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From Response to Compliance: An Implementation Analysis of Local Government Unit Compliance During Typhoon

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Abstract

The increasing frequency and intensity of hydro-meteorological hazards in the Philippines underscore the urgent need for effective disaster risk reduction strategies and reliable early warning systems. This study examines the extent to which Local Government Units (LGUs) in Masbate Province operationalize advisories issued by the Philippine Atmospheric, Geophysical and Astronomical Services Administration (PAGASA). Anchored in Matland's Ambiguity-Conflict Model (1995) and Mazmanian and Sabatier's Theory of Policy Implementation (1981), the research integrates behavioral and institutional perspectives to analyze LGU compliance. Employing a mixed-methods approach, the study investigates the availability of disaster response tools and equipment, immediate LGU actions before and during typhoon events, the degree of response in relation to PAGASA advisories, and the challenges encountered in implementation. Findings reveal that while LGUs demonstrate strong institutional awareness and adherence to Standard Operating Procedures (SOPs), significant challenges persist in resource mobilization, infrastructure resilience, and community compliance. Quantitative results indicate moderate logistical and environmental challenges, while qualitative data highlight gaps in coordination, monitoring, and resource allocation. The study concludes that effective compliance requires not only clear advisories and institutional structures but also strengthened local capacity, improved communication systems, and enhanced collaboration between PAGASA, LGUs, and communities. Recommendations include capacity-building initiatives, improved disaster financing mechanisms, and culturally accessible communication strategies to bridge the gap between scientific forecasts and community action. Ultimately, the research contributes to strengthening disaster governance and resilience in vulnerable provinces, ensuring that early warnings are translated into timely, life-saving measures.

Keywords: LGU Compliance; PAGASA Advisories, Disaster Response; Typhoon Preparedness; Crisis Management

1. Introduction

The increasing frequency and intensity of hydro-meteorological hazards worldwide highlight the urgent need for effective disaster risk reduction strategies and reliable Early Warning Systems (EWS). Climate change has intensified extreme weather events, exposing communities, particularly those in coastal and island regions, to higher risks of disaster impacts. The Sendai Framework for Disaster Risk Reduction (2015–2030) emphasizes the importance of people-centered early warning systems, recognizing that accurate scientific forecasts alone are insufficient unless they are effectively disseminated and translated into timely protective actions. Effective disaster risk management, therefore, requires not only technological capability but also strong institutional coordination and local governance capacity to ensure that warnings lead to appropriate responses. Studies across different countries have shown that the success of early warning systems largely depends on the ability of local institutions to interpret and operationalize hazard advisories. For instance, disaster resilience initiatives highlight that the effectiveness of local disaster management is influenced by governance structures, organizational capacity, and coordination among stakeholders (Florece et al., 2022). Similarly, research on local government policy implementation indicates that institutional capacities, including strategic, managerial, analytical, and collaborative capabilities, play a critical role in enabling local governments to translate national policies and scientific information into practical action at the community level (Salvador & Sancho, 2021). Without these institutional capacities, disaster warnings may fail to reach vulnerable populations in a timely and actionable manner.

In the Philippine context, disaster risk management is particularly significant due to the country's geographic exposure to natural hazards. Located along the Pacific Typhoon Belt, the Philippines experiences an average of twenty tropical cyclones annually, many of which cause severe flooding, landslides, storm surges, and widespread infrastructure damage. To address these risks, the Philippine Atmospheric, Geophysical, and Astronomical Services Administration (PAGASA) provides scientific weather forecasts and hazard advisories that serve as the basis for preparedness and response measures across the country. Republic Act No. 10121, also known as the Philippine Disaster Risk Reduction and Management Act of 2010,

institutionalizes a decentralized disaster governance framework that assigns Local Government Units (LGUs) a central role in translating national disaster advisories into local actions.

Despite this institutional framework, studies suggest that the effectiveness of disaster risk reduction policies in the Philippines depends heavily on the capacity and commitment of local governments to implement them. Research on local disaster management in Philippine communities indicates that while structures and policies for disaster preparedness exist, their implementation is often only partially accomplished due to challenges such as limited financial resources, insufficient technical capacity, and weak coordination among local stakeholders (Nacaya et al., 2022). Similarly, disaster risk financing studies emphasize that delays in funding mechanisms and limited local resources can hinder the timely execution of disaster response and recovery programs (Villacin, 2021). These findings suggest that the presence of policies and advisories does not automatically guarantee effective implementation at the local level.

Furthermore, studies examining compliance and implementation of disaster risk reduction programs highlight the persistent gap between awareness and actual practice. For example, research on disaster risk reduction management initiatives found that stakeholders often demonstrate satisfactory awareness of disaster preparedness policies but only moderate levels of compliance and implementation, indicating that knowledge does not always translate into operational action (Cubillas et al., 2022). Similar findings were observed in governance studies, where high awareness of policy requirements did not necessarily lead to consistent implementation due to structural and resource constraints faced by local government units (Gonzalvo, 2021). These challenges underscore the importance of examining not only the availability of disaster advisories but also the processes through which local governments respond to them. The role of local governments in disaster response becomes even more critical in geographically vulnerable areas such as Masbate Province. As an archipelagic province within the Bicol Region, Masbate is exposed to multiple climate-related hazards, including typhoons, storm surges, flooding, and landslides. Its coastal communities are particularly vulnerable to rising sea levels and storm surges, while inland areas experience flooding and landslide risks during heavy rainfall events. These geographic conditions, combined with economic and infrastructural limitations, create significant challenges for local government units tasked with protecting communities during severe weather events.
Given these vulnerabilities, effective compliance with PAGASA advisories is essential for safeguarding lives, property, and livelihoods in Masbate. However, the extent to which LGUs are able to translate scientific weather warnings into timely and coordinated response actions remains insufficiently examined. While previous studies have explored disaster governance, institutional capacity, and policy implementation in broader contexts, limited research specifically investigates how PAGASA advisories are operationalized at the local level and what factors influence LGU compliance during typhoon events.

Addressing this research gap is crucial for strengthening the overall effectiveness of the Philippine disaster risk reduction framework. Understanding how local governments respond to PAGASA advisories, particularly in high-risk provinces such as Masbate, can provide valuable insights into improving early warning systems, enhancing institutional coordination, and strengthening local disaster preparedness strategies. Moreover, examining the transition from warning issuance to actual local compliance helps illuminate the “last-mile” challenges in disaster communication and governance. Therefore, this study seeks to analyze the extent of Local Government Unit compliance with PAGASA advisories in Masbate Province and to identify the factors that influence the translation of warnings into protective actions. Specifically, it examines the availability of disaster response tools and equipment, the immediate responses undertaken by LGUs before and during typhoon events, the degree of response in relation to PAGASA advisories, the challenges encountered in operationalizing these advisories, and the measures that may strengthen LGU compliance and enhance the effectiveness of PAGASA’s warning systems. By addressing these concerns, the study contributes to the broader goals of strengthening disaster resilience, improving climate adaptation strategies, and enhancing accountable and responsive governance at the local level. Ultimately, the findings aim to support the development of more effective partnerships between PAGASA, Local Government Units, Disaster Risk Reduction and Management Offices, and local communities in ensuring that scientific warnings lead to timely and life-saving actions.

This study analyzed the extent of Local Government Unit (LGU) compliance with PAGASA advisories in Masbate Province and identified the factors that influenced the translation of warnings into protective actions. To guide this investigation, the research first evaluated the existing disaster response tools and equipment utilized during typhoons and assessed the immediate actions taken by LGUs both before and during these weather events in relation to official advisories. Furthermore, the study determined the degree of LGU responsiveness and identified the specific challenges officials encountered in operationalizing PAGASA communications and implementing timely response measures. Finally, the research explored potential measures that could be proposed to strengthen LGU compliance and improve the overall effectiveness of PAGASA advisories.

2. Material and methods

2.1 Research Design

This study employed a descriptive–evaluative research design, complemented by an implementation analysis approach, to assess the extent of local government unit (LGU) compliance with PAGASA advisories. The design facilitated the systematic examination of institutional, technical, and contextual factors influencing policy implementation. A mixed-methods approach was adopted, wherein quantitative techniques were utilized to generate measurable data on compliance levels, institutional capacity, technical capability, and clarity of advisory interpretation. These were supplemented by qualitative methods that explored interpretive processes, communication dynamics, implementation challenges, and contextual conditions. The integration of quantitative and qualitative data enabled a comprehensive and nuanced understanding of both the extent and nature of compliance.

The analytical framework was anchored on the Ambiguity–Conflict Model proposed by Richard E. Matland (1995) and the Implementation Framework developed by Daniel A. Mazmanian and Paul A. Sabatier (1983). These models provided a theoretical basis for classifying LGU implementation processes in terms of ambiguity, conflict, and institutional support.

2.2 Locale of the Study

This study will be conducted in Masbate Province, which is located in the Bicol Region in the central Philippines. Masbate is an archipelagic province composed of three major islands and several smaller islets, with twenty municipalities and one component city. Its diverse landscape includes coastal lowlands, river systems, and upland areas, which expose communities to flooding, landslides, strong winds, and storm surges. The province lies along the common path of tropical cyclones that enter the Philippine Area of Responsibility, and it frequently experiences typhoons and monsoon rains that underscore the urgency of effective early warning and preparedness measures. For this study, selected sample areas include San Fernando in Ticao Island, San Pascual in Burias Island, Aroroy and Esperanza in mainland Masbate, as well as Masbate City.

Masbate is chosen as the study locale because its high exposure to hydro-meteorological hazards, combined with varying levels of institutional capacity among Local Government Units, provides a strategic setting for examining the degree of compliance with PAGASA advisories. The province presents a relevant context for understanding how geographical vulnerability, governance structures, and resource limitations influence the implementation of early warnings and the protection of at-risk communities.

2.3 Respondents of the Study

Table 1 reflects the demographic profile of the respondents. Respondents of this study were the Local Government Units (LGUs) within Masbate Province, specifically the municipal-level LGUs and the City Government of Masbate, together with their respective Local Disaster Risk Reduction and Management Offices (LDRRMOs). These respondents were purposively selected due to their critical role as frontline implementers of disaster preparedness and response measures, as mandated under Republic Act No. 10121. Their responsibility to interpret and operationalize PAGASA advisories into localized actions before, during, and after typhoon events makes them highly suitable sources of data for this investigation. The study primarily involved Municipal Disaster Risk Reduction and Management Officers (MDRRMOs), along with key personnel engaged in disaster operations, coordination, and compliance monitoring. As reflected in Table 1, the respondents represented five LGUs in Masbate Province: San Fernando, Esperanza, Aroroy, Masbate City, and San Pascual. Their positions ensured that the data gathered were drawn from individuals directly involved in decision-making processes, emergency response coordination, and implementation of disaster risk reduction and management (DRRM) programs within their respective localities.

In terms of demographic characteristics, the respondents demonstrated a substantial level of professional experience in the field of disaster management, ranging from four to eight years. Two of the respondents had eight years of experience, while others had between five to six years, and one had four years of service. This range indicates that the participants possess not only foundational knowledge but also practical, field-based expertise in handling typhoon-related emergencies. Their years of service suggest repeated exposure to disaster events, which enhances the reliability and depth of their insights regarding LGU compliance with PAGASA advisories.

Moreover, the respondents' participation in DRRM-related trainings reflects ongoing institutional efforts to strengthen technical competencies in disaster preparedness and response. The majority reported having attended relevant trainings, which supports their capability to implement standardized protocols and adapt to evolving disaster management frameworks. However, the presence of incomplete or undocumented training participation in one LGU highlights a potential gap in institutional record-keeping and continuous professional development. This inconsistency may have implications for the uniformity of disaster response practices and compliance levels across LGUs. Geographically, the inclusion of municipalities such as San Fernando, Esperanza, Aroroy, San Pascual, and Masbate City provided a diverse

representation of both coastal and inland communities. This diversity is significant, as it captures variations in disaster vulnerability, accessibility, resource availability, and exposure to hydro-meteorological hazards. Masbate Province, being an archipelagic area within the Bicol Region, is particularly prone to typhoons, making it an appropriate setting for examining the dynamics of LGU compliance and response effectiveness.

Overall, the integration of the respondents' demographic profile strengthens the credibility and contextual grounding of the study. Their professional roles, years of experience, and training exposure provide a solid empirical basis for analyzing how PAGASA advisories are interpreted and translated into action. These characteristics also offer valuable insights into how institutional capacity, leadership, and technical preparedness influence the responsiveness and effectiveness of LGU disaster management systems in Masbate Province.

Table 1. *Demographic Profile*

LGU / Municipality	Position	Years of Experience	DRRM-Related Trainings Attended
San Fernando	MDRRMO	6 years	Yes
Esperanza	MDRRMO	5 years	Yes
Aroroy	MDRRMO	8 years	Yes
Masbate City	MDRRMO	8 years	Yes
San Pascual	MDRRMO	4 years	Yes
Total / Summary		**4–8 years**	Majority Attended

2.4 Sample and Sampling Procedure

The respondents of the study consisted of selected Local Government Units (LGUs) in Masbate Province, particularly the Municipal Disaster Risk Reduction and Management Officers (MDRRMOs) and key personnel directly involved in disaster preparedness, response operations, and the implementation of PAGASA advisories. The study included representatives from the municipalities of San Fernando, Esperanza, Aroroy, San Pascual, and Masbate City. These respondents were chosen because of their direct responsibility in interpreting weather advisories, coordinating disaster response activities, mobilizing resources, and implementing disaster risk reduction and management (DRRM) protocols before and during typhoon events. Their years of experience in disaster management, ranging from four to eight years, as well as their participation in DRRM-related trainings, provided credible and relevant insights regarding LGU compliance with PAGASA advisories and the operational challenges encountered during typhoon emergencies.

The study employed purposive sampling as the sampling method. This non-probability sampling technique was utilized to intentionally select respondents who possess specialized knowledge, technical expertise, and direct involvement in disaster risk reduction and management operations within their respective LGUs. Purposive sampling was considered appropriate because the study specifically required participants who are actively engaged in the implementation of PAGASA advisories, emergency preparedness planning, coordination of disaster response mechanisms, and decision-making during typhoon events. Through this method, the researcher ensured that the data gathered came from qualified individuals who could provide accurate, experience-based, and context-specific information relevant to the objectives of the study. The selection of geographically diverse municipalities within Masbate Province also allowed the study to capture varying disaster vulnerabilities, institutional capacities, and operational conditions influencing LGU compliance and disaster response effectiveness.

2.5 Research Instrument

The study utilized two primary research instruments to collect both quantitative and qualitative data: a structured questionnaire and a semi-structured interview guide. The structured questionnaire served as the principal tool for gathering quantitative data from the selected respondents. It was designed to generate measurable information on the preparedness and response practices of Local Government Units (LGUs) during typhoon events. Specifically, the instrument captured data on the availability of disaster response tools, equipment, and operational resources; the actions undertaken by LGUs before, during, and after typhoon occurrences; and the level of response implemented in relation to PAGASA advisories. Furthermore, the questionnaire assessed the perceived challenges encountered by LGUs in implementing disaster response measures and operationalizing weather advisories. Most items were structured using checklist formats and Likert-type scales, enabling respondents to indicate the frequency, extent, or level of implementation of specific practices. This format facilitated systematic quantification and statistical analysis of the data.

Complementing the quantitative instrument, a semi-structured interview guide was employed to obtain qualitative data that provided deeper insights into the experiences and institutional dynamics underlying LGU compliance with PAGASA advisories. The interview guide included open-ended questions that explored the interpretation of weather advisories by LGU personnel, internal communication and coordination mechanisms for disseminating warning information, and administrative and institutional challenges encountered during disaster response operations.

In addition, the interviews examined decision-making processes during critical weather events, as well as instances of ambiguity or conflict arising from the translation of scientific advisories into operational actions. The qualitative data derived from the interviews complemented the quantitative findings by offering contextual explanations, detailed narratives, and experiential perspectives, thereby enhancing the overall analysis of LGU compliance and disaster response practices.

2.6 Data Gathering Procedure

The data gathering process will be conducted systematically to ensure the reliability, accuracy, and ethical integrity of the information collected from the selected Local Government Units (LGUs). Initially, the researcher will coordinate with the identified LGUs by sending formal communication letters addressed to the municipal mayors, municipal administrators, and Municipal Disaster Risk Reduction and Management Officers (MDRRMOs). These letters will formally request permission to conduct the study and to schedule onsite or virtual data collection activities. As part of this coordination, the researcher will also request access to relevant documents and records from the MDRRMOs, such as inventories of disaster response equipment, preparedness and contingency plans, operational procedures, and other materials related to the implementation of PAGASA advisories. Upon receiving approval from the concerned LGU offices, structured questionnaires will be administered to the identified respondents. The questionnaires may be distributed personally during scheduled visits or through coordinated sessions with the LGU offices to ensure convenience and clarity in answering the items. Respondents will be given sufficient time to carefully read and respond to the questionnaire, which is designed to gather information regarding available disaster response tools, immediate response actions before and during typhoons, and the level of LGU compliance with PAGASA advisories.

To complement the quantitative data obtained from the questionnaires, selected key informants will participate in semi-structured interviews. These interviews will allow respondents to elaborate on their experiences and provide deeper insights into the interpretation of PAGASA advisories, internal communication and coordination processes, and the institutional or operational challenges encountered during disaster response. The qualitative information obtained from these interviews will help contextualize and enrich the quantitative findings. After the completion of data collection, the researcher will retrieve all completed questionnaires and proceed with the organization and coding of the data. Quantitative responses will be encoded for statistical analysis, while interview recordings and field notes will be transcribed and categorized thematically to facilitate qualitative analysis.

Throughout the entire research process, ethical considerations will be strictly observed. Participation in the study will be voluntary, and respondents will be fully informed about the purpose and procedures of the research before data collection begins. Informed consent will be obtained from all participants, ensuring that they agree to participate willingly and may withdraw from the study at any time without penalty. Furthermore, the confidentiality and anonymity of respondents will be maintained by ensuring that personal identifiers and sensitive information are not disclosed in the presentation of results. All collected data will be used solely for academic and research purposes.

2.7 Data Analysis Techniques

The data collected in this study were analyzed using both quantitative and qualitative techniques to provide a comprehensive examination of Local Government Unit (LGU) compliance with PAGASA advisories. For the quantitative component, descriptive statistical methods such as frequency, percentage, mean, and standard deviation were used to determine the levels of compliance, institutional capacity, and clarity in the interpretation of weather advisories. These measures summarized the responses obtained from the structured questionnaire and identified patterns in the availability of disaster response tools, response actions, and operational practices before and during typhoon events. To ensure the reliability of the instrument, internal consistency was tested using Cronbach's alpha. A coefficient of 0.70 or higher was considered acceptable, indicating that the questionnaire items produced consistent results. When necessary, additional statistical procedures, such as correlation and comparative analysis, were conducted to examine possible relationships and differences among the selected municipalities in terms of response levels and compliance practices.

For the qualitative component, thematic analysis was employed to examine the data gathered from the semi-structured interviews. Responses were transcribed, coded, and organized into themes related to the interpretation of PAGASA advisories, institutional coordination, operational challenges, and decision-making processes during weather disturbances. The emerging themes were interpreted using the frameworks of Richard E. Matland (1995) and Daniel A. Mazmanian and Paul A. Sabatier (1983). These perspectives helped explain variations in LGU compliance by examining the roles of ambiguity, conflict, institutional capacity, and implementation conditions. The integration of quantitative and qualitative findings provided a more complete understanding of both the measurable indicators and contextual factors influencing LGU compliance with PAGASA advisories during typhoon events.

2.8 Ethical Considerations

Throughout the entire research process, ethical considerations will be strictly observed. Participation in the study will be voluntary, and respondents will be fully informed about the purpose and procedures of the research before data collection begins. Informed consent will be obtained from all participants, ensuring that they agree to participate willingly and may withdraw from the study at any time without penalty. Furthermore, the confidentiality and anonymity of respondents will be maintained by ensuring that personal identifiers and sensitive information are not disclosed in the presentation of results. All collected data will be used solely for academic and research purposes.

3. Results and Discussion

3.1 Inventory of the Existing Disaster Response Tools and Equipment During a Typhoon

Table 2.1 *Communication Tools*

A. Communication Tools	Frequency	Percentage
Handheld Radio	5	100%
Base Radio	4	80%
Satellite Phone	2	40%
Megaphone	5	100%
Public Address System	2	40%

Table 2.1 presents the inventory of communication tools available among the five Local Government Units (LGUs). The results show that handheld radios and megaphones recorded the highest availability (100%), while “others” had the lowest (20%), followed by satellite phones and public address systems (40%). Base radios ranked relatively high at 80% availability. This comparison indicates a clear disparity between commonly used, low-cost communication tools and more advanced or specialized equipment.

Table 2.2 *Rescue & Emergency Tools*

B. Rescue & Emergency Tools	Frequency	Percentage
Rescue Boat	2	40%
Life Vests / Floatation Devices	3	60%
Ambulance	5	100%
Chainsaw	4	80%
Generator /Floodlights	5	100%

Table 2.2 presents the availability of rescue and emergency tools among the five Local Government Units (LGUs). The results show that ambulances and generators/floodlights recorded the highest availability (100%), while “others” had the lowest (20%), followed by rescue boats (40%). Chainsaws were relatively high at 80%, and life vests or flotation devices were present in 60% of LGUs. This comparison highlights a disparity between essential, commonly utilized emergency equipment and more specialized rescue resources. The universal availability of ambulances and generators/floodlights indicates that LGUs prioritize medical response and continuous power supply, which are critical during emergencies. However, the limited availability of rescue boats and specialized equipment suggests gaps in water-based rescue capacity and advanced emergency response, which are crucial in typhoon-prone areas experiencing flooding and storm surges

Table 2.3 *Monitoring Tools*

C. Monitoring Tools	Frequency	Percentage
Rain Gauge	4	80%
Water Level Gauge	3	60%
Hazard Maps	5	100%
GIS Equipment	1	20%

Table 2.3 presents the availability of monitoring tools among the five Local Government Units (LGUs). The results reveal that hazard maps recorded the highest availability (100%), while GIS equipment had the lowest (20%). Rain gauges were available in 80% of LGUs, whereas water level gauges and other tools (including CCTV systems) were both reported at 60%. This comparison highlights a clear gap between the availability of basic and widely used monitoring tools and advanced technological systems for disaster risk assessment. The universal presence of hazard maps indicates that LGUs strongly prioritize foundational risk assessment tools for identifying vulnerable areas and guiding disaster preparedness

planning. However, the very limited availability of GIS equipment suggests that most LGUs lack access to advanced spatial analysis and predictive monitoring technologies, which are essential for real-time decision-making and data-driven disaster response.

Table 2.4 *Transportation*

D. Transportation	Frequency	Percentage
Rescue Vehicle	5	100%
Dump Truck	4	80%
Patrol Car	4	80%
Motorcycle	4	80%
4x4 Vehicle	4	80%

Table 2.4 presents the inventory of transportation resources among the five Local Government Units (LGUs). The results show that rescue vehicles recorded the highest availability (100%), while "others" had the lowest (20%). Meanwhile, dump trucks, patrol cars, motorcycles, and 4x4 vehicles were all consistently reported at 80% availability. This comparison indicates that while LGUs maintain a strong base of essential transport resources, the availability of specialized or heavy-duty vehicles remains limited. The universal presence of rescue vehicles highlights their critical role in evacuation, emergency response, and rapid deployment of personnel during typhoon events. On the other hand, the limited availability of specialized vehicles suggests constraints in handling complex rescue operations, large-scale debris clearing, and infrastructure repair, particularly in severely affected or hard-to-reach areas.

Table 2.5 *Office and Support Equipment*

E. Office and Support Equipment	Frequency	Percentage
Computer / Laptop	5	100%
Printer	5	100%
Powerbank	4	80%
Generator	5	100%

Table 2.5 presents the availability of office and support equipment among the five Local Government Units (LGUs). The results show that computers/laptops, printers, and generators recorded the highest availability (100%), while "other" equipment had the lowest (20%). Powerbanks were also relatively high at 80% availability. This comparison indicates that LGUs prioritize essential administrative and operational tools, while additional or specialized office equipment remains limited. The complete availability of computers, printers, and generators reflects the importance of maintaining continuous administrative operations, documentation, and communication, especially during disaster events. However, the limited presence of other equipment, such as scanners and photocopiers, suggests gaps in comprehensive documentation and information management systems, which are also vital during emergency response.

3.2 Immediate Response of the LGU Before and During a Typhoon in Relation to PAGASA Advisories

Table 3.1.1 *Immediate Actions of LGUs'*

Immediate Actions	Frequency	Percentage
Monitoring and analysis of PAGASA advisories	5	100%
Dissemination of advisories to barangays and the public	5	100%
Activation of LDRRMC/EOC	5	100%
Emergency meetings or briefings are conducted	5	100%
Pre-positioning of rescue equipment and vehicles	5	100%
Preparation of evacuation centers	5	100%
Stockpiling of relief goods	5	100%
Coordination with national agencies (PNP, BFP, AFP, DOH)	4	80%
Issuance of public warnings and announcements	5	100%
Pre-emptive evacuation	5	100%
Others (24/7 duty directives for disaster responders)	2	40%

Table 3.1.1 presents the immediate actions undertaken by LGUs upon receiving PAGASA advisories. The results show that all five LGUs (100%) reported implementing several key preparedness measures, including monitoring and analysis of PAGASA advisories, dissemination of advisories to barangays and the public, activation of the Local Disaster Risk Reduction and Management Council or Emergency Operations Center (LDRRMC/EOC), conducting emergency meetings, pre-positioning rescue equipment and vehicles, preparing evacuation centers, stockpiling relief goods, issuing public warnings, and implementing pre-emptive evacuation. Coordination with national agencies such as the PNP, BFP, AFP, and

DOH was reported by four LGUs (80%), while additional actions such as the implementation of 24/7 on-duty directives for disaster responders were mentioned by two LGUs (40%).

Table 3.1.2 *Response Time of LGUs'*

Response Time	Frequency	Percentage
Within 1 Hour	2	40%
Within 3 Hours	1	20%
Within 6 Hours	2	40%
More than 6 Hours	0	0%

Table 3.1.2 shows the response time of LGUs in initiating preparedness actions after receiving PAGASA advisories. The findings indicate that two LGUs (40%) initiated actions within one hour, one LGU (20%) responded within three hours, and two LGUs (40%) responded within six hours. None of the LGUs reported initiating actions after more than six hours.

Table 3.1.3 *PAGASA Advisory Level that Triggered LGUs' Initiated Advisory*

PAGASA Advisory Level	Frequency	Percentage
TCWS#1	5	100%
TCWS#2	0	0%
TCWS#3	0	0%
TCWS#4	0	0%

Table 3.1.3 indicates that all five LGUs (100%) initiated their disaster response actions upon the issuance of Tropical Cyclone Wind Signal No. 1 (TCWS #1). No LGU reported initiating response only at higher signal levels such as TCWS #2, #3, or #4.

Table 3.1.4 *Actions Implemented during Typhoon*

Immediate Actions	Frequency	Percentage
Continuous monitoring of PAGASA updates	5	100%
Operation of Emergency Operations Center (EOC)	5	100%
Rescue and evacuation operations	5	100%
Deployment of response teams	5	100%
Continuous information dissemination to the public	5	100%
Coordination with barangays and national agencies	5	100%
Management of evacuation centers	5	100%
Road clearing and emergency repairs	2	40%
Others (please specify):	2	40%

Table 3.1.4 presents the actions implemented by LGUs during the typhoon event. The results indicate that all five LGUs (100%) conducted continuous monitoring of PAGASA updates, operated Emergency Operations Centers, performed rescue and evacuation operations, deployed response teams, disseminated information to the public, coordinated with barangays and national agencies, and managed evacuation centers. However, only two LGUs (40%) reported conducting road clearing and emergency repair operations, while two LGUs (40%) also reported providing logistical support to responders.

Table 3.1.5 *Coordination with PAGASA and Other Agencies*

Coordination with PAGASA and Other Agencies	Frequency	Percentage
Yes	5	100%
No	0	0%

Table 3.1.5 indicates that all five LGUs (100%) maintained coordination with PAGASA and other national agencies during the typhoon event. This result highlights the importance of inter-agency collaboration in disaster management. Effective coordination ensures that LGUs receive updated weather forecasts, operational guidance, and technical support from national agencies. Such collaboration is a core principle of the Philippine disaster governance framework, which promotes a multi-agency approach to disaster response.

Table 3.1.6 *PAGASA Advisory Level that Triggered LGUs' Initiated Advisory*

Response Actions Adjusted based on the Updated PAGASA Advisories	Frequency	Percentage
Yes	5	100%
No	0	0%

Table 3.1.6 shows that all five LGUs (100%) reported adjusting their response actions based on updated PAGASA advisories. This result demonstrates that LGUs practice adaptive disaster management, where response strategies are

modified according to evolving weather conditions. The ability to adjust operational plans based on updated advisories indicates a dynamic decision-making process rather than a fixed procedural response

Table 3.2.1 *Awareness and Monitoring*

Indicators	Mean	Interpretation
PAGASA advisory was received in a timely manner	4.80	Strongly Agree
LGU early warning systems functioned properly	4.20	Agree
Weather updates were relayed promptly to departments	4.60	Strongly Agree
Monitoring of PAGASA bulletins was consistent	4.80	Strongly Agree
Overall Mean	**4.60**	Strongly Agree

Table 3.2.1 presents the level of awareness and monitoring of PAGASA advisories among the participating LGUs. The results reveal an overall mean of 4.60, interpreted as Strongly Agree, indicating that LGUs demonstrate a high level of responsiveness in receiving and monitoring weather advisories. Specifically, respondents strongly agreed that PAGASA advisories were received in a timely manner (M = 4.80) and that monitoring of PAGASA bulletins was consistent (M = 4.80). Similarly, weather updates were relayed promptly to relevant departments (M = 4.60), while the functionality of early warning systems such as SMS alerts, radios, and sirens received a slightly lower but still positive rating (M = 4.20), interpreted as Agree. Thematic responses confirm this strength, with Participant A stating, "The PAGASA updates received by the LGU were timely, clear, and well-structured," and Participant B adding, "The PAGASA updates were received on time and were easy to understand." These reflect the theme of Effective Early Warning Information, showing that advisories were timely and actionable. However, Participant A also noted challenges such as "frequent power interruptions and limited connectivity in upland barangays," which highlight Infrastructure and Connectivity Limitations. This suggests that while advisories are clear and timely, infrastructure gaps hinder their full effectiveness.

Table 3.2.2 *Coordination & Decision-Making*

Indicators	Mean	Interpretation
The Incident Command System (ICS) was activated immediately.	3.80	Agree
Coordination with barangays was effective and timely.	5.00	Strongly Agree
The Pre-Disaster Risk Assessment (PDRA) was conducted as scheduled.	4.80	Strongly Agree
All designated officers were present or represented during meetings.	4.20	Agree
Overall Mean	**4.45**	**Strongly Agree**

In Table 3.2.2 (Coordination and Decision-Making), the overall mean of 4.45 (Strongly Agree) reflects strong institutional coordination. The highest indicator, effective coordination with barangays (M = 5.00), highlights the strength of grassroots-level collaboration, which is essential for localized disaster response. Conversely, the lowest indicator, immediate activation of the Incident Command System (ICS) (M = 3.80), indicates some inconsistency in formal command structure implementation. Thematic responses support this, with Participant A explaining, "It was effective, as it provided a systematic and organized structure," and Participant B noting, "Roles and responsibilities were clearly assigned early on." These reflect the theme of Institutional Disaster Management Structure. However, Participant E admitted, "Most of the council are not yet ICS trained," pointing to Capacity and Training Gaps. This confirms that coordination is strong but structured leadership mechanisms are not always optimized.

Table 3.2.3 *Preparedness Action*

Indicators	Mean	Interpretation
Evacuation centers were prepared and inspected early.	4.60	Strongly Agree
Rescue equipment and vehicles were checked and ready.	4.60	Strongly Agree
Relief goods were adequately pre-positioned.	4.40	Strongly Agree
Personnel deployment matched hazard-prone areas.	3.20	Neutral
Overall Mean	**4.20**	**Agree**

For Table 3.2.3 (Preparedness Action), the overall mean of 4.20 (Agree) indicates good but comparatively lower performance than other sections. The highest indicators—early preparation of evacuation centers and readiness of rescue equipment (both M = 4.60)—demonstrate that LGUs prioritize logistical readiness. However, the lowest indicator, alignment of personnel deployment with hazard-prone areas (M = 3.20, Neutral), reveals a significant operational gap. Thematic responses highlight this contrast. Participant A explained, "The municipality's evacuation center is consistently prepared, with all lacking resources regularly checked," reflecting Evacuation Center Preparedness. Meanwhile, Participant B noted, "Most evacuation centers, which are primarily schools, were generally prepared… though some limitations in space and amenities were noted," showing Infrastructure and Facility Limitations. Participant E added, "Lack of facilities such as breastfeeding area, child/women-friendly space etc.," pointing to Inclusive Disaster Shelter Limitations. These responses confirm that while centers are prepared, inclusivity and strategic deployment remain gaps. These results align with Sala et al. (2025) and Yusay and Caelian (2022), who highlighted constraints in manpower and resource allocation.

The implication for LGUs is the need to improve operational planning and prioritization. Therefore, it is recommended that LGUs adopt risk-based deployment strategies, enhance manpower augmentation, and utilize hazard mapping and data-driven tools to ensure efficient allocation of personnel and resources.

Table 3.2.4 *Public Information Dissemination*

Indicators	Mean	Interpretation
Advisories were issued promptly after each PAGASA update.	4.80	Strongly Agree
The community received clear and accurate warnings.	4.60	Strongly Agree
Social media posts and announcements were timely and consistent.	4.20	Agree
Overall Mean	**4.53**	**Strongly Agree**

In Table 3.2.4 (Public Information Dissemination), the overall mean of 4.53 (Strongly Agree) indicates strong performance in communicating disaster information. The highest indicator, prompt issuance of advisories (M = 4.80), confirms that LGUs act quickly in disseminating updates. Meanwhile, the lowest indicator, consistency of social media and announcements (M = 4.20), suggests variability in communication practices. Qualitative findings reveal that LGUs rely on a multi-channel approach, including social media, barangay officials, and house-to-house visits, particularly in areas with limited connectivity. Thematic responses confirm this strength. Participant A explained, "Warnings were generally effective in reaching the community through social media and house visits," reflecting Multi-channel Disaster Communication. Participant B added, "Advisories were promptly disseminated through barangay officials," showing Community-Based Information Dissemination. Participant E emphasized, "Through group chat and meetings with the Brgy officials," which highlights Community-Based Communication Networks. These responses show that LGUs rely on multiple channels to reach communities, but consistency across platforms remains a challenge.

Table 3.2.5 *Overall Implementation*

Indicators	Mean	Interpretation
The LGU responded immediately upon receiving the advisory.	4.80	Strongly Agree
The immediate response reduced potential risks.	4.80	Strongly Agree
The LGU is better prepared for the next typhoon.	4.80	Strongly Agree
Overall Mean	**4.80**	**Strongly Agree**

Table 3.2.5 presents the overall implementation of LGU disaster response measures during typhoon events. The results show an overall mean of 4.80, interpreted as Strongly Agree, indicating a very high level of implementation among the participating LGUs. Respondents strongly agreed that the LGU responded immediately upon receiving advisories (M = 4.80), that immediate responses helped reduce potential risks (M = 4.80), and that the LGU is better prepared for future typhoons (M = 4.80). Thematic responses reinforce this, with Participant C noting, "Inter-agency coordination works well during actual operations," reflecting Effective Inter-Agency Coordination, while Participant B suggested, "Coordination can still be improved through clearer communication lines and more regular meetings," pointing to Inter-Agency Coordination Challenges. This shows strong compliance but highlights the need for clearer communication and role clarity.

3.3 The Degree of Response of the LGU Before and During a Typhoon in Relation to PAGASA Advisories

Table 4.1 *Preparedness Action*

Indicators	Mean	Interpretation
I received timely notifications regarding the PAGASA advisory.	4.80	Strongly Agree
The LGU used multiple channels for disseminating advisories.	4.60	Strongly Agree
Advisory information was clear and understandable.	4.80	Strongly Agree
Overall Mean	**4.73**	**Strongly Agree**

The overall mean of 4.73, interpreted as Strongly Agree, indicates that respondents perceived the LGU as highly capable of delivering early warning information before typhoon events. The highest mean values were obtained by Indicator 1 (M = 4.80), "I received timely notifications regarding the PAGASA advisory," and Indicator 3 (M = 4.80), "Advisory information was clear and understandable." These findings suggest that timeliness and message clarity are among the strongest aspects of LGU disaster communication.

Table 4.2 *Preparedness*

Indicators	Mean	Interpretation
The LGU provided adequate pre-typhoon guidance.	4.80	Strongly Agree
Evacuation centers were prepared and communicated properly.	4.40	Strongly Agree
There was visible coordination among LGU offices and responders.	4.80	Strongly Agree
Overall Mean	**4.67**	**Strongly Agree**

The overall mean of 4.67, interpreted as Strongly Agree, indicates that pre-typhoon preparedness mechanisms were highly evident among respondents. Indicators 4 and 6 both obtained 4.80, showing strong confidence in LGU guidance and institutional coordination before typhoon impact.

Table 4.3 *Response and Assistance*

Indicators	Mean	Interpretation
The LGU responded promptly to typhoon-related emergencies.	4.80	Strongly Agree
Assistance (relief, medical, transport) was effective.	4.60	Strongly Agree
The LGU monitored the situation and issued updates.	4.80	Strongly Agree
Overall Mean	**4.73**	**Strongly Agree**

The overall mean of 4.73, interpreted as Strongly Agree, indicates that respondents viewed actual emergency response during typhoon events as highly effective. Indicators 7 and 9 both obtained 4.80, reflecting strong confidence in emergency responsiveness and continuous monitoring.

Table 4.4 *Awareness of SOPs*

Indicators	Mean	Interpretation
LGU personnel were aware of typhoon-related SOPs.	4.80	Strongly Agree
SOPs were clearly communicated across departments.	4.40	Strongly Agree
Residents were informed about SOP procedures.	4.20	Agree
Overall Mean	**4.47**	**Strongly Agree**

As reflected in Table 4.4, the Awareness of SOPs was rated very high (overall mean = 4.47, Strongly Agree), with respondents affirming that LGU personnel were aware of typhoon-related SOPs (M = 4.80) and that these were clearly communicated across departments (M = 4.40). However, residents' awareness was slightly lower (M = 4.20, Agree), suggesting that while institutional awareness was strong, community-level dissemination still required improvement. This finding resonates with Bollettino et al. (2018), who noted that households often rely on media for disaster information but lack formal preparedness training, underscoring the LGU's role in bridging institutional knowledge with household awareness.

Table 4.5 *Preparedness Compliance*

Indicators	Mean	Interpretation
Response teams were pre-activated per SOPs.	4.60	Strongly Agree
Evacuation centers followed SOP standards.	4.20	Agree
Pre-typhoon warnings complied with SOP timelines.	4.40	Strongly Agree
Overall Mean	**4.40**	**Strongly Agree**

Table 4.5 or Preparedness compliance also scored highly (overall mean = 4.40, Strongly Agree), with strong ratings for pre-activation of response teams (M = 4.60) and compliance with warning timelines (M = 4.40). Evacuation centers, however, were rated slightly lower (M = 4.20, Agree), reflecting infrastructure and facility limitations. This aligns with Sala et al. (2025), who found that while RA 10121 structures were in place, challenges persisted in fund utilization and infrastructure resilience, and with Basilio (2025), who observed gaps in evacuation practices despite high disaster belief.

Table 4.6 *Response Compliance*

Indicators	Mean	Interpretation
Personnel and resources were deployed per SOPs.	4.60	Strongly Agree
Coordination followed SOP protocols.	4.60	Strongly Agree
Assistance efforts met SOP requirements.	4.40	Strongly Agree
Overall Mean	**4.53**	**Strongly Agree**

As reflected in Table 4.6, Response compliance was rated very high (overall mean = 4.53, Strongly Agree), with personnel deployment (M = 4.60), coordination (M = 4.60), and assistance efforts (M = 4.40) all strongly affirmed. This reflects effective institutional coordination, consistent with Gundran et al. (2023), who emphasized the importance of simulation training and structured systems like ICS to strengthen inter-agency response.

Table 4.7 *Monitoring and Evaluation*

Indicators	Mean	Interpretation
Monitoring and post-assessment followed SOPs.	4.60	Strongly Agree
Impact reports complied with SOP standards.	4.60	Strongly Agree
Overall Mean	**4.60**	**Strongly Agree**

As reflected in Table 4.7 or Monitoring and evaluation received the highest ratings (overall mean = 4.60, Strongly Agree), with both monitoring/post-assessment and impact reporting rated at M = 4.60. This suggests that LGUs were highly compliant in documenting and evaluating disaster operations, which resonates with Cuya-Antonio and Antonio (2017), who stressed the importance of periodic evaluation and performance measures in strengthening disaster preparedness.

Table 4.8 *Overall Compliance*

Indicators	Mean	Interpretation
Overall, the LGU adhered to SOPs during the typhoon.	4.40	Strongly Agree
Overall Mean	**4.40**	**Strongly Agree**

Overall, as reflected in Table 4.8 the quantitative results demonstrate that LGUs in Masbate exhibit strong institutional compliance with SOPs, particularly in preparedness, response, and monitoring. However, consistent with the literature, challenges remain in ensuring community-level awareness, infrastructure adequacy, and resource allocation. Addressing these gaps requires strengthening both institutional capacity and grassroots preparedness to ensure that PAGASA advisories are fully operationalized and translated into effective protective actions.

3.4 Challenges Encountered in Operationalizing PAGASA Advisories

Table 5.1 *Resource and Logistics Challenges*

Indicators	Mean	Interpretation
Personnel mobilization was difficult.	2.40	Disagree
Relief distribution experienced delays.	2.80	Neutral
Transportation limitations affected operations.	3.40	Neutral
Emergency equipment was insufficient.	3.40	Neutral
Overall Mean	**3.00**	**Neutral**

Quantitative results (Table 5.1) rated resource and logistics challenges as Neutral overall (mean = 3.00). Respondents disagreed that personnel mobilization was difficult (M = 2.40), but noted neutral ratings for relief distribution delays (M = 2.80), transportation limitations (M = 3.40), and insufficient emergency equipment (M = 3.40). This suggests that while LGUs were able to mobilize personnel, logistical constraints such as transport and equipment posed moderate challenges.

Table 5.2 *Communication and Coordination Challenges*

Indicators	Mean	Interpretation
Coordination with barangays was challenging.	2.80	Neutral
Advisory dissemination faced delays.	2.60	Disagree
Communication with partner agencies was difficult.	2.00	Disagree
Overall Mean	**2.47**	**Disagree**

Quantitative results (Table 5.2) rated communication and coordination challenges as Disagree overall (mean = 2.47), indicating that LGUs generally did not experience major difficulties in coordination. Advisory dissemination delays (M = 2.60) and communication with partner agencies (M = 2.00) were rated low, suggesting effective communication systems.

Table 5.3 *Operating Challenges*

Indicators	Mean	Interpretation
SOP implementation faced unforeseen issues.	2.60	Disagree
Evacuation and shelter management encountered problems.	3.20	Neutral
Monitoring and reporting were challenging.	3.60	Agree
Overall Mean	**3.13**	**Neutral**

Quantitative results (Table 5.3) rated operating challenges as Neutral overall (mean = 3.13). Respondents disagreed that SOP implementation faced unforeseen issues (M = 2.60), but noted neutral ratings for evacuation and shelter management (M = 3.20) and agreed that monitoring and reporting were challenging (M = 3.60).

Table 5.4 *Environmental and External Challenges*

Indicators	Mean	Interpretation
Weather conditions impeded response efforts.	3.40	Neutral
Community compliance with evacuation orders was difficult.	3.20	Neutral
Overall Mean	**3.30**	**Neutral**

Quantitative results (Table 5.4) rated environmental and external challenges as Neutral overall (mean = 3.30). Weather conditions (M = 3.40) and community compliance with evacuation orders (M = 3.20) were noted as moderate challenges. Qualitative responses strongly confirm this. Respondent A explained, “Flooding, landslides, heavy rains, and damaged roads restricted access to barangays,” while Respondent B added, “Flooding and strong winds made roads impassable and delayed response.” Respondent C noted, “Rough sea conditions hindered sea-based emergency response,” while Respondent D emphasized, “Slow recovery of affected areas.” These highlight Environmental and Geographic Barriers.

Table 5.5 *Overall Challenge Level*

Indicators	Mean	Interpretation
Overall, the LGU encountered significant challenges.	3.40	Neutral
Overall Mean	**3.40**	**Neutral**

Quantitative results (Table 5.5) rated the overall challenge level as Neutral (mean = 3.40), indicating that while LGUs encountered challenges, these were not severe enough to undermine overall disaster response.

3.5 Proposed Measures to strengthen LGU Compliance

3.5.1 Enhancement of Technical and Human Capacities

The enhancement of technical and human capacities is a critical starting point in bridging the gap between weather warnings and localized action. This component recognizes that while PAGASA advisories are scientifically sound, their effectiveness ultimately depends on the ability of Local Government Unit (LGU) personnel to interpret and translate these technical inputs into actionable decisions. Through sustained collaboration with PAGASA and the Department of the Interior and Local Government (DILG), capacity-building initiatives, particularly in Impact-Based Forecasting (IBF), enable MDRRMOs and frontline responders to contextualize hazard data into localized risk scenarios, such as identifying flood-prone barangays or landslide-vulnerable zones. Moreover, the conversion of advisories into operational triggers, such as evacuation thresholds and class suspensions, enhances the speed and precision of decision-making. As a result, LGUs develop a more technically competent workforce capable of anticipatory and evidence-based governance. This reduces reliance on subjective judgment and promotes standardized, timely, and consistent responses, thereby strengthening institutional compliance and overall disaster management performance.

3.5.2 Strengthening the Last-Mile Risk Communication System

Strengthening the last-mile risk communication system addresses the critical gap between the issuance of advisories and community-level understanding and action. While LGUs may efficiently receive PAGASA updates, their effectiveness is diminished if these are not properly communicated in forms that are accessible and meaningful to the public. By adopting a multi-layered communication approach, LGUs ensure that advisories are translated into local dialects, simplified for better comprehension, and disseminated through both digital platforms (such as SMS and social media) and traditional mechanisms (including sirens, public address systems, and house-to-house notifications). The involvement of barangay leaders and community networks further strengthens trust and message penetration. This approach transforms communication from a passive information-sharing process into an active behavioral intervention mechanism. Consequently, communities become more responsive to warnings, leading to higher compliance with evacuation protocols and safety measures. For LGU performance, this means a shift toward people-centered governance, where communication directly influences public action and contributes to risk reduction.

3.5.3 Development of Climate-Resilient Communication Infrastructure

The development of climate-resilient communication infrastructure is essential to ensure continuity of operations during extreme weather events, when conventional communication systems are most vulnerable. Findings from the study highlight that power interruptions, weak internet connectivity, and network disruptions significantly hinder the timely relay of advisories, particularly in remote and upland barangays. To address this, LGUs must invest in redundant and resilient systems such as satellite phones, VHF/UHF radios, and mobile command units, supported by solar-powered or generator-based communication hubs. Additionally, the establishment of offline communication protocols ensures that even isolated communities remain informed during disasters. Partnerships with telecommunications providers can further enhance emergency connectivity. These measures collectively ensure that communication channels remain operational under adverse conditions. In terms of LGU performance, this reduces dependence on fragile infrastructure, enhances reliability, and ensures that disaster response operations are sustained without interruption, particularly in high-risk and geographically isolated areas.

3.5.4 Institutionalization of Operational Synergy through Incident Command System (ICS)

The institutionalization of the Incident Command System (ICS) is fundamental in addressing coordination inefficiencies and operational fragmentation among LGU response units. Disaster response often involves multiple agencies, including the MDRRMO, police (PNP), fire services (BFP), health units, and social welfare offices. Without a unified command structure, efforts may become duplicated or delayed. By fully adopting ICS, LGUs establish a clear chain of command, defined roles and responsibilities, and standardized operating procedures aligned with PAGASA advisory levels. Regular simulation exercises and drills further reinforce preparedness and coordination among stakeholders. This structured approach ensures that decision-making is centralized yet collaborative, enabling faster and more organized responses. The result is a cohesive disaster response system characterized by efficiency, accountability, and minimal operational overlap. For LGUs, this significantly enhances organizational performance by ensuring synchronized actions, reducing confusion during emergencies, and improving overall response effectiveness.

3.5.6 Optimization of Logistics and Mutual Aid Mechanisms

Effective disaster response is highly dependent on the timely availability and distribution of resources, making the optimization of logistics and mutual aid mechanisms a crucial component of the action plan. LGUs must strengthen their capacity for pre-positioning essential goods, equipment, and supplies in strategic locations prior to typhoon impact. The establishment of Mutual Aid Agreements (MAAs) with neighboring LGUs allows for resource sharing during large-scale emergencies, ensuring that areas with limited capacity can still respond effectively. Furthermore, the development of real-time inventory and tracking systems enhances transparency and efficiency in resource management, while contingency funding enables rapid procurement when necessary. These strategies collectively ensure that relief, rescue, and medical services are delivered promptly and efficiently. In terms of LGU performance, this improves resource utilization, reduces delays in service delivery, and enhances the overall responsiveness of disaster management operations, particularly during critical periods when time-sensitive interventions are required.

3.6.6 Institutionalization of Continuous Learning and Feedback Systems

The institutionalization of continuous learning and feedback systems promotes adaptive governance by ensuring that disaster response strategies evolve based on actual experiences and empirical evidence. Through the systematic conduct of Post-Disaster Needs Assessments (PDNA) and After-Action Reviews (AAR), LGUs can identify strengths, weaknesses, and operational gaps in their response efforts. Documenting best practices and lessons learned allows these insights to be integrated into future planning, policy formulation, and training programs. Additionally, the establishment of a knowledge management system ensures that information is preserved, shared, and utilized across different disaster events. This continuous cycle of evaluation and improvement transforms disaster management into a dynamic and learning-oriented system. For LGUs, this strengthens institutional memory, enhances adaptability, and ensures that each disaster experience contributes to improved future performance, ultimately leading to more resilient and effective disaster governance.

3.6.7 Overall Outcome

This Strategic Framework establishes a comprehensive and forward-looking framework for enhancing Local Government Unit (LGU) compliance with PAGASA advisories. By systematically addressing identified gaps in communication, coordination, infrastructure, and institutional capacity, the plan enables LGUs to transition from a predominantly reactive approach to a more proactive and anticipatory model of disaster governance. In doing so, it strengthens the ability of local systems to effectively interpret and operationalize early warning information into timely and context-specific actions. Ultimately, the implementation of this plan is expected to significantly improve the translation of weather advisories into localized and actionable measures, ensuring that warnings lead to concrete preparedness and response activities at the community level. It also reinforces institutional coordination and operational efficiency by promoting unified systems, clear protocols, and synchronized actions among response agencies. Furthermore, the plan enhances community preparedness and compliance by fostering more inclusive, accessible, and behavior-oriented communication strategies. Collectively, these improvements contribute to the reduction of disaster risks, the protection of lives and property, and the strengthening of overall community resilience in the face of increasingly complex and frequent typhoon events.

4. Conclusion & Recommendations

The study concluded that Local Government Units (LGUs) in Masbate Province generally demonstrate a high level of compliance with PAGASA advisories during typhoon events through the availability of disaster response tools, prompt implementation of preparedness measures, and coordinated response actions before and during typhoons. The findings revealed that LGUs are capable of translating weather advisories into operational actions such as early warning dissemination, evacuation preparation, and resource mobilization. Strong coordination among local agencies and adherence to disaster preparedness protocols contributed to the effectiveness of local disaster response systems. However, despite the generally positive level of compliance, several operational challenges remain, particularly in communication infrastructure, logistical limitations, environmental barriers, and community compliance with evacuation directives. Overall, the study established that while LGUs possess functional disaster response systems, strengthening institutional capacity, communication mechanisms, and anticipatory disaster management strategies is essential to further improve local resilience and disaster risk reduction efforts.

Based on the findings of the study, several recommendations are proposed to strengthen LGU compliance with PAGASA advisories and improve disaster preparedness and response effectiveness. LGUs should institutionalize continuous capacity-building programs for Local Disaster Risk Reduction and Management (LDRRM) personnel to enhance their ability to interpret and operationalize weather advisories effectively. Community-based Information, Education, and Communication (IEC) campaigns should also be intensified to improve public awareness, risk understanding, and evacuation compliance using localized and culturally appropriate communication strategies. Furthermore, LGUs should strengthen inter-agency coordination through the full implementation of the Incident Command System (ICS) and standardized operating protocols among response agencies. Investments in resilient and redundant communication systems,

particularly in remote and disaster-prone areas, are also necessary to ensure uninterrupted dissemination of advisories during emergencies. In addition, the establishment of permanent plantilla positions for DRRM Officers is highly recommended to ensure continuity, accountability, and sustainability in disaster management operations. Continuous post-disaster evaluations and institutional learning mechanisms should likewise be strengthened to improve future disaster response initiatives.

Despite its contributions, the study has several limitations that may have influenced the findings. The research focused only on municipal-level LGUs and their respective LDRRM Offices within Masbate Province; therefore, the results may not be fully generalizable to other provinces with different geographical, socio-economic, and institutional contexts. The study also concentrated primarily on institutional compliance and operational processes related to PAGASA advisories and did not include a comprehensive assessment of responses from private organizations, civil society groups, or individual households. In addition, the research did not evaluate the scientific accuracy or technical reliability of PAGASA weather forecasts and advisories, as these areas fall beyond the scope of the study and belong to the field of meteorological science. While community participation was recognized as an important component of disaster preparedness, the analysis remained limited to official LGU actions and coordination mechanisms. These limitations suggest the need for future studies that incorporate broader stakeholder perspectives, comparative regional analyses, and community-level assessments to provide a more comprehensive understanding of disaster preparedness and compliance systems.

Compliance with ethical standards

Throughout the entire research process, ethical considerations were strictly observed. Participation in the study was voluntary, and respondents were fully informed about the purpose and procedures of the research before data collection begins. Informed consent was obtained from all participants, ensuring that they agreed to participate willingly and might withdraw from the study at any time without penalty. Furthermore, the confidentiality and anonymity of respondents were maintained by ensuring that personal identifiers and sensitive information are not disclosed in the presentation of results. All collected data were used solely for academic and research purposes.

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