Effectiveness of Disaster Mitigation Information by National Disaster Relief Agency in Indonesia

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Abstract. This paper aims to determine the function and relationship between social media and the dissemination of disaster mitigation information by the National Disaster Relief Agency. The method used in this research is Q-DAS (Qualitative Data Analysis Software) Nvivo 12 plus. Stages of data analysis with Nvivo 12 plus captured data, data import, data coding, data classification, and data display. This study's findings reveal that the National Disaster Relief Agency has made various efforts related to disaster mitigation by conveying the substance of information through the hashtags #bersatulawancovid19 and #infobencanaabnpb, which dominate the trend with a percentage of 47% and 22%.

Keywords: Social media · Disaster mitigation · Information · National disaster relief agency

1 Introduction

Disasters, both natural and artificial, are worrying and frightening to humans. Even the culture of the nation can be affected by the fear of disaster [1]. The industrial era 4.0 is an era of public information openness [2]. Therefore, many media support communication patterns and government activities [3]. This information disclosure makes it easier for the public to communicate and control the activities carried out by the government [4]. Social media communication patterns become easy and open because their designs tend to be more open to the public. The way of spreading the message, which tends to be free, aims to be immediately recognized by the wider community [1]. Also, social media is an information tool through which the authorities can provide information by identifying the scene and transferring data in real-time [5]. This can be a problem, especially in terms of the accuracy or validity of the news. With many social media users and the broader distribution of information, communication patterns have become uncontrollable [6].

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With technology development, the government should provide news and data quickly and quickly [1]. Social media's extensive use is one model of government communication in realizing good governance, particularly transparency [7]. Given the concept of good governance, the government must be transparent and open to the public [4]. Therefore, information technology must be maximized appropriately to support government running and create good governance [8].

This study uses Q-DAS (Qualitative Data Analysis Software) Nvivo 12 plus to collect data and analyze data with graph analysis, cluster analysis, and cloud word analysis. The purpose of this research is to see the effectiveness of the strategy for delivering information on disaster mitigation by the National Disaster Relief Agency through its Twitter account. The focus of this research is the relevance of providing disaster mitigation information through social media. This study seeks to answer substantive questions: What are the functions and links between social media and the dissemination of disaster mitigation information conveyed by the National Disaster Relief Agency?

2 Literature Review

2.1 Social Media Twitter as Public Communication for Disaster Mitigation

Social media is essential for risk communication regarding any event, including a disaster. This study analyzes the current status quo by examining time-series, network, and content [8]. The emergence of social media has been able to change the interaction patterns and habits of society [5]. Updating retweets, reply tweets and mentioning someone has become a part of everyday life for internet users [9]. Warnings, coming from established stakeholders, are the most common messages, making them essential for risk communication [1]. Due to the lack of information on protective measures and recommendations for social media behaviour, more helpful info is needed to disseminate [10]. Effectiveness is the relationship between output and objectives, the more significant the contribution (contribution) of the production to achieving goals, the more effective a program or activity is [11]. Based on this opinion, that effectiveness has a reciprocal relationship between output and objectives, the more effective the output contribution, the more effective a program or activity is [12]. Effectiveness focuses on the results (outcomes), programs, or activities that are considered effective if the resulting output can meet the expected objectives or spend wisely [10]. Advances in technology allow the government to disseminate information on disaster mitigation more effectively.

2.2 Disaster Mitigation

Disaster Management Cycle (DMC). These authors list the four phases of DMCs: preparedness, response, rehabilitation, and mitigation [4]. Humanitarian logistics research seeks to link disaster preparedness and response to disasters [1]. Central to the working model for disaster preparedness decisions is the inventory proposition and network planning [1]. Supplies modelled in the literature range from in-kind assistance such as water and food to assets such as vehicles and electric generators [13]. However, studying the relationship between disaster preparedness and disaster response, the existing literature

on operations management largely ignores the relationship between disaster mitigation and disaster preparedness [4]. The substitution effect between disaster mitigation and disaster preparedness is explained [1]. This research is based on disaster study literature on disaster mitigation and preparedness [10].

Community Involvement in Disaster Management. Community involvement is one reason a more resilient community results in more effective disaster response [1]. Adding disaster mitigation in the future will benefit from more empowerment of local communities [14]. A charge is about engaging communities in active dialogue with stakeholders such as the government to identify their assets and needs, which ultimately leads to increasing the capacity of communities to prepare for disasters, respond to, rehabilitate, and reduce the future [4]. Also, communities are first responders and are actively engaged in humanitarian needs to save lives and reduce human suffering [1]. Other stakeholders, such as the government and the private sector, can also facilitate community engagement [12]. By using document analysis, social workers can increase community involvement in disaster management [15].

3 Method

This study uses the Nvivo 12 plus. Nvivo 12 plus as a qualitative analysis tool displays data in a quantitative form called qualitative to quantitative analysis. This analysis produces quality data whose validity can be proven scientifically [16]. The qualitative approach provides exploration and description of disaster mitigation, illustrations to provide information, and explains data efficiently. The research data comes from the Twitter account of the National Disaster Relief Agency (@BNPB_Indonesia). Nvivo 12 plus in this study is graph analysis, cluster analysis, and cloud word analysis. The use of NVIVO as an analysis tool has five stages: (1) capturing data, (2) importing data, (3) coding data, (4) data classification, and (5) displaying data. The information shown is submitted to the data using qualitative data analysis methods.

4 Results and Discussion

4.1 Twitter Social Media Activity About Disaster Mitigation

A significant interaction pattern has occurred on the National Disaster Relief Agency's Twitter account in recent months based on additional data. The delivery of this information shows a comparison of the dynamics of different interactions in the previous two years. Below is the number of tweets from @BNPB_Indonesia, viewed from June 2020 to February 2021 (Fig. 1).

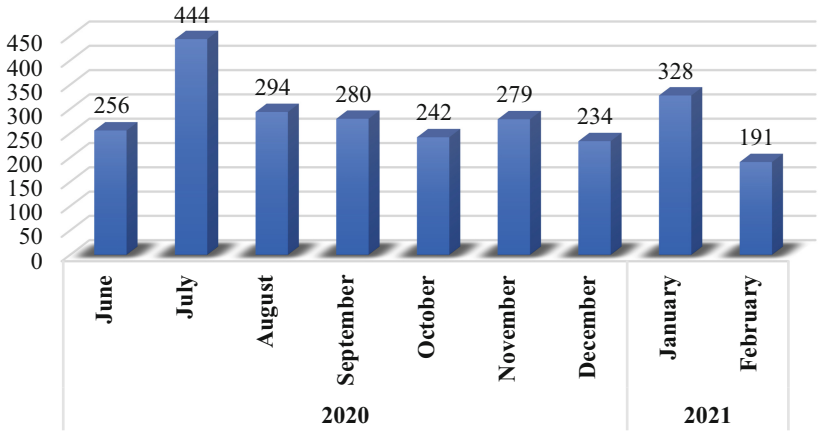

Fig. 1. Twitter activity

Information provided by @BNPB_Indonesia shows an increasing trend every month because the dynamics of disasters in Indonesia every month and year are different. Natural disasters dominate the dissemination of information via Twitter, then accelerated handling, mitigation efforts, and the government updating data related to the tragedy (Fig. 2).

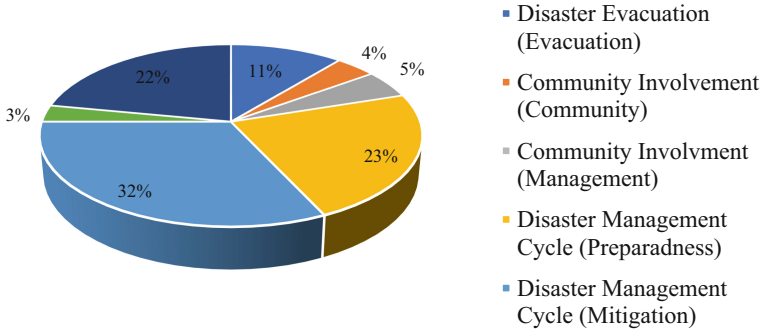

Fig. 2. Disaster mitigation information

The picture above shows the aspects of the disaster mitigation movement instrument presented by the National Disaster Relief Agency, which is dominated by the disaster management mitigation cycle. The delivery of disaster mitigation information by the National Disaster Relief Agency has a substantially dynamic content proportion of the three indicators and sub-indicators. The disaster management cycle indicator has the highest percentage at 80%. In comparison, it is divided into four sub-indicators: preparedness with a 23% level, mitigation with a group of 32% or the highest, rehabilitation with 3% or the lowest. And a response of 22%. In the second indicator, community involvement is 11%, divided into two sub-indicators: community with a level of 4% and

management with a group of 5%. In the third indicator, disaster evacuation has a figure of 11%. The most dominant communication carried out by @BNPB_Indonesia is towards disaster management, which is dominated by the topic of disaster mitigation. BNPB recommends that the community take action as disaster preparedness. Dissemination of information related to disaster mitigation is followed up through the BNPB program in collaboration with various related agencies. Dissemination of disaster mitigation information includes the following.

4.2 Effectiveness of Disseminating Disaster Mitigation Information

Disclosure of information on disaster mitigation efforts through the @BNPB_Indonesia post is carried out by government agencies, media, and government officials. The strategy for submitting mentions and hashtags is to convey information to the public (Fig. 3).

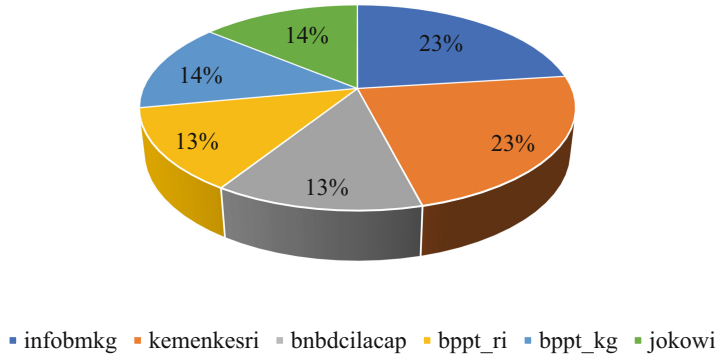

Fig. 3. Mention twitter account

The Mention feature is one of Twitter's hallmarks. Every tweet or tweet will go viral if spread using the Mention and Retweet features. The first time you create a Twitter account, users are required to create a username or username. This username's function is to make it easier for users to communicate with other users on Twitter. The @BNPB_Indonesia account is seen frequently interacting with the @infobmkg and @kemenkesri accounts which show 23%. This data proves that the two reports often carry out social media activities discussing disaster mitigation through the hashtag # bersatulinterviewsovid19 and #infobencanaabnpb. The dissemination of information through social media is considered more effective through this trend because it can convey broad objectives by mentioning various related accounts (Fig. 4).

One of the exciting features of Twitter is that we can find out in real-time what things are currently trending or also known as hashtags. Disclosure of information related to disaster mitigation efforts submitted by the National Disaster Relief Agency uses various hashtags to classify each substance. # converse interviewovid19 has a total of 961 or 47%. The general nature of disaster mitigation efforts is focused on the dissemination stage of information through the hashtag #infobencanaabnpb.

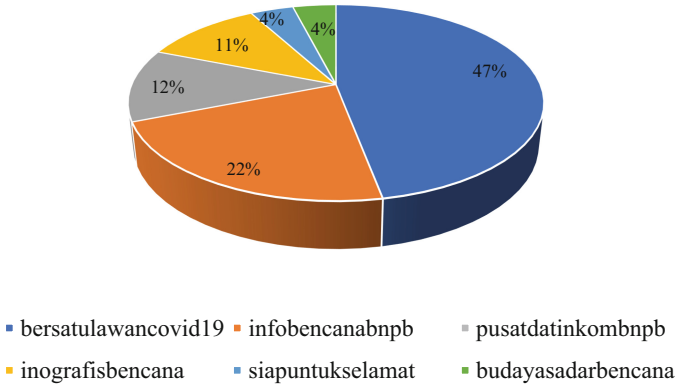

Fig. 4. Twitter social media hashtags

The information conveyed by the @BNPB_Indonesia account uses several hashtag messages to carry out various disaster mitigation awareness campaigns, such as # bersatulinterviewovid19, which has a percentage of 47% or the highest. The focus of #infobencanaabnpb is to socialize and provide education about disaster mitigation efforts to the broader community. The message contains #infobencanaabnpb from the official @BNPB_Indonesia account. Important information message #infobencanaabnpb has a percentage of 22%. Information related to this hashtag is used by @BNPB_Indonesia to invite all people to have an attitude of preparedness in facing disasters in Indonesia. Meanwhile, the trends of #budayasadarbencana and # ready to survive to show the lowest percentage figures.

5 Conclusion

BNPB uses Twitter for a valuable function, disseminating information about disasters. @BNPB_Indonesia followers get a positive influence from the information or news published. Previously, they did not know or even did not know anything about natural disasters. However, gradually they have not turned into everyday actions. Disseminating information via Twitter is technically practical and efficient because it does not require significant capital and is up to date with the times. The effectiveness of the dissemination of disaster mitigation information is disseminated through mentions from several of the most dominant accounts, namely @infobmkg and @kemenkesri, each with a percentage of 23%. The dissemination of this information was followed by a trend spread through the hashtag # bersatul interviewovid19 which dominated by 47%, and #infobencanaabnpb by 22%. Thus, the authors conclude that the information provided by BNPB is about the timing of the disaster and the implementation of disaster management, carried out effectively through social media Twitter. This study's limitation is that this study only examines disaster mitigation from @BNPB_Indonesia from 2020 to 2021.

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