The Impact of Human Resources Capacity and Policy on Disaster Preparedness (Study at the Luwu Regency Regional Disaster Management Agency)

Zainal Efendy*, Salju, Muchtar Surullah, & Sapar

Universitas Muhammadiyah Palopo, South Sulawesi, Indonesia

Abstract

This study aims to describe and determine the effect of human resource capacity, policy, and disaster preparedness. This study uses a quantitative method by taking a sample of 80 respondents from the Luwu Regency Regional Disaster Management Agency using the Slovin formula. Sources of data were obtained using questionnaires and interviews. The data collected was analyzed by Structural Equation Modeling (SEM) using the Smart PLS application. The results of the study show that Human Resource Capacity has an effect on disaster preparedness by 0.260 units with a t-count value = 4.129 > t table = 1.900 and a P-value = 0.000 <0.05. Policies have an effect on disaster preparedness by 0.737 units with a t-count value = 12,183 > t table = 1.900 and a P-value = 0.000 <0.05. The joint influence of Human Resource Capacity and Policy on disaster preparedness is 96.5 percent, while 3.5 percent is influenced by other variables not observed in this study.

Keywords: capacity; human resources; policy; preparedness; disaster.

1. Introduction

Disaster Management Law Number 24 of 2007 defines a disaster as an event or series of events that can disrupt and threaten the survival and livelihood of the community. Disasters can be caused by natural, non-natural, and artificial factors and cause casualties, environmental damage, material loss of property, and psychological impacts. Judging from its geographical location, Indonesia, which is crossed by the equator, has a tropical climate with two seasons: summer and rainy. It makes Indonesia prone to extreme weather, temperature, and wind direction changes. In some cases, with these climatic conditions and combined with the state of the surface topography and the distribution of lithological diversity (physically and chemically), we benefit because it can increase soil fertility. Still, at the same time, this condition can also cause harm to humans because it has the potential to cause hydrometeorological disasters, such as floods, droughts, landslides, and forest fires. Along with the times and the increasing number of human activities, the environmental damage also increases and worsens. It requires more attention because it can trigger an increase in hydrometeorological disasters in terms of intensity and number of occurrences alternately in the Indonesian Territory (https://bnpb.go.id/potensi-ancaman-bencana).

Recently, natural disasters that have occurred in Indonesia have an increasing trend. The growing incidence is caused by various factors, including climate change, which results in uncertain weather, Indonesia's geographical location, deforestation or deforestation through massive tree cutting, and many other aspects. The increasing trend is also dominated by hydrometeorological disasters such as floods, hurricanes, landslides, and flash floods (Suprapto, 2011).

Luwu Regency is an area that has a very high potential for floods and landslides because its geographical condition

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* Corresponding author.

E-mail address: zainalefendy@student.umpalopo.ac.id

consists of mountains and lowlands that are traversed by many rivers. The disaster seriously threatened the community's safety and affected people's lives in both the social and economic sectors. In dealing with this potential disaster, it is necessary to prepare all elements, especially the Luwu Regency Regional Disaster Management Agency. Statistical data from the Luwu Regency Regional Disaster Management Agency shows four types of disasters: Floods, Landslides, Strong Winds, and Forest Fires. The number of occurrences in the last six years (2015-2020) is shown in the following table:

Table 1. Disaster Occurrence Data

The Disaster type	Year						Total
	2015	2016	2017	2018	2019	2020	
Flood	5	7	14	8	90	85	209
Landslide	3	3	9	9	15	6	45
Storm	2	0	0	1	5	3	11
Forest Fire	0	0	0	0	1	2	3
Total	10	10	23	18	111	96	268

Source: BPBD Luwu Regency, 2021

In its disaster management function, the Luwu Regency Regional Disaster Management Agency carries out integrated tasks, namely Prevention and Preparedness (Pre-disaster), Emergency Management, and Post-Disaster Rehabilitation and Reconstruction (Post-Disaster).

Based on general guidelines from the World Health Organization or commonly abbreviated as WHO (1995), there are four aspects of disaster preparedness which include; human resources (HR), facility preparedness, SOPs or standard operating procedures related to disasters, and policies (Cut Dian, Imran, 2017).

One of the essential parts of the concept of disaster management and management that is growing in this era is preparedness. Improving preparedness is crucial in reducing disaster risk more actively before a disaster occurs. In the representation of the disaster management process cycle model, the improvement of preparedness activities is part of the disaster risk management process (LIPI-UNESCO/ISDR, 2006). Improving preparedness in dealing with disasters is also one the crucial things in the context of disaster management efforts. Today there is also a shift in perspective on disaster management from responsive fatalistic, which focuses on emergency response to disaster impacts, to proactive preparedness, which is carried out from the beginning with preparedness to the stage of social recovery (Anam et al., 2018).

There are several aspects to increasing preparedness, namely:

a. Planning and Organization: there are clear directions and policies, appropriate and up-to-date emergency management plans, and adequate disaster management organizational structures.

b. Resources: a complete inventory of all resource organizations and a clear division of tasks and responsibilities

c. Coordination: strengthening coordination between institutions/organizations, as well as eliminating friction or disputes and increasing cooperation between related institutions/organizations

d. Readiness: each disaster management organizational unit is fully responsible for monitoring and maintaining each standard of preparedness of all elements

e. Training and Community Awareness: It requires the provision of sufficient training, the growth of public awareness, and access to adequate and accurate information (LIPI-UNESCO/ISDR, 2006).

In supporting efforts to increase preparedness, several elements are needed, including:

a. Adequate policies and regulations Disaster Management Agency/Unit that is permanent and specialist (leading) in monitoring and maintaining the level of preparedness

b. Identification, assessment, and monitoring of possible forms of disaster threat

c. Emergency planning (contingency planning), with the involvement of various resource organizations, clarity of tasks, and responsibilities

d. Utilization of resources (requires a complete and up-to-date resource inventory (LIPI-UNESCO/ISDR, 2006).

To increase preparedness, the role of human resources of the Luwu Regency Regional Disaster Management Agency is crucial as a leading actor in the implementation of disaster management. In increasing the capacity of human resources, efforts are needed, including improving knowledge, skills, and attitudes in responding to disaster events.

Every head of an agency or organization needs to take concrete steps to prepare human resources with sufficient knowledge, skills, competencies, and ethical attitudes to deal with the impact of technological advances. To prepare these human resources, institutions need to conduct well-planned education and training to strengthen human resource capacity (Soeherlan, 2019)

The existence of human resources is essential to developing the capacity of local government as a whole (Kartika & Amalia, 2018). In addition, leaders must also make a suitable and appropriate policy to support activities in disaster preparedness. Policies related to disaster preparedness will have a significant influence because they are one of the substantial efforts in carrying out disaster preparedness activities which include; public education, emergency planning, disaster early warning systems (SPD), and resource mobilization (Susanti et al., 2014). The disaster management process will be influenced by the attitude taken from implementing the policy. If the implementer has good behavior, of course, he will carry out the policies that apply well according to policymakers' expectations (Silmi et al., 2019).

In implementing policies, one thing is essential and needs to be added, namely discretion or space for individuals implementing procedures. In some instances, can determine the following steps to be taken if the policy does not regulate or regulates differently from field conditions (Silmi et al., 2019)).

One of the critical elements in the organization is the availability of Standard Operating Procedures (SOP) or standard operating procedures that serve as guidelines for every implementer in taking action (Silmi et al., 2019).

2. Methods

This research uses a quantitative method approach by conducting research on a particular population or sample and collecting data using a research instrument in the form of a questionnaire using a Likert scale. Data processing in this study uses statistical techniques with the help of Smart-PLS software. In addition to using questionnaires, the researcher also conducted several interviews with several respondents to obtain other information to support the research results.

The object of this research is Disaster Preparedness by measuring the capacity of human resources and policies at the Regional Disaster Management Agency (BPBD) of Luwu Regency. In this study, there are several variables measured, namely Human Resource Capacity as a variable (X1), Policy as a variable (X2), and Disaster Preparedness as a Variable (Y2).

Determining the number of samples using the Slovin Formula (Sapar, 2021) obtained a total sample of 80 employees at the Luwu Regency Regional Disaster Management Agency consisting of State Civil Apparatus and Honorary (Non of State Civil Apparatus).

3. Result and Discussions

3.1. Descriptive Analysis

As presented in the table 2, the majority of HR capacity is in a low category of 77.5 percent, classified as Medium at 22.5 percent. Overall, the average HR Capacity is 1.23 percent on a scale of 1 to 5.

Table 2. Distribution of Respondents by Variable Capacity

Category (Scale 1-5)	Frequency	Percent
Low (<1,66)	62	77,5
Medium (1,66-3,33)	18	22,5
High (>3,33)	0	00,0
Total	80	100,0
Average	1,23	

Table 3. Distribution of Respondents based on Policy Variables

Category (Skala 1-5)	Frequency	Percent
Low (<1,66)	52	65
Medium (1,66-3,33)	28	35
High (>3,33)	0	0,0
Total	80	100,0
Average	1,35	

As presented in the table 3, most policies are in a low category, namely 65 percent, moderate at 35 percent, and none in the high category. Overall, the policy average is 1.35 percent on a scale of 1 to 5.

Table 4. Distribution of Respondents based on Preparedness Variables

Category (Skala 1-5)	Frequency	Percent
Low (<1,66)	63	78,7
Medium (1,66-3,33)	17	21,3
High (>3,33)	0	00,0
Total	80	100,0
Average	1,21	

As presented in the table 4, most preparedness is in a low category, namely 78.7 percent, classified as moderate at 21.3 percent, and none classified as high. Overall, the average Preparedness was 1.21 percent on a scale of 1 to 5

3.2. Inferential Analysis

Inferential analysis in this study uses Structural Equation Modeling Based Variance (VB-SEM) analysis with the help of Smart PLS software.

3.2.1. Outer Model Test Results
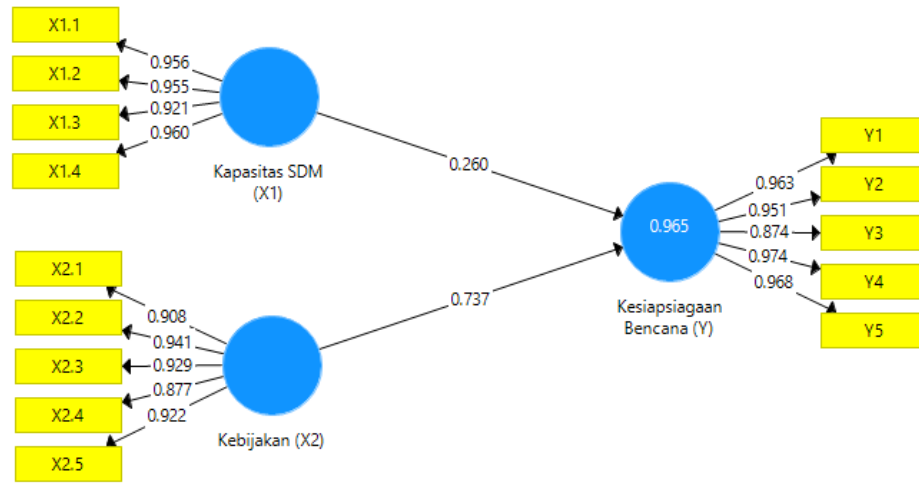
1) Model Validity Test

a) Outer Model

Figure 1. Outer Model

b) Convergent Validity (Loading Factor)

Convergent validity is a validity test to get the value of the loading factor of a latent variable on its indicators.Based on the analysis results, the outer loading was used to assess the level of validity of the indicator variables as in the table above. It was found that all indicators used had an outer loading value of> 0.7 (the minimum value for the specified indicator validity level) and were declared valid, as in the table 5.

Table 5. Outer Loading (Convergent Validity)

	HR Capacity (X1)	Policy (X2)	Disaster Preparedness (Y)
X1.1	0,956		
X1.2	0,955		
X1.3	0,921		
X1.4	0,960		
X2.1		0,908	
X2.2		0,941	
X2.3		0,929	
X2.4		0,877	
X2.5		0,922	
Y1			0,963
Y2			0,951
Y3			0,874
Y4			0,974
Y5			0,968

c) Discriminant Validity

The discriminant validity of the model aims to see the level of validity of the indicators in the reflective model.

Average Variance Extracted (AVE) is the value that becomes the measure, with an expected value of > 0.5.

Table 6. Average Variance Extracted (AVE) value on SEM. model variables

Variable	*Average Variance Extracted* (AVE)
HR Capacity (X1)	0,899
Policy (X2)	0,839
Preparedness (Y)	0,897

Based on the table 6, the AVE value of each variable in the study is > 0.5, so it can be concluded that all variables in the analyzed SEM model are declared valid.

2) Model Reliability

The values used to determine the level of reliability of the SEM model are Composite Reliability and Cronbach Alpha. This type of reliability serves to assess the level of internal reliability of the indicator variable.

Table 7. Cronbach Alpha and Composite Reliability values for each variable

Variable	*Cronbach's Alpha*	*Composite Reliability*
HR Capacity (X1)	0,962	0,973
Policy (X2)	0,952	0,963
Preparedness (Y)	0,971	0,977

The standard Cronbach's Alpha value of a variable so that it is declared reliable is > 0.6, while the standard value for Composite Reliability is > 0.7. Therefore, based on the table above, it is known that all variables have Cronbach's Alpha values > 0.6 and Composite Reliability values > 0.7, so it can be stated that the SEM model analyzed is reliable.
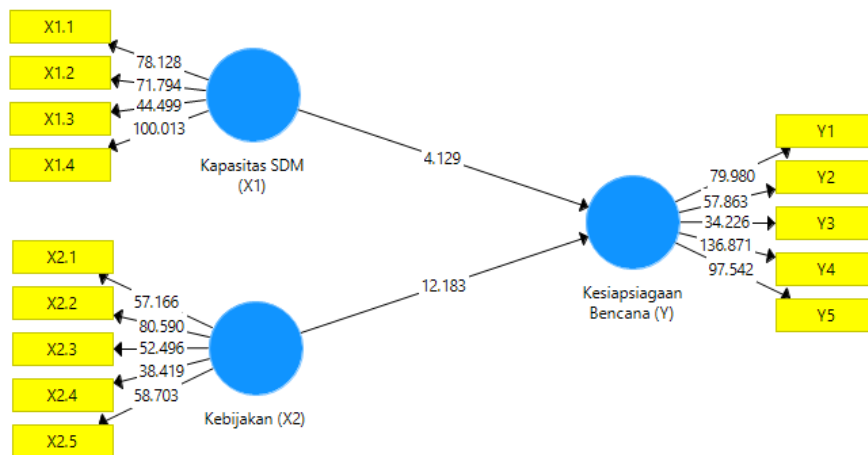
3.3. Inner Model Analysis Results

Figure 2. Inner Model

The figure 2 results from an analysis that aims to determine the value of the t-count or t-statistics of each indicator and the value of the t-count between the independent variables to the dependent variable. The statistical t value is used to determine the significance value of the influence between these variables.

3.4. T Statistical Analysis

T statistic analysis aims to determine the magnitude of the influence between variables. The calculated T value is more excellent than the T table value, showing a significant effect of the variable. The analysis of the inner SEM model is used to see the magnitude of the calculated T value and P-Value, which is also a measure of the strength of the influence of the Independentvariable on the dependent variable.

Table 8. T Value of the Independent Variable to the Dependent Variable

Variabel	T Statistics (|O/STDEV|)	T Tabel	P Values	P Cut of Values
HR Capacity (X1) -> Preparedness (Y)	4,129	1,900	0,000	0,05
Policy (X2) -> Preparedness (Y)	12,183	1,900	0,000	0,05

Based on the table 8, as shown in the table above, it can be stated that the hypothesis test on the dependent variable is as follows:

Hypothesis 1: It is suspected that (X1) significantly affects (Y1). The results of the statistical T analysis obtained the value of t count = 4.129 > t table = 1.900 with a P-Value of 0.000 or less than the Cut off Value of 0.05. It means that the variable (X1) significantly affects (Y1). So it can be stated that hypothesis 1 is accepted.

Hypothesis 2: It is suspected that (X2) significantly affects (Y1). The results of the statistical T analysis obtained the value of t count = 12,183 > t Table: 1,900 with a P-Value of 0.000 or less than the Cut off Value of 0.05. It means that the variable (X2) significantly affects (Y1). So it can be stated that hypothesis 2 is accepted.

3.5. Determinant Analysis Results (R Square)

The determinant analysis aims to see the magnitude of the influence of the independent variables simultaneously affecting the dependent variable. The results of the analysis of the determinants of the SEM model are presented in the table 9.

Table 9. The results of the analysis of the determinants of the independent variables

	R Square	R Square Adjusted
Preparedness (Y)	0,965	0,964

Based on the table 9, it is known that the HR Capacity (X1) and Policy (X2) variables affect Preparedness (Y) by 96.5 percent. In comparison, 3.5 percent is influenced by other variables not observed in this study.

3.6. Discussion

3.6.1. The Effect of HR Capacity on Disaster Preparedness

There are two meanings of human resources or human resources. First, HR has the meaning of a business or service that can be provided by someone to produce goods and services within a certain period. Second, HR is related to someone who can try to give business or work services in carrying out several economic activities in the form of goods or services to meet needs (Sumarsono, 2003).

The analysis showed that the average respondent responded highly to the Human Resources Capacity of the Luwu Regency Regional Disaster Management Agency. Still, it had no significant effect on preparedness in dealing with disasters with a significance of 0.000, which was smaller than the value of = 0.05. These results align with previous research that there is an influence between personnel on the preparedness of district BPBD officers. Jeneponto in the face of disaster. (Alamsyah & Handayani, 2020). From the results of interviews conducted, it was revealed that

several things that the Luwu Regency BPBD should do to increase human resource capacity had been carried out, such as training and disaster management simulations. But need to be improved to deal with future disaster threats. It is said that training activities in the context of increasing the capacity of human resources and the community are very much needed in the context of preparedness which has a significant impact on the effectiveness of disaster response. (Bustari et al., 2018)

3.6.2. Influence of Policy on Disaster Preparedness (theory/book)

According to Aminullah (Muhammadi, 2001:371-372), the policy is an effort or action taken to influence the system to achieve the expected goals. The effort or action is strategic, namely comprehensive and sustainable (Sore & Sobirin, 2017).

The analysis results show that the average respondent responded reasonably to the policies carried out by the BPBD of Luwu Regency but also had no significant effect on disaster preparedness with a significance of 0.000 more remarkable than the value of = 0.05. This result is also in line with the results of previous studies, which showed the relationship between policies and guidelines on the preparedness of the Aceh Health Service UPTD P2KK to deal with the earthquake disaster in Aceh a substantial influence. (Farizi et al., 2016). It is because several work programs or policies of the Luwu Regency Regional Disaster Management Agency have been made and implemented even though they have not been carried out optimally. Previous research shows that through its technical institutions, the local government of Aceh Tamiang has issued several essential work programs or policies to increase human and institutional capacity to maximize future disaster management and preparedness efforts. (Bustari et al., 2018). In addition, the policies that have been made need to be adequately implemented, as it is stated that for the implementation of the approach to take place smoothly and avoid mistakes, it is necessary to have communication between fellow implementers and the target of the policy (Silmi et al., 2019).

4. Conclusions

Based on the results and discussion, it can be concluded that the capacity of Human Resources affects disaster preparedness at the BPBD of Luwu Regency; increasing the human resource capacity of Luwu Regency BPBD employees will be very helpful in preparedness efforts in dealing with disasters. In addition, the policy affects disaster preparedness at the Luwu Regency BPBD. In this case, the determination of policies carried out by the leadership, if they can be carried out correctly and are supported and appropriately implemented by all elements in the Luwu Regency BPBD, will further strengthen the capacity in the implementation of disaster management, especially disaster preparedness.

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