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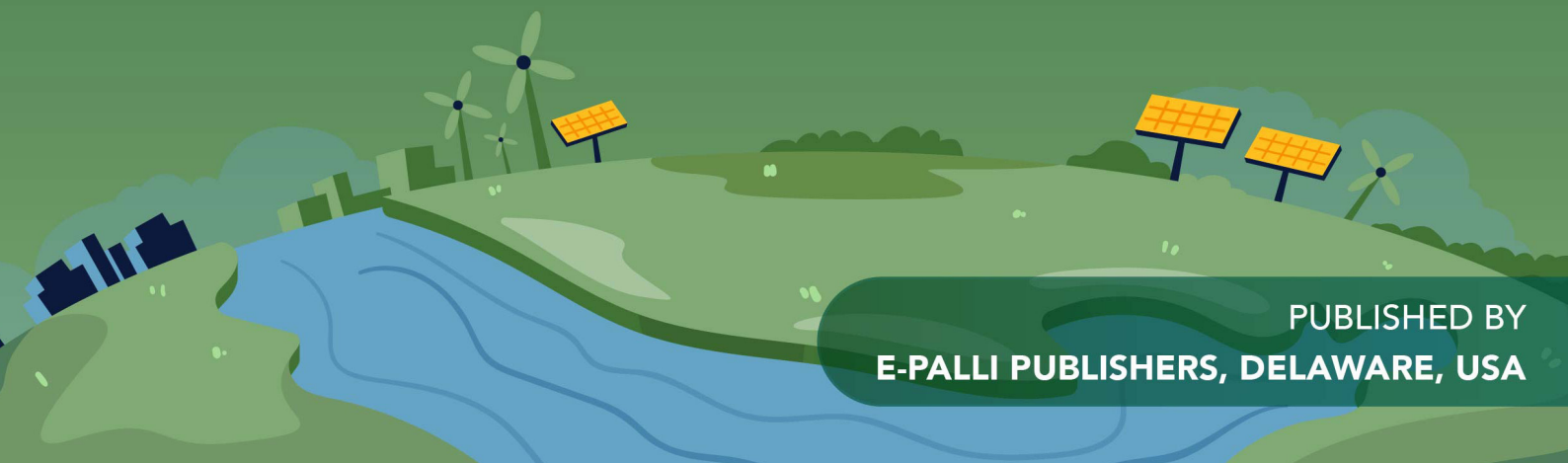

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Assessment of the Disaster Response of the Barangays (Villages) in the River Basin Communities in Southern Philippines

Ian Mark Q. Nacaya[1*], Ester L. Raagas[1], Astrid L. Sinco[2]

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ABSTRACT

Threat to safety and security is the new norm faced by the Local Government Units. Climate-related hazards, especially in the barangays within the Tagoloan River Basin (TRB) area, are now part of the realities of the residents. The importance of governance as a catalyst of change in managing the community is to become responsive to the new order of the environment and the demands of public service. Results revealed that the tasks of the Barangay (Village) Disaster Risk Reduction and Management Committees (BDRRMCs) in the river basin communities on disaster response were partially accomplished. As a whole, the performance of the BDRRMCs is generally satisfactory (3.19). This is broken down into 'upon alert' (satisfactory = 3.36) and 'during alert' (satisfactory = 3.02). The findings further revealed that the performance of the BDRRMC in disaster response is significant when the Punong Barangay's (Village's Head) educational attainment, BDRRMC budget and community's experience in flood are higher. The FGD responses indicated that the TRB barangays have issues and concerns considering the appropriate disaster response during imminent danger (upon alert) and disaster. There is a cogent need for all government offices handling the DRRM functions to provide appropriate attention at the Barangay level to properly implement the DRRM Plan.

INTRODUCTION

In 2011, tropical storm (TS) Sendong (international name, Washi) devastated Misamis Oriental's major city of Cagayan de Oro and several communities in the two river systems, i.e. the Tagoloan River Basin (TRB) and Cagayan de Oro River Basin (CDORB), including the coastal towns under the Macajalar Bay Development Alliance (MBDA) from Laguindingan to Kinoguitan. Another TS Vinta (aka Timben) entered PAR four days before Christmas of 2017 and claimed 75 lives in Region 10 and because of flash floods coming from headwaters upland, about 200 families evacuated to Sta Cruz and Natumolan, both in Tagoloan, Misamis Oriental (Citizens' Disaster Response Center, 2017).

These natural disasters resulted to massive preparations, strengthening and passing of more climate-related hazard policies. Among these were the enactment of the National Disaster Risk Reduction and Management Act of 2010 (RA 10121) and its Implementing Rules and Regulations (National Disaster Coordinating Council, 2010). In the IRR of RA 10121 (Senate of the Philippines, 2010), the Barangay Disaster Risk Reduction Management Committee in every Barangay will serve as the regular committee of the Barangay Development Council (Section 1, Rule 5). Fund for this purpose is the BDRRM Fund, allocated as mandated by law. This special fund (formerly calamity fund) is obtained from 5% of the local revenue set aside for DRRM activities, like pre-disaster, during and post-disaster activities. The 30% of the BDRRM fund is intended for the Quick Response Fund (QRF) (Section 1-2, Rule 18, Code).

The Local Government Code's concept of devolution is well articulated in Section 2 (a) on the declaration of policy: "It is hereby declared the policy of the State that the territorial and political subdivisions of the State shall enjoy genuine and meaningful local autonomy to enable them to attain their fullest development as self-reliant communities and make them more effective partners in the attainment of national goals." Section 17 (e) of the code defines "devolution as the act by which the national government confers power and authority upon the various LGUs to perform specific functions and responsibilities. For instance, barangays are responsible for agricultural support services, including planting material distribution, maintenance of health centers and day care centers, general hygiene and sanitation, barangay roads, bridges and water supply, infrastructure and barangay justice (Code, 1991).

The study focuses on the Barangays in the Tagoloan River Basin. The Basin is the thirteenth (13th) largest river system in the Philippines and has a total area of about 180 thousand hectares of waterways, plateaus, canyons, and valleys which starts from the province of Bukidnon covering five (5) municipalities and one (1) city, then down to Misamis Oriental's three (3) municipalities or a total of 26 barangays, and finally discharges an annual run-off of 4106 MCM ont Macajalar Bay through its main drainage – Tagoloan River. Most (57%) of TRB is forest, while the remaining proportion is disposable land (National Economic Development Authority X, 2005).

Threat to safety and security is the new norm faced by the LGUs. In same breadth, climate-related hazards, especially

[1] Graduate School, Xavier University-Ateneo de Cagayan, Philippines
[2] Biology Department, Xavier University-Ateneo de Cagayan, Philippines
[*] Corresponding author's e-mail: nacaya729@gmail.com

in the villages within the area of the Tagoloan River Basin, are now part of the realities of life. Stoker(1998)contends that the local governments have expanded increasingly their authority in the dispensation of local services. One of the four priority areas of the BDRRMC is on disaster response, the third pillar of the DRRM program. Disaster response refers to the provision of emergency services and public assistance during or immediately after a disaster in order to save lives, reduce health impacts, ensure public safety and meet the basic subsistence needs of the people affected. Its response is predominantly focused on immediate and short-term needs and is sometimes called "disaster relief". These are the actions taken during imminent hazard.

Objectives of the Study

The objective of the study is to review, assess and determine the performance of the BDRRMCs in the Tagoloan River Basin Barangays based on the mandated tasks on disaster response outlined by the National Disaster Risk Reduction and Management Council for the smallest Local Government Units (Barangays) to implement at their respective communities. Hence, Fig. 1 shows the relationship of the variables of the study vis-à-vis the DRRM tasks, specifically on disaster response and the characteristics of the TRB Barangays (populations and the budgets) and the immediate past Punong Barangays (educational attainment, age, gender, and years in the service) and the three climate-related hazards (floods, heavy rainfall, and unseasonal/erratic rain). The dependent variable is the level of performance of the Barangay Disaster Risk Reduction and Management Committees on disaster response on the following Barangay DRRM framework: (a) upon alert and (b) during alert. The level of BDRRMCs' performance refers to the rating of the Barangay leaders of the relevant actions and activities initiated and other roles and responsibilities carried out by the BDRRM committees in pursuing its mandated functions on disaster response considering the existing guidelines of the implementing rules and regulations of RA 10121.

More specifically, the following questions were sought for answers to determine the level of performance of the BDRRMCs, considering disaster response:

1. What is the level of performance of the BDRRMCs considering disaster response?
2. To what extent do the independent variables explain the variations in the level of performance of the BDRRMCs?
3. What are the issues and concerns that surfaced in relation to the level of performance of the BDRRMCs, considering disaster response?

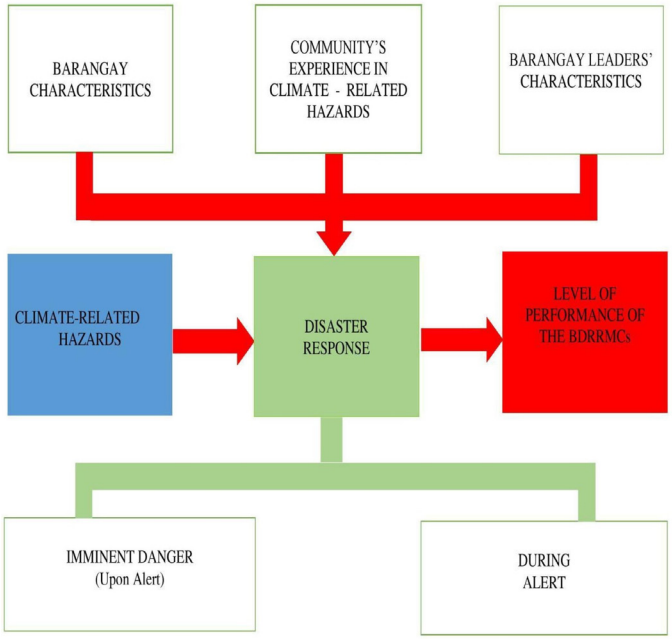

Figure 1: Schematic Diagram Showing the Relationship of the Variables of the Study

LITERATURE REVIEW

Abdel-Basset *et al.* (2020) advanced that studying disaster response systems is considered as one of the most significant vital topics that must be studied and developed. Where negligence in responding to disasters in an appropriate manner is devastating to human and economic life alike. The number of people affected by disasters that are not responding properly is huge. This is due to the failure to alert the citizen to the catastrophe before it occurred, through the technological progression that the world is experiencing. Also, one of the most important causes of country growth retardation is the consequences of disasters that have not been properly responded to, Abdel-Basset, et. al. (2020) concluded.

Sanyal & Routray (2016) argued that the network at the community is crucial for survival of the community. Social capital serves like an informal insurance in cases of small-scale disasters. They suggested that policymakers

should strengthen social capital-supported organizing body in the local level. Policymakers and practitioners should use the existing units, mode of communication, and authority structure as they influence both efficiency and effectiveness of undertakings in reducing risks.

In influencing residents to risk and preparedness, Donahue *et al.* (2014) contend that public officials see citizens differently; they tend to attribute lack of preparedness to procrastination and denial, while citizens feel like they do not have the information they need and are more uncomfortable focusing on the possibility of disaster. These then lead to their conclusion that people act based on their perceptions, and so public policies must account for what people think and feel if they are to influence behavior. To be an effective and responsive local government unit, it must be directed by competent officials. In the case of a barangay government, it must be constituted with capable barangay officials who can handle barangay management effectively, such as planning and fiscal administration (Department of the Interior and Local Government (DILG) - Local Government Academy (LGA), 2018).

These cited literature, studies and government regulations and guidelines have aided in the development of the study. In particular, Republic Act 10121 magnified the role of the local government units, particularly the barangay, in directing its affairs in disaster response and management. It tasked and organized the NDRRMC and assigned certain departments to oversee the duties and functions of the chief executives in the LGUs. To have a unified direction, NDRRMC adopted the National DRRM Plan and enjoined all LGU offices and stakeholders alike to take part in the enforcement thereof (National Disaster Coordinating Council, 2011). The Local Government Code of 1991 also played a vital role in the efforts to build vibrant institutions that will address the DRR concerns as it provided the essential structures and legal framework of the local government units. However, even after the enactment of these laws, pressing issues on public safety and the protection of life, limbs and properties of the people remained to be the top concerns of the community residents, especially in the changing climate patterns and the threats brought about by flood, heavy rainfall and unseasonal/erratic rain; thus, this study assesses the disaster response of the Barangay Disaster Risk Reduction and Management Committees of the Tagoloan River Basin Communities in Southern Philippines.

METHODOLOGY

Research Design

This study used the descriptive research design. It involves the descriptions and evaluation of the existing conditions related to the performance of the Barangay Disaster Risk Reduction and Management Committees in the Baragays of the Tagoloan River Basin on disaster response. According to Best & Kahn (2006), this design allows some type of comparison, contrast, and uncovering of relationships between existing non-manipulated variables in the study.

Statistical Tools

On the findings, analysis, and interpretation of the data gathered, the following statistical tools were employed:

Frequency, percentages, mean, and standard deviation. These were used to answer the objectives 1 and 2.

T test and F test. These tests were used to determine significant differences in the level of performance of the BDRRMC considering the independent variable of the study.

Multiple Linear Regression Analysis (MLRA) and MLRA with dummy variable. These techniques were used to determine the extent to which the independent variables explain the variations in the level of performance of the BDRRMC. All the MLRAs in this study met the assumption on multicollinearity of the independent variables, indicating that these variables are not collinear.

Research Environment

The study covers the eight local government units

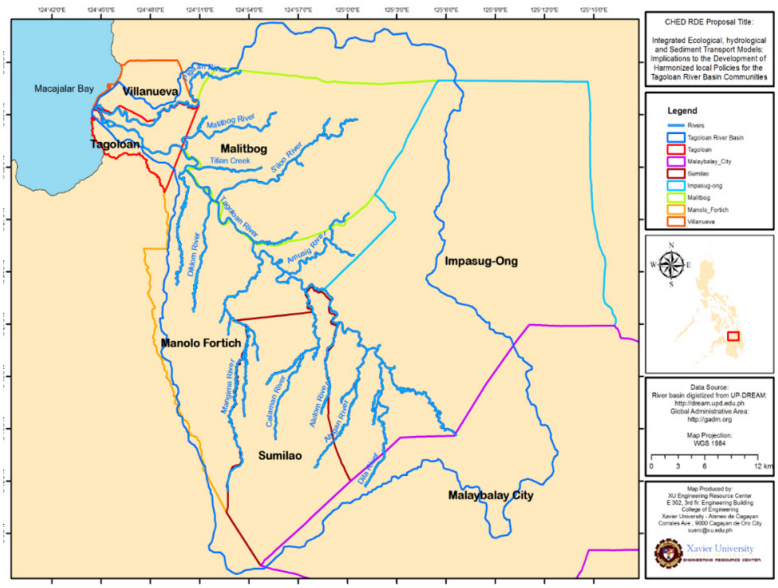

Figure 2: Map showing the Municipalities included in the Study

within the Tagoloan River Basin (TRB). Three are municipalities of Misamis Oriental Province, which are located downstream of the basin; while the five belong to the Bukidnon Province, upstream of the TRB - both provinces are situated in Southern Philippines. A total of 152 respondents from the 26 Barangays, which constitute the 8 municipalities. The main rivers of TRB are the following: Tagoloan River, Malitbog River, Siloo River, Titian River, Mangima River, Alulum River, Amusig River, and Dila River, which are shown in Fig. 2.

The study utilizes Cochran's formula in the determination of the sample size, where alpha = 0.05, Z = 1.96, and a margin of error E = 0.103. The sample size, n = 152, was allocated to the different barangays where the barangay council members and other members of the BDRRMCs who came from the private sector were chosen randomly and the Punong Barangays, the Secretaries, and the Treasurers comprised the remaining respondents.

Respondents and Data Gathering

The 152 respondents of the 26 Barangays in this study were chosen randomly. Each one was given the question form. These were duly filled out during the scheduled data gathering per batch of respondents supervised directly by the researcher and trained staff. Two focused group discussions (FGDs) were also conducted for selected respondents to address objective 3. The FGD results also triangulated the quantitative findings of the study.

RESULTS AND DISCUSSIONS

What is the Level of Performance of the BDRRMCs Considering Disaster Response

Table 1 presents the distribution of respondents by their ratings on the performance of the BDRRMC considering Disaster Response. As shown, 16.45% of the respondents rated their barangays to have an excellent performance, 26.32% gave very satisfactory rating and15.79% rated satisfactory, while 22.37% and 19.08% rated low and very low, respectively. In general, the performance of BDRRMC considering Disaster Response in the TRB barangays is at the satisfactory level (mean=3.19).

One of the main indicators of BDRRMC performance considering Disaster Response is 'upon alert'. The respondents rated this indicator with satisfactory performance (mean=3.36). In fact, only 1 sub-indicator, prepared the list of landslide and flood prone areas, is considered by 87.5% of the respondents as available in their barangays. Listing of landslide and flood prone areas is of prime importance in these barangays, these being traversed by the Tagoloan River Basin, where the reality is the common occurrence of heavy rainfall and flooding. However, the results indicate that there are still TRB barangays who do not have the list of landslide and flood prone areas. The findings also reveal that some of the sub-indicators for the BDRRMC under upon alert were considered to be available by only 23% to 47% of the respondents. These are the following: made sure that

Table 1: Distribution of Respondents by Ratings on Performance of the BDRRMC considering Disaster Response

Level of Performance	**Frequency**	**Percent (%)**
Excellent (4.60-5.00)	25	16.45
Very Satisfactory (3.70-4.59)	40	26.32
Satisfactory (2.80-3.69)	24	15.79
Low (1.90-2.79)	34	22.37
Very Low (1.0-1.89)	29	19.08
Total	**152**	**100.00**
Mean: 3.19	**Standard Deviation: 1.37**	
Description: Satisfactory		
Indicators	% mean	Desc
Upon Alert	3.36	Sat
BDRRMC had recommended to the SB (Barangay Council) the following:		
1. Convened the BDRRMC	78.95	
2. Estimated the number of families to be evacuated	75.00	
3. Prepared the list of landslide and flood prone areas	87.50	
4. Had standby supplies, equipment and relief goods	42.11	
5. Checked the functionality of the equipment and rescue vehicles	63.16	
6. Alerted the SAR Team and BERT Team for mobilization in SAR and relief operations	47.37	
7. Prepared the evacuation center	73.03	
8. Ensured that all equipment and facilities are well-maintained	59.87	
9. Issued alert and warnings to the community through the designated information officer	65.79	
10. Made sure that every household has an E-balde	23.03	
11. Coordinated with the Office of the Mayor on possible suspension of classes	51.32	

12. Assigned barangay tanods to ensure security in the evacuation center	76.32	
13. Conducted patrol within the barangay	72.37	
14. Coordinated with other institutions or organizations for additional equipment during disasters	29.61	
Indicators	% mean	Desc
During Alert	3.02	Sat
BDRRMC had recommended to the SB (Barangay Council) and put into motion the following:		
1. Deployed SAR Team and or BERT for operation, if necessary	57.89	
2. Assisted in search and rescue operation of the city/municipal rescue team	55.92	
3. Enlisted additional volunteers	62.50	
4. Secured power supply within the operations Center	61.18	
5. Secured water supply within the operations Center	62.50	
6. Secured communication system (radio, cellphone) within the operations Center	45.39	
7. Prepared the list of evacuees	67.11	
8. Conducted a reassessment on barangay capability	47.37	
9. Roster of families	68.42	
10. Supplies on hand - food and cooking utensils, clothing, and blankets	38.16	
11. Medicines	43.42	
12. Materials for temporary shelters needed	42.11	
13. Evacuation/alternate evacuation places and routes/alternate routes	49.34	
14. Rescue materials and equipment	59.21	
15. Plan on how to evacuate people if and when necessary	57.89	
16. Established pick-up points of evacuees	65.79	
17. Provided transportation needs	57.89	
18. Alerted the community on the directives issued by the LDRMMOs on possible evacuation	55.92	
19. Assisted in traffic management in vulnerable area	50.00	
20. Conducted clearing operation on affected roads within the barangay for rescue teams and faster delivery of relief goods	53.29	
21. Assisted the City/Municipal SWD in the distribution of relief goods in evacuation center and affected areas in the barangay	65.13	

every household has an E-balde (23.03%), coordinated with other institutions or organizations for necessary and additional equipment during disasters (29.61%), had standby supplies, equipment and relief goods (42.11%), alerted the SAR Team and BERT Team for mobilization in SAR and relief operations (47.37%).

These data imply that, to a certain extent, there is some level of BDRRMC functionality, although these also indicate that these tools/materials/measures are not available in many of the TRB barangays. According to Das (2018), effective disaster response is not possible if measures are not taken before a disaster. Tierney (2012) asserted that flood risk management includes topping the resources of other organizations. Flood risk management is beyond the scope of one entity. The function to mobilize the community, alerting the SAR/BERT Teams, coordinate with other institutions and manage resources to meet the desired objective in responding to the needs of the residents as part of disaster response efforts are within the power and authority of the leadership in the BDRRMC. These measures are already specified in the functions of the BDRRMC under disaster response (JMC No. 2013-1, NDRRMC, DBM & DILG, 2013).

On the second indicator of BDRRMC considering Disaster Response is 'during disaster'. The respondents rated this indicator with satisfactory performance (mean=3.02). Considering the 21 sub-indicators, around 60 to 69% of the respondents specified that 6 of the tools/data/measures are available in the barangays. These are the following: secured power supply within the operations center (61.18%), enlisted additional volunteers (62.50%), secured water supply within the operations center (62.50%), assisted the City/Municipal SWD in the distribution of relief goods in evacuation center and affected areas in the barangay (65.13%), established pick-up points of evacuees (65.79%), prepared the list of evacuees (67.11%) and roster of families 68.42%. These tools/data/measures are necessary courses of actions in these barangays, considering that the occurrences of heavy rainfall and flooding in their areas are considerably higher. The results also indicate that, to a certain extent, there is some level of BDRRMC performance, although

these tools/data/measures are not available in some of the TRB barangays. To be more responsive to the needs of the community in times of crisis, there is a need to boost the BDRRMC's capacity and strengthened and widened by way of enlisting support from the higher LGUs and volunteers for the protection and benefit of the residents. Disaster preparedness increases the skills to cope with disaster events leading to a successful individual disaster response, Anilan & Yuksek (2017) stipulates.

For the other 15 sub-indicators under 'during disaster', only about 38 to 59 percent of the respondents specified that these supplies/guidelines/measures were available (Supplies on hand - food and cooking utensils, clothing, and blankets, materials for temporary shelters needed, medicines, conducted a reassessment on barangay capability, evacuation/alternate evacuation places and routes/alternate route, secured communication system (radio, cellphone) within the operations center, etc). These supplies/guidelines/measures are of utmost importance in times of crisis situations, such as floods and heavy rainfall, especially for the TRB barangays, which are always under threat brought about by climate-related hazards. It implies that there are TRB barangays that were able to act on these measures. The data imply further that the capacity of the barangay to respond properly is dependent on the ability of the LGU to equip itself with these supplies for the use of the affected residents who during this crisis would need material and logistical assistance from the government. Having impacted with the wrath of nature, such as floods and heavy rains, the community groping in the dark, losing household possessions and directions would need a government that can provide them the needed support. Nacaya (2021) contends that the affected residents could get through this difficulty if their BDRRMC, in-charge of the community's disaster risk reduction, had the capability to immediately provide them with the first aid support, provisions of temporary shelter, medicines, food packs, kitchen utensils and clothing. As Asfaw *et al.* (2019) pointed out that what affects community emergency response relates to the lack of community capacity. Moreover, the results clearly indicated that the BDRRMCs have only partially complied and on some other requirements were low compliance to the national DRR directives in fulfilling their tasks upon alert and during disaster.

Table 2 shows the results of the initial and final Multiple Linear Regression Analysis (MLRA) between the dependent variables and the three set of independent variables (Barangay characteristics, characteristics of immediate past PBs and community's experience in climate-related hazards). The null hypothesis stating that the independent variables do not explain the variation in the dependent variable is rejected (F=14.57**). The final model $\hat{y} = -0.02 + 0.55X_1 + 0.000002X_5 + 0.02X_6$ is highly significant. The variables in the model, PB' educational attainment, BDRRMC budget and community's experience in floods, explain 21% of the variation of the performance of the BDRRMC in disaster response. In fact, for every increase in the educational attainment of the Punong Barangay in the TRB Barangays, the performance of the BDRRMC in disaster response increases by 0.77 holding BDRRMC budget and community's experience in floods constant. Similarly, for every year increase in the BDRRMC budget, the performance of the BDRRMC in disaster response increases by 0.000003 holding PB's educational attainment and community's experience in floods constant. Furthermore, for a unit increase in community's experience in floods, the functionality of the BDRRMC in disaster response increases by 0.03

Table 2: Multiple Linear Regression Analysis between the independent variables and performance of the BDRRMC in Disaster Response (n=152)

Dependent Variable: Performance of the BDRRMC in Disaster Response			
Independent Variables		**♦Regression Coefficients**	**T Values**
X_1: Educational attainment		0.77	4.77**
X_2: Gender		0.44	1.52ns
X_3: Age		0.02	1.79+
X_4: Years in the service		0.03	1.48ns
X5: BDRRM budget		0.000003	2.28*
X_6: Experience in floods		0.03	4.06**
X_7: Experience in heavy Rainfall		0.009	2.12*
Constant: -3.59			
Initial MLRA		**Final MLRA**	
Adjusted R^2: 0.23	Adjusted R^2: 0.22	Adjusted R^2: 0.21	
F value: 7.61**	F value: 9.61**	F value: 14.57**	
Final Model: $\hat{y} = -0.02 + 0.55X_1 + 0.000002X_5 + 0.02X_6$			

*Legend: ♦Regression coefficients generated at the Initial MLRA, ns not significant ($a \geq 0.10$), **highly significant ($a \leq 0.01$) *significant ($0.01 < a \leq 0.05$) + significant ($0.05 < a < 0.10$)*

holding PB's educational attainment and BDRRMC budget constant.

The findings imply that the BDRRMC's performance in disaster response is explained by the PB's educational attainment, BDRRMC budget and community's experience in flood. The tasks of the BDRRMC in disaster response would require readiness and abilities to discern, comprehend and prioritize actions, and respond promptly during imminent danger and in the course of a disaster. These traits and abilities would be convenient for the Punong Barangays with higher educational attainment. Cutler & Lleras-Muney (2010) contend that education can enhance the acquisition of knowledge, values and priorities as well as the capacity to plan for the future and to allocate resources efficiently.

Moreover, the BDRRMC budget also contributes significantly to the BDRRMC's performance considering disaster response. With bigger budget, disposable for disaster response, the BDRRMC would be able to prepare the evacuation centers with full complements necessary to undertake disaster loss reduction actions and support the constituents during crisis by providing the following provisions: medicines, food, clothing and materials. Wu *et al.* (2020) argued that government's expenditure on disaster prevention and mitigation plays an important role in aspects like disaster loss reduction.

Furthermore, the community's experience in floods explains significantly the BDRRMC's performance in its disaster response role. Barangays with higher number of experiences in floods are more likely to respond positively to similar flood incidents and effectuate support and assistance from their residents for an improved disaster response program (Nacaya, 2021). The community's experience in floods can be utilized to further develop a more functional DRRM disaster response. The community in the high flood-prone area, with prior experience in flooding, can manage flood risk better (Lwin *et al*., 2020).

What are the issues and concerns that surfaced in relation to the level of performance of the BDRRMCs, considering disaster response?

The responses provided by the FGD participants indicate that the BDRRMC members have accomplished some tasks in disaster response during imminent danger (upon alert) and during disaster. They put into motion some measures as part of the barangays' disaster response during imminent danger and during disaster, such as, reviewing the roster of families, listing of evacuees, alerting the community on the directives issued by the LDRMMOs on possible evacuation, conducted clearing operation on affected roads within the barangay for rescue teams and faster delivery of relief goods, and assisted the City/Municipal SWD in the distribution of relief goods in evacuation center and affected areas in the barangay.

However, issues and concerns were noted considering appropriate disaster response at the onset of a climate-related hazard. Specifically, no participant pointed out the following measures that were supposed to be acted by the BDRRMC: having standby operational equipment and relief goods, coordination with other institutions or organizations for necessary and additional equipment during disasters, alerted the SAR Team and BERT Team for mobilization in SAR and relief operations, rechecking of medicines and materials for temporary shelters needed, etc. Furthermore, some participants complain that they were not alerted prior to a developing disaster, which was supposed to be relayed by the higher LGU.

CONCLUSIONS

The BDRRMCs in the Tagoloan River Basin Barangays are functional, but only at a satisfactory level in disaster response. This indicates partial and incomplete implementation of RA 10121 and legal orders (JMC 2013-01 of NDRRMC, DILG, DBM, and DILG-Local Government Academy and DILG - Listo si Kap! 2016) that mandate compliance upon all Punong Barangays, the heads of the BDRRMCs, and other officers in the Barangay Governments. The BDRRM Committees during imminent danger (upon alert) and during disaster, are not fully operational, in terms of having stand-by supplies, equipment and relief goods, coordination with other institutions or organizations for additional equipment during disasters, enlisting volunteers, alerting the SAR Team and BERT Team for mobilization in SAR and relief operations, and other functions of coordination and getting support from higher agencies. The findings point clearly to a need for all government agencies administering the operations of the DRRM to provide appropriate attention at the community level for full compliance of the DRRM law.

The findings indicate that it is essential for the river basin communities to revise their disaster response operations to comply with DRRM law. The results present an appalling inherent weakness of RA 10121 (PDRRM Law) when it viewed that the DRRM Plan can be easily enforced by the BDRRMCs given that some communities are far flung and prone to climate-related hazards, like the river basin communities. It is exigent for the policymakers in the national and local DRRMCs to develop and implement reforms in disaster response on the third pillar of the DRR management program. This paper thus argues that the most appropriate and effective disaster response is an uttermost preparation. The BDRRMC officers should be knowledgeable of the law's mandates and apply them conscientiously.

RECOMMENDATIONS

River basin communities should have higher standards and rules in disaster risk reduction and management, considering various hazards frequenting in these places than in the poblacions. At least, if residents are allowed to reside and own lands in flood-prone areas, the government should institutionalize the rules of engagement in preparing and protecting the public from the ill effects of climate-related hazards. These rules should be tailored fit

based on the river basin conditions. The higher authorities should monitor the enforcement of the role and functions of the BDRRMC-Barangay during imminent danger and during disaster and provide necessary assistance and support to the communities in this period. It should also strictly implement the administrative obligations of the LGU officers by imposing accountability.

To the Future Researchers

Conduct a study on the the implementation of RA 10121, focusing on the operational relationship between the involved government agencies and the local government units, whether the existing DRRM framework is compliant to and is effectively enforced pursuant to the PDRRM law and its implementing rules and regulations. Determine also the effectiveness and functionality of the local DRR and Management Councils.

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