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Disaster Preparedness in Flood-Prone Areas in San Juan, La Union Toward a Preparedness Model

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Abstract

Flooding remains a persistent threat to many communities in the Philippines, particularly in areas like San Juan, La Union, where several barangays are highly vulnerable. This study set out to assess the current level of disaster preparedness and management in the five most flood-prone barangays namely Cabaroan, Nadsaag, Bambanay, Catdungan, and Oaquing. By employing a quantitative research design particularly decriptive-correlational and collecting responses from 328 participants through a structured questionnaire, the study explored the adequacy of emergency equipment, the community's disaster knowledge, and the frequency and impact of training programs. The findings revealed moderate preparedness across all barangays, with noticeable gaps in critical resources such as emergency vehicles and communication systems. Moreover, while most residents demonstrated a good level of awareness and readiness, disparities remained—particularly in access to consistent training and the engagement of local stakeholders. Statistical analysis confirmed a significant correlation between the availability of resources and disaster-related knowledge and training, underscoring the need for a holistic approach to flood preparedness. Challenges such as limited inter-agency coordination, weak political will, and community engagement further hindered effective disaster response. To address these, the study proposes a localized preparedness model that emphasizes stronger governance, improved public education, collaborative planning, and resource investment. Ultimately, this research seeks to support more proactive, inclusive, and sustainable flood management strategies that empower communities and reduce disaster-related risks.

Keywords: *Preparedness Model, Community, Flood, Disaster*

Chapter 1

INTRODUCTION

Background of the Study

Flooding continues to be one of the most urgent and destructive environmental threats worldwide, especially in urban communities where rapid urbanization and climate change amplify its consequences. From damaged homes and disrupted livelihoods to the loss of lives and essential infrastructure, the impacts of both sudden and prolonged flood events are deeply felt, particularly in vulnerable areas. In response, the Philippines, like many disaster-prone countries, has adopted the Disaster Risk Reduction and Management (DRRM) framework, structured around four interconnected thematic areas: prevention and mitigation, preparedness, response, and rehabilitation and recovery. Each area plays a vital role in building resilient communities and minimizing the risks and consequences of disasters.

Prevention and mitigation focus on long-term strategies to address the root causes of vulnerability, such as implementing proper land use zoning, constructing resilient flood-control infrastructure, and preserving the environment through reforestation and watershed management. These efforts are widely recognized as cost-effective ways to lessen future disaster impacts and reduce exposure to hazards (Asian Development Bank [ADB], 2020). Complementing this is the equally important area of preparedness, which translates knowledge into action. It includes training programs, community-based drills, public education, and early warning systems—practical measures that ensure both institutions and citizens are equipped to respond quickly and effectively in times of crisis (Department of Science and Technology - Philippine Institute of Volcanology and Seismology [DOST-PHIVOLCS], 2019).

When disasters strike, focus shifts to the response phase, where emergency services such as search and rescue, first aid, relief distribution, and temporary shelter provision are mobilized. A timely and efficient response is critical in preventing her loss of life and addressing the immediate needs of affected populations (National Disaster Risk Reduction and Management Council [NDRRMC], 2020). After the immediate crisis, communities then move into the rehabilitation and recovery stage, which involves rebuilding homes, schools, and infrastructure, while also addressing psychological well-being and restoring livelihoods. This phase goes beyond physical reconstruction; it is an opportunity to rebuild safer, stronger, and more resilient communities through the "build back better" approach (United Nations Office for Disaster Risk Reduction [UNDRR], 2022).

While all four thematic areas are essential, this study places particular emphasis on disaster preparedness as the most proactive and empowering pillar in reducing the negative effects of flooding. By investing in preparedness—from education to drills to warning systems—communities can act decisively and confidently when floodwaters rise. It is through preparedness that people move from being passive victims of disaster to becoming capable agents of safety and resilience.

Preparedness is more than just emergency kits and evacuation drills; it is a coordinated effort involving individuals, communities, institutions, and systems working together to reduce vulnerability and enhance readiness. This becomes particularly vital in the face of compound flood events, such as simultaneous riverine, urban, and coastal flooding often triggered by extreme rainfall, storm surges, and

other cascading hazards. According to Ming et al. (2022), these events are becoming more frequent under changing climate conditions, emphasizing the urgency of preparedness measures.

Tabari (2020) also warns that global warming is intensifying precipitation patterns, making extreme rainfall more frequent and severe. These findings highlight that flood risk is dynamic and continually evolving. As Lai (2020) pointed out, flood vulnerability is shaped by a complex interplay of climate variability, land use changes, and socio-economic development. This requires flexible, adaptive preparedness strategies that evolve alongside emerging risks.

Across the globe, nations and cities have recognized the importance of preparedness in safeguarding communities. In Indonesia, Budiyono et al. (2016) examined flood-prone areas in Jakarta and underscored the need for sustainable land use planning and improved drainage systems. However, their study also noted that infrastructure alone is not sufficient; community awareness, planning, and local engagement must go hand-in-hand with physical measures.

In India, Parthasarathy et al. (2017) analyzed Mumbai's vulnerability to extreme rainfall and found that disaster preparedness efforts were often hindered by insufficient community engagement and poor early warning dissemination. This echoes the findings of Ahmed and Frazier (2020) in Bangladesh, where localized preparedness actions such as community-based evacuation planning and embankment construction played a crucial role in long-term flood resilience following severe storms and floods.

Policy-oriented studies further support this shift toward preparedness. In Europe, Kundzewicz et al. (2018) highlighted how the EU Floods Directive has encouraged member states to adopt proactive risk management, including risk mapping, preparedness drills, and participatory planning. This pivot from reactive to anticipatory approaches reflects a growing understanding that preparedness saves more lives and resources than response alone.

From a climate adaptation perspective, Hino et al. (2017) advocate integrating long-term climate projections into city planning to support flood resilience. Their work suggests that urban design should incorporate preparedness thinking, blending gray and green infrastructure with social preparedness policies. In addition to infrastructure and policy, environmental systems can also enhance preparedness. For example, Mitsch and Gosselink (2015) emphasized the role of wetlands in naturally absorbing floodwaters and reducing downstream impacts, arguing for their protection and integration into flood management strategies.

Recent flood events serve as grim reminders of the consequences of under-preparedness. In 2023, São Paulo, Brazil, experienced deadly floods that displaced over 4,000 people, revealing major gaps in local early warning systems and evacuation plans (Al Jazeera, 2023). That same year, northeastern Bangladesh saw extensive flooding from the Barak and Kushiyara rivers, which submerged more than 53,000 hectares of land and disrupted education in over 600 schools (Hansen, 2023). These events underscore the cascading impacts of flooding—not just physical destruction, but educational, economic, and social disruption.

Preparedness is especially critical in Asia, where many countries are particularly vulnerable to climate-induced flooding. In 2022, Typhoon Nanmadol struck Japan, prompting mass evacuations. The well-organized response demonstrated the value of a strong culture of preparedness, built through years

of planning and education (Al Jazeera, 2022). In China, the same year, deadly flash floods affected over 6,000 people in Qinghai Province, illustrating how rapid-onset disasters challenge local preparedness mechanisms (Davies, 2022).

In the Philippines, a flood-prone country with deep exposure to typhoons and seasonal monsoons, studies have begun to highlight the importance of localized preparedness models. For example, the work of Garcia and Fermin (2022) focused on community-based disaster preparedness in Central Luzon and emphasized the critical role of barangay-level governance, regular drills, and household participation in improving flood readiness. Their study revealed that preparedness efforts must be context-specific, participatory, and sustained to be effective.

Ultimately, disaster preparedness is not just an option; it is a lifeline. As cities grow and climate threats intensify, preparedness becomes the cornerstone of resilience. Infrastructure may delay the impacts, but it is people, plans, and proactive action that truly save lives. This study, therefore, centers on assessing the state of disaster preparedness in flood-prone areas, highlighting that while all four thematic areas of DRRM are interconnected, preparedness offers the strongest line of defense before disaster strikes.

Beyond macro-level strategies, preparedness at the community and household levels has become a focal point for flood risk reduction research in recent years. In Indonesia, Worowirasmi et al. (2015) emphasized the effectiveness of community-based disaster risk reduction (CBDRR) in Semarang, revealing that communities equipped with localized knowledge, organized training, and collective flood memory are far more responsive and adaptive during disasters. Similarly, Ashenefe, Wubshet, and Shimeka (2017) examined flood-prone households in Ethiopia's Dembia district and found that socio-economic factors such as income level, educational attainment, and past flood experience significantly influenced preparedness behaviors—emphasizing the need for contextual, targeted interventions.

In Ghana, Glago (2019) studied residents' flood awareness and preparedness and found a strong link between risk perception and the likelihood of adopting preventive measures like securing emergency supplies or planning evacuation routes. These findings align with the conclusions of Bodoque et al. (2019) in Spain, who discovered that well-designed flood risk communication campaigns substantially improved public awareness and community readiness for flash floods. Their work reiterates that communication is not a secondary concern; it is a central pillar of effective preparedness.

The growing role of technology in preparedness has also come under increasing academic attention. Cheng et al. (2019) analyzed how residents of Wuhan, China, used social media platforms during major urban floods. They suggested that integrating social media into formal disaster preparedness systems could help authorities gauge public sentiment, verify real-time conditions, and better coordinate warnings and response efforts. Extending the technological lens, Arizala et al. (2025) introduced RoutScape, an XR-based geospatial platform developed with disaster officers in the Philippines. The tool allows users to visualize flood scenarios, plan evacuation routes, and simulate disaster responses, proving how immersive technology can enhance preparedness education and planning at the local government level.

Other studies have honed in on vulnerable sectors within communities. Sawangnate, Chaisri, and Kittipongvises (2022) focused on elderly populations in Bangkok, finding that preparedness strategies

such as simplified flood hazard maps, household-level drills, and disaster literacy programs significantly improved the elderly's ability to respond effectively to flooding. Meanwhile, Mhd Noor et al. (2022) conducted a randomized trial in Malaysia demonstrating that structured, health-based educational interventions notably increased preparedness knowledge, skills, and confidence across multiple community sectors.

More recently, Sa'adi et al. (2024) evaluated early warning systems and preparedness in Johor, Malaysia, revealing gaps in public understanding and technological reach. Their recommendations included strengthening school-based education programs, decentralizing warning systems, and investing in mobile app-based alerts. On a similarly localized note, Aniag et al. (2024) conducted a preparedness assessment in Valdefuente, Cabanatuan City, Philippines. Their findings showed that while many households had informal evacuation plans, few had access to official emergency communication channels or participated in drills—signaling the need for greater institutional support in grassroots preparedness efforts.

At the national level, disaster preparedness in the Philippines is governed by Republic Act No. 10121, also known as the Philippine Disaster Risk Reduction and Management Act of 2010. This legislation outlines four thematic areas: prevention and mitigation, preparedness, response, and rehabilitation/recovery. While each theme is vital, this study concentrates on disaster preparedness, defined as the knowledge, capacities, and organized actions taken before disasters to ensure an effective response. Despite the legal framework, implementation gaps persist. A critical review by Luna (2016) highlighted that local government units (LGUs), especially in rural and coastal areas, often struggle to localize national policy due to limited financial resources, inadequate technical training, and low public risk awareness. These structural issues hinder sustained preparedness, particularly in communities with high exposure to climate hazards.

In Region I or the Ilocos Region, where La Union is located, recent risk assessments led by PHIVOLCS and the Office of Civil Defense (Solidum et al., 2021) have emphasized the heightened vulnerability of coastal provinces like Ilocos Sur and La Union to hydro-meteorological hazards, including typhoons, storm surges, and monsoon-induced flooding. The report underscored the importance of integrating community-based risk assessments and early warning systems tailored to the unique exposure profiles of each locality. In a related case study, Javier and Resurreccion (2020) found that although many barangays across Region I have established Barangay Disaster Risk Reduction and Management Committees (BDRRMCs), a significant number of these committees lack adequate training, conduct infrequent drills, and have limited resources for hazard mapping and public education.

At the provincial level, La Union's Provincial Disaster Risk Reduction and Management Office (PDRRMO) has made noticeable strides in promoting disaster preparedness through flagship programs such as Project LAUNION SAFE and Operation LISTO. A 2019 report from the PDRRMO documented ongoing initiatives like community-wide flood drills, first responder training, and hazard orientation campaigns in partnership with local schools and barangays. However, the report also acknowledged that preparedness capacities differ widely across municipalities, driven largely by the commitment of local leaders, access to risk data, and the frequency of local hazards. In many cases, municipalities with limited institutional capacity still lag in the localization of DRRM protocols and proactive community engagement.

At the municipal level, San Juan, La Union—well known for its coastal tourism—regularly experiences flooding events that challenge its disaster preparedness mechanisms. In August 2018, Tropical Storm Karding brought torrential rains that triggered flooding in several barangays, including Urbiztondo, Ili Sur, and Panicsican. The storm rendered roads impassable and forced numerous households to evacuate due to overflowing riverbanks and poorly maintained drainage systems (La Union DRRMO, 2018). Again in October 2022, localized thunderstorms intensified by a cold front caused heavy inundation in parts of San Juan. In response, the Municipal Disaster Risk Reduction and Management Office (MDRRMO) deployed emergency teams and issued early warnings. However, post-event evaluations revealed persistent gaps: many residents were unfamiliar with designated evacuation areas and lacked access to timely hazard updates, indicating a gap between institutional preparedness and household-level action.

In the coastal municipality of San Juan, La Union, including barangays like Barangay 1, Barangay 2 , Barangay 3, and Barangay 4, the low elevation (Barangay 3 is approximately 11 m above sea level) and proximity to the West Philippine Sea and local creeks make these communities highly susceptible to flooding. Historical events illustrate this vulnerability: in July 2015, Tropical Storm “Egay” (Linfa) triggered a state of calamity in La Union, bringing torrential rain that inundated coastal and riverine communities and led to mass evacuations and impassable roads. More recently, the passage of Typhoon Carina (Gaemi) in July 2024, enhanced by the southwest monsoon, caused widespread flash flooding that displaced nearly 60 families in La Union and led to the collapse of river walls and roads near San Juan. The event also resulted in casualties, including a fatality in Barangay Urayong and two missing persons swept away by strong currents—highlighting the lethal combination of unregulated water channels and inadequate barangay-level flood infrastructure. Despite proactive response efforts by local authorities, including evacuation orders and clearing operations, post-event evaluations revealed persistent shortcomings in evacuation readiness, household preparedness (e.g., go-bags, evacuation plans), and community-based early warning systems, with many residents still unaware of evacuation sites or receiving delayed hazard notifications via top-down SMS or radio alerts.

Given the vulnerability of San Juan, La Union, this study evaluated the flood preparedness strategies in its five most flood-prone barangays: Barangay 5, Barangay 4, Barangay 3, Barangay 2, and Barangay 1. Data was collected from the Provincial Government of La Union through their official website, launion.gov.ph, to identify these barangays. The study seeks to assess the effectiveness of existing disaster preparedness plans, community awareness programs, and the role of local agencies in mitigating flood risks. Additionally, it determined whether respondents require further disaster preparedness training and seminars to enhance community resilience.

By understanding the gaps in flood preparedness, this research contributes to the broader goal of developing more effective flood mitigation strategies in La Union and similar flood-prone areas in the Philippines. Strengthening local disaster response mechanisms, improving infrastructure resilience, and promoting community-based disaster risk reduction efforts are crucial in minimizing the devastating impact of future floods.

Theoretical/Conceptual Framework

The following theories are anchored to Davidson and Lambert’s Disaster Response Indices theory, Lindell and Perry’s Protective Action Decision Model, Shiwaku and Takeuchi’s Disaster Education

theory, Icek Ajzen's Theory of Planned Behavior, and David McEntire's Emergency Management Theory, together with other relevant theories in assessing the extent of disaster preparedness in flood-prone areas of San Juan, La Union.

The research presents the theoretical framework of the study on disaster preparedness in flood-prone areas in San Juan, La Union, to organize ideas and capture essential concepts in a way that is easy to remember and apply. It also explains the theories involved that are relevant to the study.

Disaster Response Indices Theory plays an important role in measuring stakeholders' disaster preparedness, resilience, mitigation efforts, social vulnerability, and hazard exposure. Davidson and Lambert (2001) explained that natural disaster indices are valuable as they summarize a substantial amount of technical information in an accessible manner. Indices have been widely applied to measure social capital, quality of life, human development, social vulnerability, and emergency preparedness (Davidson & Lambert, 2001). According to Davidson and Lambert (2001), disaster response indices offer several benefits: (1) providing a more dynamic picture of disasters, (2) comparing vulnerability between different communities, (3) efficiently allocating scarce resources, (4) assessing disaster risk more effectively and accurately, and (5) understanding community preparedness. Additionally, these indices support disaster resource allocation, high-level planning decisions, public education efforts, and disaster risk assessment (Davidson & Lambert, 2001). This theory supports the study by measuring and assessing stakeholders' disaster preparedness, reinforcing the significance of summarizing extensive technical data in an understandable way.

The Protective Action Decision Model (PADM) is a multistage model that examines how people respond to environmental hazards and disasters. PADM integrates the processing of information from social and environmental cues with messages received from social sources through communication channels. It identifies three critical predecision processes: (1) reception, attention, and comprehension of warnings; (2) exposure, attention, and interpretation of environmental/social cues; and (3) formation of three core perceptions threat perceptions, protective action perceptions, and stakeholder perceptions that shape decisions on responding to imminent or long-term threats (Lindell, 2012). The outcome of the decision-making process, along with situational facilitators and impediments, determines behavioral responses (Lindell, 2012). This model is highly relevant to the study as it examines the population's responses to flood-related disasters, offering a framework to understand how individuals engage in disaster preparedness.

Another theory utilized in this study is Shiwaku and Takeuchi's Disaster Education Theory. This theory posits that disaster education enhances individuals' awareness of what to do before, during, and after a disaster. According to Shiwaku and Takeuchi, disaster education influences individuals' knowledge and perception of disaster risks, making it an essential tool for promoting preparedness (Kitagawa, 2021). Their research found that disaster education is effective in improving risk perception, information-seeking behavior, and disaster preparedness, recommending stronger links between schools and communities to build disaster resilience (Kitagawa, 2021). This theory is crucial to the study, as it highlights the role of education in increasing disaster preparedness, ensuring that communities are better equipped to handle flood-related emergencies.

The Theory of Planned Behavior (TPB) provides a framework for understanding the antecedents of behavior, particularly disaster preparedness. The central factor in TPB is an individual's intention to perform a given behavior, which is influenced by three primary factors: (1) attitude toward the behavior (favorable or unfavorable evaluation), (2) subjective norm (perceived social pressure to engage or not engage in the behavior), and (3) perceived behavioral control (ease or difficulty of performing the behavior) (Ajzen, 1991). In the context of disaster preparedness, behavioral approaches play a significant role in motivating individuals to take proactive measures. Despite the frequent occurrence of disasters affecting thousands of lives each year, many individuals remain unprepared (Ajzen, 1991). The study incorporates TPB to explore the behavioral factors influencing disaster preparedness, emphasizing the need for broad-based behavioral change efforts.

Lastly, David McEntire's Emergency Management Theory asserts that disasters are inevitable and can have devastating effects unless proactive measures are taken to prevent, respond to, recover from, and mitigate emergencies (McEntire, 2004). According to this theory, the lack of preparedness can lead to catastrophic consequences, threatening the survival of communities (McEntire, 2004). The theory emphasizes that societies must implement proactive, reactive, and post-emergency strategies to effectively combat disasters and their effects. These strategies should align with the nature of the disaster and adhere to fundamental principles, including preparedness, response, recovery, and mitigation (McEntire, 2004). This theory aligns with the study as it underscores the necessity of urgent and immediate safety measures before, during, and after disasters. The researcher utilized this model to develop appropriate safety and preventive measures to minimize the adverse impacts of disasters on society and communities.

The integration of these theories provides a comprehensive understanding of disaster preparedness in flood-prone areas in San Juan, La Union. These theoretical frameworks help assess the level of preparedness among respondents, the availability of resources, and the existing disaster management strategies in the community.

Floods are the most common type of natural disaster, occurring when excess water submerges typically dry land. They are often triggered by heavy rainfall, rapid snowmelt, or storm surges from tropical cyclones or tsunamis in coastal areas. The 21st century is predicted to be an era of water scarcity, and for thousands of years, people have settled in flood plains due to their fertile soils and access to water (Kundzewicz et al., 2002). However, increasing population density, urbanization, and agricultural expansion in flood-prone areas have exacerbated society's vulnerability to flooding (Kundzewicz et al., 2002). As a result, floods have become increasingly disastrous to human settlements.

Therefore, effective flood preparedness are essential, particularly in local communities where preventive measures must be adequately implemented. The primary focus should be on addressing the needs of the most vulnerable populations, ensuring their safety and resilience in the face of disasters.

Figure 1 shows the paradigm of the study. The input of the study contains the level of knowledge on flood preparedness in terms of equipment for floods and communication system, disaster preparedness, and training programs and seminars. It also contains the degree of challenges encountered in the implementation of disaster management and the significant relationship and difference on the assessment on the level of disaster preparedness on measures when grouped according to variables. Lastly, the creation

pf DRRM Model that may be proposed to enhance disaster preparedness to flood-prone areas in San Juan, La Union.

The process includes the distribution of survey through questionnaire checklist. The analysis and interpretation of the level of flood preparedness, if there is significant correlation or difference on the assessment of the level of flood preparedness on variables and a DRRM Model that may be proposed to enhance disaster preparedness of flood prone areas in San Juan, La Union.

The output shows the level of flood preparedness result and possible propose training programs or management intervention on Disaster Preparedness to Flood Prone Areas in San Juan, La Union.

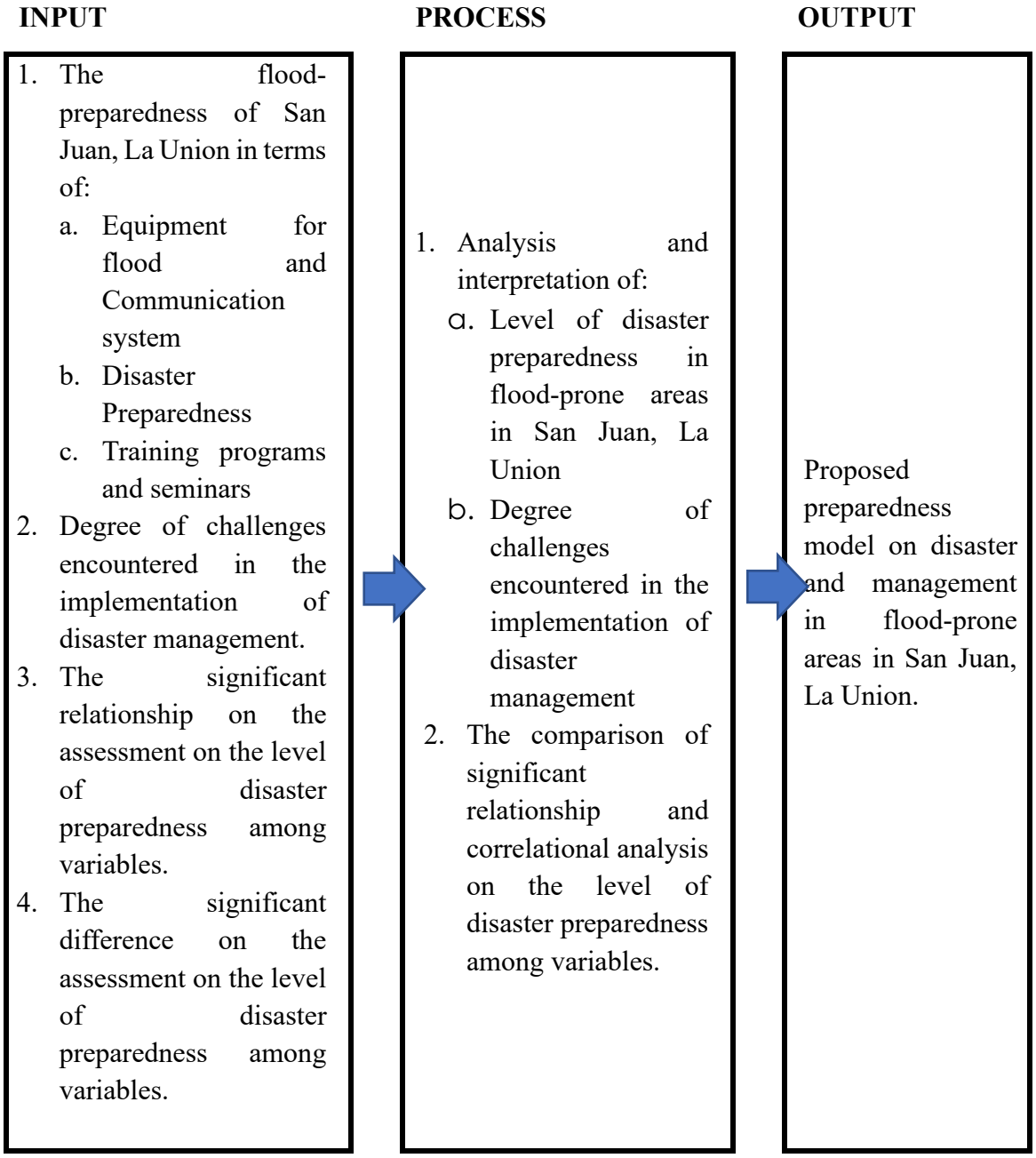


Figure 1. Research Paradigm

Statement of the Problem

This study determined the disaster preparedness of flood prone areas in San Juan, La Union. Specifically, it answered the following questions:

1. What is the level of disaster preparedness in flood-prone areas in San Juan, La Union in terms of the following:
   a. Equipment for floods and Communication system
   b. Disaster Preparedness
   c. Training programs and seminars
2. What is the degree of challenges encountered in the implementation of disaster management.
3. Is there a significant relationship on the assessment on the level of disaster preparedness on measures when grouped according to their profile variables?
4. Is there a significant difference on the assessment on the level of disaster preparedness on measures when grouped according to their profile variables?

Significance of the Study

The entities benefit from this study are the residents of Barangay 5, Barangay 4, Barangay 3, Barangay 2 and Barangay 1, Barangay Officials, Barangay Disaster Risk Reduction and Management Committee (BDRRMC), Municipal Disaster Risk Reduction and Management Committee (MDRRMC), Municipal Officials, and Future Researchers.

Residents of Barangay 5, Barangay 4, Barangay 3, Barangay 2 and Barangay 1. Through the help of this research, the residents of the aforementioned barangay will have a better response when flood strikes in their respective barangays. This study will help the citizens of Municipality of San Juan to plan a strategic response whenever a natural hazard that causes flood strike the Municipality of San Juan.

Barangay Officials and Barangay Disaster Risk Reduction and Management Committee (BDRRMC). Through the help of this study, officials and committee for each barangay can proactively device or enhance existing disaster response plans to minimize the damages and losses caused by flooding.

Municipal Disaster Risk Reduction and Management Committee (MDRRMC) and Municipal Officials. Through the help of this study, the Municipal Officials and MDRRMC can formulate or enhance a municipal wide risk reduction plan to minimize the damages and losses caused by flooding.

Researchers. The result of the study give them better insights and sense of fulfillment and shall boast his morale in the enhancement of the existing policies on disaster management.

Future Researchers. Through the help of this study, it will open doors for future researchers to refine, and expand studies in relation to disaster preparedness. This may serve as a source of information about disaster preparedness.

Definition of Terms

The following terms were defined in this section for a better understanding of the study:

Disaster preparedness. It refers to the readiness of households and barangay to execute actions such as evacuation, rescue, first aid, relief distribution, and post-disaster recovery, in accordance with established protocols and legal frameworks like the Philippine Disaster Risk Reduction and Management Act of 2010.

Equipment and communication system. It refers to the pre-identified and pre-positioned set of tools, devices, and technologies that are organized, maintained, and ready for use to ensure early warning, coordination, and emergency preparedness before a flood occurs.

Flood-Prone Areas. These are the selected barangays of San Juan, La Union which is frequently struck by flooding.

Chapter 2

METHODOLOGY

This chapter presents the research design, population and locale of the study, instrumentation and data collection, validity, data analysis, categorization of data used in this study and ethical consideration.

Research Design

This research study used a quantitative Descriptive Correlational research design. According to Mustieles (2020), descriptive correlational design is used in research studies to establish the relationship between various variables and provide static descriptions of situations. The main goal is to give a full account of the variables and how they are related. Descriptive Correlational was used to identify the relationship and correlate the respondents' profile in the disaster preparedness of flood-prone areas in the selected barangay in San Juan, La Union.

In this study, it involved a survey in the form of a questionnaire checklist; the study's primary goal is to determine the level of disaster preparedness of flood-prone areas in the selected barangay in San Juan, La Union, and to ascertain the amount of support from the Municipal Disaster Risk Reduction Management (McCombes, 2022).

Population and Locale of the Study

The purpose of this study was to determine the disaster preparedness of flood-prone areas in the selected barangays in San Juan, La Union. The study was conducted in San Juan, La Union, and the respondents of the study included the residents, members of the Barangay Disaster Council Committee, and the Barangay Officials of the flood-prone areas in San Juan, La Union.

To gather the necessary data, a total of 328 respondents were selected using the Raosoft sample size calculator, applying a 5% margin of error a standard statistical method for determining an appropriate sample size. The determination of respondents is presented in Table 4. The sample population consisted of residents, members of the Barangay Disaster Council Committee, and Barangay Officials. All participants were willing to respond to the survey checklist questionnaire prepared by the researcher, which was designed to assess disaster preparedness in the flood-prone areas of San Juan, La Union.

Table 1. ***Distribution of Respondents***

Flood Prone Areas in San Juan, La Union	Total Population (N)	Sample Population (n)
Barangay 1	339	61
Barangay 2	475	64
Barangay 3	596	66
Barangay 4	793	67
Barangay 5	1559	70
Total	**3762**	**328**

Instrumentation and Data Collection

In gathering the data needed in the study, the researcher utilized a questionnaire checklist adapted from the study of Roxas Jr. (2019), entitled *"Disaster Preparedness and Management of Selected Barangays of Santa, Ilocos Sur."*

Moreover, the checklist-type survey questionnaire was used as a research instrument to determine the level of disaster preparedness in flood-prone areas, specifically Barangay 1, Barangay 2, Barangay 3, Barangay 4, and Barangay 5 in San Juan, La Union. Before the survey was conducted, the researcher sought and secured approval from the respective Barangay Captains for the collection of data and the statistics of respondents to be included as part of the total population of the study.

The researcher used Purposive Sampling, in which the respondents were selected based on specific characteristics necessary for the study. In other words, the respondents were selected "on purpose." This sampling method relied on the researcher's judgment in identifying and selecting individuals, cases, or events that could provide the most relevant information to meet the objectives of the study. The chosen respondents were residents of Barangay 1, Barangay 2, Barangay 3, Barangay 4, and Barangay 5 in San Juan, La Union, as well as members of the Barangay Disaster Council Committee and Barangay Officials who had been residing in their respective barangays for at least five (5) years. The inclusion criterion of requiring participants to have lived in a barangay for at least five years holds significant value. Individuals who have resided in the area for an extended period are more likely to have firsthand experience with past flooding events, local response efforts, and the community's evolving strategies for disaster risk reduction. Their insights are deeply rooted in actual encounters with hazards, recovery processes, and community-level adaptations, which are critical for accurately assessing preparedness levels. These individuals had directly experienced or observed flooding in their communities. Residents who had lived in the barangay for less than five (5) years were excluded.

Using a five-year residency criterion ensures that the data collected reflects long-term residents' awareness, perceptions, and behaviors developed through repeated exposure to disasters. These individuals can provide historical perspectives on changes in infrastructure, local government responses, and the effectiveness of community-based preparedness programs. Moreover, they are more likely to understand localized risks, traditional coping mechanisms, and the strengths or gaps in current preparedness efforts. This criterion, therefore, enhances the relevance and credibility of the study by focusing on participants whose lived experience makes them more equipped to contribute meaningful insights toward building a realistic and community-specific preparedness model.

To begin the survey process properly, the researcher wrote a letter requesting consent from the barangays involved. For ethical considerations, guidelines were strictly observed to respect participants' rights and uphold the moral standards required of all research undertakings.

During the conduct of the survey, consent forms were distributed, completed, and signed by the respondents, indicating their voluntary and informed participation in the study. These signatories served as proof that the respondents were fully aware of and clearly understood the purpose and terms of the study. Participation was entirely voluntary, and confidentiality of all gathered data was assured.

The researcher approached the selected respondents with utmost humility and appropriate courtesy. They carefully explained items or indicators in the questionnaire that were unclear to the respondents and translated the questions into the local dialect when necessary. The questionnaires were administered face-to-face during the respondents' available time. Respondents were given the option to disclose or withhold their names to protect their identities and were also provided ample time to complete the survey.

Table 2. ***Distribution of Validators***

VALIDATORS	SAMPLE
DRRM Head	1
Bureau of Fire Protection	1
Philippine National Police	1
Academecian	1
Total	**4**

The table shows that four validators participated in the study. Each validator represents a key sector, namely disaster risk reduction, fire protection, law enforcement, and the academic field. This distribution ensures balanced input from both practitioners and an academic expert, supporting a well-rounded and credible validation process.

Likert Point Scale	Scale Range	Descriptive Rating	Description
4	3.26-4.00	Very Valid	The questionnaire is highly appropriate, clear, and relevant to the objective. No revision needed.
3	2.50-3.25	Valid	The questionnaire is generally appropriate and relevant, but minor revision is suggested.
2	1.76-2.50	Slightly Valid	The questionnaire needs major revision to improve clarity or alignment with objectives.

1	1.00-1.75	Not Valid	The questionnaire is unclear, irrelevant, or inappropriate; it should be removed or rewritten.

The mean values of the ratings of the validators were computed, and the obtained weighted mean was interpreted based on the given standards and criteria following the Likert Scale below. It was utilized to interpret the results for the degree of validity.

The table shows that the data gathering instrument obtained a high level of validation from the four validators. The grand mean of 3.72 indicates that the instrument is generally clear, readable, well structured, and aligned with the objectives of the study.

Table 3. ***Validation Results***

ITEM	VALIDATORS				WM
	V1	V2	V3	V4	
1. The directions given are clear in all sections of the data gathering instrument.	3	4	4	4	3.75
2. Each item is readable.	4	4	4	4	4
3. Each item is attractive to read and good spacing is observed.	4	4	4	3	3.75
4. The data gathering instrument is comprehensive i.e., it covered all area that are important in the study.	3	4	3	3	3.25
5. Each item is focused on a particular thought or idea.	3	4	4	4	3.75
6. The items are objective i.e., the responses to be elicited are neither biased nor reactive.	4	4	3	3	3.5
7. The items are formulated in accordance to the explicit/implicit objective of the study.	4	4	4	4	4
8. The items do not overlap with each other; no duplication of item is observed.	4	4	4	3	3.75
GRAND MEAN					3.72

All items received consistently high ratings, with the highest mean scores on readability and alignment with study objectives. The lowest mean relates to comprehensiveness, suggesting minor areas for improvement, but overall results confirm that the instrument is valid and acceptable for use in the study.

Analysis of Data

All data gathered through the survey questionnaire were quantified and analyzed using mean. The weighted mean was used to determine the level of disaster preparedness in flood-prone areas in San Juan, La Union, in terms of equipment and communication system, disaster preparedness, and training programs and seminars.

The average weighted mean is computed using the formula

$$\bar{x} = \frac{\sum fx}{n}$$

Where $\bar{x}$= weighted mean

x = represent the item value

f = represent the frequency associated to x

n = number of respondents

$\sum fx$= sum of all the products of x and f or total weighted value.

To answer Problem 1, the **mean was used** to determine the level of disaster preparedness of flood-prone areas in San Juan, La Union.

To answer Problem 2, the **mean was also used** to determine the degree of challenges encountered in the implementation of disaster management in the flood-prone areas in San Juan, La Union.

To answer Problem 3, **Spearman's Rank Correlation Coefficient (Spearman's rho, non-parametric) test was used**, determine the significant relationship between variables in SOP 1.

To answer Problem 4, the **Kruskal-Wallis One-Way Analysis of Variance (non-parametric) test was used** to determine the significant difference between variables in SOP 1.

The **Spearman's Rank Correlation Coefficient (Spearman's rho)** was utilized to examine the **relationship between two ranked variables** in the context of disaster preparedness in the flood-prones of San Juan, La Union. This non-parametric statistical method was chosen because the data did not satisfy the assumptions of linearity or normal distribution required for Pearson's correlation. Spearman's rho is particularly appropriate for **ordinal data** or when the relationship between variables is **monotonic but not necessarily linear**.

This statistical test evaluates how well the **relationship between two variables can be described using a monotonic function**, meaning that as one variable increases, the other tends to either consistently increase or consistently decrease. Spearman's rho was computed using the following formula:

$$r_s = 1 - \frac{6\sum D^2}{n\left(n^2 - 1\right)}$$

Where:

ρ\rhoρ = Spearman's rank correlation coefficient

did_idi = the difference between the ranks of each pair of observations

nnn = the number of paired observations

The value of Spearman's rho ranges from **-1 to +1**, where:

+1 indicates a perfect positive correlation

−1 indicates a perfect negative correlation

0 indicates no correlation

The **Kruskal-Wallis One-Way ANOVA (Non-Parametric Test)** was also used to determine the significant difference in the perceptions of the respondents regarding the level of preparedness of flood-prones of San Juan, La Union.

This statistical test was chosen because the data did not meet the assumptions of normality required for parametric tests, and the groups being compared were independent of one another. The Kruskal-Wallis test ranks all data points from all groups together and evaluates whether the distribution of ranks differs significantly among the groups.

The decision to accept or reject the null hypothesis was based on the computed *H* value and its corresponding p-value, using the formula:

$$H = \frac{12}{N(N+1)}\Sigma\left(\frac{R_i^2}{n_i}\right) - 3(N+1)$$

Where:

H = Kruskal-Wallis test statistic

N = Total number of observations across all groups

$\mathbf{R_i}$ = Sum of ranks in the *i*th group

$\mathbf{n_i}$ = Number of observations in the *i*th group

A significance level (α) of 0.001 was used to determine whether the observed differences were statistically significant. If the computed p-value was less than 0.05, the null hypothesis (that there is no significant difference among the groups) was rejected.

Categorization of data

The descriptive equivalent rating and the range of values are represented below were used to interpret the disaster preparedness of flood prone areas in San Juan, La Union using 4.00-point Likert Scale:

To determine the level of preparedness of flood-prone areas in San Juan, La Union, in terms of **equipment and communication system**, the **4-point rating scale shown below was used**.

Likert Point Scale	Scale Range	Descriptive Rating	Description
4	3.26-4.00	Very Adequate	Exceeds expectations; demonstrates excellent sufficiency and completeness
3	2.50-3.25	Adequate	Meets expectations; sufficiently addresses the required standards.
2	1.76-2.50	Moderately Adequate	Partially meets expectations; has noticeable gaps or lacks depth.
1	1.00-1.75	Inadequate	Fails to meet basic requirements; significantly lacking or insufficient.

To determine the level of preparedness of flood-prone areas in San Juan, La Union in terms of **knowledge of disaster**, the **4-point rating scale shown below was used**.

Likert Point Scale	Scale Range	Descriptive Rating	Description
4	3.26-4.00	Always Prepared	Fully knowledgeable and consistently ready for disasters.
3	2.50-3.25	Prepared	Sufficiently knowledgeable with regular preparedness.
2	1.76-2.50	Slightly Prepared	Has basic knowledge but inconsistently prepared.
1	1.00-1.75	Unprepared	Lacks essential knowledge and preparation for disasters.

To determine the **level of preparedness** of flood-prone areas in San Juan, La Union in terms of **training programs and seminars**, the **5-point rating scale was used**.

Likert Point Scale	Scale Range	Descriptive Rating	Description
5	4.21-5.00	Always	Training and seminars are consistently conducted and actively attended.
4	3.41-4.20	Often	Training and seminars are regularly held with strong community participation.
3	2.61-3.40	Sometimes	Training and seminars are occasionally conducted but are inconsistent.
2	1.81-2.60	Rarely	Training and seminars are infrequently held, with minimal participation.
1	1.00-1.80	Never	No training or seminars have been conducted or attended in the community.

Likert Point Scale	Scale Range	Descriptive Rating	Description
5	4.50-5.00	Always	Challenges are consistently encountered during implementation.
4	3.50-4.49	Often	Challenges are frequently experienced in implementation efforts.
3	2.50-3.49	Sometimes	Challenges are occasionally encountered during implementation.
2	1.50-2.49	Seldom	Challenges are rarely experienced in implementation efforts.

1	1.00-1.49	Never	No significant challenges are encountered in implementation.

To determine the Degree of Challenges Encountered in the Implementation of Disaster Management in San Juan, La Union, the 4-point scale will be used.

Ethical Consideration

The researcher sought permission from the local government unit of San Juan, La Union, as well as the relevant disaster management authorities, to conduct the study on *Disaster Preparedness in Flood-Prone Areas in San Juan, La Union, Toward a Preparedness Model*. A formal letter of permission was drafted and addressed to these agencies, with the consent and approval of the research director, research adviser, and dean.

The researcher then approached the participants, who were residents of flood-prone areas, to seek their voluntary participation in the study. Informed consent was obtained from each participant, explaining the purpose of the study, the procedures involved, and the potential risks and benefits of participation. This was done in a transparent manner, ensuring that participants had a clear understanding of their involvement and could freely decide whether to participate.

The researcher emphasized the confidentiality of the participants' responses and guaranteed that the data collected would be used solely for research purposes. The information gathered was kept secure, with access limited to the research team only.

Chapter 3

RESULTS AND DISCUSSION

This chapter presents the results of the analysis and interpretations of data gathered relative to the specific problems of the study.

Disaster Preparedness in Flood-Prone Areas in San Juan, La Union

Tables 4, 5, and 6 present the major dimensions used to assess the level of disaster preparedness in this study. Table 4 examines the availability and adequacy of equipment and communication system, which are critical for coordination, information dissemination, and effective response during emergency situations. Table 5 focuses on knowledge of disaster preparedness, reflecting the extent to which individuals understand hazards, protocols, and appropriate actions across disaster phases. Table 6 discusses training programs and seminars, which serve as formal mechanisms for developing skills, reinforcing knowledge, and enhancing preparedness through continuous capacity building. Taken together, these tables establish an integrated framework for analyzing preparedness in terms of resources, knowledge, and training.

Equipment and Communication System

The data across the five barangays of San Juan, La Union reveals a nuanced and multi-layered depiction of disaster preparedness, particularly

Table 4. Level of Disaster Preparedness in Flood-prone Areas in San Juan, La Union in Terms of Equipment and Communication

	BARANGAY						
	1	2	3	4	5	OVER ALL MEAN	SUB MEAN
A. EMERGENCY VEHICLES							
1. Ambulance	2.48/MA	3.20/A	2.85/A	3.03/A	2.99/A	**2.91/A**	
2. Rescue truck	2.31/MA	2.97/A	2.79/A	2.85/A	2.84/A	**2.75/A**	**2.79/A**
3. Rescue boat	2.20/MA	2.94/A	2.79/A	2.75/A	2.87/A	**2.71/A**	
B. WATER SEARCH AND RESCUE EQUIPMENT							
1. Life jacket	3.23/A	3.77/VA	3.89/VA	3.49/VA	3.76/VA	**3.63/VA**	
2. Rescue helmet	2.84/A	3.41/VA	3.38/VA	3.33/VA	3.30/VA	**3.25/A**	
3. Rescue boots	2.57/A	3.27/VA	3.18/A	3.04/A	3.11/A	**3.04/A**	**3.23/A**
4. Traction rope	2.80/A	3.30/VA	3.21/A	3.12/A	3.26/VA	**3.14/A**	
5. Rope throwing bag	2.82/A	3.16/A	3.30/VA	2.93/A	3.23/A	**3.09/A**	
C. COMMUNICATION EQUIPMENT							
1. 2-way VHF/UHF radio	3.13/A	3.42/VA	3.53/VA	3.21/A	3.51/VA	**3.36/VA**	
2. Cellphone	3.44/VA	3.78/VA	3.82/VA	3.42/VA	3.74/VA	**3.64/VA**	
3. Whistles	3.21/A	3.41/VA	3.58/VA	3.12/A	3.41/VA	**3.35/VA**	**3.31/VA**
4. Transistor radios	2.70/A	3.20/A	3.08/A	2.94/A	3.04A	**2.99/A**	
5. Megaphones	2.95/A	3.33/VA	3.44/VA	3.01/A	3.30/VA	**3.21/A**	
D. ALARM AND EARLY WARNING SYSTEM							
1. Siren	2.46/A	2.94/A	2.73/A	2.87/A	2.83/A	**2.76/A**	
2. Flood meter gauges	2.79/A	3.27/VA	3.27/VA	3.06/A	3.26/VA	**3.13/A**	**2.95/A**
E. LIGHTING TOOLS AND EQUIPMENT							
1. Emergency lights	3.30/VA	3.66/VA	3.74/VA	3.39/VA	3.67/VA	**3.55/VA**	
2. Flashlights with batteries	3.31/VA	3.59/VA	3.79/VA	3.28/VA	3.63/VA	**3.52/VA**	
3. Search lights	3.21/A	3.28/VA	3.39/VA	2.94/A	3.31/VA	**3.23/A**	**3.30/VA**
4. High power torches	2.70/A	3.09A	2.94/A	2.85/A	2.94/A	**2.91/A**	

F.	**PERSONAL PROTECTIVE EQUIPMENT**							
1.	Breathing apparatus	2.77/A	3.53/VA	3.41/VA	3.28/VA	3.37/VA	**3.27/VA**	
2.	Hand gloves	2.87/A	3.19/A	3.15/A	3.01/A	3.10/A	**3.06/A**	
3.	Eye goggles	3.02/A	3.28/VA	3.36/VA	3.06/A	3.29/VA	**3.20/A**	
4.	Safety full body harness	2.66/A	3.17/A	3.02/A	3.00/A	3.04/A	**2.98/A**	**3.19/A**
5.	Hard hat	3.05/A	3.48/VA	3.64/VA	3.16/A	3.51/VA	**3.37/VA**	
6.	Ear plugs	2.85/A	3.25/A	3.21/A	2.99/A	3.10/A	**3.08/A**	
7.	Reflectorized vest	3.36/VA	3.52/VA	3.61/VA	3.03/A	3.44/VA	**3.39/VA**	

Continuation of Table 4

G.	**SEARCH AND RESCUE EQUIPMENT**							
1.	Spine board	3.07/A	3.25/A	3.30/VA	2.97/A	3.19/A	**3.15/A**	
2.	Foldable stretchers	3.00/A	3.42/VA	3.47/VA	3.07/A	3.33/VA	**3.26/VA**	
5.	Ropes	2.97/A	3.31/VA	3.26/VA	3.15/A	3.19/A	**3.17/A**	
6.	Body bags	2.70/A	3.36/VA	3.21/A	3.25/A	3.26/VA	**3.16/A**	
7.	Floating ring	2.67/A	3.30/VA	3.17/A	3.10/A	3.23/A	**3.09/A**	
H.	**VEHICULAR AND EXTRICATION EQUIPMENT**							
1.	Hydraulic cutter	2.34/MA	3.19/A	2.94/A	3.19/A	3.09/A	**2.95/A**	
2.	Power pack pump	2.49/MA	3.02/A	2.92/A	2.91/A	2.89/A	**2.85/A**	
3.	Electric drill	2.74/A	3.14/A	3.24/A	2.93/A	3.11/A	**3.03/A**	
4.	Shovel	3.02/A	3.39/VA	3.59/VA	3.16/A	3.39/VA	**3.31/VA**	**3.08/A**
5.	Axe	2.89/A	3.22/A	3.27/VA	3.03/A	3.17/A	**3.12/A**	
6.	Bolo	3.08/A	3.38VA	3.67/VA	3.12/A	3.44/VA	**3.34/VA**	
7.	Pickaxe	2.84/A	3.17/A	3.23/A	3.06/A	3.13/A	**3.08/A**	
8.	Crowbar	2.64/A	3.11/A	2.95/A	3.09/A	3.00/A	**2.96/A**	
I.	**BASIC LIFE SUPPORT, MEDICAL & FIRST AID SUPPLIES & EQUIPMENT**							
1.	First aid kits	3.34/VA	3.64/VA	3.74/VA	3.36/VA	3.60/VA	**3.54/VA**	**3.35/VA**
2.	Trauma bag	2.57/A	3.30/VA	3.08/A	3.18/A	3.19/A	**3.06/A**	

3.	Stretchers	3.08/A	3.55/VA	3.56/VA	3.31/VA	3.50/VA	**3.40/VA**
4.	Head immobilizer	2.79/A	3.38/VA	3.38/VA	3.15/A	3.24/A	**3.19/A**
5.	Splints	2.75/A	3.48/VA	3.58/VA	3.24/A	3.50/VA	**3.31/VA**
6.	Elastic bandage	3.23/A	3.47/VA	3.62/VA	3.19/A	3.51/VA	**3.41/VA**
7.	Gauze bandage	3.36/A	3.63/VA	3.88/VA	3.30/VA	3.70/VA	**3.57/VA**
						GRAND MEAN	**3.14/A**

Legend: ***MA-Moderately Adequate*** ***A-Adequate*** ***VA-Very Adequate***

in terms of the adequacy and availability of emergency equipment and communication systems. With a grand mean of 3.14, the overall preparedness level is interpreted as "Adequate". However, this general assessment conceals crucial weaknesses in specific categories particularly Emergency Vehicles (2.91) and Vehicular and Extrication Equipment (2.95) which are vital during severe flooding events that require mass evacuations, rescue operations, and post-disaster clearance. This inadequacy is consistent with the findings of Cuevas and Pama (2020), who emphasized that local government units (LGUs) in flood-prone Philippine areas often suffer from systemic underinvestment in heavy-duty response infrastructure. From the lens of Davidson and Lambert's Disaster Response Indices (DRI) Theory, these scores represent a mid-range level of readiness. DRI asserts that preparedness is not solely about the presence of tools but their strategic alignment with expected hazards. The low availability of emergency vehicles and extrication tools suggests a misalignment between risk exposure and resource allocation exposing communities to prolonged response times and higher vulnerability in large-scale disasters.

In contrast, the relatively high scores in Lighting Tools and Equipment (3.55), Basic Life Support and First Aid Supplies (3.35), and Water Search and Rescue Equipment (3.25) illustrate baseline readiness for small- to medium-scale incidents. These results are echoed by Aranilla and Dizon (2018), who observed that communities often prioritize more affordable and accessible items like flashlights, life vests, and first aid kits. This is particularly visible in Barangays 2 and 3, which recorded stronger adequacy scores in these categories. According to David McEntire's Emergency Management Theory, such inter-barangay disparities reflect systemic issues in coordination and integration. McEntire stresses the need for inclusive planning and equitable distribution of resources, as fragmented capabilities among barangays can erode collective resilience. Uneven procurement capacities, variations in DRRM training, and differing governance effectiveness may explain why some barangays are better equipped than others an issue also raised by Bueza (2020) in his comparative analysis of DRRM implementation across Philippine municipalities.

The communication and early warning systems, while receiving a generally favorable rating in terms of communication equipment (3.36), revealed weaknesses in alarm systems (2.76) and sirens (3.13). These are vital tools for prompting timely evacuations and are integral components of Lindell and Perry's Protective Action Decision Model (PADM). According to PADM, the success of protective actions such as seeking shelter or evacuation depends heavily on the credibility, clarity, and timeliness of alerts. Delays

in these early-warning mechanisms can lead to chaotic responses, missed evacuation windows, and preventable casualties. This aligns with the findings of Valenzuela et al. (2021), who reported that many

barangays still rely on outdated or improvised alarm systems that are not integrated with modern information systems or social media platforms. The need for modernization is evident, and any improvement must be accompanied by community trust-building and education, ensuring that warning systems are not only technically sound but also socially embedded.

Another area of concern is the moderate adequacy of Personal Protective Equipment (PPE), particularly low scores for breathing apparatuses (2.77) and full-body harnesses (2.97). This limitation poses a threat not only to civilians but also to frontliners such as barangay responders and volunteers. These findings mirror the conclusions of Santos and Reyes (2019), who noted that many local disaster teams lack propersafety gear, leaving them exposed to toxic floodwaters, sharp debris, and structural collapses. According to McEntire's Theory, responder protection is a foundational element of any emergency management system. Without adequate PPE, even the most committed local responders are put at risk, weakening the community's response capability and morale. threats, thus increasing casualty risk. PADM underscores that information

Positively, the strong performance in Lighting Tools, Basic Life Support, and Communication Equipment also suggests a culture of preparedness in some barangays, where proactive efforts have been made to invest in what is accessible. This community-driven behavior aligns with Icek Ajzen's Theory of Planned Behavior, where perceived behavioral control (the belief that preparedness is achievable), combined with positive attitudes and supportive social norms, encourages disaster readiness. The idea that individuals act when they believe they can influence outcomes is evident in the barangays that scored higher in accessible items like emergency lights and medical kits. These behaviors should be nurtured through public engagement, capacity-building programs, and incentives.

Nonetheless, preparedness is not just about individual or barangay-level action it must be system-wide and inclusive. The disparities among barangays call for contextualized, data-informed, and equity-driven DRRM planning, as advocated by Aguinaldo (2021). This involves tailoring disaster strategies to the specific hazards, vulnerabilities, and capacities of each barangay. It also demands enhanced inter-barangay collaboration, coordinated procurement systems, and integrated capacity-building programs involving LGUs, NGOs, private donors, and civil society groups. Shiwaku and Takeuchi's Disaster Education Theory reinforces this idea by emphasizing the need for continuous education, community drills, and participatory planning. Disaster resilience is strengthened not just by owning equipment, but by knowing how to use it, trusting the system in place, and working as a collective.

Knowledge in Disaster Preparedness

The data presented in the second table reflects a nuanced understanding of individual and household-level disaster preparedness,

TABLE 5. ***Level of Disaster Preparedness in Flood-prone Areas in San Juan, La Union in terms of Knowledge in Disaster Preparedness***

		B 1	B 2	B 3	B 4	B 5	OVER ALL MEAN
1.	Prepared life jackets and life buoys in case of flash floods.	3.46/AP	3.53/AP	3.56/AP	3.58/AP	3.56/AP	**3.54/AP**
2.	Ready to flee to one of the municipally designated evacuation zones.	3.39/AP	3.47/AP	3.53/AP	3.43/AP	3.49/AP	**3.46/AP**
3.	Because floods can linger for days or weeks, depending on the discharge conditions, we keep food and water on hand.	3.48/AP	3.56/AP	3.52/AP	3.52/AP	3.54/AP	**3.52/AP**
4.	Since floods contaminate water supplies, we stockpile waters.	3.36/AP	3.47/AP	3.52/AP	3.34/AP	3.46/AP	**3.43/AP**
5.	We stock up on candles and flashlights because flooding frequently causes power outages.	3.48/AP	3.50/AP	3.58/AP	3.39/AP	3.53/AP	**3.49/AP**
6.	We prepare food supplies, including canned products, in advance of the storm.	3.30/AP	3.47/AP	3.67/AP	3.19/P	3.53/AP	**3.43/AP**
7.	I am prepared on the information and warning of an impending typhoon given by the PAGASA.	3.31/AP	3.39/AP	3.55/AP	3.21/P	3.49/AP	**3.39/AP**
8.	During a calamity, medicines are available.	3.46/AP	3.55/AP	3.61/AP	3.28/AP	3.59/AP	**3.50/AP**
9.	The lines of communication are prepared for quicker action.	3.44/AP	3.55/AP	3.59/AP	3.33/AP	3.57/AP	**3.50/AP**
10.	Every home has to have a first aid or medication kit on hand.	3.36/AP	3.44/AP	3.64/AP	3.18/P	3.57/AP	**3.44/AP**
					GRAND MEAN		**3.47/AP**

Legend: AP-Always Prepared P-Prepared

particularly in response to flood-related hazards. With an overall mean rating of 3.47, the results suggest that these communities are approaching a state of functional readiness, categorized as "Almost Prepared." This preparedness level is particularly evident in the availability of life-saving flotation devices (M = 3.54) and the willingness to evacuate (M = 3.46) two behavioral indicators that highlight not only logistical readiness but also cognitive engagement with disaster risk.

Through the lens of Ajzen's Theory of Planned Behavior (TPB), these findings suggest that positive attitudes toward preparedness behaviors, perceived social support (subjective norms), and moderate to high perceived behavioral control contribute to action-oriented responses. The widespread

availability of supplies such as food (M = 3.52), water (M = 3.43), flashlights (M = 3.49), and first aid kits (M = 3.44) can be interpreted as the outcome of deliberate intention, supported by both internal motivation and external enabling conditions. The readiness to evacuate and the conscious effort to prepare survival essentials demonstrate how planned behavior becomes actual behavior when barriers are minimal and awareness is high.

Moreover, the Protective Action Decision Model (PADM), developed by Lindell and Perry, further explains this behavioral inclination. PADM posits that individuals assess the hazard characteristics, environmental cues, and official warnings before choosing a protective action. The relatively high scores for communication readiness (M = 3.50) and information awareness (M = 3.39) suggest that the information environment is mostly conducive to protective action. However, the slightly lower ratings in Barangay 4 (e.g., 3.21 for PAGASA warnings) indicate that either the quality of risk communication is insufficient or the public's trust in those messages is not fully developed, potentially disrupting the decision-making chain outlined in PADM.

The observed disparities across barangays especially Barangays 1 and 4 also bring into focus Shiwaku and Takeuchi's Disaster Education Theory, which emphasizes the role of community-based, continuous, and participatory disaster learning in cultivating a culture of preparedness. The slightly lower scores in food stockpiling (3.30 and 3.19, respectively) and lower trust or use of early warnings suggest a deficiency in localized education or reinforcement mechanisms, such as community drills, workshops, or simulations. Disaster education in this context is not merely about information dissemination but involves developing critical thinking, contextual understanding, and procedural knowledge, which appear unevenly developed in some barangays.

These theoretical intersections highlight an important dynamic: preparedness is not only about resources, but also about mindset, perception, and learned behavior. For example, while physical resources like life jackets are available, cognitive preparedness such as understanding when and how to evacuate or interpret warnings may still lag behind in certain segments of the population.

To move from "almost prepared" to fully resilient, interventions should be behaviorally informed and education-driven. First, strengthening risk communication strategies to improve comprehension and trust in official warnings, particularly in lower-rated barangays, is critical. This aligns with both TPB and PADM, which stress the importance of perceived credibility and behavioral reinforcement in shaping protective action.

Second, consistent with Disaster Education Theory, local governments should invest in experiential learning programs such as flood evacuation drills, household emergency planning workshops, and peer-led preparedness campaigns. These programs should be tailored to the specific socio-economic and cultural profiles of each barangay, ensuring inclusivity and accessibility.

Lastly, addressing socio-economic constraints that limit household stockpiling especially in Barangays 1 and 4 through resource subsidies or community stockpile systems could help equalize readiness levels. Preparedness must be framed as a shared social responsibility, not just an individual task, requiring a systems-level response.

Training Programs and Seminars

The results from Table 6 point to a mature and deeply integrated culture of disaster education within the flood-prone barangays of San Juan, La Union. With an overall weighted mean of 4.21 ("Always"), residents overwhelmingly affirm the consistent implementation of training programs, evacuation drills, and public awareness seminars. This frequency signals more than compliance it reflects the institutionalization of preparedness behaviors as part of everyday life in high-risk communities.

Through the lens of Shiwaku and Takeuchi's Disaster Education Theory, these findings demonstrate an effective application of community-based and experience-rich disaster learning. The highest-rated item (M = 4.41), which recognizes the involvement of trained professionals and field experts, supports one of the theory's central tenets: that localized knowledge must be enhanced not replaced by technical expertise. Their presence likely adds both credibility and practical relevance, reinforcing the translation of theoretical knowledge into real-world action.

The regular conduct of evacuation simulations (M = 4.23) and widespread familiarity with emergency protocols (M = 4.37) further indicate that knowledge acquisition is not passive. Rather, it is participatory and scenario-based, aligning with Shiwaku and Takeuchi's assertion that disaster education should promote critical thinking, decision-making under pressure, and social cohesion. These practices appear to be working on the surface.

However, Lindell and Perry's Protective Action Decision Model (PADM) brings into focus the next layer of insight: the *behavioral follow-through* during real emergencies. While residents report high exposure to trainings, the indicator related to actual application of knowledge in live disaster situations (M = 4.11) reveals a subtle but important "intention-action gap." PADM explains this phenomenon as the difference between understanding what needs to be done and the ability to execute protective behaviors when stress, uncertainty, and risk perception distort judgment.

This insight is echoed in the rating for effectiveness of training sessions (M = 3.95). Despite high participation, this score suggests a gap in training content, delivery, or contextual fit a common challenge in disaster risk reduction education. Here, Ajzen's Theory of Planned Behavior (TPB) is highly instructive. TPB posits that behavioral enactment is shaped not only by knowledge or attitude, but also by the individual's perceived behavioral control the belief that they can actually carry out the action when required. In this case, if drills are overly scripted, too theoretical, or fail to simulate realistic time constraints and emotional pressures, then confidence may not fully develop, even with frequent participation.

This multidimensional view offers a refined explanation for the emerging pattern: while training is frequent and valued, its behavioral impact may plateau without qualitative enhancements that address psychological readiness, accessibility, and situational realism. Lack of

TABLE 6. ***Level of Disaster Preparedness in Flood-prone Areas in San Juan, La Union in terms of Training Programs and Seminars***

	B 1	B 2	B 3	B 4	B 5	MEAN
1.Community's resource availability affects training programs.	4.34/A	4.22/ A	4.15/ O	4.16/ O	4.16/ O	**4.21/A**
2.Government resources and officials with local catastrophe experience are used to help create emergency plans in the community.	4.23/A	4.16/ O	4.29/ A	4.07/ O	4.20/ O	**4.19/O**
3. Radio and television are accessible as communication mediums that provide links for training information, especially in rural places.	4.28/A	4.14/ O	4.27/ A	3.96/ O	4.17/ O	**4.16/O**
4. Following a calamity, an organized institution offers lectures, workshops, and trainings. Tests, drills, and workouts are also included in that.	4.39/A	4.19/ O	4.39/ A	4.16/ O	4.31/ A	**4.29/A**
5.Professionals in the fields of emergency response and disaster evacuation are conducting seminars, programs, or workshops.	4.52/A	4.41/ A	4.39/ A	4.28/ A	4.44/ A	**4.41/A**
6. Trainings, workshops, and seminars are conducted in a very effective manner.	3.95/O	3.94/ O	4.11/ O	3.69/ O	4.06/ O	**3.95/O**
7. The majority of people in your town participate in and attend trainings, seminars, and events.	4.26/A	4.09/ O	4.30/ A	3.94/ O	4.24/ A	**4.17/O**
8. The barangay frequently hosts trainings, seminars, or events to inform residents about emergency evacuation.	4.34/A	4.16/ O	4.41/ A	3.93/ O	4.30/ A	**4.23/A**
9. Mobilization of the search and rescue action team, as well as their relocation to a center that is safer.	4.44/A	4.19/ O	4.35/ A	3.94/ O	4.27/ A	**4.24/A**
10. Surveys, damage assessments, and report verification by the local government should all be done.	4.28/A	4.14/ O	4.35/ A	3.85/ O	4.27/ A	**4.18/O**
11. Everyone in the barangay is able to put their understanding of disaster evacuation to use.	4.23/A	4.05/ O	4.36/ A	3.70/ O	4.20/ O	**4.11/O**
12. When a calamity strikes, disaster evacuation is handled quickly and effectively.	4.43/A	4.22/ A	4.44/ A	3.88/ O	4.34/ A	**4.26/A**
13. The deployment of medical teams imparts first aid knowledge.	4.41/A	4.27/ A	4.53/ A	3.87/ O	4.40/ A	**4.29/A**
14. Everybody in the barangay is familiar with the fundamentals of emergency evacuation.	4.52/A	4.34/ A	4.58/ A	3.97/ O	4.46/ A	**4.37/A**
15. Trainings, seminars, and programs give timely information about upcoming emergencies.	4.33/A	4.17/ O	4.48/ A	3.81/ O	4.31/ A	**4.22/A**
			GRAND MEAN			**4.22/A**

Legend: A-Always O-Often

inclusivity or differentiation e.g., for elderly, youth, or marginalized groups could also limit perceived personal relevance, which TPB identifies as critical for intention formation and follow-through.

Degree of Seriousness of Challenges Encountered in the Implementation of Disaster Management

Table 7. ***Degree of Challenges Encountered in The Implementation of Disaster Management***

	B 1	B 2	B 3	B 4	B 5	MEAN
1. Lack of political will from government officials and agencies	3.38/ S	3.22/ S	3.02/ S	3.27/ S	3.13/ S	**3.20/S**
2. Disaster Risk Reduction policies are not a priority	3.43/ S	3.23/ S	3.00/ S	3.15/ S	3.11/ S	**3.18/S**
3. Limited capacity of the government agency in charge to implement DRR policies	3.23/ S	3.06/ S	2.82/ S	2.96/ S	2.96/ S	**3.00/S**
4. Personnel cannot implement all the programs needed in disaster management	3.25/ S	3.11/ S	2.77/ S	2.97/ S	2.91/ S	**3.00/S**
5. Lack of collaboration among the different actors involved in DRR	3.18/ S	3.03/ S	2.73/ S	2.87/ S	2.90/ S	**2.94/S**
6. Lack of coordination among different sectors involved in DRR	2.97/ S	2.89/ S	2.56/ S	2.66/ S	2.70/ S	**2.76/S**
7. Lack of awareness of the general pubic about disasters and its risks	3.48/ S	3.30/ S	3.08/ S	3.03/ S	3.14/ S	**3.20/S**
8. There is difficulty in engaging communities to participate in disaster preparedness.	3.25/ S	2.98/ S	2.85/ S	2.79/ S	2.89/ S	**2.95/S**
9. There is a problem in mobilizing communities to participate in disaster response.	3.23/ S	3.03/ S	2.83/ S	2.88/ S	2.91/ S	**2.98/S**
10. Complexity in interagency coordination that may lead to inefficiencies or gaps in response.	3.10/ S	2.89/ S	2.83/ S	2.64/ S	2.84/ S	**2.86/S**
				GRAND MEAN		**3.01/S**

Legend: ***S - Sometimes***

The data reflects a clear and recurring theme across the barangays: institutional and behavioral obstacles continue to impede effective disaster risk reduction. The top-rated concerns the lack of political will (M = 3.20) and public awareness (M = 3.20) reveal a twofold vulnerability. On one side, leadership and governance gaps compromise the long-term sustainability of DRR strategies; on the other, insufficient public understanding of risks undermines community participation and responsiveness.

Under David McEntire's Emergency Management Theory, which stresses the need for interconnectedness among political, organizational,
and social systems, these findings illustrate a failure of integration. McEntire asserts that effective disaster management depends on coordination, adaptability, and stakeholder participation factors that are notably deficient according to this dataset. For example, the deprioritization of DRR policies (M = 3.18) and the limited capacity of local government personnel (M = 3.00) reflect not just a lack of resources, but a broader institutional inertia that places reactive measures above proactive governance.

Similarly, Davidson and Lambert's Disaster Response Indices (DRI) Theory situates the effectiveness of disaster response systems within multiple indices such as planning, logistics, and leadership. The low scores in inter-agency coordination (M = 2.86) and stakeholder collaboration (M =

2.94) suggest that the barangays struggle with system coherence, a crucial DRI domain. These inefficiencies aren't just procedural they undermine readiness by allowing bureaucratic bottlenecks and siloed operations to persist, particularly during critical response windows.

The social dimension of disaster risk, especially around community engagement and public behavior, is best examined through Lindell and Perry's Protective Action Decision Model (PADM). The relatively low scores for community engagement (M = 2.95) and response mobilization (M = 2.98) highlight the gap between awareness and action. According to PADM, individual and collective protective behavior is influenced by perceptions of risk, trust in authorities, and clear, actionable guidance. A lack of public awareness and inconsistent messaging likely contributes to community inaction especially when combined with perceptions of weak institutional leadership.

The lowest-rated item coordination across sectors (M = 2.76) represents a failure in network governance, where institutions, NGOs, and local leaders operate in parallel rather than as a cohesive whole. This fragmentation not only slows disaster response but also disrupts recovery planning, weakens accountability, and increases community vulnerability. Within both McEntire's and DRI's frameworks, this signals a failure to institutionalize DRR within everyday governance structures.

Interrelationships of Disaster Preparedness Components in Flood Prone Areas of San Juan, La Union

Table 8. ***Significant Relationship of Disaster Preparedness in Flood-Prone Areas in San Juan, La Union***

Variables	r-value	p-value	Interpretation	Decision
Equipment and Communication Systems and Knowledge on Disaster	0.211	<0.001	Significant	Reject Ho
Equipment and Communication Systems and Training Programs and Seminars	0.302	<0.001	Significant	Reject Ho
Knowledge on Disaster and Training Programs and Seminars	0.410	<0.001	Significant	Reject Ho

The correlation matrix presented offers critical insight into the relationships among three core variables relevant to disaster preparedness: equipment and communication systems, knowledge on disaster, and training programs and seminars. Using Spearman's rho as the measure of correlation, the data reveal statistically significant, positive relationships among all three variables ($p < .001$ for all correlations), which reinforces and deepens the interpretation of the inventory findings discussed previously.

First, the correlation between equipment and communication systems and knowledge on disaster ($\rho = 0.211$, $p < .001$) indicates a weak but significant positive relationship, suggesting that communities with better access to emergency and communication equipment tend to have slightly higher levels of disaster knowledge. This aligns with the theory of experiential learning in disaster risk reduction, where exposure to tools and systems enhances the cognitive grasp of disaster response protocols (Kolb, 1984).

In simpler terms, when barangays possess functional communication tools and emergency response gear, they are more likely to understand how to use them effectively, thereby increasing the overall knowledge base of the community.

Second, a stronger correlation exists between equipment and communication systems and training programs and seminars ($\rho = 0.302$, $p < .001$), indicating a moderate positive relationship. This suggests that training initiatives are closely tied to the presence and usability of equipment. In fact, equipment is often embedded into training modules, such as fire response drills or emergency medical training, thus reinforcing the availability-knowledge nexus. This finding echoes the study of Tan and Alcantara (2019), who found that LGUs with structured training programs often maintain better physical assets, as these tools are actively used in drills and capacity-building sessions. It also confirms the earlier observation that barangays with higher adequacy ratings (e.g., Barangay 2 and Barangay 3) are likely more invested in both resource acquisition and skills development.

The strongest correlation observed is between knowledge on disaster and training programs and seminars ($\rho = 0.410$, $p < .001$), reflecting a moderate to strong positive relationship. This is consistent with the prevailing body of literature, including the work of Gaillard and Mercer (2013), which underscores training as one of the most effective means of embedding disaster preparedness knowledge within communities. Structured learning experiences especially when they are frequent, localized, and participatory equip individuals with both theoretical and practical skills needed during emergencies. This finding also validates the principle promoted by the United Nations Office for Disaster Risk Reduction (UNDRR), which posits that community-based disaster risk reduction (CBDRR) must emphasize continuous education and capacity-building.

Bridging this with the earlier inventory analysis, it becomes evident that the triad of physical resources, knowledge, and training must be viewed as an interconnected ecosystem. Communities cannot rely solely on the availability of emergency equipment without parallel investments in training and education. Likewise, even well-trained individuals may be rendered ineffective if necessary tools and communication devices are absent. The synergy among these variables forms the bedrock of resilient communities a notion supported by the Hyogo and Sendai Frameworks for Disaster Risk Reduction, which stress the integration of local knowledge, institutional support, and operational capacity.

In conclusion, the correlation matrix substantiates the prior interpretation that although certain barangays show signs of moderate preparedness through equipment availability, true resilience can only be achieved by strengthening training programs and disaster education initiatives, particularly in underperforming areas. Policymakers and local government units are therefore urged to adopt a holistic, systems-based approach to disaster preparedness one that ensures not only the procurement of tools but also the capacity-building of the people expected to use them.

The results of the Kruskal-Wallis One-Way ANOVA (non-parametric) test offer a comprehensive understanding of the disparities in disaster preparedness across the five barangays assessed in the study. Among the three core variables equipment and communication systems, knowledge on disaster, and training programs and seminars only equipment and communication systems revealed a statistically significant difference across the barangays ($\chi^2 = 22.73$, $df = 4$, $p < .001$). This finding validates the earlier descriptive analysis where barangays such as Barangay 2 and Barangay 3 scored higher in the availability

and adequacy of emergency resources compared to others like Barangay 1. The significant variance highlights the unequal distribution of essential equipment, which may pose serious challenges during actual disaster situations. These findings echo those of Villanueva and Martinez (2021), who emphasized that inconsistencies in disaster response infrastructure can undermine community-level resilience and coordinated action.

In contrast, the results for knowledge on disaster ($\chi^2 = 3.68$, df = 4, p = 0.450) and training programs and seminars ($\chi^2 = 6.83$, df = 4, p = 0.145) were not statistically significant. This indicates that, despite the disparities in equipment, the barangays do not differ significantly in their understanding of disaster preparedness or in their access to training opportunities. One possible explanation is that basic disaster knowledge is being widely disseminated through public campaigns, schools, or national initiatives, regardless of the local resource levels. This aligns with the observations of Gaillard et al. (2008), who found that informal knowledge transmission and standardized national messaging often level the field in terms of awareness within Filipino communities.

However, it is important to note that while the frequency or availability of training programs may be uniform across barangays, their quality and level of community engagement might still differ. This is supported by the earlier correlation analysis, which showed a moderate positive relationship (Spearman's rho = 0.410, p < .001) between training and disaster knowledge, suggesting that effective training remains a vital contributor to preparedness even if its availability does not differ significantly across localities.

Overall, these findings highlight a crucial insight: while education and training programs have managed to achieve relatively uniform coverage, there remains a pressing need to address the disparity in physical resources. As Bankoff (2007) argued, in the context of Philippine disaster risk management, material vulnerability manifested through insufficient infrastructure and equipment often dictates the real capacity of communities to respond effectively to emergencies. Therefore, future interventions must prioritize equipping under-resourced barangays while maintaining the momentum in knowledge dissemination and community training. This balanced approach would pave the way toward a more resilient and inclusive disaster preparedness system across all barangays.

Comparison of Disaster Preparedness Components in Flood Prone Areas of San Juan, La Union

This presents a comparison of key disaster preparedness components in flood prone areas of San Juan, La Union. It examines equipment and communication systems, knowledge on disaster preparedness, and training programs and seminars to identify similarities and differences in their contribution to overall preparedness. The comparison provides a basis for understanding how these components relate to one another and where improvements may be needed.

Table 8. ***Comparative Analysis of Disaster Preparedness in San Juan, La Union***

	x^2	p	Interpretation	Decision
Equipment and Communication Systems	22.73	<.001	Significant	Reject Ho
Knowledge on Disaster	3.68	0.450	Not Significant	Do Not Reject Ho

Training Programs and Seminars	6.83	0.145	Not Significant	Do Not Reject Ho

The application of the Kruskal-Wallis H Test provided critical insights into the perceived challenges faced by respondents in the implementation of various components of Disaster Risk Reduction and Management (DRRM), especially when analyzed across different profile variables. The analysis revealed a statistically significant difference in perceptions related to Equipment and Communication Systems, as evidenced by a chi-square value of 22.73, degrees of freedom (df) of 4, and a p-value less than 0.001. This highly significant result suggests that respondents from different demographic or institutional profiles such as barangay officials, community volunteers, or health workers experience and perceive challenges in this area in distinct and meaningful ways. This reinforces the notion that equipment and communication infrastructure, being closely tied to funding access, administrative capacity, and geographic vulnerabilities, cannot be addressed through one-size-fits-all approaches. Localized and group-specific interventions are necessary, particularly for those operating in resource-constrained or geographically isolated barangays.

In contrast, no statistically significant differences were observed in the respondents' perceptions of challenges related to Knowledge on Disaster, as shown by a chi-square value of 3.68 and a p-value of 0.450. This uniformity implies that disaster knowledge gaps or constraints are widely shared, regardless of one's role or profile in the DRRM structure. Such findings highlight the positive outcome of ongoing public education campaigns and awareness programs, suggesting a relatively equal diffusion of disaster-related information across communities. Similarly, the component on Training Programs and Seminars showed no significant variance among groups, with a chi-square value of 6.83 and a p-value of 0.145, indicating that respondents had generally consistent perceptions of the challenges associated with training accessibility, content relevance, or frequency.

These findings paint a clear picture of the lived realities of those engaged in disaster preparedness. While everyone shares common struggles in learning and training, it is in the realm of physical resources vehicles, communication tools, protective gear where disparities truly emerge. This aligns with broader research, such as that by Villarin (2020) and Dizon & Miranda (2018), which have documented how material preparedness remains highly uneven across Philippine localities. The statistical evidence thus supports a dual approach: targeted, equity-driven investment in equipment and communication systems tailored to the needs of specific groups or locales, and sustained, standardized programs in disaster education and training that reinforce shared understanding and capacity. In essence, the numbers tell a human story one where knowledge and commitment are abundant, but the tools to act on them remain unevenly distributed.

C.H.E.C.K. Model

The C.H.E.C.K. Model Booklet presents a community-based disaster preparedness framework for flood prone and typhoon exposed areas in the Philippines. It is grounded in Republic Act Number 10121 and developed based on the data and findings derived from this study. The model translates empirical results into practical, localized actions that communities can implement before, during, and after flooding

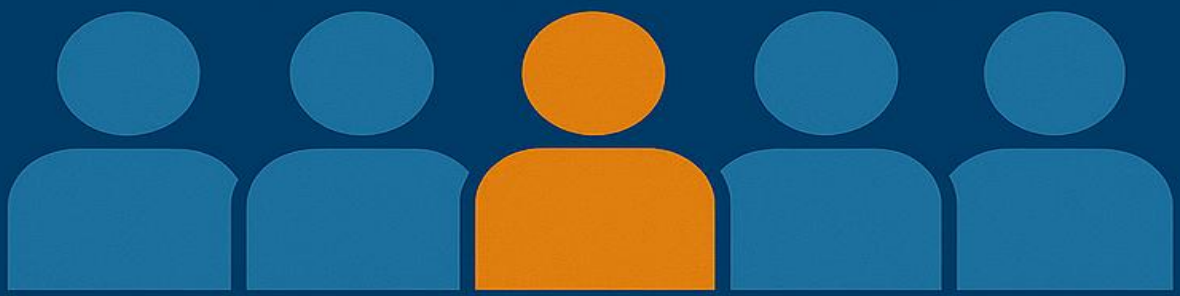
events. By integrating awareness, early warning, emergency response, coordination, and post flood recovery, the C.H.E.C.K. Model strengthens community resilience and addresses the specific gaps and needs identified in the study.

C.H.E.C.K MODEL BOOKLET

COMMUNITY HAZARD ENGAGEMENT AND CAPACITY KIT

A COMPREHENSIVE GUIDE FOR FLOOD PREPAREDNESS IN TYPHOON-PRONE COMMUNITIES

ALIGNED WITH REPUBLIC ACT NO. 10121



C.H.E.C.K. MODEL BOOKLET

Community Hazard Engagement and Capacity Kit

A Comprehensive Guide for Flood Preparedness in Typhoon-Prone Communities

Aligned with the Philippine Disaster Risk Reduction and Management Act of 2010 (Republic Act Number 10121)

INTRODUCTION

Flooding is one of the most damaging natural disasters in the Philippines, particularly during typhoon season. The **Community Hazard Engagement and Capacity Kit (C.H.E.C.K.) Model** is a localized framework for communities, especially at the barangay and municipal levels, that offers structured preparedness actions, legal grounding from **Republic Act Number 10121**, and tailored training to ensure resilience before, during, and after flooding events.

1. COMMUNITY AWARENESS AND EDUCATION

Objective:
Build foundational knowledge on disaster risk reduction and cultivate proactive behavior at the household and community levels.

When to Act: *Before Public* ***Storm Warning Signal Number 1*** *is issued.*

Key Actions and Their Importance

1. **Conduct barangay-wide disaster risk reduction and management seminars**
   These seminars inform the public about flood risks, contingency plans, and responsibilities, promoting early understanding and participation in preparedness efforts.
2. **Integrate flood education into elementary and secondary school curricula**
   Educating children fosters early behavioral adaptation and makes disaster preparedness part of community culture.
3. **Produce and distribute multi-language visual materials (flyers, infographics)**
   This ensures inclusive access to information for all demographics, including indigenous groups and older adults.
4. **Organize household preparedness events like "go-bag day" or neighborhood drills**
   Practicing evacuation and emergency procedures empowers families to act quickly and confidently in real situations.

Recommended Training and Their Significance

1. **Community-Based Disaster Risk Reduction and Management Training**
   This training provides barangay leaders with knowledge and skills to assess local flood risks, organize public education efforts, and develop localized preparedness plans.
2. **Information, Education, and Communication Materials Development Workshop**
   This session trains information officers to create culturally appropriate materials to increase disaster awareness and literacy.

3. **Household Emergency Drill Facilitation Training**
   Empowers barangay volunteers to guide families in preparing emergency kits, family communication plans, and dry-run evacuations.

2. HAZARD MONITORING AND EARLY WARNING

Objective:
Enhance the community's capacity to detect flood hazards and deliver timely alerts that reach all residents.

When to Act: *During Public* ***Storm Warning Signal Number 1 to 2***

Key Actions and Their Importance

1. **Install early warning systems (sirens, community SMS alert system, hazard flags)**
   Ensures real-time communication, allowing immediate evacuation or safety actions.
2. **Train barangay responders to interpret bulletins from the Philippine Atmospheric, Geophysical and Astronomical Services Administration**
   Accurate interpretation of data reduces confusion and panic.
3. **Monitor flood-prone areas (rivers, lowlands, coastal zones)**
   Direct observation ensures context-specific actions, especially during rapidly changing weather.
4. **Display color-coded flood risk maps and hazard markers in public spaces**
   These visuals provide immediate reference for evacuation routes and danger zones.

Recommended Training and Their Significance

1. **Flood Hazard Mapping and Geographic Information System Training**
   Trains community members to map danger zones and make data-driven plans using digital tools.
2. **Community-Based Early Warning System Installation and Maintenance Course**
   Prepares barangay technicians to set up and maintain sirens, signage, and other alert mechanisms.
3. **Weather Forecast Interpretation Seminar by the Philippine Atmospheric, Geophysical and Astronomical Services Administration**
   Helps responders and leaders make informed decisions based on weather patterns and risk indices.
4. **Incident Command System Level One Training**
   A nationally standardized course that establishes chain-of-command and responsibilities during disasters.

3. EMERGENCY RESPONSE AND EVACUATION PLANNING

Objective:
Execute rapid and inclusive evacuation and safety measures to protect all residents.

When to Act: *During Public* ***Storm Warning Signal Number 2 to 3*** *or when local flood alerts are raised*

Key Actions and Their Importance

1. **Activate Barangay Emergency Response Teams**
   These teams manage evacuation, medical aid, and hazard patrol, ensuring community-wide safety and support.

2. **Prepare designated evacuation shelters and conduct maintenance checks**
   Well-managed shelters prevent overcrowding, disease outbreaks, and security risks.
3. **Ensure early evacuation of persons with disabilities, elderly, pregnant women, and infants**
   Prioritizing vulnerable individuals ensures a humane, equitable response.
4. **Simulate evacuation scenarios during dry season**
   Prepares the entire community for coordinated action in high-pressure conditions.

Recommended Training and Their Significance

1. **Evacuation Planning and Shelter Management Training**
   This teaches organizers how to allocate space, manage sanitation, assign tasks, and ensure security in shelters.
2. **Basic First Aid and Cardiopulmonary Resuscitation Training (Philippine Red Cross Certified)**
   Empowers volunteers to provide immediate, life-saving care to flood victims.
3. **Camp Coordination and Camp Management Training**
   Improves management of temporary shelters by addressing food, health, water, and protection services.
4. **Inclusive Emergency Planning Workshop**
   Focuses on creating plans that respect and respond to the needs of marginalized groups such as persons with disabilities, senior citizens, and women.

4. COORDINATION AND CAPACITY BUILDING

Objective:
Strengthen local disaster risk reduction and management institutions, networks, and logistics.

When to Act: During and Immediately After the Flood

Key Actions and Their Importance

1. **Activate Emergency Operations Centers at the municipal level**
   These centers act as communication and decision-making hubs to streamline disaster response.
2. **Coordinate with national government agencies, non-government organizations, and private sector groups**
   Ensures resource-sharing and avoids duplication of relief efforts.
3. **Mobilize trained volunteers and barangay disaster brigades**
   Expands workforce and increases community trust in operations.
4. **Utilize Local Government Unit disaster risk reduction and management funds**
   Funding ensures immediate procurement of supplies and services.

Recommended Training and Their Significance

1. **Emergency Operations Center Management Training**
   Equips disaster leaders with technical skills in coordination, monitoring, logistics, and communication.
2. **Disaster Relief Logistics and Resource Management Training**
   Teaches inventory systems, stockpiling, and rapid distribution to affected areas.

3. **Volunteer Safety and Deployment Protocols Training**
   Ensures that volunteers work safely, efficiently, and with psychological readiness.
4. **Private Sector Engagement in Disaster Risk Reduction and Management Seminar**
   Trains government units to partner with local businesses for fuel, food, shelter, and equipment access.

5. KNOWLEDGE MANAGEMENT AND POST-FLOOD RECOVERY

Objective:
Facilitate recovery, healing, and institutional learning to reduce future disaster impacts.

When to Act: After Flooding

Key Actions and Their Importance

1. **Conduct structured Post-Disaster Needs Assessment**
   Provides data to justify relief requests and rebuild priorities.
2. **Hold facilitated After-Action Review forums**
   Evaluates what went right or wrong and how to improve.
3. **Deploy Mental Health and Psychosocial Support Teams**
   Helps individuals recover emotionally from trauma and loss.
4. **Launch skills training and livelihood recovery programs**
   Encourages economic rebuilding and disaster-resilient livelihoods.

Recommended Training and Their Significance

1. **Post-Disaster Needs Assessment Training**
   Instructs local officials to gather and analyze quantitative and qualitative damage data.
2. **After-Action Review Facilitation Course**
   Builds capacity to lead reflective discussions and integrate findings into future plans.
3. **Psychosocial First Aid and Mental Health Training**
   Ensures community workers can recognize trauma and provide basic emotional care.
4. **Technical and Vocational Skills Recovery Training (coordinated with Technical Education and Skills Development Authority)**
   Helps families restore income-generating activities lost to floods.

The **C.H.E.C.K. Model** is a powerful community preparedness framework that guides local action before, during, and after flooding events. Rooted in policy and strengthened by targeted training, it transforms communities into **resilient, responsive, and empowered units of disaster risk reduction**.

Let us always C.H.E.C.K. before the storm hits.

- *cfontanilla*

Chapter 4

CONCLUSIONS AND RECOMMENDATIONS

This chapter presents the summary of the findings, conclusion and recommendation of the study.

Conclusions

Based from the results and discussions on the Disaster Preparedness in Flood-Prone Areas in San Juan, La Union Toward a Preparedness Model the following conclusions were drawn:

1. Disaster preparedness in San Juan, La Union is moderate to high, with strong knowledge and training but gaps in critical equipment and protective resources.
2. Persistent challenges include limited political support, weak coordination, and low public awareness, affecting both institutional and behavioral aspects of preparedness.
3. Barangays differ significantly only in equipment and communication systems, while knowledge and training are relatively uniform, highlighting disparities in physical resources.
4. Equipment, knowledge, and training are positively linked, with training most strongly associated with knowledge, showing that preparedness requires integrated development of resources, education, and capacity.

Recommendations

Based on the findings of the study, the following recommendations are made.

1. It is recommended that the local government of San Juan, La Union, allocate sufficient resources to upgrade and complete the emergency response equipment of flood-prone barangays, particularly focusing on the provision of emergency vehicles and vehicular extrication tools, to ensure timely and effective disaster response.
2. It is also recommended that a comprehensive disaster risk reduction strategy be adopted, emphasizing stronger political will, sustained public education on disaster risks, improved coordination among agencies, and proactive community participation to build more resilient and disaster-ready barangays.
3. In support of a more community-based, scalable, and actionable approach to flood preparedness, it is highly recommended that the local government formally adopt the C.H.E.C.K. Flood Preparedness Model (Community Hazard Engagement and Capacity Kit). This model offers a systematic and evidence-informed framework that addresses critical dimensions of flood preparedness including communication, equipment readiness, capacity-building, hazard awareness, and key training interventions. Through its localized and participatory structure, the C.H.E.C.K. model fosters grassroots resilience and operational efficiency at the barangay level.
4. It is recommended that further research be conducted on disaster preparedness and risk reduction in the local context, particularly focusing on emerging hazards, marginalized and high-risk populations, and the long-term impacts of climate change on flood vulnerability. Such research will provide updated empirical data to inform policy decisions, strengthen program implementation, and guide continuous improvement of preparedness models like C.H.E.C.K.

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APPENDIX A

LETTER REQUEST TO SAN JUAN MUNICIPAL MAYOR

CICOSAT COLLEGES
Lingsat, City of San Fernando, La Union, Philippines 2500
Telefax No. (072) 607-11-18/(072) 242-26-98
Email address: cicosatc@yahoo.com

HON. ARTURO P. VALDRIZ
Mayor
San Juan, La Union

OFFICE OF THE MAYOR
8/19/24 11:13AM

Thru: MR. GINO MABALOT
Head, DRRM
San Juan, La Union

Sir:

Greetings!

The undersigned is currently undertaking a research study entitled: "**DISASTER PREPAREDNESS IN FLOOD-PRONE AREAS IN SAN JUAN, LA UNION TOWARD A PREPAREDNESS MODEL**" in connection with his Masters's Degree in Criminal Justice with a specialization in Criminology.

In this connection, the undersigned respectfully requests that your office allow the researcher to conduct the study in the selected barangay of San Juan, La Union, namely **Bambanay, Cabaroan, Catdungan, Nadsaag, and Oaquing**. Said research will benefit the residents of San Juan, MDRRMO, and the locality in general.

Hoping for your favorable response.

Thank you and more power!

Sincerely,

CHRISTIAN M. FONTANILLA
Researcher

Noted by:

FLORALYN L. DOQUILLA, Ph D.
Adviser

APPENDIX B

LETTER REQUEST TO PUNONG BARANGAY OF SELECT BARANGAYS

CICOSAT COLLEGES
Lingsat, City of San Fernando, La Union, Philippines 2500
Telefax No. (072) 607-11-18/(072) 242-26-98
Email address: cicosatc@yahoo.com

September 29, 2024

HON. EMMANUEL V. LANUZO JR
Punong Barangay
Oaquing, San Juan, La Union

Sir:

Warm greetings! I am writing to formally inform you about my research study titled **"Disaster Preparedness in Flood-Prone Areas in San Juan, La Union Toward a Preparedness Model,"** which aims to enhance the safety and preparedness of communities during floods. Your barangay has been identified as one of the key areas for this study due to its geographical location and experiences with flooding. I believe that your community's insights and cooperation will play a vital role in developing a comprehensive disaster preparedness model tailored to flood-prone areas.

For this study, I kindly request the participation of **61 respondents** from your barangay, which will include barangay officials and residents who have lived in the community for **five years or more.** Their valuable experiences and perspectives will help us better understand the challenges and opportunities in improving flood preparedness. The data collection process will be conducted with strict adherence to ethical standards, ensuring the confidentiality and security of all information provided.

I humbly seek your support in endorsing this study to your constituents and assisting me in identifying suitable participants. Your partnership in this initiative will significantly contribute to creating a safer and more resilient community. Should you have any questions or require further details, please do not hesitate to contact me at **christianmfontanilla@gmail.com** or **(63) 926 6580 549.**

Thank you for your kind cooperation and commitment to the welfare of your community.

Sincerely,

CHRISTIAN M. FONTANILLA
Researcher

Noted by:

EMMANUEL V. LANUZO JR.
Punong Barangay
Barangay OAQUING

FLORALYN L. DOQUILLA, Ph D.
Adviser

CICOSAT COLLEGES
Lingsat, City of San Fernando, La Union, Philippines 2500
Telefax No. (072) 607-11-18/(072) 242-26-98
Email address: cicosatc@yahoo.com

September 29, 2024

HON. CARLO F. MACATO
Punong Barangay
Bambanay, San Juan, La Union

Sir:

Warm greetings! I am writing to formally inform you about my research study titled **"Disaster Preparedness in Flood-Prone Areas in San Juan, La Union Toward a Preparedness Model,"** which aims to enhance the safety and preparedness of communities during floods. Your barangay has been identified as one of the key areas for this study due to its geographical location and experiences with flooding. I believe that your community's insights and cooperation will play a vital role in developing a comprehensive disaster preparedness model tailored to flood-prone areas.

For this study, I kindly request the participation of **66 respondents** from your barangay, which will include barangay officials and residents who have lived in the community for **five years or more.** Their valuable experiences and perspectives will help us better understand the challenges and opportunities in improving flood preparedness. The data collection process will be conducted with strict adherence to ethical standards, ensuring the confidentiality and security of all information provided.

I humbly seek your support in endorsing this study to your constituents and assisting me in identifying suitable participants. Your partnership in this initiative will significantly contribute to creating a safer and more resilient community. Should you have any questions or require further details, please do not hesitate to contact me at **christianmfontanilla@gmail.com** or **(63) 926 6580 549.**

Thank you for your kind cooperation and commitment to the welfare of your community.

Sincerely,

CHRISTIAN M. FONTANILLA
Researcher

Noted by:

FLORALYN L. DOQUILLA, Ph D.
Adviser

CICOSAT COLLEGES
Lingsat, City of San Fernando, La Union, Philippines 2500
Telefax No. (072) 607-11-18/(072) 242-26-98
Email address: cicosatc@yahoo.com

September 29, 2024

HON. EMILIA G. LABSAN
Punong Barangay
Nadsaag, San Juan, La Union

Ma'am:

Warm greetings! I am writing to formally inform you about my research study titled **"Disaster Preparedness in Flood-Prone Areas in San Juan, La Union Toward a Preparedness Model,"** which aims to enhance the safety and preparedness of communities during floods. Your barangay has been identified as one of the key areas for this study due to its geographical location and experiences with flooding. I believe that your community's insights and cooperation will play a vital role in developing a comprehensive disaster preparedness model tailored to flood-prone areas.

For this study, I kindly request the participation of **67 respondents** from your barangay, which will include barangay officials and residents who have lived in the community for **five years or more.** Their valuable experiences and perspectives will help us better understand the challenges and opportunities in improving flood preparedness. The data collection process will be conducted with strict adherence to ethical standards, ensuring the confidentiality and security of all information provided.

I humbly seek your support in endorsing this study to your constituents and assisting me in identifying suitable participants. Your partnership in this initiative will significantly contribute to creating a safer and more resilient community. Should you have any questions or require further details, please do not hesitate to contact me at **christianmfontanilla@gmail.com** or **(63) 926 6580 549.**

Thank you for your kind cooperation and commitment to the welfare of your community.

Sincerely,

CHRISTIAN M. FONTANILLA
Researcher

Noted by:

FLORALYN L. DOQUILLA, Ph D.
Adviser

Pb. EMILIA LABSAN

CICOSAT COLLEGES
Lingsat, City of San Fernando, La Union, Philippines 2500
Telefax No. (072) 607-11-18/(072) 242-26-98
Email address: cicosatc@yahoo.com

September 29, 2024

HON. TEDDY D. EBREO
Punong Barangay
Cabaroan, San Juan, La Union

Sir:

Warm greetings! I am writing to formally inform you about my research study titled **"Disaster Preparedness in Flood-Prone Areas in San Juan, La Union Toward a Preparedness Model,"** which aims to enhance the safety and preparedness of communities during floods. Your barangay has been identified as one of the key areas for this study due to its geographical location and experiences with flooding. I believe that your community's insights and cooperation will play a vital role in developing a comprehensive disaster preparedness model tailored to flood-prone areas.

For this study, I kindly request the participation of **70 respondents** from your barangay, which will include barangay officials and residents who have lived in the community for **five years or more.** Their valuable experiences and perspectives will help us better understand the challenges and opportunities in improving flood preparedness. The data collection process will be conducted with strict adherence to ethical standards, ensuring the confidentiality and security of all information provided.

I humbly seek your support in endorsing this study to your constituents and assisting me in identifying suitable participants. Your partnership in this initiative will significantly contribute to creating a safer and more resilient community. Should you have any questions or require further details, please do not hesitate to contact me at **christianmfontanilla@gmail.com** or **(63) 926 6580 549.**

Thank you for your kind cooperation and commitment to the welfare of your community.

Sincerely,

CHRISTIAN M. FONTANILLA
Researcher

Noted by:

FLORALYN L. DOQUILLA, Ph D.
Adviser

RECEIVED BY: TEDDY D. EBREO

CICOSAT COLLEGES
Lingsat, City of San Fernando, La Union, Philippines 2500
Telefax No. (072) 607-11-18/(072) 242-26-98
Email address: cicosatc@yahoo.com

September 29, 2024

HON. MANUEL S. MARZO
Punong Barangay
Catdungan, San Juan, La Union

Sir:

Warm greetings! I am writing to formally inform you about my research study titled **"Disaster Preparedness in Flood-Prone Areas in San Juan, La Union Toward a Preparedness Model,"** which aims to enhance the safety and preparedness of communities during floods. Your barangay has been identified as one of the key areas for this study due to its geographical location and experiences with flooding. I believe that your community's insights and cooperation will play a vital role in developing a comprehensive disaster preparedness model tailored to flood-prone areas.

For this study, I kindly request the participation of **64 respondents** from your barangay, which will include barangay officials and residents who have lived in the community for **five years or more.** Their valuable experiences and perspectives will help us better understand the challenges and opportunities in improving flood preparedness. The data collection process will be conducted with strict adherence to ethical standards, ensuring the confidentiality and security of all information provided.

I humbly seek your support in endorsing this study to your constituents and assisting me in identifying suitable participants. Your partnership in this initiative will significantly contribute to creating a safer and more resilient community. Should you have any questions or require further details, please do not hesitate to contact me at **christianmfontanilla@gmail.com** or **(63) 926 6580 549.**

Thank you for your kind cooperation and commitment to the welfare of your community.

Sincerely,

CHRISTIAN M. FONTANILLA
Researcher

Noted by:

FLORALYN L. DOQUILLA, Ph D.
Adviser

APPENDIX C

LETTER TO RESPONDENTS

CICOSAT COLLEGES
Lingsat, City of San Fernando, La Union, Philippines 2500
Telefax No. (072) 607-11-18/(072) 242-26-98
Email address: cicosatc@yahoo.com

Dear Respondents,

Greetings!

The undersigned is currently undertaking a research study entitled: "**DISASTER PREPAREDNESS IN FLOOD-PRONE AREAS IN SAN JUAN, LA UNION TOWARD A PREPAREDNESS MODEL**" in connection with his Masters's Degree in Criminal Justice with a specialization in Criminology.

As a valued member of the target locale of the study, your insights and experiences are crucial for the success of this research. I am kindly requesting your participation in this study by completing a survey questionnaire.

Please be assured that all information you provide will be treated with utmost confidentiality. Your participation is entirely voluntary, and you are free to withdraw from the study at any time without any repercussions. The data collected will be used solely for academic purposes and will be anonymized to protect your identity.

Thank you and more power!

Sincerely,

CHRISTIAN M. FONTANILLA
Researcher

Noted by:

FLORALYN L. DOQUILLA, Ph D.
Adviser

APPENDIX D

LETTER FOR VALIDATION

CICOSAT COLLEGES
Lingsat, City of San Fernando, La Union, Philippines 2500
Telefax No. (072) 607-11-18/(072) 242-26-98
Email address: cicosatc@yahoo.com

August 10, 2024

LYLANI S. CLARO-DELA CRUZ
Dean, School of Criminal Justice Education
Concepcion Holy Cross College, Concepcion, Tarlac

Ma'am:

Greetings!

The undersigned is currently undertaking a research study entitled: "**DISASTER PREPAREDNESS IN FLOOD-PRONE AREAS IN SAN JUAN, LA UNION TOWARD A PREPAREDNESS MODEL**" in connection with his Masters's Degree in Criminal Justice with a specialization in Criminology.

In this connection, the undersigned respectfully requests that your office validate his survey questionnaire and interview guide about disaster response and management at the Municipality of San Juan, La Union. Your comments and suggestions will be very great help in the completion of this study.

Thank you and more power!

Sincerely,

CHRISTIAN M. FONTANILLA
Researcher

Noted by:

FLORALYN L. DOQUILLA, Ph D.
Adviser

CICOSAT COLLEGES
Lingsat, City of San Fernando, La Union, Philippines 2500
Telefax No. (072) 607-11-18/(072) 242-26-98
Email address: cicosatc@yahoo.com

August 12, 2024

POL MAJ NAPOLEON A LANGO
Chief of Police
Naguilian Police Station, La Union

Sir:

Greetings!

The undersigned is currently undertaking a research study entitled: "**DISASTER PREPAREDNESS IN FLOOD-PRONE AREAS IN SAN JUAN, LA UNION TOWARD A PREPAREDNESS MODEL**" in connection with his Masters's Degree in Criminal Justice with a specialization in Criminology.

In this connection, the undersigned respectfully requests that your office validate his survey questionnaire and interview guide about disaster response and management at the Municipality of San Juan, La Union. Your comments and suggestions will be very great help in the completion of this study.

Thank you and more power!

Sincerely,

CHRISTIAN M. FONTANILLA
Researcher

Noted by:

FLORALYN L. DOQUILLA, Ph D.
Adviser

CICOSAT COLLEGES
Lingsat, City of San Fernando, La Union, Philippines 2500
Telefax No. (072) 607-11-18/(072) 242-26-98
Email address: cicosatc@yahoo.com

August 12, 2024

SFINSP NOEL C LOPEZ
Municipal Fire Marshal
Naguilian Fire Station, La Union

Sir:

Greetings!

The undersigned is currently undertaking a research study entitled: "**DISASTER PREPAREDNESS IN FLOOD-PRONE AREAS IN SAN JUAN, LA UNION TOWARD A PREPAREDNESS MODEL**" in connection with his Masters's Degree in Criminal Justice with a specialization in Criminology.

In this connection, the undersigned respectfully requests that your office validate his survey questionnaire and interview guide about disaster response and management at the Municipality of San Juan, La Union. Your comments and suggestions will be very great help in the completion of this study.

Thank you and more power!

Sincerely,

CHRISTIAN M. FONTANILLA
Researcher

Noted by:

FLORALYN L. DOQUILLA, Ph D.
Adviser

CICOSAT COLLEGES
Lingsat, City of San Fernando, La Union, Philippines 2500
Telefax No. (072) 607-11-18/(072) 242-26-98
Email address: cicosatc@yahoo.com

August 14, 2024

ENP MARK ANTHONY B. DILODILO, RN
Head
Municipal Disaster Risk Reduction Managament Office

Sir:

Greetings!

The undersigned is currently undertaking a research study entitled: "**DISASTER PREPAREDNESS IN FLOOD-PRONE AREAS IN SAN JUAN, LA UNION TOWARD A PREPAREDNESS MODEL**" in connection with his Masters's Degree in Criminal Justice with a specialization in Criminology.

In this connection, the undersigned respectfully requests that your office validate his survey questionnaire and interview guide about disaster response and management at the Municipality of San Juan, La Union. Your comments and suggestions will be very great help in the completion of this study.

Thank you and more power!

Sincerely,

CHRISTIAN M. FONTANILLA
Researcher

Noted by:

FLORALYN L. DOQUILLA, Ph D.

APPENDIX E

VALIDATION RESULTS

ITEM	VALIDATORS				WM
9. The directions given are clear in all sections of the data gathering instrument.	3	4	4	4	3.75
10. Each item is readable.	4	4	4	4	4
11. Each item is attractive to read and good spacing is observed.	4	4	4	3	3.75
12. The data gathering instrument is comprehensive i.e., it covered all area that are important in the study.	3	4	3	3	3.25
13. Each item is focused on a particular thought or idea.	3	4	4	4	3.75
14. The items are objective i.e., the responses to be elicited are neither biased nor reactive.	4	4	3	3	3.5
15. The items are formulated in accordance to the explicit/implicit objective of the study.	4	4	4	4	4
16. The items do not overlap with each other, no duplication of item is observed.	4	4	4	3	3.75
GRAND MEAN					3.72

VALIDATION QUESTIONNAIRE

	ITEM	Rating 4	3	2	1	WM	D.E.R.
1.	The directions given are clear in all sections of the data gathering instrument.	✓					
2.	Each item is readable	✓					
3.	Each item is attractive to read and good spacing is observed.	✓					
4.	The data gathering instrument is comprehensive i.e., it covered all area that are important in the study.	✓					
5.	Each item is focused on a particular thought or idea.						
6.	The items are objective i.e., the responses to be elicited are neither biased nor reactive.	✓					
7.	The items are formulated in accordance to the explicit/implicit objective of the study.	✓					
8.	The items do not overlap with each other, no duplication of item is observed.	✓					

Legend		
Rate	**Numerical Evaluation**	**Descriptive equivalent rating**
4	3.26 – 4.00	Highly Valid
3	2.51 – 3.25	Valid
2	1.76 – 2.50	Fairly Valid
1	1.00 – 1.75	Not Valid

Name and Signature of Validator: _____

VALIDATION QUESTIONNAIRE

	ITEM	Rating 4	3	2	1	WM	D.E.R.
1.	The directions given are clear in all sections of the data gathering instrument.	✓					
2.	Each item is readable	✓					
3.	Each item is attractive to read and good spacing is observed.	✓					
4.	The data gathering instrument is comprehensive i.e., it covered all area that are important in the study.	✓					
5.	Each item is focused on a particular thought or idea.						
6.	The items are objective i.e., the responses to be elicited are neither biased nor reactive.	✓					
7.	The items are formulated in accordance to the explicit/implicit objective of the study.	✓					
8.	The items do not overlap with each other, no duplication of item is observed.	✓					

Legend		
Rate	**Numerical Evaluation**	**Descriptive equivalent rating**
4	3.26 – 4.00	Highly Valid
3	2.51 – 3.25	Valid
2	1.76 – 2.50	Fairly Valid
1	1.00 – 1.75	Not Valid

Name and Signature of Validator: _____

VALIDATION QUESTIONNAIRE

	ITEM	Rating				WM	D.E.R.
		4	3	2	1		
1.	The directions given are clear in all sections of the data gathering instrument.	✓					
2.	Each item is readable	✓					
3.	Each item is attractive to read and good spacing is observed.	✓					
4.	The data gathering instrument is comprehensive i.e., it covered all area that are important in the study.		✓				
5.	Each item is focused on a particular thought or idea.	✓					
6.	The items are objective i.e., the responses to be elicited are neither biased nor reactive.		✓				
7.	The items are formulated in accordance to the explicit/implicit objective of the study.	✓					
8.	The items do not overlap with each other, no duplication of item is observed.	✓					

Legend		
Rate	**Numerical Evaluation**	**Descriptive equivalent rating**
4	3.26 – 4.00	Highly Valid
3	2.51 – 3.25	Valid
2	1.76 – 2.50	Fairly Valid
1	1.00 – 1.75	Not Valid

Name and Signature of Validator: FELINSA NOEL C LOPEZ

VALIDATION QUESTIONNAIRE

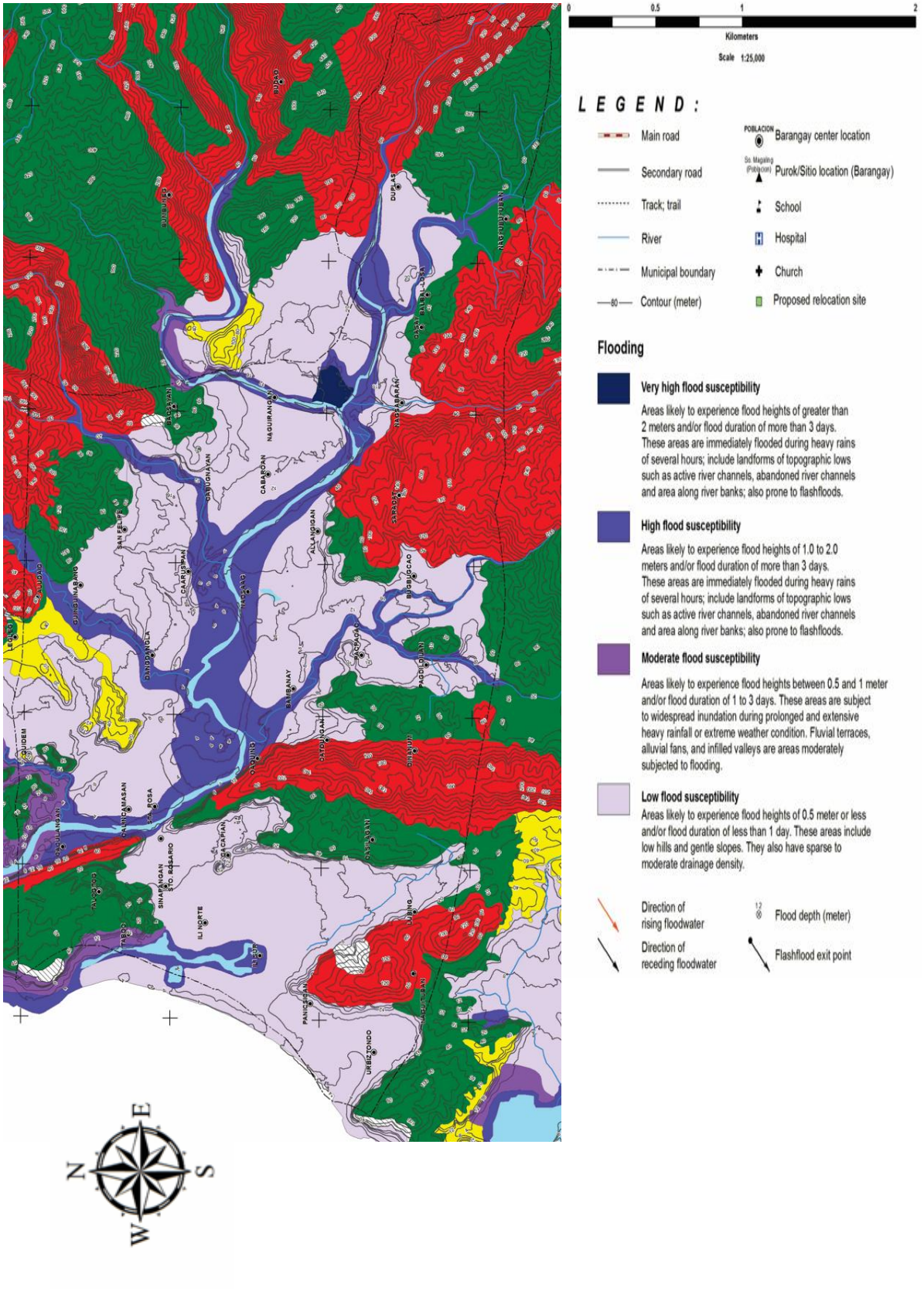
	ITEM	Rating				WM	D.E.R.
		4	3	2	1		
1.	The directions given are clear in all sections of the data gathering instrument.	✓					
2.	Each item is readable	✓					
3.	Each item is attractive to read and good spacing is observed.		✓				
4.	The data gathering instrument is comprehensive i.e., it covered all area that are important in the study.		✓				
5.	Each item is focused on a particular thought or idea.	✓					
6.	The items are objective i.e., the responses to be elicited are neither biased nor reactive.		✓				
7.	The items are formulated in accordance to the explicit/implicit objective of the study.	✓					
8.	The items do not overlap with each other, no duplication of item is observed.		✓				

Legend		
Rate	**Numerical Evaluation**	**Descriptive equivalent rating**
4	3.26 – 4.00	Highly Valid
3	2.51 – 3.25	Valid
2	1.76 – 2.50	Fairly Valid
1	1.00 – 1.75	Not Valid

Name and Signature of Validator: ENP. MARK ANTHONY B. DILODILO, RN / MDRRMO HEAD
Municipal Environment and Natural Resources Office
Naguilian, La Union

APPENDIX F

GEOGRAPHICAL MAP OF SAN JUAN, LA UNION



APPENDIX G

QUESTIONNAIRE

DISASTER PREPAREDNESS IN FLOOD-PRONE AREAS IN SAN JUAN, LA UNION TOWARD A PREPAREDNESS MODEL

Name (Optional): _____

Barangay: _____

Part 1. Disaster Preparedness and Management of Flood Prone Areas in San Juan, La Union Part 2.1. EQUIPMENT AND COMMUNICATION SYSTEM

Direction: Please rate the following by putting a checkmark (✓) on the column that corresponds to your rating using the scale shown below:

4 **Very Adequate**
3 **Adequate**
2 **Moderately Adequate**
1 **inadequate**

The following equipment and communication system are adequate in our area;	**4**	**3**	**2**	**1**
A. Emergency Vehicles				
1. Ambulance				
2. Rescue truck				
3. Rescue boat				
B. Water Search and Rescue Equipment				
1. Life jacket				
2. Rescue helmet				
3. Rescue boots				
4. Traction rope				
5. Rope throwing bag				
C. Communication Equipment				
1. 2 way VHF/UHF radio				
2. Cellphone				
3. Whistles				
4. Transistor radios				
5. Megaphones				
D. Alarm and Early Warning System				
1. Siren				
2. Flood meter gauges				
E. Lighting Tools and Equipment				
1. Emergency lights				

2. Flashlights with batteries				
3. Search lights				
4. High power torches				
F. Personal Protective Equipment				
1. Breathing apparatus				
2. Hand gloves				
3. Eye goggles				
4. Safety full body harness				
5. Hard hat				
6. Ear plugs				
7. Reflectorized vest				
G. Search and Rescue Equipment				
1. Spine board				
2. Foldable stretchers				
3. Megaphone with siren				
4. Tents				
5. Ropes				
6. Body bags				
7. Floating ring				
H. Vehicular and Extrication Equipment				
1. Hydraulic cutter				
2. Power pack pump				
3. Electric drill				
4. Shovel				
5. Axe				
6. Bolo				
7. Pickaxe				
8. Crowbar				
I. Basic Life Support, Medical & First Aid Supplies & Equipment				
1. First aid kits				
2. Trauma bag				
3. Stretchers				
4. Head immobilzer				
5. Splints				
6. Elastic bandage				
7. Gauze bandage				

Part 1.2. KNOWLEDGE ON DISASTER PREPAREDNESS

Direction: Please rate the following by putting a checkmark (✓) on the column that corresponds to your rating using the scale shown below:

4 - Always Prepared
3 - Somewhat Prepared
2 - Slightly Prepared
1 - Unprepared

INDICATORS	4	3	2	1
1. Prepared life jackets and life buoys in case of flash floods.				
2. Ready to flee to one of the municipally designated evacuation zones.				
3. Because floods can linger for days or weeks, depending on the discharge conditions, we keep food and water on hand.				
4. Since floods contaminate water supplies, we stockpile waters.				
5. We stock up on candles and flashlights because flooding frequently causes power outages.				
6. We prepare food supplies, including canned products, in advance of the storm.				
7. I am prepared on the information and warning of an impending typhoon given by the PAGASA.				
8. During a calamity, medicines are available.				
9. The lines of communication are prepared for quicker action.				
10. Every home has to have a first aid or medication kit on hand.				

Part 1.3. TRAINING PROGRAMS AND SEMINARS

Direction: Please rate the following by putting a checkmark (✓) on the column that corresponds to your rating using the scale shown below:

5 - Always
4 - Often
3 - Sometimes
2 - Rarely
1 - Never

INDICATORS	5	4	3	2	1
1. Community's resource availability affects training programs.					
2. Government resources and officials with local catastrophe experience are used to help create emergency plans in the community.					
3. Radio and television are accessible as communication mediums that provide links for training information, especially in rural places.					
4. Following a calamity, an organized institution offers lectures, workshops, and trainings. Tests, drills, and workouts are also included in that.					
5. Professionals in the fields of emergency response and disaster evacuation are conducting seminars, programs, or workshops.					
6. Trainings, workshops, and seminars are conducted in a very effective manner.					
7. The majority of people in your town participate in and attend trainings, seminars, and events.					
8. The barangay frequently hosts trainings, seminars, or events to inform residents about emergency evacuation.					
9. Mobilization of the search and rescue action team, as well as their relocation to a center that is safer.					
10. Surveys, damage assessments, and report verification by the local government should all be done.					
11. Everyone in the barangay is able to put their understanding of disaster evacuation to use.					
12. When a calamity strikes, disaster evacuation is handled quickly and effectively.					
13. The deployment of medical teams imparts first aid knowledge.					
14. Everybody in the barangay is familiar with the fundamentals of emergency evacuation.					
15. Trainings, seminars, and programs give timely information about upcoming emergencies.					

Part 1.4. DEGREE OF CHALLENGES ENCOUNTERED IN THE IMPLEMENTATION OF DISASTER MANAGEMENT

Direction: Please rate the following by putting a checkmark (✓) on the column that corresponds to your rating using the scale shown below:

5 - Always

4 - Often
3 - Sometimes
2 - Rarely
1 - Never

INDICATORS	5	4	3	2	1
1. Lack of political will from government officials and agencies					
2. Disaster Risk Reduction policies are not a priority					
3. Limited capacity of the government agency in charge to implement DRR policies					
4. Personnel cannot implement all the programs needed in disaster management					
5. Lack of collaboration among the different actors involved in DRR					
6. Lack of coordination among different sectors involved in DRR					
7. Lack of awareness of the general pubic about disasters and its risks					
8. There is difficulty in engaging communities to participate in disaster preparedness.					
9. There is a problem in mobilizing communities to participate in disaster response.					
10. Complexity in interagency coordination that may lead to inefficiencies or gaps in response.					

CURRICULUM VITAE

CHRISTIAN M. FONTANILLA
Barangay 3, San Juan, La Union
christianmfontanilla@gmail.com/03866580549

Education:

Master of Science in Criminal Justice
2022 – Present (30 units)
CICOSAT Colleges Inc.

Bachelor of Science in Criminology – 2014-2018
Saint Louis College

Eligibility: Criminologist Licensure Examination (December 2018, Baguio City)

Area of Specialization:

Course Subject/Curriculum	Topic	Sponsoring Agency
Lecturer	CFLM 1 – Character Formation 1 Nationalism and Patriotism	DMMMSU
Lecturer	CFLM 2 - Character Formation 2 with Leadership, Management, Decision-Making and Administration	DMMMSU
Lecturer	CA 1 – Institutional Corrections	DMMMSU
Lecturer	CA 2 – Non-institutional Corrections	DMMMSU
Lecturer	CRIMSOC 1 – Introduction to Criminology	DMMMSU
Lecturer	CRIMSOC 5 – Juvenile Delinquency and Juvenile Justice System	DMMMSU
Lecturer	CDI 1 - Fundamentals of Criminal Investigation and Intelligence	DMMMSU
Lecturer	CDI 5 - Fire Protection and Arson Investigation	DMMMSU
Lecturer	CDI 9 – Introduction to Cybercrime and Environmental Laws and Protection	DMMMSU
Lecturer	CFOR 1 – Forensic Photography	DMMMSU
Lecturer	CFOR 5 – Lie Detection Techniques	DMMMSU
Lecturer	CFOR 6 – Forensic Ballistics	DMMMSU
Lecturer		

Teaching and Other Professional Experiences:

- Instructor I (February 2022-Present
- Assistant Professor (January 2021-December 2021)

Work Exposure

April 2018– Present

- Extension Facilitator, Institute of Criminal Justice Education, DMMMSU-MLUC
- Sports Facilitator, Institute of Criminal Justice Education, DMMMSU-MLUC
- Focal Person, Disaster Risk Reduction Management- Institute of Criminal Justice Education, DMMMSU-MLUC
- The Prober Adviser, Institute of Criminal Justice Education, DMMMSU-MLUC
- Crime Laboratory, Philippine National Police Regional Office 1 – On-the-job Training
- AFP-Armed Forces Of the Philippines, Reservist Enlisted Personnel, Community Relations Officer, 103 CDC, Camp Jose Laberinto, Naguillian La Union

Expert Services/Speakership

Service Rendered	Topic	Sponsoring Agency
Lecturer	CFLM 1 – Character Formation 1 Nationalism and Patriotism	Prudence Review and Training Center Divine Word College of Vigan
Lecturer	CA 1 – Institutional Corrections	Data Center College of the Philippines Prudence Review and Training Center Polytechnic College of La Union Saint Louis College Don Mariano Marcos Memorial State University
Lecturer	CFLM 2 - Character Formation 2 with Leadership, Management, Decision-Making and Administration	Prudence Review and Training Center Data Center College of the Philippines
Lecturer	CDI 3 – Specialized Crime Investigation with Legal Medicine	Prudence Review and Training Center
Lecturer	CDI 2 – Specialized Crime Investigation with Interview and Interrogation	Prudence Review and Training Center
Lecturer	CRIM SOC 1 – Introduction to Criminology	NICOSAT Colleges
Lecturer	CRIM SOC 2 – Human Behavior and Victimology	NICOSAT Colleges

Lecturer	CRIM SOC 3 – Theories of Crime Causation	NICOSAT Colleges

Trainings/Seminars/Workshops 2023

Inclusive Dates	Title of Training/Seminar/Workshop	Sponsoring Agency
2023		
School Level		
September 26-27, 2023	RESEARCH PROPOSAL WRITESHOP	DMMMSU

Seminars, Webinars, and other affiliations (2022-2025)

- Laboratory Custodian Specialization Course
- Ethical Leadership in Criminal Justice
- Retooling Extension Professionals Towards Better Extension Community Engagement
- Video Editting Using Filmora Training
- Training Cum Workshop on Training Design and Iec Material Preparation
- Polygraphy
- Introduction To Industrial Security Concepts
- Juvenile Delinquency and Juvenile Justice System
- Oath Taking and Orientation of Newly Hired Faculty Members
- Iwas Sunog Ayon Kay Juana
- Forensic Photography

Leadership and Management (2014 – 2022)

Major Organization, Student-Leader, Volunteer 2014-2018

- PCAP PRESIDENT (2016 – 2018) 2 consecutive years, Saint Louis College
- PCAP Vice President (2015), Saint Louis College
- PCAP 1st Year Representative, Saint Louis College
- LINK MEMBER (2016-18), *Environmental Advocate,* Federation Student Council – City of San Fernando La Union

Skills

- Excellent communication skills
- Proficiency in computer skills (MS Word, Powerpoint, Excel, etc.)
- Strong Analytical and Problem-Solving Skills
- Multi-Tasking
- Leadership-motivated
- Adoptable and Flexible
- Keen learner

Professional Membership:

- Professional Criminologist Association of the Philippines (PCAP)
- Philippine Criminalistics Society

Education

- **BACHELOR OF SCIENCE IN CRIMINOLOGY**, Student Leadership Awardee (2016, 2017 and 2018) – Saint Louis College of City of San Fernando, Lqa Union
- **HIGH SCHOOL,** Sto. Rosario National High School, San Juan, La Union
- **ELEMENTARY,** Nadsaag Elementary School, San Juan, La Union
- **PRIMARY,** Nadsaag 4 Elementary School, San Juan, La Union

CHRISTIAN M. FONTANILLA, Rcrim, CCS