
Implementation of Disaster Risk Reduction Policy: Moderating Effect of Community Participation

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To cite this article:

Listyo Yuwanto, Rudy Handoko, Ayun Maduwinarti. Implementation of Disaster Risk Reduction Policy: Moderating Effect of Community Participation. *Journal of Public Policy and Administration*. Vol. 5, No. 4, 2021, pp. 163-167. doi: 10.11648/j.jppa.20210504.17

Received: November 17, 2021; **Accepted:** December 6, 2021; **Published:** December 24, 2021

Abstract: Implementation of disaster policies in Palu City (Indonesia) as an effort to reduce the disaster risk. However the data shows that Palu has a high disaster risk index and low disaster capacity. It is necessary to examine the determinants of the implementation of the Palu disaster risk reduction policy. This study aims to examine the effect of communication, resources, disposition, and bureaucratic structure on the implementation of disaster risk reduction policies and community participation as a moderating variable. Using a survey-based methodology and online questionnaires response were obtained from 130 participants. Snowball sampling method were using in this study. Statistical moderating analysis by partial least square. Result reveal that community participation is a moderating variable of the influence of communication, resources, disposition, and bureaucratic structure on the implementation of disaster risk reduction policies. Community participation functions negatively in moderation. Lack of community participation hinders the implementation of disaster reduction policies, resulting in disaster risk and low capacity. The results are discussed further.

Keywords: Communication, Resource, Disposition, Bureaucratic Structure, Community Participation

1. Introduction

Palu city has a high disaster risk index. The Palu and Donggala magnitude 7.5 earthquake, accompanied by tsunami and liquefaction that occurred on September 28, 2018, was one of the natural disaster phenomena that caused deep sorrow for the survivors. Palu has a high-risk index on the earthquake disaster because it traverses by an active Palu Koro fault. Deaths, damages on physical buildings and infrastructures, economic losses, changes in social structure, crime, evacuation, and changes in physical contours are the impact of the Palu earthquake [28].

Policy and their implementation are important and act as the basis for all activities in disaster risk reduction [25]. There have been several changes to disaster policies in Indonesia, starting from the Dutch colonial government in 1939 to 2007. Today, the basis of disaster management policies in Indonesia, Undang-Undang Nomor 24 Tahun 2007, is different from the previous policies, in terms of public administration perspective and disaster management paradigm. The perspective of public administration has changed from the *Old Public Administration* and *New Public*

Management perspective to a *New Public Service* that leads to *Good Governance*. Disaster management is carried out collaboratively between the government, the private sector, and the civil society.

The disaster risk reduction policy in Palu city is based on the Peraturan Daerah Kota Palu Nomor 5 Tahun 2011 Tentang Penyelenggaraan Penanggulangan Bencana, which includes prevention, mitigation, preparation, emergency response, rehabilitation, and reconstruction activities. The latest data released by Badan Nasional Penanggulangan Bencana about Palu city Disaster Risk Index in 2020 is still relatively high and the capacity form disaster risk reduction is relatively low, therefore it is necessary to examine factors that influence the implementation of disaster risk reduction policies.

Reviewing several previous studies, they have tested the implementation determinants of the policy based on Edward III theory [3, 4, 13, 15, 16, 18, 19]. Edward III theory of policy implementation states there are determinants of the policy implementation, including communication, resources, disposition, and *top-down* bureaucratic structure, i.e., the perspective of policy implementation from the policy makers

or the policy implementers from government authorities [7]. Disaster risk reduction programs or management are ineffective without the participation of vulnerable groups. The main component in disaster risk reduction is the involvement of groups or communities. The capacity of groups or communities in dealing with disasters could also increase through their participation in every stage of disaster risk reduction [13, 26]. A study proposes model for disaster policies from the community side, i.e., community participation [17]. Society or community participation in policy implementation is a bottom-up perspective, which emphasizes the importance of policy goals.

Disaster risk reduction programs/management are not effective without community participation. The main component in disaster risk reduction is the involvement of groups or communities. Groups or communities can also increase their capacity in dealing with disasters through participation in each stage of disaster risk reduction [14]. Community participation is the involvement of the community in a series of efforts that include making their own interpretation of the threats and disaster risks they face, prioritizing the handling/reduction of the disaster risks they face, reducing and monitoring and evaluating their own performance in disaster reduction efforts [12]. Community participation in disaster risk reduction includes recognizing disaster threat problems, designing disaster risk reduction programs, implementing disaster risk reduction programs, utilizing disaster risk reduction programs, maintaining facilities made for disaster risk reduction, and evaluating disaster risk reduction programs [5].

Based on the review of previous research, there has been direct influence from communication, resources, disposition, bureaucratic structure, and community participation on the implementation of disaster policy. Nevertheless, the variables that can interact between communication, resources, disposition, and bureaucratic structure with the disaster risk reduction policy implementation have not been found and makes the author interested in testing the community participation variable as a moderating variable, which is expected to strengthen or weaken this influence (Figure 1).

The researcher's rationale in implementing disaster risk reduction policies requires the role of government agencies as executor (top down) which is strengthened by community participation (bottom up). Policy implementation requires collaboration between government and society which is unique from the perspective of the New Public Service. Therefore, based on previous literature this study also proposes hypothesized:

H1: Community participation will moderate the impact of communication on implementation disaster risk reduction

H2: Community participation will moderate the impact of resources on implementation disaster risk reduction

H3: Community participation will moderate the impact of disposition on implementation disaster risk reduction

H4: Community participation will moderate the impact of bureaucratic structure on implementation disaster risk reduction

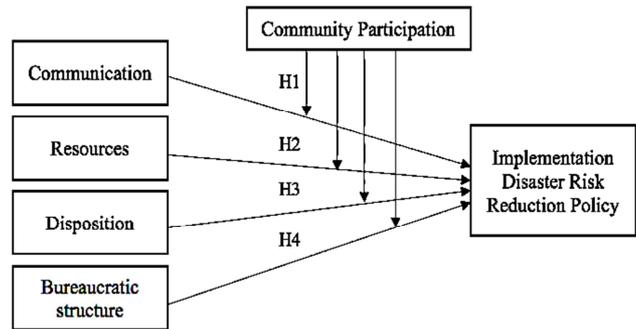


Figure 1. Research Model.

2. Methods

2.1. Participants and Procedures

The participants of this study consisted of 130 from a local citizen in Palu using snowball sampling methods. Ages ranged from 16 to 57 years, with a mean of 26.07 ($SD=7.74$), 35.7% male and 64.3% female. Voluntary informed consent was obtained from the participants. Participants were guaranteed anonymity and confidentiality.

2.2. Measurement

Communication, resources, disposition, and bureaucratic structure were measured using questionnaire [7]. Disaster Community Participation Scale was used to measure the community participation that consist of participation in decision making, participation in implementation, participation in benefits, and participation in evaluation [5]. Implementation of disaster risk reduction policies was measured using disaster management questionnaire divided into three parts preparedness, emergency response, relief and recovery [11, 26].

2.3. Data Analysis

Structural equation modeling (SEM) was used to examine the hypothesized moderation using Visual Partial Least Square (VPLS).

3. Results

The results of path analysis show communication has a significant positive effect on implementation of disaster risk reduction policy ($B=0.521$ and $t=5.965$). Resources found significant positive effect on implementation of disaster risk reduction policy ($B=0.521$ and $t=5.965$). The effect of disposition ($B=0.510$ and $t=6.546$) and bureaucratic structure ($B=0.539$ and $t=7.037$) on implementation of disaster risk reduction are significant.

Furthermore the authors examine moderating effect of community participation. The first moderated community participation has a negative significant moderating impact on the relationship between communication and implementation of disaster risk reduction policy. Community participation has a negative significant moderating impact on the relationship

between resources and implementation of disaster risk reduction policy ($B=-0.329$ and $t=-3.578$). Moderated community participation has a negative significant moderating impact on the relationship between disposition and implementation of disaster risk reduction policy ($B=-0.326$ and $t=-3.838$). Moderated community participation has a negative significant moderating impact on the relationship between bureaucratic structure and implementation of disaster risk reduction policy ($B=-0.326$ and $t=-3.838$). Therefore, the study accepts H1, H2, H3, and H4.

Based on the results of data analysis, community participation is a moderator of the influence of communication, resources, disposition, and bureaucratic structure on the implementation of disaster risk reduction policies. The role of community participation as a negative moderator. At low or lack of community participation, high communication, resources, disposition, and bureaucratic structure would predict low the implementation of disaster reduction policy.

4. Discussion

Communication relates to the process of delivering information to organizations and/or the public. Policy is an important factor in disaster risk reduction, implementation is the key to achieving policy objectives [1, 10]. Policies are implemented properly if the consistency of the information conveyed to the implementers is clear. Communication determines the success of achieving the goals of implementing public policy. Effective implementation will occur when decision makers know what they are going to do. Communication must also be established between decision makers and implementers with the aim of implementing more consistent policies. The success of policy implementation requires that implementers know what to do. Communication includes consistency, clarity, and transmission. Communication has a positive effect on the implementation of disaster risk reduction policies, but still requires community participation. Lack of community participation hinders the success of disaster risk reduction. Communications carried out by government agencies will not have a broad impact without accompanied by community support [14].

Resources are related to the availability of supporting resources, especially human resources so that implementers can carry out the policy effectively. Although the contents of the policy have been communicated clearly and consistently, if the implementor lacks resources, implementation will be hampered. Government agencies in implementing disaster risk reduction policies have limited resources then the role of community participation should support strengthening policy implementation. Ideally according Hyogo Framework for Action [23] and Sendai Framework for Disaster Reduction [24], community participation will increase resources in the form of synergies between government agencies and community resources through the stages of concept-making, construction, operation-maintenance, evaluation and monitoring activities. The lack of community participation has

an impact on the inhibition of the influence of resources on the successful implementation of disaster policies [10, 23].

Disposition is the characteristic of the implementor, such as commitment, honesty, democratic nature to implement the policy. If the implementation of the policy is to be effective, the implementers of the policy must be committed, know what to do, and have the ability. No single group or organisation can address every aspect of DRR. DRR thinking sees disasters as complex problems demanding a collective response from different disciplinary and institutional groups in other words, partnerships. This is an important consideration when looking at the characteristics of a disaster-resilient community, because individual organisations will have to decide where to focus their own efforts and how to work with partners to ensure that other important aspects of resilience are not forgotten [21].

The bureaucratic structure is described by the Standard Operating Procedure (SOP) and Fragmentation. Availability of adequate SOP and clear division of tasks and responsibilities support the achievement of success or effectiveness of policy implementation. The achievement of successful implementation of policies determined by the bureaucratic structure should ideally be strengthened by community participation starting from the stages of concept-making, construction, operational-maintenance, evaluation and monitoring activities. However, low community participation increases the government's responsibility and workload. This condition has the potential to cause overlapping responsibilities and throwing responsibilities at each other.

There are several factors that can explain the lack of community participation in disaster risk reduction. Limited knowledge of community members on disasters which shows a lack of information exchange, lack of education and training on disaster management, community culture that does not support disaster preparedness community culture, attitudes, intentions and motivation of the community in disaster management [21]. Community perception of disaster is still an emergency response, not disaster risk reduction [17, 25]. The community is not involved in the preparation of disaster risk reduction programs or activities starting from the planning, implementation, monitoring and evaluation stages of the program causing motivation and involvement in disaster risk reduction programs to be low. Community participation is vertical, the community just follows the established program [2, 12]. Several factors that cause low community participation in disaster risk reduction in Palu city based on initial data are never knowing there is a disaster risk reduction program, lack of government socialization, no invitation to government involvement, lack of ability, and low efficacy [8].

The inhibiting factor for implementing disaster risk reduction policy in Palu is the lack of community participation. This makes the government remain the main driver in implementing disaster policies based on the New Public Management model [6, 9]. Thus it is not surprising that Palu is categorized as high risk and low disaster capacity.

5. Conclusion

Overall this research has fulfilled the research objectives and answered the research problem regarding the factors that determine the implementation of disaster risk reduction policies. This study reveals the role of community participation in the implementation of disaster risk reduction policies. Community participation appears as a pseudo moderator variable of the effect of communication, resources, disposition, and bureaucratic structure on the implementation of disaster risk reduction policies. The inhibiting factors for community participation include disaster risk perception, role ambiguity in disaster risk reduction, disaster adaptability, and lack of government empowerment. Disaster management aims to reduce, or avoid, the potential losses from hazards, assure prompt and appropriate assistance to victims of disaster, and achieve rapid and effective recovery. The Disaster management cycle illustrates the ongoing process by which governments, businesses, and civil society plan for and reduce the impact of disasters, react during and immediately following a disaster, and take steps to recover after a disaster has occurred. Appropriate actions at all points in the cycle lead to greater preparedness, better warnings, reduced vulnerability or the prevention of disasters during the next iteration of the cycle. The complete disaster management cycle includes the shaping of public policies and plans that either modify the causes of disasters or mitigate their effects on people, property, and infrastructure. The mitigation and preparedness phases occur as disaster management improvements are made in anticipation of a disaster event. Developmental considerations play a key role in contributing to the mitigation and preparation of a community to effectively confront a disaster. Community participation is applied at every stage of the disaster management cycle including preparation, emergency response, and recovery. Disaster risk reduction policies are needed to facilitate community participation in capacity building to deal with disasters. The government can facilitate community participation by encouraging the formation of community-based disaster risk reduction and community leadership as agents of change. Finally, mediator effect of community participation on relation between communication, resources, disposition, bureaucratic structure and implementation of disaster risk reduction policies can be further explored.

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