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Jose Roderick S. Aguila
Laguna College of Business and Arts
joseroderickaguila@gmail.com

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Community Development Initiatives Implementation and Disaster Risk Management Practices in Calamba City Barangays

Jose Roderick S. Aguila
Laguna College of Business and Arts
joseroderickaguila@gmail.com

ABSTRACT

This examined the relationship between community development frameworks and disaster risk management (DRM), also referred to as disaster risk reduction management (DRRM), as well as Republic Act 10121 (Philippine Disaster Risk Reduction and Management Act) practices, using a quantitative descriptive correlational design. Data were gathered from 150 respondents, 40 barangay officials, and 110 community members from Barangays Palingon, Lingga, and Sampiruhan in Calamba City through a validated researcher-made survey (CVR = 1.00) utilizing a four-point Likert scale. Statistical analyses included a paired T-test (.05 significance level) and Pearson Product-Moment Correlation.

Findings indicated that community development initiatives and DRM practices were generally “Fully Implemented” and “Fully Manifested,” with Self-Understanding (3.49) and Preparedness (3.62) receiving the highest ratings, while Engage and Empower, Reflect and Celebrate (3.35), and Recovery (3.46) were the lowest. Significant differences were observed in Preparedness ($p = 0.001$) and Reflect and Celebrate ($p = 0.044$), while Self-Understanding ($p = 0.175$) showed no significant difference.

Correlation analysis revealed significant relationships, with Engage and Response ($p = 0.001$) as the strongest and Reflect and Preparedness ($p = 0.026$) as the weakest, while no significant relationship was found in Reflect and Mitigation ($p = 0.877$). To enhance disaster preparedness and response, an action plan was proposed to equip barangay officials with hands-on training in Incident Command System (ICS) Level 1.

Keywords: *Community development, community frameworks, disaster risk reduction management implementation*

INTRODUCTION

Disaster risk reduction management (DRRM) practices are essential strategies aimed at minimizing the impacts of disasters on communities, infrastructure, and economies. These

practices span risk assessment, mitigation, preparedness, response, and recovery, building resilient communities capable of withstanding and recovering from hazards. According to Bang (2024), the United Nations' 2030 Agenda for Sustainable Development highlights DRRM's vital role in addressing natural and environmental risks while enhancing resilience. Notably, Sustainable Development Goals (SDG) 11 and 13 align with this agenda. SDG 11 focuses on creating inclusive, safe, and resilient communities, while SDG 13 advocates for urgent action on climate change, embedding adaptation and mitigation strategies into community initiatives.

Sandoval et al. (2023) highlighted the rising challenges of climate change, socioeconomic inequalities, and the increasing frequency and intensity of disasters in recent decades. Building on Wen et al. (2023), the study emphasized how extreme events in a changing climate not only hinder sustainable development goals but also threaten hard-earned progress. Climate change amplifies disaster risks, intensifying damage and losses while posing significant challenges to global development.

Mizutori (2020) emphasized the national government's crucial role in aligning global priorities with localized DRRM strategies, ensuring they fit the country's geographical, cultural, and socio-economic context. Similarly, Djalante and Lassa (2019) highlighted the growing need to enhance risk governance at the community level by empowering local officials, strengthening decision-making bodies, and addressing the needs of vulnerable groups. The overflow of Laguna Lake led to significant flooding, impacting thousands of residents across various municipalities and cities in Laguna, including Barangay Palingon, Barangay Lingga, and Barangay Sampiruhan, which were located near the lake, shared adjacent borders, and were situated 2 kilometers from the Poblacion at a low elevation in the City of Calamba.

Despite increased attention to disaster risk reduction management (DRRM) and community development, local communities such as those in Calamba City continue to struggle with effective, inclusive, and risk-informed implementation. A persistent gap exists between policy intentions and actual practices, especially in integrating community development initiatives with DRRM.

This quantitative study aims to examine the relationship between the level of implementation of community development initiatives and the level of manifestation of DRRM practices in selected barangays of Calamba City. By analyzing the assessments of both barangay officials and community residents using statistical methods, the research seeks to identify significant patterns, differences, and correlations that reflect how effectively local development efforts align with DRRM strategies. The findings are expected to provide evidence-based insights that can strengthen barangay-level governance, inform future policies and programs, and support more resilient, inclusive, and sustainable community development.

Social inclusion and meaningful community engagement have been widely recognized as essential elements for the long-term sustainability of development programs. Tjale et al. (2024) emphasized that inclusive strategies are critical in reaching marginalized and vulnerable populations, ensuring equitable participation, and preventing the exclusion of any sector in community development efforts. Complementing this perspective, Amadei (2020) highlighted that active community participation significantly improves access to both material resources, such as infrastructure, healthcare, education, and financial assistance, as well as institutional resources, including government services, NGO programs, and legal support. Their findings suggest that involving communities throughout all stages of planning and implementation enables them to mobilize local capacities, leverage external support systems, and contribute meaningfully to decision-making processes, resulting in more responsive and contextually relevant outcomes.

Moreover, in the field of disaster risk reduction and management (DRRM), several scholars have advanced systematic and human-centered approaches. Albris et al. (2020) underscored the importance of structured methodologies for risk identification, assessment, and reduction, advocating for evidence-based planning tools. Bello (2023) emphasized the importance of vulnerability awareness and initiative-taking mitigation to build resilience before disaster events occur. Supporting these views, Williams et al. (2020) and Sarmiento et al. (2020) noted that fostering self-understanding within communities promotes empowerment and collective knowledge, which are vital for effective, community-led disaster responses.

Additionally, Muzamil et al. (2022), and Geekiyanage et al. (2020) emphasized the value of capacity building and collaborative planning in strengthening preparedness against natural hazards. Poland et al. (2021), Boshier et al. (2021), and Fjader (2021) added that strong social networks and trust among stakeholders significantly enhance emergency response coordination and resource mobilization. Abdussalaam et al. (2024) and Khan et al. (2022) emphasized integrating community development efforts into recovery initiatives to ensure long-term sustainability and resilience. Similarly, Pickering (2023), Mort et al. (2020), and Rabonza et al. (2022) underscored the importance of recognizing community achievements to reinforce motivation, build social cohesion, and enhance future preparedness and recovery capacities.

Furthermore, Saad et al. (2024) highlighted how international frameworks, such as the Yokohama Strategy, Hyogo Framework (2005–2015), and Sendai Framework (2015–2030), have strengthened community participation in disaster risk reduction and management (DRRM), promoting inclusive and proactive approaches to enhance global resilience, particularly in mitigating flood risks. At the national level, Pojas (2024) discussed efforts through the National Disaster Risk Reduction and Management Framework (NDRRMF) and the National Disaster Risk Reduction and Management Plan (NDRMP) 2020–2030. Alongside Republic Act 10121,

these initiatives aim to build disaster-resilient Filipino communities. However, despite their strong emphasis on public engagement, there is still a lack of assessment regarding their actual implementation at the barangay level. In support of these goals, Mendoza (2025) noted the development of various DRRM-related policies in the Philippines, including Local Disaster Risk Reduction and Management Plans for LGUs and the Guidelines for Mainstreaming DRR and Climate Change Adaptation (CCA). The Philippine Development Plan (PDP) 2023–2028 further reinforces this direction by identifying disaster resilience as a national priority.

What is more, Bankoff and Hilhorst (2022) pointed out that vulnerability has long been at the heart of disaster studies. But in recent years, the spotlight has shifted to resilience. While fostering resilience and promoting adaptation remain critical, it is equally important to recognize and directly address the underlying factors that contribute to vulnerability to achieve truly sustainable risk reduction. In addition, Gaillard et al. (2023) emphasized that participatory approaches to assessing vulnerability necessitate active community involvement and collective reflection. This includes examining past hazards, identifying affected community assets, analyzing response actions, and evaluating recovery processes. Such engagement enables participants to connect abstract concepts, like vulnerability, resilience, and local capacities, to their own lived experiences and context.

Despite these valuable contributions, gaps remain in understanding how community development and DRRM frameworks can be holistically integrated, particularly at the barangay level. This study addresses such gaps by examining the intersection of these frameworks within the context of Calamba City barangays. It bridges the literature gap by offering a comprehensive, community-centered disaster management approach that incorporates both development and risk reduction principles. The temporal dimension is addressed by analyzing evolving trends and shifts in community initiatives over time, while the spatial gap is tackled by investigating disparities in resource allocation, infrastructure development, and program accessibility between central and less-developed barangays. By doing so, this study contributes practical insights for promoting equitable resource distribution and proposes adaptive strategies to enhance both community development and DRRM practices.

METHODOLOGY

This study employed a quantitative descriptive correlational research design. According to Dehalwar and Sharma (2024), quantitative research systematically uses statistical techniques to collect and analyze numerical data, patterns, and trends for evidence-based decision-making. A structured, researcher-made survey questionnaire, designed for validity and reliability, gathered data on community development initiatives and disaster risk reduction management practices in the selected barangays.

This research focused on Barangay Palingon, Barangay Lingga, and Barangay Sampiruhan in Calamba City, collectively known as “PALISAM,” due to their geographic vulnerability and proximity to natural hazards. Situated near the San Juan River and Laguna de Bay, these barangays face significant environmental risks, including flooding, landslides, and erosion, highlighting their critical status for disaster risk research. Their selection was also strategic for understanding the intersection of disaster risk reduction management and community development, providing insights into local adaptation, mitigation, and sustainable development, as outlined in the Comprehensive Development Plan (2019–2023).

The study was limited in scope, as only selected residents, and barangay officials from three vulnerable barangays were surveyed. Key groups such as persons with disabilities, solo parents, and senior citizens may not have been adequately represented. It captured data at a single point in time, lacking a longitudinal perspective to show changes or progress over time. The use of structured questionnaires may have restricted deeper insights into local challenges. External factors such as political dynamics, funding constraints, or recent disasters were not considered, even though they may influence implementation.

This study utilized stratified random sampling to select barangay officials and resident respondents. According to Iqbal et al. (2024), stratified random sampling (StRS) involves dividing the population into distinct groups, or “strata,” ensuring proportional representation. The selected PALISAM barangays were chosen due to their vulnerability and frequent exposure to natural and human-caused hazards. The target population was divided into two strata: 40 barangay officials responsible for implementing disaster risk reduction management (DRRM) practices and 110 vulnerable residents. This method ensured fair representation, reduced bias, and allowed for a comprehensive assessment of community development initiatives and DRRM practices across the barangays, involving a total of 150 respondents.

This study utilized a researcher-made questionnaire designed to assess the implementation of community development initiatives and disaster risk reduction and management (DRRM) practices in selected barangays of Calamba City. Anchored on the study’s theoretical framework, the instrument was divided into two main sections. The first section focused on community development initiatives and included five dimensions: Self-Understanding (5 items), Engage and Empower (5 items), Connect and Build (5 items), Design and Deliver (5 items), and Reflect and Celebrate (5 items), totaling 25 items. The second section assessed DRRM practices across four dimensions: Mitigation (4 items), Preparedness (4 items), Response (4 items), and Recovery (4 items), totaling 16 items. Each item was rated using a 4-point Likert scale to quantify the level of implementation or manifestation. Additionally, a demographic profile section gathered contextual information such as age, gender, civil status, and length of residency or service, which helped in understanding the respondents’ perspectives more fully.

Validity and reliability were ensured through alignment with conceptual frameworks, and a four-point Likert Scale provided a structured method for quantifying responses, enhancing clarity, consistency, and the robustness of the findings. However, this approach may not fully capture the contextual nuances or underlying reasons behind respondents' ratings. Recognizing this limitation, future research is encouraged to incorporate qualitative methods, such as focus group discussions or key informant interviews, to provide deeper insights, serving as a solid foundation for future mixed-method research.

The questionnaire underwent a thorough validation process to ensure construct and content validity through consultations with a multidisciplinary panel, including the thesis adviser, a statistician, the school's research director, the dean of the graduate school, and two disaster risk reduction management experts from the City Government of Calamba. Their evaluations confirmed the questionnaire's relevance and alignment with the study's objectives. The instrument achieved a Lawshe's Content Validity Ratio (CVR) of 1.00, indicating unanimous agreement among experts on the relevance of all items, classifying them as "Essential." Additionally, a Cronbach's Alpha Reliability Test was conducted, with pilot test results ranging from 0.726, reflecting acceptable reliability, to 0.933, demonstrating excellent internal consistency.

The data-gathering procedures were carefully planned to ensure accuracy and reliability. A formal letter was sent to each Barangay Captain, outlining the study's objectives, significance, survey structure, and data collection process, seeking approval to conduct surveys in their communities. After securing approvals, face-to-face data collection sessions were scheduled and conducted with selected constituents from each barangay. Respondents provided informed consent before participating by signing a consent form. Barangay officials functioned as facilitators and respondents, streamlining the process and offering valuable insights into barangay-level practices. The survey featured well-structured questions aligned with the study's objectives. Upon completion, survey forms and datasets were meticulously reviewed to ensure accuracy and completeness.

The study adhered to the Data Privacy Act of 2012 and the ethical guidelines of the Laguna College of Business and Arts Research Manual. Participants were fully informed about the study's purpose, procedures, and their rights, ensuring transparency. Participation was voluntary, with data anonymized and securely stored to protect confidentiality. Surveys were conducted privately to safeguard personal information, respecting local customs and maintaining cultural sensitivity. Proper citation and referencing were ensured for all literature and studies mentioned, upholding academic integrity throughout the research process.

The study utilized the mean and a four-point Likert scale to quantitatively assess the level of implementation of community development initiatives, namely Self-Understanding, Engage and Empower, Connect and Build, Design and Deliver, and Reflect and Celebrate, and

the level of manifestation of disaster risk reduction management (DRRM) practices, including Mitigation, Preparedness, Response, and Recovery. To ensure the reliability and objectivity of the results, data from two respondent groups, barangay officials and selected residents, were independently analyzed. A Paired t-test, a robust and widely accepted parametric test, was employed to determine whether statistically significant differences existed between the perceptions of these two groups. Additionally, the Pearson Product-Moment Correlation Coefficient was applied to examine the strength and direction of the relationship between the implementation of community development initiatives and the manifestation of DRRM practices. The use of these validated statistical methods enhances the credibility and empirical rigor of the study's findings.

RESULTS AND DISCUSSION

Statement of the Problem

Problem Number 1. What is the implementation level of community development initiatives in selected barangays in Calamba City as assessed by barangay officials and selected residents in terms of; Self-understanding, Engage and Empower, Connect and Build, Design and Deliver, and Reflect and Celebrate?

Table 1.1

*Implementation Level of Community Development Initiatives in Selected Barangays in Calamba City as assessed by Barangay Officials and Selected Residents in terms of **Self Understanding***

Indicators	Officials		Constituents		Composite	
	$\bar{X}$	VI	$\bar{X}$	VI	$\bar{X}$	VI
1. The barangay has implemented programs to promote personal awareness of individual roles in community development and disaster preparedness efforts.	3.75	FI	3.57	FI	3.66	FI
2. Has consistently implemented efforts to inform residents about their roles and responsibilities in preparing for, responding to, and recovering from disasters.	3.63	FI	3.47	FI	3.55	FI
3. Consistently implements initiatives that cultivate a strong sense of responsibility, encouraging active participation.	3.50	FI	3.41	FI	3.46	FI

Indicators	Officials		Constituents		Composite	
	$\bar{X}$	VI	$\bar{X}$	VI	$\bar{X}$	VI
4. Effectively utilizes communication methods such as flyers, community meetings, and social media to promote personal awareness.	3.48	FI	3.50	FI	3.49	FI
5. Workshops and seminars aimed at increasing personal awareness of community roles are regularly implemented.	3.30	FI	3.24	I	3.27	FI
General Assessment	3.53	FI	3.44	FI	3.49	FI

Note. 3.25 - 4.00 Strongly Agree – Fully Implemented (FI) 2.50 - 3.24 Agree – Implemented (I)
1.75 - 2.49 Disagree – Partially Implemented (PI) 1.00 - 1.74 Strongly Disagree - Not Implemented (NI)

Both barangay officials and residents perceived the **Self-Understanding** component as fully implemented, reflecting a shared awareness of individual roles in community development and disaster preparedness. This alignment pointed to effective communication and inclusive strategies that promoted civic responsibility at the grassroots level.

Slightly lower ratings from residents suggested room for improvement in sustaining engagement through activities like workshops and seminars. While general awareness was evident, access to deeper, skill-based learning appeared limited. Enhancing these efforts could strengthen individual capacity and encourage more active community participation.

Table 1.2

Implementation Level of Community Development Initiatives in Selected Barangays in Calamba City as assessed by Barangay Officials and Selected Residents in terms of **Engage and Empower**

Indicators	Officials		Constituents		Composite	
	$\bar{X}$	VI	$\bar{X}$	VI	$\bar{X}$	VI
1. The barangay has implemented initiatives such as information campaigns (utilizing social media, SMS/ text brigades, and community meetings) that encourage the active participation of residents in emergency preparedness, evacuation routes, and safety protocols.	3.40	FI	3.36	FI	3.38	FI

Indicators	Officials		Constituents		Composite	
	$\bar{X}$	VI	$\bar{X}$	VI	$\bar{X}$	VI
2. Programs aimed at building confidence among community members are regularly conducted by the barangay, such as Disaster Preparedness Workshops with training sessions on first aid, fire safety, and flood response to empower residents with essential survival skills.	3.30	FI	3.39	FI	3.35	FI
3. Actively encourages residents to take responsibility for implementing positive changes in the community. Building resilience and enhancing disaster response.	3.35	FI	3.30	FI	3.33	FI
4. Supports initiatives that help residents identify and address community issues collaboratively, enabling residents to work and develop strategies for response and recovery.	3.43	FI	3.40	FI	3.42	FI
5. Training sessions focused on leadership and the necessary skills to effectively collaborate during emergencies.	3.35	FI	3.22	I	3.29	FI
General Assessment	3.37	FI	3.33	FI	3.35	FI

*Note. 3.25 - 4.00 Strongly Agree – Fully Implemented (FI) 2.50 - 3.24 Agree – Implemented (I)
1.75 - 2.49 Disagree – Partially Implemented (PI) 1.00 - 1.74 Strongly Disagree - Not Implemented (NI)*

The results showed that both barangay officials and residents perceived the Engage and Empower component as fully implemented. This reflected the barangay's consistent efforts in promoting participation through communication channels, confidence-building programs, and community-based training initiatives. Officials and residents agreed that information campaigns and collaborative efforts were in place to enhance disaster readiness and civic responsibility. Residents gave a lower rating to leadership and collaboration training, indicating that while such initiatives existed, not all segments of the community had equal access or engagement. This suggested a gap in inclusive capacity-building, especially in developing grassroots leadership during emergencies.

Table 1.3

*Implementation Level of Community Development Initiatives in Selected Barangays in Calamba City as assessed by Barangay Officials and Selected Residents in terms of **Connect and Build***

Indicators	Officials		Constituents		Composite	
	$\bar{X}$	VI	$\bar{X}$	VI	$\bar{X}$	VI
1. The barangay has implemented initiatives to connect residents to foster community relationships, enhance communication, and work to develop comprehensive disaster preparedness and response strategies.	3.50	FI	3.44	FI	3.47	FI
2. Encourages collaboration between different organizations and groups within the community.	3.48	FI	3.57	FI	3.53	FI
3. Training or workshops on effective communication and relationship-building skills are regularly offered by the barangay for effective disaster preparedness and response.	3.33	FI	3.15	FI	3.24	I
4. Feedback mechanisms are in place to assess the effectiveness of community networking efforts.	3.30	FI	3.18	FI	3.24	I
5. Effectively utilizes communication platforms to facilitate connections among residents.	3.55	FI	3.41	FI	3.48	FI
General Assessment	3.43	FI	3.35	FI	3.39	FI

Note. 3.25 - 4.00 Strongly Agree – Fully Implemented (FI) 2.50 - 3.24 Agree – Implemented (I)
1.75 - 2.49 Disagree – Partially Implemented (PI) 1.00 - 1.74 Strongly Disagree - Not Implemented (NI)

Findings showed that both barangay officials and residents perceived the Connect and Build component as fully implemented, indicating active efforts to strengthen community ties, foster inter-organizational collaboration, and improve communication systems. High ratings on collaboration and platform utilization reflected accessible and effective coordination across the community.

Slightly lower scores on communication skills training and feedback mechanisms pointed to gaps in structured capacity-building and two-way communication. This suggested that while systems were in place, deeper engagement and skill development were not consistently experienced by all stakeholders.

Table 1.4

*Implementation Level of Community Development Initiatives in Selected Barangays in Calamba City as assessed by Barangay Officials and Selected Residents in terms of **Design and Deliver***

Indicators	Officials		Constituents		Composite	
	$\bar{X}$	VI	$\bar{X}$	VI	$\bar{X}$	VI
1. The barangay has implemented initiatives specifically designed to address the unique needs of the community, and the resilience of residents, and respond to specific challenges faced by the community.	3.60	FI	3.47	FI	3.54	FI
2. Programs are regularly evaluated to ensure they remain relevant to the current needs of residents. This continuous assessment helps optimize the effectiveness of community development and disaster risk management efforts.	3.35	FI	3.28	FI	3.32	FI
3. Community awareness campaigns are conducted to ensure residents understand the initiatives and disseminate information about programs and support services for their development and disaster preparedness.	3.50	FI	3.42	FI	3.46	FI
4. Disaster risk reduction management initiatives are carefully planned and effectively executed through the conduct of drills and test exercises, ensuring that the community derives meaningful benefits and is better prepared for potential emergencies.	3.40	FI	3.41	FI	3.41	FI
General Assessment	3.46	FI	3.40	FI	3.43	FI

*Note. 3.25 - 4.00 Strongly Agree – Fully Implemented (FI) 2.50 - 3.24 Agree – Implemented (I)
1.75 - 2.49 Disagree – Partially Implemented (PI) 1.00 - 1.74 Strongly Disagree - Not Implemented (NI)*

The findings showed that both barangay officials and residents considered the Design and Deliver component as fully implemented. This reflected the barangay's commitment to crafting responsive programs tailored to the unique needs and vulnerabilities of their communities. The consistently high ratings confirmed that initiatives were not only

well-conceived but also visibly executed in areas such as risk reduction drills, information dissemination, and service accessibility. Despite full implementation, slightly lower resident ratings on program evaluation suggested that feedback mechanisms may not have been equally inclusive or transparent. This indicated that while efforts were actively monitored by officials, residents may not have been fully engaged in the assessment processes, potentially limiting adaptive improvements based on community experience.

Table 1.5

*Implementation Level of Community Development Initiatives in Selected Barangays in Calamba City as assessed by Barangay Officials and Selected Residents in terms of **Reflect and Celebrate***

Indicators	Officials		Constituents		Composite	
	$\bar{X}$	VI	$\bar{X}$	VI	$\bar{X}$	VI
1. The barangay regularly conducts evaluations of past programs and initiatives to assess their outcomes.	3.15	I	3.12	I	3.14	I
2. Community members are encouraged to share their experiences and lessons learned from previous initiatives.	3.45	FI	3.43	FI	3.44	FI
3. Actively promotes a culture of resilience by acknowledging both successes and challenges.	3.43	FI	3.21	I	3.32	FI
4. Community events are organized to reflect on past achievements and foster a sense of unity.	3.58	FI	3.34	FI	3.46	FI
5. Opportunities for community members to participate in the evaluation and reflection process are consistently offered.	3.45	FI	3.32	FI	3.39	FI
General Assessment	3.41	FI	3.28	FI	3.35	FI

Note. 3.25 - 4.00 Strongly Agree – Fully Implemented (FI) 2.50 - 3.24 Agree – Implemented (I)
1.75 - 2.49 Disagree – Partially Implemented (PI) 1.00 - 1.74 Strongly Disagree - Not Implemented (NI)

The findings revealed that both barangay officials and residents perceived the Recovery component as fully manifested, indicating effective community engagement in post-disaster activities such as rebuilding, emotional support, and access to recovery resources. High ratings underscored the visible efforts of barangay officials to support both structural and psychosocial recovery.

Slightly lower scores from residents, particularly on access to mental health services and recovery participation, suggested that support may not have been equally distributed or accessible to all sectors. This disparity implied the need to strengthen inclusive recovery measures, particularly in addressing emotional well-being and mobilizing broader community involvement.

Problem Number 2. What is the level of manifestation of disaster risk reduction management practices in selected barangays in Calamba City, as assessed by barangay officials and selected residents in terms of Mitigation, Preparedness, Response, and Recovery?

Table 2.1

*Level of Manifestation of Disaster Risk Reduction Management Practices in Selected Barangays in Calamba City as assessed by Barangay Officials and Selected Residents in terms of **Mitigation***

Indicators	Officials		Constituents		Composite	
	$\bar{X}$	VI	$\bar{X}$	VI	$\bar{X}$	VI
1. The extent of disaster-resilient infrastructure, such as flood barriers, in your community, is significant, and these structures effectively mitigate disaster risks while enhancing overall safety and resilience, reflecting the proactive efforts of barangay officials.	3.68	FM	3.45	FM	3.57	FM
2. The frequency of disaster risk mitigation awareness campaigns, such as posters, community meetings, and workshops, in your area, is notable, along with their effectiveness in engaging the community in understanding and addressing potential risks.	3.70	FM	3.40	FM	3.55	FM
3. The implementation and visibility of early warning systems, such as flood alerts and earthquake warnings, in your community are significant, as they effectively inform residents.	3.75	FM	3.53	FM	3.64	FM
4. The availability of emergency supplies, such as first aid kits, fire extinguishers, and evacuation kits, in public spaces is noticeable and reflects the officials' efforts.	3.68	FM	3.54	FM	3.61	FM

Indicators	Officials		Constituents		Composite	
	$\bar{X}$	VI	$\bar{X}$	VI	$\bar{X}$	VI
5. Has launched initiatives to connect residents, strengthen community relationships, enhance communication, and develop comprehensive disaster mitigation.	3.68	FM	3.55	FM	3.62	FM
General Assessment	3.70	FM	3.49	FM	3.60	FM

Note. 3.25 - 4.00 Fully Manifested (FM) 2.50 - 3.24 Manifested (M) 1.75 - 2.49 Partially Manifested (PM) 1.00 - 1.74 Not Manifested (NM)

The results revealed that both barangay officials and residents assessed the **Mitigation** component as **fully manifested**, reflecting initiative-taking measures to reduce disaster risks and promote community safety. High ratings across items confirmed the presence of disaster-resilient infrastructure, frequent awareness campaigns, and well-established early warning systems. These efforts demonstrated the barangay’s commitment to minimizing vulnerabilities through visible and functional interventions. While both groups rated this component favorably, slightly lower scores from residents indicated varying levels of awareness or access, particularly regarding emergency supplies and understanding of mitigation strategies. This suggested that although systems were in place, some residents may not have fully benefited from or engaged with these efforts.

Table 2.2
*Level of manifestation of Disaster Risk Reduction Management Practices in Selected Barangays in Calamba City as assessed by Barangay Officials and Selected Residents in terms of **Preparedness***

Indicators	Officials		Constituents		Composite	
	$\bar{X}$	VI	$\bar{X}$	VI	$\bar{X}$	VI
1. The extent of disaster preparedness drills, such as fire drills and earthquake simulations, conducted in your community is significant, and these drills effectively involve residents in practicing safety protocols.	3.70	FM	3.35	FM	3.53	FM
2. The presence of publicly accessible disaster preparedness plans, such as evacuation routes and emergency contact information, in your community, is notable, reflecting the efforts of barangay officials to ensure residents are informed.	3.85	FM	3.78	FM	3.82	FM

Indicators	Officials		Constituents		Composite	
	$\bar{X}$	VI	$\bar{X}$	VI	$\bar{X}$	VI
3. The visibility of public awareness campaigns on disaster preparedness, such as posters, social media, and community workshops, in your area, is significant, and these initiatives effectively engage the community.	3.85	FM	3.49	FM	3.67	FM
4. The incorporation of disaster preparedness education, such as drills and safety lessons, into the curriculum of local schools is noteworthy and reflects the commitment of barangay officials to promote safety awareness among students.	3.73	FM	3.37	FM	3.55	FM
5. The frequency with which communication channels, such as hotlines and emergency apps, are tested and promoted for disaster preparedness in your community is notable and demonstrates the proactive approach of barangay officials.	3.70	FM	3.34	FM	3.52	FM
General Assessment	3.77	FM	3.47	FM	3.62	FM

Note. 3.25 - 4.00 Fully Manifested (FM) 2.50 - 3.24 Manifested (M) 1.75 - 2.49 Partially Manifested (PM) 1.00 - 1.74 Not Manifested (NM)

Findings showed that both barangay officials and residents rated the **Preparedness** component as fully manifested, reflecting strong initiatives in public awareness, safety planning, and community-wide drills. High scores confirmed the presence of accessible preparedness plans, educational integration in schools, and frequent public campaigns, demonstrating a comprehensive approach to equipping the community for emergencies.

Residents consistently rated items slightly lower than officials, particularly in areas such as drills, communication channels, and school-based preparedness. This indicated that while programs were in place, participation and access were not uniformly experienced, pointing to gaps in outreach or community engagement strategies.

Table 2.3

Level of Manifestation of Disaster Risk Reduction Management Practices in Selected Barangays in Calamba City as assessed by Barangay Officials and Selected Residents in terms of **Response**

Indicators	Officials		Constituents		Composite	
	$\bar{X}$	VI	$\bar{X}$	VI	$\bar{X}$	VI
1. The extent to which community members volunteer in disaster response efforts, such as search and rescue and distribution of supplies, is commendable and highlights the active involvement encouraged by barangay officials.	3.68	FM	3.28	FM	3.48	FM
2. The availability of emergency response resources, such as medical supplies, food, and shelter, during a disaster in your community, is frequent and reflects barangay officials' effective planning and preparedness efforts of barangay officials.	3.70	FM	3.62	FM	3.66	FM
3. The level of awareness among residents regarding the emergency procedures and resources available in your community during a disaster is significant, reflecting the efforts of barangay officials to keep the community informed.	3.68	FM	3.45	FM	3.57	FM
4. The frequency of effective coordination between different agencies, such as government, NGOs, and community organizations, during disaster response efforts is notable, demonstrating the collaborative approach fostered by barangay officials.	3.60	FM	3.65	FM	3.63	FM
5. The extent to which technology, such as mobile apps and social media, is utilized for coordinating disaster response in your community is significant.	3.58	FM	3.37	FM	3.48	FM
General Assessment	3.65	FM	3.47	FM	3.56	FM

Note. 3.25 - 4.00 Fully Manifested (FM) 2.50 - 3.24 Manifested (M) 1.75 - 2.49 Partially Manifested (PM) 1.00 - 1.74 Not Manifested (NM)

The results indicated that both barangay officials and residents assessed the **Response** component as fully manifested, reflecting active efforts in resource mobilization, coordination, and community engagement during emergencies. High ratings from both groups on agency collaboration and resource availability confirmed the presence of structured and responsive systems during disaster events.

A noticeable disparity emerged in resident ratings regarding volunteer involvement and technology use in response coordination. While barangay officials viewed these areas positively, residents reported lower engagement, indicating that opportunities to participate in or benefit from digital tools may not have been equally accessible or communicated.

Table 2.4

*Level of Manifestation of Disaster Risk Reduction Management Practices in Selected Barangays in Calamba City as assessed by Barangay Officials and Selected Residents in terms of **Recovery***

Indicators	Officials		Constituents		Composite	
	$\bar{X}$	VI	$\bar{X}$	VI	$\bar{X}$	VI
1. The active participation of community members in recovery efforts, such as rebuilding and providing support to affected families after a disaster, is significant and effectively facilitates the overall recovery process, highlighting the encouragement from barangay officials.	3.55	FM	3.43	FM	3.49	FM
2. The availability of recovery resources, such as financial aid, counseling services, and rebuilding materials, to residents following a disaster is significant, demonstrating the commitment of barangay officials to support the community’s recovery efforts.	3.68	FM	3.45	FM	3.57	FM
3. The active participation of community members in recovery efforts, such as rebuilding and providing support to affected families after a disaster, is notable and plays a crucial role in facilitating the overall recovery process, reflecting the encouragement from barangay officials.	3.58	FM	3.27	FM	3.43	FM

Indicators	Officials		Constituents		Composite	
	$\bar{X}$	VI	$\bar{X}$	VI	$\bar{X}$	VI
4. The frequency of mental health support services, such as counseling and support groups, offered to residents following a disaster is notable, reflecting the commitment of barangay officials to address the emotional well-being of the community.	3.40	FM	3.23	M	3.32	FM
5. The active involvement of local government in recovery planning and implementation after a disaster is evident, showcasing the commitment of barangay officials to support and guide the community through the recovery process.	3.48	FM	3.53	FM	3.51	FM
General Assessment	3.54	FM	3.38	FM	3.46	FM

Note. 3.25 - 4.00 Fully Manifested (FM) 2.50 - 3.24 Manifested (M) 1.75 - 2.49 Partially Manifested (PM) 1.00 - 1.74 Not Manifested (NM)

The findings revealed that both barangay officials and residents perceived the Recovery component as fully manifested, indicating effective community engagement in post-disaster activities such as rebuilding, emotional support, and access to recovery resources. High ratings underscored the visible efforts of barangay officials to support both structural and psychosocial recovery.

Slightly lower scores from residents, particularly on access to mental health services and recovery participation, suggested that support may not have been equally distributed or accessible to all sectors. This disparity pointed to the need to strengthen inclusive recovery measures, especially in addressing emotional well-being and encouraging broader community involvement.

Problem Number 3. Is there a significant difference between the assessment of barangay officials and residents on the implementation level of the community development initiatives and the level of manifestation in terms of the community development frameworks?

Table 3

Test of Significant Difference between the Assessments of Barangay Officials and Residents on the Implementation Level of Community Development Initiatives and Level of Disaster Risk Reduction Management Practices in Selected Barangays in Calamba City

Variables	T-test	P value	Remarks	Decision
Self-understanding	1.364	0.175	Not Significant	Accept Ho
Engage and power	.531	0.596	Not Significant	Accept Ho
Connect & build	1.242	0.219	Not Significant	Accept Ho
Design & deliver	1.092	0.277	Not Significant	Accept Ho
Reflect & celebrate	2.031	0.044	Significant	Reject Ho
Mitigation	2.865	0.005	Significant	Reject Ho
Preparedness	5.732	0.001	Significant	Reject Ho
Response	3.085	0.002	Significant	Reject Ho
Recovery	2704	0.008	Significant	Reject Ho

Statistically **significant differences** were identified between barangay officials' and residents' assessments, indicating measurable gaps in the implementation and experience of community development and disaster risk management efforts. in the following areas:

Reflect and Celebrate: Barangay officials perceive that evaluation and recognition practices, such as reporting accomplishments, holding ceremonies, or showcasing success stories, are regularly conducted. However, the lower ratings from residents suggest they are often left uninformed, uninvolved, or uninvited to these activities. As a result, many community members are unaware of efforts worth celebrating, limiting shared reflection, and weakening the sense of community ownership and pride.

Mitigation: Officials may point to the existence of hazard maps, structural reinforcements, or early warning systems as evidence of preparedness. However, residents often report that they have not seen these tools, do not understand how to use them, or feel they are not accessible in their area. This suggests that, while systems may exist, they are not reaching or benefiting the wider community in practical or visible ways.

Preparedness: Higher official ratings may reflect completed training sessions and planning activities. In contrast, residents' lower assessments indicate that few have participated in disaster drills, received emergency kits, or been clearly informed about what to do during emergencies. This points to a disconnect between preparedness efforts and their actual reach or impact on households.

Response: Barangay officials may describe organized response protocols and coordination mechanisms. However, residents often experience delays, confusion, or inadequate help when disasters occur. This suggests that the systems in place may not function effectively on the ground or fail to respond equally to all affected individuals.

Recovery: Officials tend to focus on the restoration of public infrastructure and the distribution of aid. On the other hand, residents may feel that recovery is slow, uneven, or does not address their specific needs, such as livelihood support, housing repair, or mental health services. This reflects a gap between the scope of official recovery efforts and the actual needs of families trying to rebuild their lives.

Alternatively, the statistically **nonsignificant differences** in the assessments of Self-Understanding, Engage and Empower, Connect and Build, and Design and Deliver suggest that barangay officials and residents share a common perspective on the implementation of these community development initiatives. This alignment indicates that both groups consistently observe and experience the same levels of program delivery, which may be attributed to effective communication, inclusive participation, and transparent planning processes.

As a result, the impact of this shared perception is a stronger sense of trust, collaboration, and collective ownership over development efforts. It implies that the community development initiatives are not only being implemented as planned but are also genuinely reaching and engaging the community. Consequently, this alignment reinforces participatory governance, sustains civic involvement, and supports the long-term impact and resilience of community-driven programs.

Problem Number 4. Is there a significant relationship between the implementation level of community development initiatives and the level of manifestation of disaster risk reduction management practices in Calamba City Barangays?

Table 4

*Test of **Significant Relationship** between the Community Development Initiatives Implementation Level and the Level of Manifestation of Disaster Risk Reduction Management Practices in Calamba City Barangays*

Community Initiatives	Disaster Risk Reduction Management	r value	p-value	Remarks	Decision
Self-understanding	Mitigation	0.125	0.127	Not Significant	Accept Ho
	Preparedness	.232**	0.004	Significant	Reject Ho
	Response	.243**	0.003	Significant	Reject Ho
	Recovery	0.081	0.324	Not Significant	Accept Ho
Engage and empower	Mitigation	-0.032	0.700	Not Significant	Accept Ho
	Preparedness	0.102	0.212	Not Significant	Accept Ho
	Response	.269**	0.001	Significant	Reject Ho
	Recovery	0.131	0.111	Not Significant	Accept Ho
Connect and build	Mitigation	-0.144	0.078	Not Significant	Accept Ho
	Preparedness	0.061	0.457	Not Significant	Accept Ho
	Response	.183*	0.025	Significant	Reject Ho
	Recovery	.239**	0.003	Significant	Reject Ho
Design and deliver	Mitigation	0.025	0.765	Not Significant	Accept Ho
	Preparedness	0.073	0.374	Not Significant	Accept Ho
	Response	0.142	0.083	Not Significant	Accept Ho
	Recovery	.253**	0.002	Significant	Reject Ho
Reflect and celebrate	Mitigation	-0.013	0.877	Not Significant	Accept Ho
	Preparedness	.182*	0.026	Significant	Reject Ho
	Response	.211**	0.010	Significant	Reject Ho
	Recovery	.198*	0.015	Significant	Reject Ho

* Correlation is significant at the 0.05 level (2-tailed)

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

The correlation analysis revealed several **significant relationships**, indicating how specific community development components contribute to the effectiveness of disaster risk management dimensions:

Self-Understanding showed significant positive relationships with Preparedness and Response. This suggests that when individuals recognize their roles in the community, they are more likely to engage in Preparedness activities and respond effectively during disasters. **Engage and Empower** was significantly related to Response and Recovery,

indicating that promoting participation and confidence among residents strengthens their involvement during emergencies. **Connect and Build** had significant positive correlations with Response and Recovery. This implies that efforts to build community relationships and networks enhance collective disaster response and post-disaster recovery. **Design and Deliver** showed a significant relationship with Recovery, suggesting that well-planned and implemented community initiatives play a critical role in supporting long-term recovery processes. **Reflect and Celebrate** was significantly correlated with Preparedness, Response, and Recovery, highlighting that recognizing community efforts and achievements contribute positively to sustained disaster readiness and resilience.

However, other results showed **no significant relationship**, that the other several community development components did not correspond with measurable changes in specified DRRM, highlighting important gaps: **Self-Understanding** had no impact on mitigation or long-term recovery, indicating that raising individual awareness alone did not translate into stronger infrastructure projects or sustained rehabilitation efforts. **Engage and Empower** activities failed to affect mitigation, preparedness, or recovery, suggesting that confidence-building workshops and participatory training did not extend to technical risk-reduction measures, formal emergency planning, or equitable aid distribution. **Connect and Build** efforts did not lead to improved mitigation or preparedness outcomes, implying that stronger networks and collaborations did not automatically incorporate the detailed planning, drills, or resource allocation needed for these areas. **Design and Deliver** initiatives showed no effect on mitigation, preparedness, or immediate response, underscoring that even well-tailored programs require direct integration with engineering projects, standard operating procedures, and rapid-response training to influence these dimensions. Reflect and Celebrate practices did not drive mitigation improvements, revealing that recognition and celebration alone are insufficient to motivate investments in physical hazard-proofing.

CONCLUSIONS

The study's findings underscore that the implementation of community development initiatives and the manifestation of disaster risk reduction and management (DRRM) practices across Calamba City barangays are consistently assessed as Fully Implemented and Fully Manifested, respectively. These results affirm the strong institutional commitment of barangay leadership to advancing local development and disaster resilience. Through the systematic integration of the Community Development Framework, comprising Self-Understanding, Engage and Empower, Connect and Build, Design and Deliver, and Reflect and Celebrate, and the Disaster Risk Reduction and Management (DRRM) Framework, including Mitigation, Preparedness, Response, and Recovery, barangays demonstrate their readiness in addressing local needs and hazards.

However, significant differences in perceptions between barangay officials and residents indicate varying levels of engagement, understanding, and expectations. Barangay officials often approach initiatives through a managerial or policy lens, while residents evaluate them based on their lived experiences. Where such differences do not exist, it reveals a shared vision and cohesion, which are critical for sustaining participatory governance.

The study also reveals a partial alignment between the two frameworks. While certain components of community development, particularly self-understanding and engagement, show a significant influence on disaster preparedness and recovery, other components lack such synergy. This gap highlights a missed opportunity to fully harness the community development approach as a strategic asset in strengthening DRRM.

In response to these insights, the development of a Comprehensive Capacity-Building Action Plan, particularly focused on Incident Command System (ICS) Level 1, emerges as a crucial strategy for the City of Calamba. This plan, anchored in the research findings, is designed to integrate development and disaster frameworks more seamlessly into governance processes. Equipping barangay leaders and communities with appropriate knowledge and tools ensures a responsive, coordinated, and empowered local system.

Recommendations

1. Policy Integration and Institutionalization.

Local executives should institutionalize community development and DRRM integration by enacting a city ordinance that mandates periodic capacity-building workshops, participatory planning, and performance audits. This legal mechanism can allocate resources, define implementation standards, and incentivize best practices in community-led development and disaster response.

2. Community Awareness and Multi-agency Collaboration

To further strengthen DRRM, barangays must implement localized awareness campaigns and education programs that address specific hazards. Establishing Memoranda of Agreement (MOA) with agencies such as OCD, NDRRMC, DSWD, and PAGASA will ensure that local efforts align with national disaster frameworks and benefit from technical and logistical support.

3. Bridging Perception Gaps through Participatory Governance

Address the perceptual gaps between barangay officials and residents through inclusive decision-making, community consultations, and transparent communication mechanisms. Regularly held training, workshops, and feedback sessions can promote mutual understanding, build trust, and reinforce collective ownership of initiatives.

4. Strengthening DRRM Capacity through ICS Training

A formal MOA between the Office of Civil Defense and Calamba's LGU/Barangays should focus on ICS Level 1 training, simulation drills, and joint evaluation exercises. This will institutionalize disaster response procedures and clarify operational roles, enhancing the city's readiness for emergencies.

5. Implementing a 3-Year Capacity-Building Plan

Launch a 3-Year Action Plan spearheaded by the City Disaster Risk Reduction and Management Office (CDRRMO), in partnership with barangays and national agencies. The plan should prioritize training in incident planning, resource mobilization, emergency communication, and stakeholder coordination to build a robust and responsive local disaster management system.

6. Advancing Research and Innovation

Future researchers should expand the scope of the study by investigating the socio-economic, cultural, and governance dimensions influencing the success of community development and DRRM efforts. Using longitudinal and mixed-method approaches can provide nuanced insights. Collaboration with LGUs, NGOs, academic institutions, and technology providers is essential to develop scalable, evidence-based models for integrated disaster management.

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ABOUT THE AUTHOR

Jose Roderick S. Aguila is currently the OIC-Sales and Promotions Supervisor V at Duty Free Philippines Corporation, a Government-Owned and Controlled Corporation under the Department of Tourism, assigned to the airport store at NAIA Terminal 3. He has 32 years of experience in the Store Operations Department, showcasing his expertise in retail management and supply chain management.

He earned his Bachelor of Science in Commerce, Major in Marketing from Colegio San Juan de Letran, Calamba City in 1991 and later obtained his master's in management, Major in Public Administration from the Laguna College of Business and Arts in 2025.

His research interests focus on community development, disaster risk management, and local governance, particularly in assessing community initiatives and disaster preparedness at the local government level. This aligns with his passion for promoting sustainable community growth through ethical research and data-driven insights.