

Communication and Network Crisis : Mapping of Important Actors in the #BersatuLawanCovid19 Campaign on Twitter

Pipit Fitriyah^{1*} Ahmad Fatoni² Ahmad Nasher³

¹Faculty of Social and Political Sciences, Universitas Sebelas Maret, Surakarta, Indonesia

^{2,3} Faculty of Communication, Universitas Gunadarma Depok, Indonesia

*Corresponding author. Email: pipit.fitriyah@staff.uns.ac.id

ABSTRACT

Indonesia seems to not be out of the crisis caused by natural and non-natural disasters, this indicates the need for a crisis communication strategy in the face of disaster. March 2020 Indonesia to become one of the positive countries Covid-19, requires a strategic approach and communication plan tailored to the characteristics of Indonesian society. This research uses the theory of communication networks to illustrate crisis communication and analyze communication actors during the Covid-19 disaster in Indonesia. This study was conducted in the period 13-17 April 2020, where Indonesia is still experiencing a Covid-19 pandemic crisis. The results of this study showed the existence of @BNPB_Indonesia account as the Indonesian Disaster Management Agency was very severe in campaigning #BersatuLawanCovid19 during the Covid-19 disaster crisis as an invitation to involve the community in the face of a Covid-19 disaster. The concept of network analysis during the Covid-19 crisis was illustrated by digital mapping #BersatuLawanCovid19 in the Twitter platform of the @BNPB_Indonesia account observed 716 nodes (actors) and 670 Edge (line/relationship), in addition to BNPB there are actors from the government as eigenvector which has a very high influence in the network (@kemenkesri, @jokowi, @fadlizon, @infomitigasi, @ramlirizal, @divhumas_polri) Actor is referred to as a virtual social group interconnected in computer-mediated communication. Communication channels through the Twitter platform can be used as a network of communication in the dissemination of information during the Covid-19 crisis.

Keywords: Communication Crisis, Covid-19 Disaster, Social Network Analysis, Twitter

1. INTRODUCTION

Indonesia does not appear to be coming out of a catastrophic crisis, In March 2020 Indonesia became one of the positive countries of coronavirus (Covid-19). The first case of two residents of Depok, West Java. This was announced directly by President Joko Widodo at the Presidential Palace, Jakarta. President Joko Widodo formed a rapid response team for the handling, quick reaction team of the Head of the National Disaster Management Agency (BNPB). The National Disaster Management Agency (BNPB) is a Non-Ministerial Government Agency that has the task of assisting the President of the Republic of Indonesia in conducting disaster management by the mandate of Law No. 24 of 2007 on Disaster Management.

In-Law No. 24 of 2007 on Disaster Management, the meaning of disaster consists of natural, non-natural, and social disasters. Nonnature disasters are disasters caused by string events or nonnature events in the form of

technological failure, failed modernization, epidemics, and diseases. In this case, coronavirus (COVID-19) is a non-natural disaster that has been pandemic level according to the WHO statement. [1].

Coronavirus has spread in Wuhan China, so the Indonesian Government has sent 238 Indonesian citizens back to Indonesia and observed on Natuna Island. To support it that supports temporary and rapid disaster management support and ready-made fund support (DSP) BNPB [1].

BNPB Indonesia's crisis communication form in the handling of COVID-19 utilizes social media twitter, as a channel and media used for communication in the latest news information about COVID-19. Figure 1 below is @BNPB_Indonesia officially joined on twitter in August 2011. With 285.5K followers quite active in the development of the Covid19 pandemic.



Figure 1. Twitter Account Profile @BNPB_Indonesia
Source:https://twitter.com/BNPB_Indonesia

The emergence of social media brings widespread implications for BNPB Indonesia in dealing with the crisis. The availability of new media in this case Twitter social media has increased rapidly in the past decade and expanded BNPB Indonesia's communication options during the crisis, which is no longer limited to traditional media to communicate with stakeholders and the public. Twitter accounts @BNPB_Indonesia an effective and highly accessible way to provide information to diverse communities during an ongoing crisis.

This research explains the mapping of crisis communication during the Covid19 pandemic. Social media Twitter allows BNPB Indonesia to create content and create specific topics that become popular by facilitating the faster dissemination of information and allowing from various perspectives to be shared and disseminated on social media. BNPB Indonesia shares information on Twitter in the form of text, images, and videos using the hashtag #BersamaLawanCovid19 to group the information on Twitter, making it a trending topic in cyberspace.

2. LITERATURE REVIEW

2.1 Crisis Communication on Social Media

Coombs and Holladay (2010) [2] see the internet as one option for organizations to communicate quickly with their stakeholders in crises. According to them, the development of the internet has a significant influence on corporate communication. The speed and simplicity of information exchange not only make it easier for organizations to communicate with their stakeholders, but it has also changed the expectations of stakeholders. Time is becoming an important element in crisis communication and stakeholders now have greater expectations as soon as information as possible about crisis events.

Social networks such as blogs, Twitter, Podcasts, and YouTube are also increasingly being used to distribute messages, build dialogue, or continue conversations with stakeholders. Another way to use social media is to scan for signs of a growing crisis. Blogs, videos, or customer

groups on Facebook provide important information about how to view the organization's stakeholders. Now organizations are using new media to communicate with their stakeholders in crises. Stakeholders themselves can be used, for example, blogs to communicate and exchange information, not only with organizations but also with other stakeholders, without being limited by geography ([2]; Stephens and Malone, 2010).

According to Fraustino, Liu, and Jin (2012), social media is "an interactive digital medium that allows users of content to produce, manipulate, or influence others who use the same media. From a public relations perspective, Wright and Hinson (2009) operate social media widely as a digital tool and application that facilitates interactive communication and content exchange between the public and organizations. The rise of social media has changed the landscape of crisis communication in at least two important ways. First, social media can be the source or origin of organizational crises, such as campaigns or poorly designed or bad social media messages that damage the organization's reputation. Second, social media platforms have become the main vehicle for damaging rumor transmission, sharing negative opinions, and aggregation of negative emotions about an organization (Austin & Jin, 2016).

2.2 Social Media Twitter

Social media is a new information network and information technology using a form of communication using interactive and user-produced content, and interpersonal relationships are created and maintained. Typical social media networking services can share content, web communities, and internet forums [3]; [4]. At least five main features that are easy to identify (1) social networks and social interaction, (2) participation, (3) the use of different providers (e.g. search engines, blog spaces, etc.), (4) openness, and (5) collaboration (between users and user groups) Eysenbach, [5] Social media according to Seppälä (2011) is something of the biggest change to the way people communicate is users of the content generated and quickly and flexibly sharing this content.

Twitter is a free internet-based microblogging service, where users can send short, 140-character messages to each other. Its use is based on a quick exchange of thoughts and information among friends, acquaintances, and all users of the Twitter platform. Twitter messages are most often called "tweets". These tweets form a stream of messages followed in chronological order from a computer screen or other screen, such as those from a mobile phone. A kind of keyword called "hashtag" can be added to a tweet to connect the current message with some other messages, making it easier to follow the message. In conversations about society, Twitter can be an interesting communication, because the message form is very compact. In short messages, there is no opportunity to justify the point of view or quote sources, and because of this, political messages and conversations can be hotter

and more important here than on other social media platforms [6].

2.3 Social Network Analysis

Tsvetov and Kouznetsov (2013) define Social Network Analysis (SNA) as a study that studies human relationships by utilizing graph theory (Susanto, Herlina, & Chrismanto, 2012). The network's perspective focuses on relationships between actors such as relationships that occur when people exchange information about disasters. There are important characteristics of tissue research (Marin & Wellman, 2011). First, pay attention to relationships instead of attributes. Second, focus on the network instead of the group. Third, the need for a certain relational context for relationships to be meaningful. Hanneman and Riddle say a network has actors in important positions who can provide their advantages and disadvantages (Galuh, 2013). When analyzing a network will look at relationships or links that are estranged from communication between individuals or groups (Littejohn & Foss, 2009).

Social Network Analysis (SNA) has several levels of analysis that can be done such as actor level, group level, and system level. Actor Level Analysis on the complete network of the size used is centrality. There are four most widely used measures of centrality: degree, closeness, betweenness, and eigenvector. At the system level, the usual measures are density, reciprocity, diameter, and distance, centralization [7].

3. METHODS

This research uses a quantitative research approach that departs from the post-positivism paradigm. This paradigm views social reality as complex, meaningful, holistic, dynamic, and interactive symptom relationships [CITATION Sug11 l 1033]. This research was conducted in the period 13-17 April 2020 where Indonesia is still experiencing the covid19 pandemic crisis. This research uses a method of communication network analysis that will describe patterns in the form of structures within the network. The study used actor-level and level analysis. Actor levels are used to find lead actors in this crisis communication and actors who influence the network and system level describe the network as a whole on the network structure. There are several types of measurements used for actor-level measurements using degree, closeness, betweenness, and eigenvector. As for the measurement system level using cluster count, diameter, density, reciprocity, centralization, and modularity.

The design used in this study is descriptive [8]. The data used as a sample amounts to 1000 Tweets. Twitter's data analysis and crawling process Netlytic.org and Gephi software. Netlytic and Gephi can automatically create network chains based on Twitter account names and bring up data that can be used to analyze at the system and actor level.

4. RESULTS AND DISCUSSION

The results of the communication network analysis that will describe the pattern in the form of structures in the network. The results showed an analysis of the level of @BNPB_Indonesia level in crisis communication as actors who influenced the overall network on the network structure.

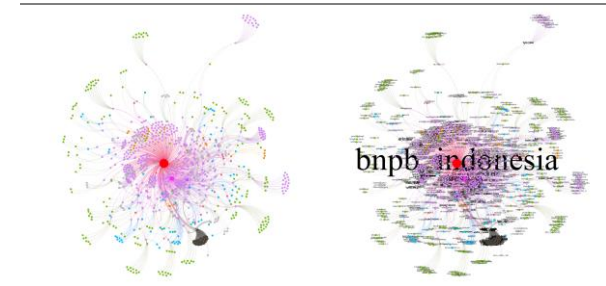


Figure 2: Cluster Communication Crisis #BersamaLawanCovid19
Source: Gephi Software

Mapping the #BersamaLawanCovid19 network is 716 nodes (Actor) and 670 Edge (Line/Relationship). Clusters are virtual social groups that connect and establish communication between members in a cluster or with members on another cluster. Netlytic clusters these networks into 5 large clusters and several small clusters. The colors of the nodes in this network indicate that the actors are in the same cluster.

Table 1: Network Properties by Netlytic.org

Network Properties	
Diameter	10
Density	0.002898
Reciprocity	0.036060
Centralization	0.256900
Modularity	0.645200

Source: Processed data with netlytic.org

Mapping the #BersamaLawanCovid19 has a network diameter of 23 points. In addition to describing the size of the network, the number of 23 points also explains the furthest distance required by one actor to get to another actor as far as 23 steps. The density in #BersamaLawanCovid19 is worth 0.026470 which means it has a very low-density level. With this density, the intensity of communication between actors in the #BersamaLawanCovid19 is so massive as well that the flow of information is so fast.

Reciprocity provides a level of mutuality of communication between actors in the #BersamaLawanCovid19. The value of 0 on the network's reciprocity indicates that the communication relationship struck only one way and the two-way communication did not occur because the actors did not reply to messages from other actors addressed to him.

Centralization in this network is a low value (0.184000) which shows the information on the network #BersamaLawanCovid19 is not dominated by 1 actor. Actors in this network provide information to other actors in the network. In social networks #BersamaLawanCovid19 that are on Twitter social media, many engage in conversation. The people involved in this conversation have different diversity. This is seen from modularity values (0.167600) that are smaller than 0.5. Actors in a network can come from individuals, organizations, countries, and so on.

Social network analysis looks at relationships between actors that occur in a conversation. Centrality measurement is done to find out how important an actor is in a network. Four factors can be seen namely degree value, closeness, betweenness, and eigenvector.

4.1 Degree

Degree Centrality is a measurement to see how many edges/relationships an actor has in the network. Based on table 2, the @bnpb_indonesia has the largest degree value of 502. This figure describes in campaigning #BersamaLawanCovid19, accounts @bnpb_indonesia get 502 relationships with other accounts. As an official government account, with a sample of 1000 tweets used in the study, half of the network's accounts @bnpb_indonesia.

Thus information about Covid-19 spread by BNPB accounts can be received directly by half the network members. Also, other accounts have a large degree value, namely @kemenkesri and @jokowi. While government accounts have a large connection in the #BersamaLawanCovid19 network, they lack interaction or reply to messages from other accounts. This is seen from an out-degree that is worth 0 both for @bnpb_indonesia, @kemenkesri, and @jokowi.

Tabel 2: Degree Statistic by Gephi

Label	In-Degree	Out-Degree	Degree
bnpb_indonesi a	502	0	502
kemenkesri	163	0	163
jokowi	78	0	78
rikikurvi	8	50	58
bakwan__	8	48	56
kotaksegiempat	8	48	56

Source: Gephi Software

4.2 Closeness Centrality

An actor's closeness to another actor in a network can be seen from the value of Closeness centrality. Closeness Centrality counts as the shortest average path from one actor to every other actor in the network. The closer to number 1, the better the value of closeness centrality. In table 3 shows, the values of closeness centrality. 402 actors have a value of 1, 46 actors have a value between

0.9-0.8, and 60 actors have a value of 0.7-0.6. With a high proximity value, these actors can forward messages or influence their relationships regarding information in #BersamaLawanCovid-19. If these accounts are very active in helping to campaign #BersamaLawanCovid19, then this will affect the public awareness of the pandemic situation in Indonesia.

In the current state of crisis, the speed and accuracy of the delivery of information are indispensable. The more actors who have a closeness to other actors will accelerate important messages from various parties, especially the government regarding the COVID-19 pandemic.

Table 3: Closeness Centrality by Gephi

Closeness Centrality Value	The Number of Actor
1.0	402
0.9 – 0.8	46
0.7 – 0.6	60
0.5 – 0.4	43
0.0	418

Source: Gephi Software

4.3 Betweenness Centrality

An actor can be a bridge from one cluster/actor to another cluster/actor in a network. This connecting role can be seen from the value of betweenness centrality, where the higher the value, then the actor is very important as a liaison in a network. Table 4 shows that @infomitigasi and @aw3126 are important links in the network. The @infomitigasi, is an account that focuses on information on disasters that occur in Indonesia, while the @aw3126 account is the account of Agus Wibowo who serves as head of BNPB's Information and Public Relations Data Center.

Table 4: Betweenness Centrality by Gephi

Label	Betweenness Centrality
infomitigasi	231.0
aw3126	198.0
umaralims	51.0
ditjenpppl	29.0

Source: Gephi Software

Figure 3 shows the connection of the @infomitigasi and @aw3126 account that acts as the link. Your @infomitigasi be a hub for multiple accounts such @bnpb_indonesia, @bpbdb_kabjepara, @bpbdbjateng, @jeparakabgold, @humasjateng, and several other personal accounts. There are so many accounts that rely on these connecting actors. Connecting actors can expand the range of information. The more liaisons, the more information about COVID-19 will spread. The active role of the community is urgently needed in situation crisis to help spread the message about this pandemic in Indonesia to realize the public about the covid-19 virus.

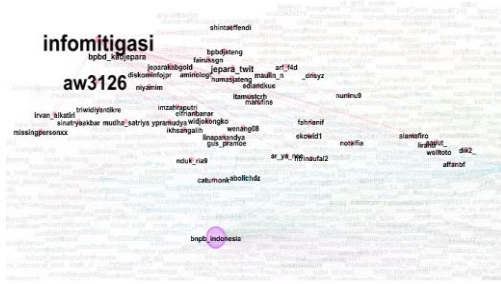


Figure 3. Actors With High Value Betweenness Centrality
Source: Gephi Software

4.4 Eigenvector Centrality

Eigenvector Centrality is a way of measuring how important actors are in a network. Actors with high levels of popularity are very influential to other actors in the network. The higher the eigenvector value, the greater its influence in the network. In table 5, there is a list of accounts that have a level of popularity on the #BersamaMelawanCovid19. Your @bnpb_indonesia an account that has a big influence on the network. With a government account that has important actors in this network, the public can get accurate information. The appointment of BNPB as a COVID-19 task force team by President Joko Widodo directly influences this account as a reliable information medium, which will be referenced by the public at the time of the crisis in this pandemic period.

Table 5: Eigenvector Centrality by Gephi

Label	Eigenvector Centrality
bnpb_indonesia	1.0
kemenkesri	0.314743
jokowi	0.137632
fadlizon	0.094571
infomitigasi	0.087941
ramlirizal	0.083398
divhumas_polri	0.081072
kawalcovid19	0.080296

Source: Gephi Software

At this stage of the crisis, several values must be held by the government, namely consistent, fast, and accurate. Your @bnpb_indonesia consistently, quickly, and accurately always provide information about the number of COVID-19 cases in Indonesia. Information about COVID-19 PCR tests, distribution of medical devices, and others are also informed through their social media accounts..



Figure 4. Covid-19 Case Count Information via twitter account @bnpb_indonesia
Source: https://twitter.com/BNPB_Indonesia

Coronavirus (COVID-19) is a large family of viruses that cause diseases ranging from common flu to more severe diseases such as Middle East Respiratory Syndrome (MERS-CoV) and Severe Severe Respiratory Syndrome (SARS-CoV). Coronavirus (COVID-19) first emerged from Wuhan, China at the end of 2019. The virus is contagious rapidly and has spread to other regions of China and several other countries, including Indonesia. The initial symptoms of coronavirus (COVID-19) that patients feel are fever, cough, colds, respiratory distress, sore throat, fatigue, and lethargy. However, some COVID-19 patients only experience symptoms of mild pain, and even have no symptoms of infection at all. The spread of this virus can be through saliva splashing sufferers (coughing and sneezing), touching the hands or faces of an infected person, touching (eyes, nose, or mouth) after holding an item affected by saliva splashing with the coronavirus.

Addressing the issue, the government also urged residents to wash their hands frequently using soap and running water for at least 20 seconds, as the first defense against the COVID-19 virus. The Central and Local Governments began to enact several policies to break the link to the spread of coronavirus, ranging from work from home, virtual classes for students and students, social distancing, to large-scale social restrictions (PSBB).

The government's efforts are in line with Gregory's concept (2010) The process of delivering messages or information in the campaign is carried out through three processes, namely as follows: 1) Awareness. The public is involved in cognitive processes at a new level of understanding. This level can be said to be an initial promotion to get the public's attention by providing information and knowledge that can attract the public to think more about a problem; 2) Attitudes and Opinion. Form a specific habit or view of a subject or problem. Attitude focuses on the reaction sparked in receiving information, this relates to effective ability (feelings concerning the emotional aspect) and can raise interest, acceptance, or rejection; 3) Behaviour. It is interesting for the public to act, commonly referred to as conative. This is done by promoting the desired response involving actions that must be taken.

After all the efforts that the government is doing, it is expected that the COVID-19 pandemic crisis can be handled properly and the public can follow the government's appeals and policies.

5. CONCLUSION

Communication and crisis network within the BNPB Indonesia network utilizes Twitter's social media presence with the ability to eliminate time, geographical and dimensional restrictions. Twitter brings widespread implications for BNPB Indonesia in dealing with the COVID-19 pandemic crisis that does not stop at retweets, likes, and mentions to other Twitter social users in the face of the crisis by providing a message regarding health protocols to reduce the risk of contracting/transmitting Covid-19 thus forming a large network. The #BersatuLawanCovid19 during the Covid-19 crisis as an invitation to engage the public in the face of the Covid-19 disaster. The concept of network analysis during the Covid-19 crisis is illustrated by digital mapping #BersatuLawanCovid19 on the twitter platform. This shows the Twitter account @BNPB_Indonesia a degree of popularity on the campaign network #BersamaMelawanCovid19. The government's refocus should be able to suppress the virus, degrade and delay the peak of the crisis from the COVID-19 pandemic so as not to further in a panic the wider community.

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