

**DIMENSIONS ON WORK ENGAGEMENT AMONG BARANGAY DISASTER RISK REDUCTION AND MANAGEMENT RESPONDERS**

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**ABSTRACT**

The Barangay Disaster Risk Reduction and Management Committee (BDRRMC) is one of the most fundamental entities in the local government in response to handling natural and man-made disasters. This study examines the work engagement of BDRRMC responders in handling unforeseen disasters including knowledge on tools, equipment and effective training through exploratory factor analysis (EFA) to gain insights into the factors influencing their engagement levels and identify strategies for improving their responsiveness and performance. The study found seven factors contributing to BDRRMC responders' work engagement framework. These factors include collaboration and communication for effective response, operational and decision-making proficiency, enhancing communication, training and preparedness for resilient communities, adaptive leadership, crafting strategies and tactics, strengthening emergency response capacities, empowered preparedness and equipped with knowledge and tools. A thorough evaluation should be conducted in the Barangay Local Government Unit (BLGU), including Local Government Units, to assess the policies and programs that support the role and structure of the Barangay Disaster Risk Reduction and Management Council (BDRRMC) at the barangay level. This evaluation will help motivate them to fulfill their duties and responsibilities more effectively.

**Keywords:**

Barangay Responders, Community Service, Work Engagement and Empowerment

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**INTRODUCTION**

The most fundamental local government entity is the Barangay Disaster Risk Reduction and Management Committee (BDRRMC), which will assist and carry out the National Government's fulfilling Republic Act 10121 otherwise known as the Philippine Disaster Risk Reduction and Management Act of 2010, in accordance with the key principles of "A Safer, Adaptive and Disaster Resilient Filipino Communities towards Sustainable Development Goals." Within its area of responsibility, the Barangay Disaster Risk Reduction and Management Committee chaired by the Punong Barangay are the first responders, both direct and immediate, to natural and man-made disasters. A crucial component of disaster risk reduction and management planning, action plan realignment, and the reenactment of more realistic and responsive bills or even laws in Congress is determining the extent of implementation of these policies in barangays that are prone to flooding. And to increase barangay officials' and individuals' level of disaster resilience, the government may continuously develop its programs to support risk reduction knowledge and the capacity to uphold public order during disasters (Tanguid, Jr. & Tanguid, 2023). It may be essential to conduct extra training events and informational seminars in order to educate the respondents regarding risk reduction concepts and emergency readiness.

The committee mentioned above will be responsible for implementing plans within the barangay to prevent or minimize the effects of impending catastrophes and disasters on the residents' homes, livelihoods and other aspects of the barangay and this committee is composed of individuals from diverse backgrounds such as education, religion institutions and

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different barangay organizations. According to Mohamed et. al. (2023) motivation is important in human behavior and is the force that causes movement in humans. Motivation explains the start, direction, and perseverance of behavior among individuals involved with adding value to the goals, perceived competence, causal attributions, and emotional reactions. Engagement in disaster relief, and even motivation to engage in it, is a challenge.

Further, many individuals are involved in disaster situations, providing support to survivors. This includes activities such as search and rescue, relief operations and other essential tasks like treating injured survivors, preventing the spread of infectious diseases, managing the handling of victims, providing information and coordinating efforts. It's important to note that these responders are the primary front-liners in a crisis. Therefore, their presence deserves recognition, which includes evaluating potential gaps or obstacles in carrying out their roles. This evaluation may encompass factors such as knowledge of tools, equipment, and training. Consequently, addressing these aspects helps expedite their learning curve and skill development, thereby fostering effective engagement.

### OBJECTIVES OF THE STUDY

The study aims to examine the work engagement of BDRRMC responders through evaluating their knowledge and performance in carrying out their function. The study specifically seeks dimensions to evaluate the following, to wit;

1. How BDRRMC responders proactively consider their duties, obligations, and assignments concerning disaster risk reduction and management;
2. Analyzing BDRRMC responders' emotional ties to and dedication to their jobs, coworkers, and the community they serve; and
3. Examining how BDRRMC respondents behave and perform their tasks efficiently.

By completing these goals, the study hopes to advance knowledge of the dynamics of work engagement in the context of grassroots disaster risk reduction management, which will help develop strategies for maximizing the effectiveness of BDRRMC responders, moreover, in reducing the challenges in carrying out their function thereby devoid possible risk of disaster response thus building sustainable and resilient community.

### SCOPE AND LIMITATION OF THE STUDY

The study will examine the work engagement of Barangay Disaster Risk Reduction and Management Committee (BDRRMC) Responders in Davao City, notably aiming to identify potential challenges hampering these responders from fully executing their duties during disasters or related incidents. In addition, the study seeks to raise awareness among aspiring and current barangay responders by highlighting the challenges they face, thus providing insights for interventions to enhance their capacity. The researchers utilized a quantitative approach, involving 150 respondents who completed a 30-item questionnaire. The study focused on the recent work engagement of tenured barangay respondents with 1 to 10 years of experience.

A limitation of the study was noted as respondents were randomly selected from among the 182 barangays, potentially introducing bias. While the study concentrated on 150 barangay respondents, it may not fully represent barangays with differing levels of access to resources and other factors. Despite this limitation, the focus on specific barangays, particularly those vulnerable to frequent disasters, aims to provide valuable insights for policy recommendations and interventions, contributing to the welfare of the broader citizenry.

### METHODOLOGY

The 150 residents tagged as responders of Barangay Disaster Risk Reduction and Management were identified as research respondents. The study tool used to collect data was a 30-item questionnaire. The resiliency of the respondents was determined using Exploratory Factor Analysis (EFA). Through the Kaiser–Meyer–Olkin (KMO) test, the adequacy for factor analysis of the dataset collected and of the correlation of the underlying factors was measured. A KMO value closer to 1 indicates a more suitable sample for factor analysis, suggesting that the variables share enough common variance for meaningful factor extraction. The suitability of the dataset for dimensionality reduction techniques was then tested using Bartlett's test of sphericity. The eigenvalues of the factors in descending order against the number of factors were

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graphically represented in a Scree Plot to determine the optimal number of factors to retain.

### RESULTS AND DISCUSSION

This section encompasses the analysis and interpretation of the data. The chapter dives into the results and findings of the study, utilizing the statistical software SPSS, where the KMO and Bartlett’s Test are applied. The study involved 150 respondents in Barangay Disaster Risk Reduction and Management Responders.

#### KMO and Bartlett’s Test

Table 1 presents the results of the Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy and Bartlett's Test of Sphericity. The KMO score of .867 indicates that the samples exhibit strong correlations, rendering them suitable for factor analysis. Additionally, Bartlett's test of Sphericity yielded a value of 1946.215 and a significance level of less than .000, suggesting that the data is suitable for the work engagement among barangay disaster risk reduction and management responders. Furthermore, rejecting the null hypothesis based on Bartlett's test of Sphericity implies that a framework of work engagement of the responders across the different barangays when it comes to disaster risk reduction and management.

**Table 1.** KMO and Bartlett's Test

<b>Kaiser-Meyer-Olkin Measure of Sampling Adequacy</b>		.867
<b>Bartlett's Test of Sphericity</b>	<b>Approx. Chi-Square</b>	1946.215
	<b>df</b>	435
	<b>Sig.</b>	.000

**Total Variance Explained.** Table 2 presents the number of dimensions that extracted the initial eigenvalues associated with the specified dimensions, the percentage of total variance, and the cumulative percentage of each dimension. Seven (7) factors were obtained using the criterion factors.

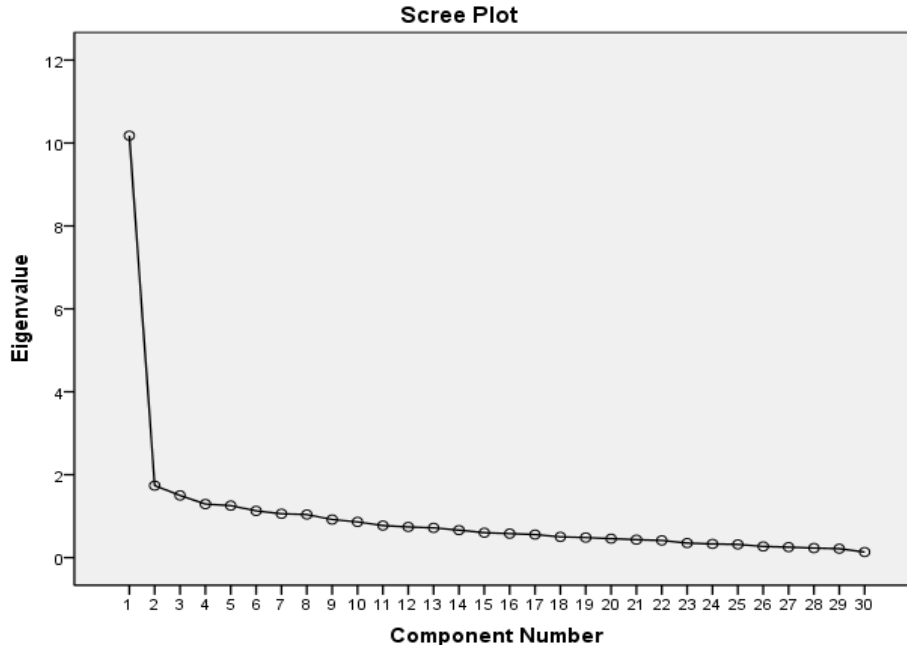
**Table 2.** Total Variance Explained

Component	Initial Eigenvalues			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	10.178	33.928	33.928	2.769	9.232	9.232
2	1.737	5.790	39.719	2.714	9.046	18.278
3	1.501	5.003	44.721	2.672	8.907	27.185
4	1.292	4.307	49.029	2.585	8.615	35.800
5	1.255	4.183	53.212	2.357	7.856	43.656
6	1.128	3.759	56.971	2.174	7.248	50.904
7	1.058	3.526	60.497	2.083	6.943	57.847
8	1.039	3.462	63.959	1.834	6.112	63.959
9	.919	3.064	67.023			
10	.862	2.873	69.897			

#### Extraction Method: Principal Component Analysis.

The Scree Plot illustrated the total variance, and Eigenvalues plotted against all factors in a graphical manner. This plot depicts the decreasing trend of Eigenvalues and helps determine the significance of each component. The Scree Plot is a valuable tool for deciding the number of factors to retain, with the inflection point indicating where the curve flattens. In this study, the curve starts to flatten at component number eight as Eigenvalues of less than one begin to appear. If the items of each dimension fall below the minimum threshold, the dimension will be eliminated. Consequently, the analysis

retained only five factors.



*Figure No. 1. Scree Plot Rotated Component Matrix*

**Rotated Components Matrix with the 27 attributes.** As presented, twenty-nine (27) items are categorized into 7 dimensions, and as presented in the table there is one item not included in the categorization of the dimensions. These items that face validity issues and low commonalities are removed from the model. Only 27 items are considered in the categorization into 7 dimensions. This is supported by Hair et. al. (2010) who posited that items having no sense and not reflective of the factor can be removed from the model.

**Rotated Component Matrix with group attributes.** The 30 items in the questionnaire were subjected to the factor analysis component with varimax rotation or rotated component matrix, a statistical technique used to identify relatively small numbers of factors that can be used to represent the relationship among a set of interrelated variables (Norusis, 1990). Based on the technique seven (7) dimensions have been identified with their respective indicators. These dimensions are presented in tables and these correspond to the dimensions of work engagements among Barangay Disaster Risk Reduction and Management Responders.

**Collaboration and Communication for Effective Response.** The dimensions with the highest loading at 0.709 discuss the respondent's readiness to listen to other ideas. The next dimension, with the highest loading at 0.642, highlights the dissemination of information on disaster preparedness and other types of emergencies to all residents of the barangay, especially those living in disaster-prone areas. The dimensions at 0.619 highlight the respondents to facilitate planning and managing incidents/events.

Involving the community in planning for disasters before they strike can make all the difference. By working together, people with different expertise can create a shared understanding of the community's strengths and weaknesses. This collaborative approach can also build trust between residents and local organizations, making the community more prepared to face challenges. Including disaster planning in ongoing community efforts strengthens resilience in the long run.

**Table 3.** Rotated Matrix with Grouped Attributes under Collaboration and Communication for Effective Response.

Item	Attributes	Loading	Dimension
20	I listen to other’s ideas.	0.709	<i>Collaboration and Communication for Effective Response</i>
9	Disseminate information on disaster preparedness and other types of emergencies to all residents of the barangay, especially those living in disaster-prone areas.	0.642	
21	I facilitate planning and managing incidents/events.	0.619	

**Operational and Decision-making Proficiency.** Considering Operational and Decision-making Proficiency as a dimension within the Work Engagement of Barangay Disaster Risk Reduction and Management Responders (BDRRMR) indicates the ability to swiftly deploy resources, take accountability for emergency decisions, develop effective strategies and tactics, and collaborate smoothly with others during emergencies.

Item (23) "I can easily deploy different resources/equipment" has the highest loading (0.758), indicating that it is the strongest indicator of the underlying factor. This underscores the critical importance of resource deployment and management in ensuring the efficiency and success of emergency responses (Zhou & Reniers, 2016). In addition, the items "I am accountable in decision making," "I know how to develop strategies and tactics during response," and " I can easily conduct collaborative emergency management when deploying resources " have moderate loadings (0.62, 0.556, 0.508, respectively), suggesting that they also contribute to the underlying factor but to a slightly lesser extent. This emphasizes the need for responders to embrace collaborative emergency management as an essential tool in addressing extreme incidents (Waugh & Streib, 2006). Moreover, responders can enhance their resource orientation skills to ensure an effective response to operations or incidents (Smith & Dowell, 2000).

However, the remaining items with moderate loadings indicate that some respondents may lack a sense of accountability in decision making while still being able to swiftly develop strategies and tactics during response. Therefore, this suggests that a presence of proficient and competent responders is vital for an effective disaster response as affirmed by King et al. (2010).

**Table 4.** Rotated Matrix with Grouped Attributes under Operational and Decision-making Proficiency.

Item	Attributes	Loading	Dimension
23	I can easily deploy different resources/equipment.	0.758	<i>Operational and Decision-making Proficiency</i>
24	I am accountable in decision making.	0.62	
22	I know how to develop strategies and tactics during response.	0.556	
27	I can easily conduct collaborative emergency management when deploying resources	0.508	

**Enhancing Communication, Training and Preparedness for Resilient Communities.** The dimension at 0.805 highlights the most critical component of disaster management as having dependable communication instruments (radios, phones, etc.) in operational order. It highlights how important it is for the government to alert locals and efficiently coordinate in times of emergency. The dimension at 0.625 indicates that BDRRMC responders may not receive adequate training and development assistance. Well-trained responders are better equipped to handle emergencies effectively. The dimension at 0.526 indicates that there is not as much regular practice or simulation as there should be. Responders and locals may become less equipped to handle real emergencies. Plans for disaster preparedness frequently stress the value of routine drills to acquaint everyone with protocols, evaluate communication systems, and pinpoint areas that require improvement.

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According to Margarena et. al. (2023) resilience, also known as the capacity of a city or community to adjust and adapt to internal and external hazards is essential. In the planning process, resilience focuses on the concepts of adaptation, flexibility and change and equipping communities to handle these risks reduces the likelihood of disasters occurring at any given time.

**Table 5.** Rotated Matrix with Grouped Attributes under Enhancing Communication, Training and Preparedness for Resilient Communities

Item	Attributes	Loading	Dimension
15	Ensure that there are working and complete communication devices to regularly update and coordinate authorities and residents.	0.805	<i>Enhancing Communication, Training and Preparedness for Resilient Communities</i>
6	Responders from BDRRMC receive sufficient training and development assistance.	0.625	
8	Conduct regular simulation exercises or drills to prepare for hazards and risks.	0.526	

**Collaborative Empowerment for Safety.** The dimension with a highest loading of 0.705 indicates that most BDRRM responders don't think about themselves, only they are open to any constructive criticism. Followed by upholding collaboration to build teamwork and that the BDRRM responders actively listens to the team in pursuit of reducing danger of calamity with loadings 0.693, and 0.589, respectively. Furthermore, item 1 indicates a lowest loading at 0.519 which suggests that the BDRRM find personal fulfillment in their work.

Collaborative governance is essential at all levels of power to ensure positive outcomes are achieved during and after the disaster. According to Khafian (2023), managing a disaster is a complex process that encompasses various tasks such as staffing, organizing, planning, leading and supervising. It involves the collaboration of organizations in order to effectively carry out activities related to catastrophe prevention, mitigation, readiness, response and recovery. Safety empowerment refers to proactive actions and plans that aim to protect individuals, communities and the environment from harm or unfavourable circumstances (Roni & Akram, 2024).

**Table 6.** Rotated Matrix with Grouped Attributes under Collaborative Empowerment for Safety.

Item	Attributes	Loading	Dimension
18	I am open to feedback from responder/s.	0.705	<i>Collaborative Empowerment for Safety</i>
17	I delegate tasks to promote teamwork.	0.693	
2	I desire to support initiatives to reduce the danger of calamity.	0.589	
1	As a responder, I find personal fulfillment in my work.	0.519	

**Adaptive, Leadership, Crafting Strategies and Tactics.** This dimension of Adaptive, Leadership, Crafting Strategies and Tactics is supported by two items having a loading score of 0.749 and 0.74. The highest leading score on this dimension shows that 'I know how to develop strategies and tactics' that constituted 0.749. Second, 'I can manage to respond to two different situations' that is constituted to a loading score of 0.74.

As explained by Heifetz et al (2009) "The Practice of Adaptive Leadership: Tools and Tactics for Changing Your Organization and the World," refers to the act of motivating people to overcome challenging situations and succeed. Additionally, according to Burns' (1978) definition, leadership is a relationship between two individuals, where one person inspires the other to work together towards a shared objective. This concept has significant implications for both the philosophy and practice of leadership.

**Table 7.** Rotated Matrix with Grouped Attributes under Adaptive, Leadership, Crafting Strategies and Tactics.



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Item	Attributes	Loading	Dimension
26	I know how to develop strategies and tactics.	0.749	Adaptive Leadership, Crafting Strategies and Tactics
19	I can manage to respond to two different situations.	0.74	

**Strengthening Emergency Response Capacities.** As signified in table 8, Exploratory Factor Analysis (EFA) revealed the six dimensions with the following indicators: 'I organize and strengthen the capacities of emergency response teams and volunteers' with highest loading coefficient of 0.805; Next, 'I develop and maintain risk maps in the barangay' with loading coefficient of 0.573; Last, 'I manage and support risk assessment at contingency planning activities' with loading coefficient of 0.538.

According to Mileti et. al. (2014) ensuring principles and practices aimed at safeguarding public safety during disasters and crises is crucial. This will enable the responders to strengthen preparedness planning, emergency response and coordination, recovery efforts and mitigation strategies.

**Table 8.** Rotated Matrix with Grouped Attributes under Strengthening Emergency Response Capacities.

Item	Attributes	Loading	Dimension
10	I organize and strengthen the capacities of emergency response teams and volunteers.	0.805	Strengthening Emergency Response Capacities
13	I develop and maintain risk maps in the barangay.	0.573	
11	I manage and support risk assessment at contingency planning activities.	0.538	

**Empowered Preparedness and Equipped with Knowledge and Tools.** This dimension is composed of three items, which is seen by the respondents as one of the dimensions of work engagement on the BDRRM responders. Having the highest loading score of 0.635 which indicates that the respondents are having knowledge how to use the different tools and equipment. Second, are well-communicated in regards to its goals and objectives of the BRRMC that constituted 0.599 and lastly, responders are accountable for its responsibilities on its resource with a loading of 0.558.

This finding affirms with Ferrer, et. al (2021) that effective communication can promote empowerment, positive change, and learning. It is a dynamic process, a method of exchanging goals, attitudes, knowledge, information, and ideas that involves a constant process of coding, decoding, and interpretation. And the organizations frequently deal with information in the event of a calamity, and this works when management may choose to assume complete command of all.

**Table 9.** Rotated Matrix with Grouped Attributes under Empowered Preparedness and Equipped with Knowledge and Tools.

Item	Attributes	Loading	Dimension
28	I know how to use different tools and equipment.	0.635	Empowered Preparedness and Equipped with Knowledge and Tools
4	The goals and objectives of the BDRRM are well-communicated to me.	0.599	
5	I have the tools I need to carry out my responsibilities well.	0.558	

### CONCEPTUAL FRAMEWORK

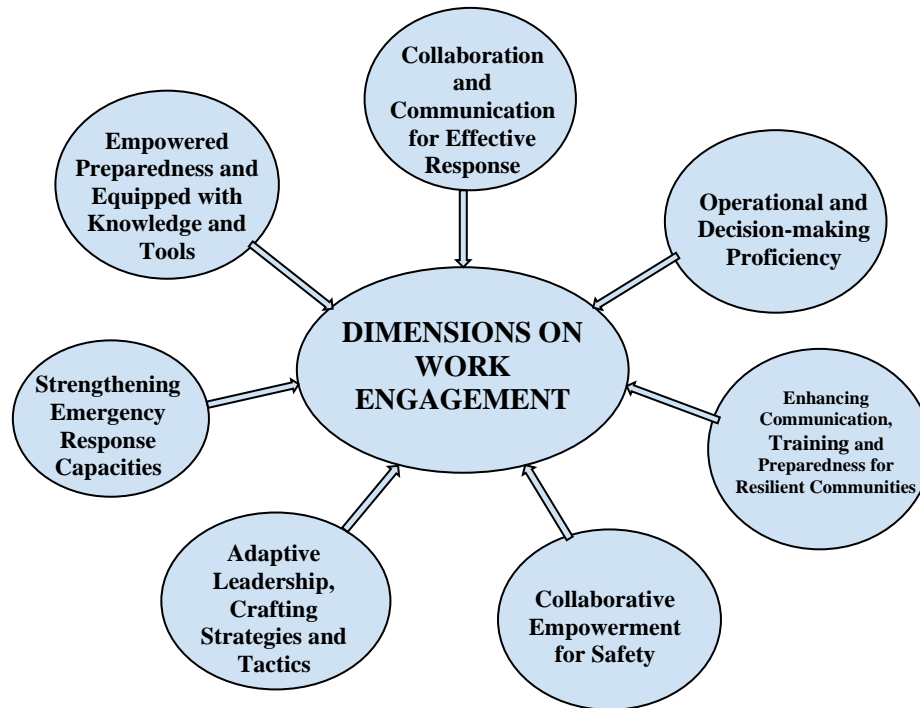
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Presented in Figure 2 is the framework developed based on the findings. The researchers found that the dimensions of the Work Engagement Framework among Barangay Disaster Risk Reduction and Management Responders are (1) Collaboration and Communication for Effective Response, (2) Operational and Decision-making Proficiency, (3) Enhancing Communication, Training and Preparedness for Resilient Communities, (4) Collaborative Empowerment for Safety, (5) Adaptive Leadership, Crafting Strategies and Tactics, (6) Strengthening Emergency Response Capacities, and (7) Empowered Preparedness and Equipped with Knowledge and Tools.



**Figure No. 2.** Work Engagement Framework among Barangay Disaster Risk Reduction and Management Responders

### SUMMARY AND CONCLUSION

Based on the findings and presentation of the data, the researchers have concluded that work engagement among barangay disaster risk reduction management responders identifies seven (7) dimensions these are *Collaboration and Communication for Effective Response*, *Operational and Decision-making Proficiency*, *Enhancing Communication, Training and Preparedness for Resilient Communities*, *Collaborative Empowerment for Safety*, *Adaptive Leadership, Crafting Strategies and Tactics*, *Strengthening Emergency Response Capacities*, and lastly *Empowered Preparedness and Equipped with Knowledge and Tools*, the researchers concluded that multiple factors can still contribute to the work engagement among barangay disaster risk reduction management responders. However, when compared to other items and factors, some attributes, such as training, resources, professional development, recognition, and guidance, have varying degrees of significance. These attributes could potentially contribute significantly to low engagement among barangay disaster risk reduction management responders, with a significance level of approximately 0.05 based on the data.

### RECOMMENDATION

Based on the summary and conclusions, the researchers recommend the following steps for implementing agencies like the Local Government Units or Local Disaster Risk Reduction and Management Office/Centers, to wit;

1. Outline a concise plan for investigating work engagements among barangay disaster risk reduction and



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management responders.

2. Review the current structure and role of barangay responders for the barangay local government units or BLGUs, and other agencies involved in engaging the BDRRM responders.
3. Determine if the responders desire continuous professional development and compensation, equipped with knowledge and skills to empower a safe community.
4. Strengthen the emergency response with leadership capacities that will make the responders more committed to their duties and responsibilities.

Despite their strong social support and commitment as volunteers for the barangay, providing recognition and adequate skills and knowledge will empower them and increase their motivation in their work.

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