepare for instances of damages or loss of properties.	3.31	0.65	Highly Resilient
4.	I keep a network of contacts with government agencies and NGOs.	3.29	0.69	Highly Resilient
5.	I am well supported by the local community.	3.13	0.67	Resilient
6.	I participate in talks or discussions about climate change or any environmental issue.	3.13	0.69	Resilient
7.	I develop strong relationships with suppliers.	3.17	0.65	Resilient
Overall		3.22	0.45	Resilient

The findings from Table 6 indicate that micro enterprises exhibit a moderate level of resilience in terms of external support and linkages, with an overall mean (M) of 3.22 and a standard deviation (SD) of .45. This suggests that these enterprises are fairly robust in leveraging external relationships to bolster their resilience. The highest scoring indicator, "*I have a strong relationship with its customers/clients,*" with a mean of 3.50 and SD of .60, emphasizes the importance of customer relationships. Conversely, the lowest scoring indicator, "*I source expert assistance concerning disaster response in times of need,*" with a mean of 3.07 and a higher variability (SD = .72), highlights a lower priority in accessing experts in disaster responses.

The findings from Table 6 suggest that micro enterprises have effectively built strong relationships with their customers, which is a significant aspect of their resilience. These relationships not only provide a steady revenue stream but also offer valuable feedback and loyalty, which are critical during times of crisis. This is also supported by the study of Donmaz et al. (2013) that relationship marketing is significant determinant for business success. However, micro, small, and medium-sized businesses (MSMEs) bear the brunt of the problems during disasters since they are less resilient and have fewer resources (Ballesteros & Domingo, 2015). Accessing expert assistance during disaster can enhance long-term sustainability and resilience, many small businesses struggle with the immediate costs and complexities associated with such initiatives.

The resilience of micro enterprises in terms of external support and linkages is an indication of the importance of community networks, cooperatives, and local support systems in disaster recovery. This resilience also suggests that MSMEs are successfully leveraging government programs and partnerships with NGOs that provide post-disaster recovery aid, training, and resources.

Table 7 presents the mean and standard deviation of business resilience in terms of communication and media.

Table 7. Micro enterprise's assessment on business resilience based on communication and media

No.	Business Resilience – Communication and Media	Mean	SD	Qualifying Statement
1.	I utilize social media as a tool to disseminate information regarding risks.	3.34	0.65	Highly Resilient
2.	I utilize technology in monitoring and assessing the extent of the damage of the disaster.	3.33	0.66	Highly Resilient
3.	I handle the communication channels of the organization effectively.	3.29	0.62	Highly Resilient
4.	I will formulate quick decision-making protocols in times of disasters.	3.27	0.55	Highly Resilient
5.	I get essential updates regarding impending disasters from the government and reliable news stations.	3.31	0.58	Highly Resilient
Overall		3.31	0.47	Highly Resilient

The findings indicate that micro enterprises demonstrate a high level of resilience in terms of communication and media, with an overall mean (M) of 3.31 and a standard deviation (SD) of .47. This suggests that these enterprises are reasonably effective in utilizing communication channels and media to support their resilience. The highest scoring indicator, "*I utilize social media as a tool to disseminate information regarding risks.*," with a mean of 3.34 and SD of .65, highlights the use of social media in disseminating risk information. Conversely, the lowest scoring indicator, "*I will formulate quick decision-making protocols in times of disasters.*," with a mean of 3.27 and a higher variability (SD=.55), points to some challenges in internal decision-making.

The findings from Table 7 suggest that while micro enterprises are adept at using social media as a platform for information dissemination, there is variability in their ability to make decision during disasters effectively. The study of Cvetković and Nikolić (2023) emphasized that social media disseminates vital information and keeps the public informed about the most significant occurrences. Social media is used to spread information about disasters and to gather information pertinent to the execution of preparedness, response, and recovery actions and measures before, during, and after disasters which highly utilized by micro enterprises.

However, the relatively lower mean score for quickly developing protocols for decision-making during disasters points to an area for improvement. According to Alvarez et al. (2018), entrepreneurs' decision-making is influenced by uncertainty. A decision's success or failure is influenced by both tangible and intangible variables, but a decision-maker still

needs appropriate facts while making decisions. If not, the decision-maker may be forced to rely solely on the experiences, which could lead to a poor selection and cast doubt on their dependability and effectiveness (Horita et al., 2018).

The finding that micro enterprises exhibit high resilience in communication and media is particularly noteworthy. Effective communication is a key component of disaster resilience, as it enables businesses to receive timely updates, disseminate information, and coordinate recovery efforts. The high resilience in communication could also be attributed to community-based early warning systems and the use of local radio stations and social media platforms to disseminate disaster-related information.

Table 8 presents the correlation analysis between the business resilience of micro enterprises (dependent variable) and two independent variables: disaster preparedness and disaster-related knowledge.

Table 8. Correlation analysis on the business resilience of micro enterprises

Independent Variable	Dependent Variable: Business Resilience			
	Correlation Coefficient	p-value	Degree	Remark
Disaster Preparedness	.354	< .001	Low	Significant
Disaster-related Knowledge	.591	< .001	Moderate	Significant

** Correlation is significant at 0.01 level

The result indicates that a statistically significant relationship exists between business resilience and the independent variables. The figures displayed in Table 8 show a positive relationship between business resilience and disaster preparedness ($r = 0.354$), and disaster-related knowledge ($r = 0.591$). As the assessment scores of these two variables increase, the higher is the business resilience.

Regarding disaster preparedness, the correlation coefficient is 0.354, indicating a low positive relationship with business resilience. Despite the low degree, the relationship is statistically significant ($p < 0.001$). This suggests that as disaster preparedness increases, business resilience tends to improve, although the effect size is relatively small. This low correlation implies that while preparedness is important, it may not be the primary factor influencing resilience. Micro enterprises might be undertaking preparedness activities that are either insufficient or inadequately implemented.

This finding aligns with recent research indicating that preparedness activities, such as developing emergency response plans, conducting drills, and securing necessary resources, play a crucial role in mitigating the impacts of disasters on business operations (Kato & Charoenrat, 2020). By enhancing their preparedness, businesses can better anticipate and manage potential disruptions, thereby sustaining their operations and reducing downtime during and after disaster events.

On the other hand, the correlation coefficient for disaster-related knowledge is 0.591, demonstrating a moderate positive relationship with business resilience. This relationship is also statistically significant ($p < 0.001$), indicating that greater disaster-related knowledge is associated with higher business resilience to a moderate extent. These finding highlights that understanding the nature of disasters, potential impacts, and mitigation strategies is more influential in building resilience. Knowledge equips business owners with the necessary insights to make informed decisions, adopt effective strategies, and respond proactively to disaster threats.

This result highlights the critical importance of knowledge and awareness in resilience-building efforts. A study has shown that businesses that possess a deeper understanding of potential risks, effective response strategies, and recovery processes are better equipped to implement effective preparedness measures and adapt to evolving circumstances during disasters (Lui & Lai, 2021). The significant correlation underscores the need for continuous education and training programs to keep businesses informed about best practices and emerging threats.

Comparing the two variables, disaster-related knowledge exhibits a higher correlation with business resilience than disaster preparedness. This suggests that while preparedness actions are essential, it is the underlying knowledge that drives the effectiveness of these actions. Knowledge empowers businesses to make informed decisions, optimize their preparedness strategies, and swiftly adapt to changing disaster scenarios. Therefore, fostering a culture of learning and knowledge sharing within organizations is paramount to enhancing overall resilience (Gibb & Buchanan-Smith, 2021).

Based on these findings, it is recommended to develop comprehensive training programs focusing on disaster preparedness tailored for micro enterprises. These programs should include practical drills, resource management, and contingency planning to improve the effectiveness of preparedness measures. Additionally, educational initiatives that enhance disaster-related knowledge needs to be prioritized. Workshops, seminars, and information sessions should cover topics such as risk assessment, disaster impact analysis, and advanced mitigation strategies.

An integrated approach combining both preparedness activities and knowledge dissemination is essential. Policies need to encourage micro enterprises to participate in both aspects to build a more robust resilience framework. The findings support the development of an extension program that includes stakeholder engagement, involving business owners, community leaders, and disaster management authorities in the design and implementation of resilience programs. Collaborative efforts can lead to more tailored and effective strategies.

Table 9 presents the results of the regression analysis conducted to understand the influence of disaster preparedness and disaster-related knowledge on the business resilience of micro enterprises.

Table 9. Regression analysis of the independent variables and business resilience of micro enterprises

Independent Variable	Dependent Variable: Business Resilience					
	Beta Coefficient	Std. Error	Std. Beta Coefficient	t-value	p-value	Remark
(Constant)	1.270	.269		4.725	<.001	--
Disaster Preparedness	.196	.076	.179	2.583	.011	Significant
Disaster-related Knowledge	.392	.051	.532	7.711	<.001	Significant
R = .614	R ² = .377	SE = .317	F = 44.55		p < .001	

**Significant at 0.01 level

The constant value in the regression model has an unstandardized coefficient of 1.270 with a standard error of 0.269, and a t-value of 4.725, which is statistically significant ($p < 0.001$). This indicates the baseline level of business resilience when both independent variables are zero. For disaster preparedness, the unstandardized coefficient is 0.196 with a standard error of 0.076, a standardized beta coefficient of 0.179, and a t-value of 2.583, which is significant at the 0.011 level. This positive and significant influence means that for each unit increase in disaster preparedness, business resilience increases by 0.196 units, holding other factors constant. However, the standardized beta coefficient shows that disaster preparedness has a relatively modest impact on business resilience compared to disaster-related knowledge.

Disaster-related knowledge has a stronger positive and significant effect on business resilience, with an unstandardized coefficient of 0.392, a standard error of 0.051, a standardized beta coefficient of 0.532, and a t-value of 7.711, which is highly significant ($p < 0.001$). This suggests that for each unit increase in disaster-related knowledge, business resilience increases by 0.392 units, holding other factors constant. The standardized beta coefficient highlights that disaster-related knowledge has a substantial impact on business resilience, more than disaster preparedness.

The model summary shows an R value of 0.614, indicating a moderate correlation between the independent variables and the dependent variable. The R² value of 0.377 suggests that approximately 37.7% of the variance in business resilience can be explained by disaster preparedness and disaster-related knowledge. The F-value of 44.55 and its associated p-value ($p < 0.001$) indicate that the overall regression model is statistically significant and provides a good fit for the data.

The regression analysis reveals that both disaster preparedness and disaster-related knowledge significantly contribute to business resilience, with disaster-related knowledge having a more pronounced effect. This finding aligns with the correlation analysis, emphasizing the importance of both factors but highlighting the greater influence of knowledge. The significant positive effect of disaster preparedness on business resilience highlights the importance of practical measures and strategies to prepare for potential disasters. Although the impact is relatively modest, enhancing disaster preparedness can still

positively contribute to the resilience of micro enterprises. The stronger impact of disaster-related knowledge indicates that understanding the nature, impacts, and mitigation strategies of disasters is crucial for building resilience.

A study by Kato and Charoenrat (2020) emphasizes that knowledge and training significantly enhance business resilience to natural disasters. They found that small and medium-sized enterprises (SMEs) with comprehensive disaster-related knowledge were more likely to implement effective risk management and continuity planning, which significantly improved their resilience to disruptions (Kato & Charoenrat, 2020). This study emphasizes the value of targeted educational initiatives to boost disaster preparedness and resilience among businesses.

Similarly, research by Gibb and Buchanan-Smith (2021) highlights the pivotal role of disaster education in fostering resilience. Based on the study, businesses in disaster-prone regions revealed that enterprises with higher levels of disaster awareness and knowledge were better equipped to develop adaptive strategies and mitigate the impacts of disasters. This aligns with the findings from the regression analysis, which showed a significant impact of disaster-related knowledge on business resilience.

The work of Djalante et al. (2020) on resilience and adaptive capacity in the face of climate change emphasizes the critical role of knowledge in building resilience. Their research shows that communities and businesses with access to accurate, timely information and education on disaster risks are more likely to develop effective adaptation strategies. This comprehensive view supports the idea that improving disaster-related knowledge is a key factor in boosting business resilience.

Disaster preparedness, though significant, has a less pronounced effect compared to disaster-related knowledge in determining the resilience of MSMEs in Malaybalay City. The fact that preparedness contributes to business resilience aligns with the notion that proactive measures such as business continuity planning, emergency drills, and asset protection help businesses mitigate the immediate impacts of disasters. However, the less dominant influence of preparedness in this context may be attributed to the limited resources available to many micro enterprises in Malaybalay. These businesses often operate with minimal capital and may struggle to implement extensive disaster preparedness measures, relying instead on basic risk reduction practices.

The regression analysis shows that disaster-related knowledge has a more substantial effect on business resilience than preparedness. In the context of Malaybalay City, where MSMEs frequently face the threat of natural disasters, access to timely and relevant knowledge about disaster risks, response strategies, and recovery processes is crucial. MSMEs that are well-informed about early warning systems, hazard maps, and post-disaster recovery options are better positioned to adapt to the challenges posed by natural disasters.

Moreover, local initiatives in Malaybalay, such as community-based disaster risk reduction (DRR) programs and training sessions provided by local government units (LGUs), play a critical role in disseminating disaster-related knowledge. This is particularly important for MSMEs that lack the financial resources to invest in robust preparedness measures, as knowledge can serve as a cost-effective tool for enhancing resilience.

7. CONCLUSION

The study on the resilience of micro enterprises in disaster-prone areas reveals significant insights into their preparedness, knowledge, and overall resilience to natural disasters. The findings indicate that while micro enterprises in Malaybalay City, Bukidnon, exhibit a high level of self-assessed preparedness, there is variability in their actual disaster-related knowledge and the practical application of resilience strategies. It is worth noting that micro enterprises consider themselves "extremely prepared," placing high importance on knowledge sharing. Overall disaster-related knowledge among these enterprises is moderate, with high awareness of the potential harm caused by disasters but significant uncertainty in predicting disaster occurrences. In terms of business resilience, micro enterprises demonstrate moderate resilience. Further, this study shows a positive and significant correlation between business resilience and both disaster preparedness and disaster-related knowledge. Disaster preparedness and disaster-related knowledge are significant predictors of business resilience, highlighting disaster-related knowledge having a more noticeable effect on enhancing business resilience capabilities. By addressing both disaster preparedness and disaster-related knowledge, and prioritizing the latter, the overall resilience of micro enterprises can be significantly enhanced, enabling them to withstand and recover from disaster impacts more effectively.

8. RECOMMENDATIONS

Based on the results of the study, it is recommended to develop comprehensive training and education programs that focus on both disaster preparedness and disaster-related knowledge, and business resilience. Gibb and Buchanan-Smith (2021) argued that ongoing education and training are essential for businesses to stay updated on best practices and evolving risks. The study of Djalante et al. (2020) emphasized that enhancing disaster-related knowledge through education and training is crucial for strengthening resilience against the increasing frequency and intensity of climate-related disasters. Prioritizing the dissemination of information on disaster-related knowledge and preparedness, including business resilience strategies for an extension project is a vital strategy.

Policy initiatives aimed at increasing disaster knowledge, disaster-related knowledge, and business resilience such as subsidized training programs or partnerships with the academe and non-government organizations for disaster and business resilience education could significantly improve the resilience of micro enterprises in Malaybalay. Knowledge-based interventions could be a more cost-effective way to enhance resilience among micro enterprises, particularly for those with limited financial capacity.

Furthermore, resources are needed to be allocated to support the continuous education and training of micro enterprises, including funding for workshops, development of educational materials, and access to disaster management tools and technologies. Regular assessments can help in identifying gaps, making necessary adjustments, and ensuring the long-term sustainability of the project. By addressing both disaster preparedness and disaster-related knowledge, the extension activity can significantly enhance the resilience of micro enterprises, enabling them to withstand and recover from disaster impacts more effectively.

Extension Program: Promoting Resilience and Operational Transformation for Emergency Continuity of Micro Enterprises (PROTECT ME)

The extension program aims to improve the resilience of men and women-led micro enterprises through development, capacity-building, and collaboration. With the specific objectives of developing customized Information Education and Communication (IEC) materials for disaster preparedness & disaster-related knowledge tailored to address gender-specific needs; providing capacity-building activities to enhance disaster and business resilience capabilities, including marketing, simple bookkeeping and personal finance of micro enterprises; assisting the micro enterprises in crafting their operations manual, business continuity plan, and sustainability plan; and establishing networks and collaborations for mutual support and resource-sharing among micro enterprises and for possible commercialization pursuits.

To improve the disaster risk reduction management practices, this extension program will develop customized Information, Education, and Communications (IEC) materials covering disaster preparedness and disaster-related knowledge. For business resilience, the PROTECT ME project will implement gender-sensitive capacity-building activities that cater to the specific needs of both male and female micro entrepreneurs. This will cover topics on marketing, simple bookkeeping, and personal finance of micro enterprises. Research indicates that women often face barriers to participation in training programs due to childcare responsibilities or societal expectations. As such, the project will provide flexible training schedules to encourage women's participation. Another strategy to enhance business resilience is to create manual of operations, business continuity plan, and sustainability plan, in which this extension project also aims to cover. Partnerships and networks will be formed to share resources, provide support, and explore for potential commercialization opportunities.

The PROTECT ME program aligns closely with several Sustainable Development Goals (SDGs) established by the United Nations, particularly SDG 1: No Poverty, SDG 5: Gender Equality, SDG 8: Decent Work and Economic Growth, SDG 9: Industry, Innovation and Infrastructure, SDG 11: Sustainable Cities and Communities, and SDG 13: Climate Action. By enhancing the resilience of micro enterprises, the project helps protect the livelihoods of small business owners and their employees, contributing to poverty reduction. Many micro enterprises are operated by individuals or families who rely on these businesses as their primary source of income. Strengthening their capacity to survive and recover from disasters directly supports poverty alleviation efforts.

The extension program's activities are strategically structured over four years, ensuring a comprehensive and phased implementation. The planning and coordination with partners, alongside the preparation of the program proposal, occur in the initial phase (January to June 2025). This will be followed by the signing of the Memorandum of Agreement (MOA) and preparation of the project implementation team in the latter half of 2025.

The actual implementation of the program begins in early 2026, incorporating a series of trainings and capacity development activities to equip beneficiaries with the necessary skills and knowledge. Continuous training, monitoring, and consultations will be conducted throughout the program timeline, ensuring sustained engagement and addressing emerging needs. Key deliverables such as report submissions and project evaluations are scheduled toward the latter part of the program (2027–2028), ensuring accountability and enabling insights into the project's impact. This timeline reflects a deliberate progression of activities, fostering steady growth and ensuring that the program achieves its intended objectives efficiently.

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