

Disaster Preparedness in Local Government Units: An Assessment of Planning and Implementation Practices

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Abstract. Prior studies have identified gaps between formal disaster plans and operational readiness, but do not establish how barangay leaders in Bohol's Second District assess local planning and implementation practices. This study examined perceived implementation and effectiveness of disaster preparedness programs across fourteen municipalities during the second semester of academic year 2024–2025. A descriptive-correlational survey included 175 Punong Barangays drawn from a reported population of 318. A researcher-made questionnaire assessed hazard identification, risk assessment, early warning systems, evaluation protocols, and shelter and relief distribution, alongside perceived program effectiveness. Frequency counts, percentages, means, independent-samples t-tests, one-way ANOVA, and Pearson correlation were used. Overall implementation ($M = 4.30$) and perceived effectiveness ($M = 4.29$) were rated very high. No statistically significant group differences were identified by age, gender, educational attainment, or years of service at $\alpha = .05$. Implementation and perceived effectiveness were positively associated ($r = .809$, $p < .001$). This association does not establish that implementation causes effectiveness. The findings offer a basis for reviewing local preparedness practices, although self-reporting, overlapping constructs, incomplete methodological documentation, and inconsistencies in component-level reporting limit interpretation. Recommendations emphasize warning-system maintenance, inclusive shelter arrangements, participatory risk assessment, and independent verification of operational readiness.

Keywords: Disaster Preparedness; Local Government Units; Perceived Effectiveness; Planning Practices; Program Implementation

Introduction

Local government units (LGUs) coordinate risk information, preparedness planning, resources, warnings, and response arrangements within their jurisdictions. In Bohol, exposure to multiple hazards makes the translation of plans into usable local practices a continuing governance concern. An assessment of these practices should distinguish officials' perceptions of implementation from independently demonstrated response performance.

Republic Act No. 10121 provides the institutional basis for these responsibilities. Section 11 requires local disaster risk reduction and management councils to approve, monitor, evaluate, and test local plans. Section 12 establishes municipal, city, and provincial disaster risk reduction and management offices and barangay disaster risk reduction and management committees under the Punong Barangay. Their duties include local risk assessment, risk mapping, training, early warning, coordinated planning, and emergency assistance. Section 21 requires LGUs to allocate at least five percent of estimated revenue from regular sources to the local DRRM fund (Republic Act No. 10121, 2010). These provisions establish responsibilities and resources; their existence alone does not demonstrate implementation quality.

The National Disaster Risk Reduction and Management Plan 2020–2030 links prevention and mitigation, preparedness, response and early recovery, and rehabilitation and recovery. The Sendai Framework similarly emphasizes risk understanding, governance, resilience investment, and preparedness for response (National Disaster Risk Reduction and Management Council [NDRRMC], 2020; United Nations Office for Disaster Risk Reduction [UNDRR], 2015). The five dimensions assessed here reflect related planning and operational responsibilities, although the questionnaire is not a comprehensive compliance audit of either framework.

These priorities also align with Sustainable Development Goal (SDG) 11: Sustainable Cities and Communities, which seeks to make cities and human settlements inclusive, safe, resilient, and sustainable. Specifically, Target 11.b emphasizes integrated policies and plans for disaster resilience and disaster risk management consistent with the Sendai Framework. Indicator 11.b.2 addresses the adoption and implementation of local disaster risk reduction strategies aligned with national strategies (United Nations, n.d.). This connection supports the study's objectives of describing reported preparedness implementation, comparing respondent groups, and examining the association between implementation and perceived effectiveness. The intended improvement plan translates these findings into locally relevant priorities for planning, resource allocation, warning systems, and coordination, thereby supporting disaster-resilient communities. However, the study does not directly measure SDG attainment or demonstrate reductions in disaster losses.

Dariagan et al. (2020) found that 92 municipalities in Panay were only partially prepared and identified manpower, information-management, and stakeholder challenges. Their findings show why formal arrangements require empirical examination but cannot establish conditions in Bohol. Norris et al. (2008) explain disaster readiness through linked adaptive capacities, suggesting that technical arrangements must be considered alongside information, organizational resources, and social coordination. Together, these perspectives support examining both reported implementation and perceived usefulness while avoiding an assumption that plans necessarily produce effective outcomes.

The unresolved issue is how Punong Barangays in Bohol's Second District assess the implementation of interconnected preparedness practices and whether these assessments are associated with perceived effectiveness. The study therefore described these perceptions, compared respondent groups, and examined their association as a basis for a locally relevant improvement plan aligned with SDG 11's emphasis on disaster resilience and integrated local risk governance.

Research Questions

The study assessed planning and implementation practices through respondents' ratings of disaster preparedness programs. Specifically, it sought to answer the following questions:

1. What is the respondents' profile in terms of age, gender, educational attainment, and years of service?
2. What is the perceived level of implementation in terms of hazard identification, risk assessment, early warning systems, evaluation protocols, and shelter and relief distribution?
3. What is the perceived effectiveness of disaster preparedness programs?
4. Do perceived implementation and effectiveness ratings differ significantly when respondents are grouped according to their profile?
5. Is perceived implementation significantly associated with perceived effectiveness?
6. What improvement plan can be proposed from the findings?

Scope and Delimitation of the Study

The study evaluated disaster preparedness programs in the fourteen municipalities of the second district of Bohol during the second semester of academic year 2024–2025. It focused on five implementation components: hazard identification, risk assessment, early warning systems, evaluation protocols, and shelter and relief distribution. It also examined perceived effectiveness and differences according to age, gender, educational attainment, and years of service. The respondents numbered 175. The study relied on self-reported survey responses; therefore, the findings represent respondents' perceptions at the time of data collection and should not be interpreted as an independent audit of LGU disaster preparedness.

Literature Review

Institutional responsibilities and operational practices

RA 10121 and the NDRRMP establish expectations for local preparedness, whereas empirical research examines how those expectations are implemented. Dariagan et al. (2020) found that institutional arrangements coexist with gaps in staffing and information management. This distinction guides the present assessment: hazard identification and risk assessment concern the information used for planning; warnings concern its operational communication; evaluation concerns feedback; and shelter and relief arrangements concern readiness to assist affected populations. Because these responsibilities cross DRRM thematic areas, the study uses preparedness in a broad operational sense rather than treating the five dimensions as the entire national framework.

Community resilience as the theoretical lens

Norris et al. (2008) conceptualize community resilience as a process linking adaptive capacities to positive adaptation after disruption. Their emphasis on information and communication, resources, social capital, and community competence provides a coherent lens for examining preparedness practices. Hazard and risk information support informed planning; warning arrangements connect information to protective action; evaluation supports learning; and shelter and relief arrangements reflect organizational resources and coordination. These are conceptual links, not evidence that the questionnaire directly measures community resilience or tests every proposition of the theory.

Implementation and perceived effectiveness as related constructs

Implementation refers to the reported extent to which preparedness arrangements and activities are in place. Perceived effectiveness refers to officials' judgments of the adequacy and usefulness of those arrangements. The measures overlap because effectiveness items also address plans, training, resources, risk assessment, and coordination. Their correlation may therefore reflect shared content and a common self-report method as well as an association between distinct judgments. Evidence of discriminant validity would be needed before treating them as clearly independent constructs. Neither scale directly measures disaster casualties, response times, or independently observed performance. The literature supports a multidimensional assessment of preparedness rather than a description of plans alone. Institutional frameworks specify responsibilities, research in other settings identifies implementation constraints, and resilience theory explains why information, resources, coordination, and learning should be examined together. What remains unresolved in the reviewed evidence is the pattern of barangay leaders' perceptions in Bohol's Second District and the association between implementation and perceived effectiveness in that setting. The study addresses this localized question without claiming to establish causality or national representativeness.

Methodology

Research Design

The study employed a cross-sectional descriptive-correlational survey during the second semester of academic year 2024–2025. Descriptive analysis summarized respondents' profiles and ratings, while group comparisons and correlation examined differences and association. Variables were not manipulated, and implementation was not shown to precede effectiveness. Consequently, the design does not support causal inference. The unit of observation was the individual Punong Barangay; ratings are perceptions of local practices rather than direct measurements of municipal performance.

Research Locale

The study covered fourteen municipalities, where the source thesis identified a population of 318 Punong Barangays. Officials outside this geographic scope were outside the stated study population.

Research Participants

The source thesis identifies a population of 318 Punong Barangays across fourteen municipalities and an achieved sample of 175, approximately 55.0 percent of that reported population. This was a sample survey, not total enumeration. The thesis states that respondents were selected at random and reports allocations by municipality, but does not explain the sampling frame, randomization procedure, sample-size calculation, handling of nonresponse, or replacement of selected officials. A specific probability-sampling subtype and a response rate therefore cannot be established from the available records. The documented participant category was Punong Barangay within an included municipality. Officials outside this category or geographic scope were outside the stated study population. The thesis does not provide a separate inclusion/exclusion protocol, minimum service requirement, rules for acting officials, or screening records. The abstract and permission letter refer more broadly to disaster-office personnel; the methods and sampling table identify Punong Barangays. This manuscript follows the latter definition, subject to confirmation against the recruitment records. Participation was voluntary, and an invitation or official authorization did not oblige an individual to respond.

Research Instrument

A researcher-made questionnaire used a five-point agreement scale: 5 = strongly agree, 4 = agree, 3 = moderately agree, 2 = disagree, and 1 = strongly disagree. The analyzed constructs comprised respondent profile, preparedness implementation across five components, and perceived effectiveness. The implementation descriptive output lists 27 items, and the effectiveness output lists 10 items. The thesis

methods also refer to challenges, but no separate challenge construct is established in the reported analyses. The thesis reports expert content validation and pilot testing, but does not specify the number and qualifications of validators, review criteria, rating procedure, revisions, or a content-validity index. Content validity is therefore reported as an expert-review procedure rather than a quantified, demonstrated property. Instrument relevance to each construct, clarity, coverage, and the distinction between implementation and effectiveness require further documentation. Appendix 8 reports a pilot sample of 30 and Cronbach's alpha values of .970 for a 37-item measure labelled implementation and .922 for a 10-item effectiveness measure. The 37-item reliability result does not match the 27 implementation items in the descriptive output. It cannot be taken as verified reliability of the analyzed implementation scale without the pilot questionnaire and item key. Internal consistency also does not establish content validity or construct separation.

Data Gathering Procedure

The researcher obtained institutional authorization and requested permission from the Liga President of the Association of Barangay Captains. Questionnaires were distributed personally after the study purpose was explained, and completed responses were collected for analysis. The thesis reports voluntary participation, freedom to withdraw, absence of threats or coercion, and confidential handling of personal information. These safeguards are particularly relevant because participants held public office. Permission from an institution or local authority must remain separate from an official's individual consent. The available records do not establish the consent documentation used, whether supervisors could see individual responses, how small-group identification was prevented, who could access stored data, or the retention and destruction arrangements. An ethics-review approval number is not provided. These procedural details require confirmation; institutional permission should not be represented as ethics-committee approval.

Results and Discussions

Research Question 1: What is the respondents' profile in terms of age, gender, educational attainment, and years of service?

Table 1. Population and sample distribution reported in the source thesis

	Municipality	Reported population	Sample
1.	Bien Unido	15	8
2.	Buenavista	33	19
3.	Clarin	24	13
4.	Dagohoy	15	8
5.	Danao	16	9
6.	Getafe	24	13
7.	Inabanga	48	27
8.	Pres. Carlos P. Garcia	23	13
9.	San Isidro	12	6
10.	Sagbayan	24	13
11.	San Miguel	18	10
12.	Talibon	25	14
13.	Trinidad	21	11
14.	Ubay	20	11
	Total	318	175

Table 2. Respondent profile from the SPSS appendix

Variable	Category	n	Percent
1. Gender	Male	127	72.6
	Female	48	27.4
2. Age	Below 30	4	2.3
	31-40	31	17.7
	41-50	65	37.1
	51 and above	75	42.9
3. Educational Attainment	High School Graduate	77	44.0
	College Level	2	1.1
	College Graduate	91	52.0
	4.00	5	2.9
4. Years of Service	5 years and below	65	37.1
	6-10 years	64	36.6
	11-15 years	31	17.7
	16-20 years	15	8.6

Most respondents were male (72.6 percent), and the largest age group was 51 years and above (42.9 percent). The appendix records 91 college graduates and 77 high school graduates, differing from the thesis's main demographic table. The five cases coded "4.00" have no identified category label and should not be assigned an educational qualification without the codebook. Service was concentrated in the groups with five years or less and six to ten years. These characteristics describe the sample and do not establish equal representation of all officials or residents.

Research Question 2: What is the perceived level of implementation in terms of hazard identification, risk assessment, early warning systems, evaluation protocols, and shelter and relief distribution?

Table 3. Implementation component means reported in the thesis main results

Component	Reported mean	Rating
1. Hazard identification	4.35	Very high
2. Risk assessment	4.29	Very high
3. Early warning systems	4.31	Very high
4. Evaluation protocols	4.31	Very high
5. Shelter and relief distribution	4.36	Very high
Overall composite	4.30	Very high

The overall composite rating was very high ($M = 4.3003$ in the SPSS group descriptives). The component means in Table 3 are retained as reported, but several do not reconcile with their constituent item means, and some item values differ between the main results and the appendix. Consequently, precise component rankings are provisional and should not determine priorities until checked against the item key and respondent-level dataset.

Two comparatively lower implementation item ratings reported consistently in the source concern warning-system testing and maintenance ($M = 4.017$) and prioritization of vulnerable groups in shelter and relief distribution ($M = 4.149$). Both fall in the high band. They identify matters for operational review rather than demonstrate that systems failed during disasters. Under the resilience perspective, warning maintenance concerns dependable communication capacity, while inclusive shelter arrangements concern how resources serve exposed populations.

Research Question 3: What is the perceived effectiveness of disaster preparedness programs?

Perceived Effectiveness

The appendix reports an overall effectiveness mean of 4.2886, rounded to 4.29 and interpreted as very high. The findings concern perceived effectiveness, not demonstrated reductions in losses or improved response performance. The ten item means in the appendix range from 4.1371 to 4.3771. However, item-to-statement assignments differ across the thesis tables and the attached article. An item-level effectiveness table and claims about the highest or lowest specific effectiveness activity are therefore withheld pending verification of the questionnaire coding. The overall result supports a favourable assessment by surveyed officials, with the possibility of social-desirability and common-method bias.

Research Question 4: Do perceived implementation and effectiveness ratings differ significantly when respondents are grouped according to their profile?

Table 4. Group comparisons based on the thesis SPSS appendix

Profile	Implementation statistic	p	Effectiveness statistic	p
1. Age	$F(3, 171) = .151$	.929	$F(3, 171) = .621$	.602
2. Gender	$t(173) = -1.122$	.263	$t(173) = -.561$	.576
3. Educational attainment	$F(3, 171) = 2.204$	.089	$F(3, 171) = 2.251$	.084
4. Years of service	$F(3, 171) = .689$	.560	$F(3, 171) = .329$	.804

No comparison reached statistical significance at $\alpha = .05$. The null hypotheses of no group differences were not rejected. This does not prove that the groups are equivalent that demographic characteristics have no influence, or that programs are equally accessible. The education analysis includes four codes, including the unidentified "4.00" group; its interpretation remains conditional on verification of those codes. Very small groups also limit precision and sensitivity. The appendix's education results replace the article's $F = 1.412$, $p = .247$ and $F = 1.675$, $p = .190$, which are not supported by the supplied SPSS output.

Research Question 5: Is perceived implementation significantly associated with perceived effectiveness?

Table 5. Correlation of composite ratings

Variables	Pearson r	p	n
Perceived implementation and perceived effectiveness	.809	< .001	175

The ratings were strongly and positively associated, $r = .809$, $p < .001$. Respondents who gave higher implementation ratings tended to give higher effectiveness ratings. This association does not establish a causal effect, temporal order, or independence from other conditions. Overlapping questionnaire content and collection from the same respondents at one time may contribute to the magnitude of the correlation. The result therefore supports examining the two judgments together, while objective performance measures and stronger construct validation would be needed to assess operational outcomes.

Research Question 6: What improvement plan can be proposed from the findings?

Proposed Improvement Plan

The proposed plan uses the consistently reported lower implementation items and the conceptual framework to identify review priorities. Activities are recommendations rather than tested interventions, and implementation should follow verification of local needs and available resources.

Priority	Proposed activity	Responsible units	Monitoring indicator
1. Warning reliability	Test warning equipment and communication channels; document corrective maintenance.	LDRRMO and BDRRMC	Completed tests and closure of identified faults.
2. Inclusive shelter arrangements	Review accessible shelters and procedures for assisting vulnerable households.	LDRRMO, BDRRMC, social welfare office	Accessibility checks and documented assistance arrangements.
3. Participatory risk assessment	Update local risk information through consultations and hazard-map review.	LDRRMO, barangay leaders, community representatives	Updated maps and recorded community inputs.
4. Learning and coordination	Conduct drills and after-action reviews; track agreed improvements.	LDRRMO, BDRRMC, partner agencies	Action items completed after exercises.
5. Evidence quality	Reconcile the questionnaire, codebook, analysis outputs, and reported findings.	Research team and statistician	Verified item mapping, composite scoring, and corrected tables.

Ethical Considerations

The researcher maintained respondents' privacy and confidentiality and obtained authorization before conducting the study. Participation was voluntary, respondents were informed of the study's purpose in understandable terms, and they were not threatened or coerced to participate. The researcher also reported that data, results, methodologies, and procedures were gathered without falsification.

Conclusion

Surveyed Punong Barangays gave very high overall ratings to preparedness implementation and perceived effectiveness in Bohol's Second District. No statistically significant profile-group differences were detected, and the composite ratings were strongly associated. These findings describe officials' perceptions and do not establish that implementation causes effectiveness or that programs meet all legal and operational standards. Component rankings, item-specific effectiveness interpretations, and education-group findings require confirmation against source records. The study offers a localized basis for reviewing warning reliability, inclusive shelter practices, risk assessment, and organizational learning, supplemented by independent operational evidence.

Recommendations

LGUs may review warning-system maintenance and the inclusion of vulnerable groups in shelter and relief arrangements, involving community representatives in identifying practical needs. Preparedness

planning may be supported through updated risk information, drills, coordination meetings, and documented after-action reviews. These proposals should be evaluated using operational indicators rather than favorable survey ratings alone. The research team should verify the sampling frame and selection procedure, eligibility rules, sample-size rationale, questionnaire versions, item coding, education-category labels, component scoring, validation records, and ethics documentation. Reliability should be calculated for the actual analyzed scales where the pilot data permit. Future research may combine surveys with document review, observation, community feedback, and response-performance indicators, and account for clustering within municipalities. Longitudinal or other suitably designed studies would be needed to evaluate changes over time or causal effects.

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