Leadership Communication for Crisis Network Coordination During "PPKM" Using Social Network Analysis Method

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Abstract. In a large-scale social crisis, the government responsible for protecting the community needs to work together and coordinate in the context of mitigation and increasing resilience. This study analysis the coordination of leadership communication in handling the Covid-19 pandemic. During the Covid-19 crisis period, the government implemented policies PSBB and PPKM. This research uses the social network analysis method to see the public who play a role in using Twitter to interact with the @Jokowi account, the official representation of the President Republic Indonesia as a communicator of the COVID-19 crisis. Network analysis using Gephi software looks at the communication of leadership and the public who play an active role during the PPKM policy. The findings of the network node 2059 and edge 2047 illustrate that the public supports crisis coordination significantly by finding a network diameter of 8 and modularity of 0.839. The measure of centrality found is degree @chusnulch__ (313), @jokowi (236), betweenness @penmerah_ (509), @_antaresh29 (373.5), and eigenvector @jokowi (1.0). This criticism conveyed by the public on social media directs and encourages the government to immediately deal with the COVID-19 pandemic crisis. This study contributes with new knowledge about leadership communication for network coordination during the handling of the Covid-19 crisis.

Keywords: leadership communication · crisis communication · social media · social network analysis

1 Introduction

Indonesia does not seem to be out of the crisis caused by the threat of the Covid-19 disaster. COVID-19 is a disease caused by acute respiratory syndrome coronavirus 2 (SARS-CoV-2). COVID-19 can cause respiratory problems, ranging from mild flu-like symptoms to lung infections such as pneumonia. COVID-19 (coronavirus disease 2019) is a new type of disease caused by a virus belonging to the Coronavirus group, namely: SARS-CoV-2, also known as the Coronavirus. The first case of the disease occurred in Wuhan, China, at the end of December 2019. Then COVID-19 spread between humans

very quickly and in just a few months it spread to dozens of countries, including Indonesia. The first case in Indonesia happened to two residents of Depok, West Java. This was announced live.

President Joko Widodo at the Presidential Palace, Jakarta. In a crisis like this, the leadership of the head of state and regional head is the key to minimizing the spread of Covid-19, indicating the need for crisis communication in dealing with the Covid-19 pandemic. In March 2020, Indonesia became one of the positive countries for the coronavirus (Covid-19) after being deemed to have failed in anticipating and crises in the early stages, for this purpose the purpose of this research requires a strategic approach and communication plan that is adapted to the characteristics of the Indonesian people.

As it is known that every crisis that occurs in an organization, there are always two accompanying dimensions, namely the technical managerial dimension and the perceptual communication dimension. Every crisis needs to be faced and removed so that the organization does not lose its credibility and reputation, and still has a positive image. The article entitled Developing a Crisis Communication Plan, written by Ray [1] in her book entitled Strategic Communication in Crisis Management Lesson from the Airline Industry, systematically explains how to create, and prepare a crisis communication plan. Identification of targets, strategic issues, themes, and messages of crisis communication, communication channels, and media relations become interrelated presentations.

Public safety authorities are the direct responsibility of the government to manage the Covid-19 crisis and prepare post-crisis plans and emergency measures for various crisis scenarios that will occur during the Covid-19 pandemic. Plan various strategies for potential Covid-19 risk or disaster scenarios and establish general guidelines/protocols for crisis communication. Such a phenomenon that researchers will discuss regarding these authorities must quickly adjust the response on the ground, given that there is no plan for predicting such a comprehensive disaster, which is exacerbated by the large digital divide and problems related to the literacy level of the victims of the Covid-19.

The emergence of social media brings broad implications for the government in dealing with the crisis. The availability of new media in this case Twitter social media has increased rapidly in the last decade and expanded government communication options during the crisis, which is no longer limited to traditional media to communicate with stakeholders and the public. Twitter is an effective and highly accessible way to provide information to a diverse community during the COVID-19 pandemic crisis.

Social media is a product resulting from a new online-based media through a website that is used to share communication networks such as speaking and participating [2]. In addition, social media can also be used to interact in the form of exchanges, collaborations, and visual and audiovisual introductions [3]. One of the products of social media is Twitter. Twitter is a microblogging service that facilitates short messages to other users to make friends, greet, and build a brand [4]. Twitter can also serve to find out what events are happening in the world and what people are talking about right now.

Several policies that have been trending during the Covid-19 pandemic are PSBB and PPKM, where the first PSBB approved by the Minister of Health was in DKI Jakarta which started on April 10, 2020, with the implementation of the first PSBB from April to June 2018, PSBB: Strict from September to October 2020, Transitional PSBB June to September 2020, Transitional PSBB II October 2020–January 2021. Following the

subsequent PSBB policy, the PPKM policy was also implemented for the first time from January to February 2021, Micro PPKM from February to June 2021, Emergency PPKM July 1 to 20 July 2021, and PPKM Levels 3 & 4 on 21 to July 2021. The PSBB and PPKM policies have been running for about a year and various obstacles arise here and there. Considering that Indonesia has never imposed a lockdown policy, automatically the success of handling Covid-19 is very dependent on the PPKM policy.

In Fitriyah and Fatoni [5], it is important to refocus the government's measures to suppress the virus, reduce and delay the peak of the threat of a second wave of pandemics. Uncontrolled measures will lead to a rapid increase in the number of cases, peaking early and requiring more capacity of the health care system to respond, while strict control measures implemented early will help lower the number of cases, delay peaking, and require much lower capacity from the Health care system. The government of Indonesia has so far prepared more than 100 homes sick to treat Covid-19 positive patients.

Many studies have been conducted to discuss crisis communication on social media. However, this study focuses more on crisis learning on social media by using communication network theory to describe crisis communication and analyzing communication actors during the Covid19 transition era on Twitter. The Social Network Analysis model provides statistical tools to examine relational data not only on the characteristics of individual actors' attributes, and focuses on explaining the pattern of relationships between actors, and analyzing the structure of these patterns.

2   Research Objective

The object of the research is to look at the interaction network on Twitter social media which was found by crawling using Netlytic to get Posts, N = 10000 in the dissemination of "PPKM" information on Twitter so that a picture of leadership communication from the Covid-19 pandemic crisis can be seen, the implementation of the pros and cons of the policy " PPKM" is certainly an interesting topic to ask, what is communication leadership in crisis coordination on network interactions during the Covid-19 pandemic on Twitter?

3   Literature Review

Coombs [6] defines a crisis as the perception of an unpredictable event that threatens stakeholder expectations that can seriously affect an organization's performance and produce negative outputs. While crisis communication is the collection, processing, and dissemination of information needed to deal with crises. An important feature of crisis communication is the management of complex organizational communications. The definition of crisis according to Regester and Larkin [7] is a company condition that makes the company the object of discussion by the wider community. Meanwhile, Fink [8] in his book Crisis Management Planning For the Inevitable defines a crisis as an unstable condition, in which companies must take action and decisions quickly and appropriately.

Two possible outcomes arise as a result of this decision. The first result is unwanted, meaning that it can lead to a worse situation than before. The second result is to obtain results that have a positive impact and can make the company better than before (turning point for better or worse). I understood from the definition, the crisis not only contains problems but also makes the company talked about by many people from a negative point of view. However, if taken from the positive side, a crisis makes a company stronger and stronger when a problem that hits the company can be handled properly and appropriately. Cutlip [9] suggests the types of crises based on time as follows: 1) Immediate crises or crises that are immediate. This type of crisis is the type most feared by companies because a crisis that occurs suddenly appears without any signals indicating that a crisis will arise. Companies also do not have time to do research planning. This type of crisis comes because of a disaster that occurs and has an impact on the company. 2) Emerging crisis or a new crisis emerges. This type of crisis still requires a PR practitioner to first examine the crisis before the problem explodes and can cause damage to the company or organization. 3) Sustained crisis, or a crisis to survive. This type of crisis is a crisis that has long passed but still appears in the period of months or years. Even though the problem has been resolved as best as possible by the company's management.

In the face of a crisis, the presence of a leadership role is very much needed, Crisis leadership research has been largely ignored the coordinating and organizing function of leadership communication but rather focused on leader's personality traits and behavior which influence their ability to deal with and get subordinates through organizational crises by being charismatic and pragmatic, manage emotions and information vacuums and develop confidence and trust [10, 11]. Leadership in networked collaboration is different from traditional leadership in organizations or teams since participants in networks are not bound by any hierarchical order or formal chain of command [12]. A theoretical model of leadership in cross-sector collaborations comprises initial conditions, processes and practices, structure and governance, as well as contingencies and constraints [13]. Typically, business networks and their structural dimensions such as forms and functions have been studied [14]. Rather than participants' actual communication practices of leadership, networking, and collaboration. A review of leadership in interorganizational networks concludes that it is "essential" for researchers "to contribute further to the current understanding of how leadership is made to happen" [15].

Coombs and Holladay [6] view the internet as an 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 have not only made it easier for organizations to communicate with their stakeholders, but it has also changed stakeholder expectations. Time has become an important element in crisis communication and stakeholders now have greater expectations of information as soon as possible about crisis events.

Social networks such as Blogs, Twitter, Facebook, Instagram, 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 developing crisis. Blogs, Videos, or customer groups on Facebook.

4   Methodology

This study uses a quantitative research approach that departs from the post-positivism paradigm. This paradigm views social reality as complex, meaningful, holistic, dynamic and the relationship of symptoms is interactive [CITATION Sug11\l 1033]. This research was conducted on July 19, 2021, where the implementation of the PPKM Level 3 & 4 policy was extended. This study uses a communication network analysis method that will describe the pattern in the form of a structure in the network. This study uses an analysis of the actor level and the level. The actor level is used to find the main actors in this crisis communication and the actors who have influence in the network and the system level describes the network as a whole in 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 the number of clusters, diameter, density, reciprocity, centralization, and modularity [16].

The design used in this study is descriptive (Samatan, 2017). The data used as a sample is Posts, N = 10000. The process of analyzing and crawling Twitter data uses Netlytic.org and Gephi software. Netlytic and Gephi can automatically create a network chain based on the names of Twitter accounts and generate data that can be used for analysis at the system and actor level.

5   Results

The study obtained an interaction network on Twitter on July 19, 2021, with a sample number of Posts, N = 10000 using Netlytic.org. Communication network analysis relates social relations to the theory of networks consisting of nodes and edges. Nodes are individuals or actors in the network, and edges are relationships between nodes. In understanding the patterns and interactions that occur in the network, researchers can visualize the network in Fig. 1.

The network pattern in Fig. 1 can automatically be formed into five large clusters in the interaction network of the "PPKM" issue with the discussion of leadership communication during the Covid-19 pandemic crisis, which can be visualized in Fig. 2.
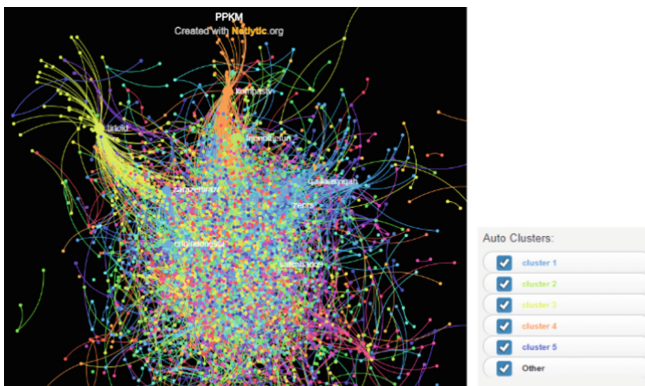

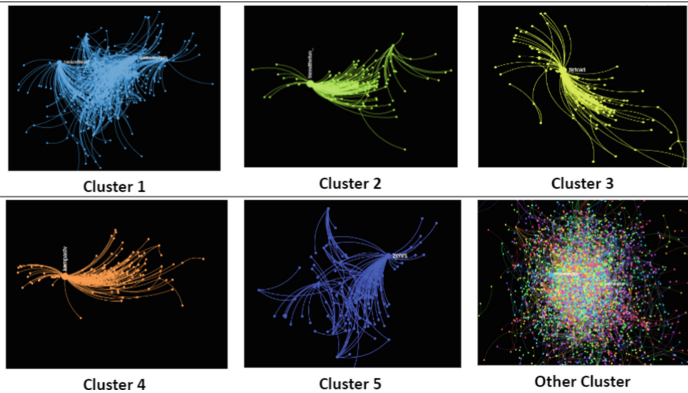**Fig. 1.** Visualization of the "PPKM" policy crisis network on Twitter by Netlytic.org

Fig. 2. Visualization of 5 large clusters from Netlytic.org

Table 1. Network Properties by Netlytic.org

Network Properties	
Diameter	47
Density	0.000178
Reciprocity	0.026160
Centralization	0.016280
Modularity	0.948900

Nelytic clustered the network into five large clusters. Nodes in the cluster with the same color mean that there is a more significant interaction than other clusters. Each cluster in patterns and colors shows a massive network of interactions during the Covid-19 pandemic crisis. Table 1 contains information about the network properties of the crisis network consisting of the following diameter, density, reciprocity, centralization, modularity.

The Covid-19 pandemic crisis network during PPKM has a diameter of 47 points. This explains that the furthest distance needed by one actor to get to another is 47 steps in interacting with the crisis during PPKM.

Reciprocity shows the level of mutuality of communication between actors in the network with a number from 0 to 1, where 1 shows perfect reciprocity until each actor interacts with each other [16]. The value of 0.026160 on the reciprocity of this network shows that the communication relationship that occurs is only one-way and two-way communication does not occur because it does not approach the perfect value (1) so that large actors or government accounts do not reply to messages from public accounts addressed to them.

Centralization in this network has a low value (0.016280) which shows that information on the network is not dominated by 1 actor. The actors in this network provide information to other actors in the network and many are involved in the conversation. The people involved in these conversations have different kinds of diversity. This can
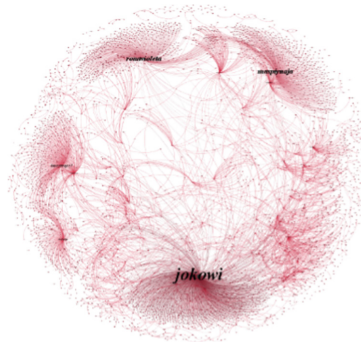
Fig. 3. Visualization of the PPKM crisis network with Gephi Source: Processed by researchers (2021)

Table 2. Centrality Value on Gephi. Source: Processed by researchers (2021)

Actor	In-Degree	Out-Degree	Degree	Betweennees s	Eigenvector	Closeness
jokowi	885	0	885	0.0	1.0	0.0
ronavioleta	524	4	528	2073.08	0.45	1.0
maspiyuaja	515	1	516	459.75	0.44	1.0
dennysiregar7	289	1	290	260.5	0.25	1.0
cnnindonesia	137	1	138	129.0	0.12	1.0

be seen from the modularity value of 0.948900 (modularity value is higher than 0.5), indicating that clusters in a network can vary from individuals, organizations, countries, and so on.

The analysis uses Gephi software version 0.9.2 to visualize PPKM network interaction data during the Covid-19 pandemic crisis on the Twitter social network. The data is visualized into a sociogram where the points in the image are called nodes representing individuals or nodes = 4134, connected by a line called edges = 4593. Two connected nodes are represented by a line connecting the two. The thicker the line, the more the number of interactions that occur between them, the pattern is shown in Fig. 3.

From Fig. 3, it can be seen the value of the centrality of the nodes in the network concept, which is to see the interaction between individuals, not only focusing on individuals but also looking at the quality of relationships between individuals. Communication network analysis can be seen from degree centrality, closeness centrality, betweenness centrality, and eigenvector centrality in Table 2.

In the table, the degree shows the popularity of actors in the relationship of a node to other nodes in the network crisis. The degree used is the total degree which means the number of in-degree (who commented on) and outdegree (which is commented on), can be seen in Table 1, the actor who has a high level of popularity is @jokowi the official account of the President of the Republic of Indonesia with a total of 885, then followed by @ronavioleta (528), @maspiyuaja (516), @dennysiregar7 (290), @cnnindonesia (138).

Betweenness Centrality is a symbol of "strength" or "influence" of a node in a social network as a liaison actor with other actors. The value on actor @ronavioleta

(2073.08) can be concluded that this account is the strongest node in connecting the PPKM interaction network during the Covid-19 pandemic crisis on Twitter with other nodes.

Eigenvector Centrality is a measurement of the importance or worth of a node in a social network. The higher the value (value 1), the more important the node is. Data from the Eigenvector Centrality table, researchers conclude that there is only one node that is considered very important in the crisis network during the Covid 19 pandemic, namely @jokowi with a perfect score (1.0). This is certainly in line with the concept of leadership communication during the Covid-19 pandemic crisis, which must have a good level of coordination with the community.

Closeness centrality is a measurement of the number of other nodes known by one node in the graph, without considering that the node is close or knows the detailed information of other nodes. The higher the value (1.0), the more contacts the node has. The results show that only actor @jokowi does not have a high closeness value (1.0) with other actors. So that in network theory, @jokowi does not have the freedom to communicate with other actors in the crisis network during PPKM during the pandemic, is of course very unfortunate because digital communication media in many theories and research can be an alternative to form a good leadership communication network.

6 Discussion

Analysis of the research data can be concluded that leadership in network collaboration is different from traditional leadership in organizations or teams because participants in the network are not bound by a hierarchical order or formal chain of command [12]. A review of leadership in inter-organizational networks concluded that it was "important" for researchers "to further contribute to current understanding of how leadership is made to happen" [15].

The context of leadership in the network during a crisis is to get input from the public regarding the perception of efforts to coordinate crisis communication (directing, recommitting), problems in implementing PPKM policies on social media Twitter, which was responded to by Joko Widodo as president of the Republic of Indonesia, which in this case needed his role in leadership communication during the crisis, the following is a picture of the researcher's findings from observations related to the appeal from the Indonesian government, which is shown in Fig. 4.

Crisis network as a framework of thought and framework of action for the government in crisis coordination to adapt crisis communication strategies to the level of stakeholder responsibility and reputational threats caused by the crisis. The bad impact of the crisis on reputation leads management to choose a communication strategy to respond to the crisis [17]. The reputational threat is defined as how much damage the crisis will cause if the government does not take action to respond to the crisis. Reputational threats can be caused by initial crisis responsibilities, crisis history, and pre-crisis reputation.

On Twitter, the public can easily express their opinions without going through organizational intermediaries. Opinions that arise about a particular topic or phenomenon have become a "trending topic" and can form a communication network. Information related to the Covid-19 pandemic crisis has always been a hot topic of conversation on

Fig. 4. Calls from the President of the Republic of Indonesia regarding PPKM

Twitter. The results of this study also show that social media users, especially Twitter users, respond quickly in spreading problems or phenomena that occur, as well as bringing various hashtags comments that can become trending topics. It can be a concern for the government to carefully review the opinions issued through social media to prevent problems of social issues that will arise in society.

7   Conclusion

Based on the results of the analysis and discussion on the Covid-19 pandemic crisis interaction network during the implementation of the PPKM policy to see leadership communication in handling the crisis, the researcher can conclude as follows:

1. Dissemination and interaction on social media Twitter found posts, N = 10000 on Netlytic.org and formed into 5 large clusters
2. Analysis on Gephi found that @jokowi's Eigenvector Centrality score was perfect (1.0), Betweenness Centrality @renavioleta's score (2073.08), and Closeness Centrality was not found in actor @jokowi (0.0) which was supposed to be leadership communication during the crisis.
3. Leadership communication in the crisis network has not been used as well as possible by the government, by showing that Twitter social media users respond quickly in interactions during the Covid-19 pandemic and provide various responses related to PPKM policies that have been prolonged, such as the PSBB policy.

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