

Social media analysis of the West Java Governor's Twitter account in the early COVID-19 pandemic

M A Mansyur, IHS, Erasmus University Rotterdam, T Building, 3062 PA, Rotterdam, The Netherlands, mansyur@ihs.nl

K Yusriyah, Department of Communication Science, University of Gunadarma, KelapaDua, 16951 Depok, Indonesia

A Fatoni, Department of Communication Science, University of Gunadarma, KelapaDua, 16951 Depok, Indonesia

F D Lestari, Department of Communication Science, University of Gunadarma, KelapaDua, 16951 Depok, Indonesia

Abstract- This study investigates the Twitter communication network related to the Corona Virus Disease 2019 (Covid-19) pandemic in West Java. On the basis of the Social Network Analysis (SNA) method, it was found that Governor Ridwan Kamil's Twitter account had become a central account of Covid-19-related virtual traffic information at the earliest stages of the pandemic. Based on the topic of the classification of Ridwan Kamil's Twitter posts, it was found that the topics of information disseminated were quite varied and transparent. These posts were found to be capable of inviting massive community engagement, even making Ridwan Kamil's posts as source of information to be re-disseminated. All post topics have a different frequency of publication. The most frequent were those related to policy promotion, and the least were posts related to the campaign combating against negative stigma of infected people.

Keywords: Corona Virus, Social Network Analysis (SNA), Twitter posts

I. INTRODUCTION

Currently the community is faced with rapid technological development, which changes the communication patterns of society. One of technological advances that affect the communication pattern is the existence of social media. In the field of crisis communication, social media offers transparency and speed of information flow that could enforce the intensity of communication's interaction between the government and the public [1]. Through social media the government agencies and society are assumed to be able to communicate effectively and even come up with collaborative actions [2].

The given crisis situation due to the covid-19 pandemic is a quite interesting context. This global crisis situation makes information flows not only fast but also massive because sources of information related to covid-19 can come from anywhere in the world. One of the main challenges is the spreading of false information. This is a major homework for government agencies and other emergency stakeholders in countering the problem, and also coming with an effective crisis communication strategy.

In this regard, this study tries to look at the application of social media in crises from a different perspective. The focus in this study is not the government but rather the behavior of the social media of the leader, which is Ridwan Kamil, where The Capital City of West Java Province is the most affected area of the covid-19. His Twitter accounts followers who reach millions place Ridwan Kamil not only as government leader, but also have potential as virtual opinion leader on social media.

This study then was conducted based on the following research questions: How was the virtual network communication built related with Covid-19? How was the governor's crisis communication through Twitter could be conceptualized? And how can we learn from this?

II. MAIN CONCEPTS UNDERPINNING THE STUDY

2.1 Social Media and Emergency Situation

Communication is a key element in disaster crisis management. Effective communication during disaster could reduce the level of its crisis, whereas the ineffective communication may cause a greater crisis or even the disaster [3]. Disasters often are the result of a crisis in the communication process or a result of a communication breakdown. Thus, Kim, Bae, et al. [4] suggests that developing an effective communication system which specifically can run under crisis condition should be the top priority for relevant governmental agencies, private organizations, and communities. Disaster risk communication is basically aimed to provide information related to the disaster events, identifying various possible impacts,

providing information about damage reduction and people safety tips in honest way, non-contrived, complete, fast, and accurate to all parties such as the affected citizens and various emergency stakeholders [5-7].

2.2 Social Media Network

Actors of crisis communication are not only confined around government emergency stakeholders and NGOs. Community individuals are also actors who take a dominant place in this crisis communication ecosystem, including in social media ecosystem. The large population then creates an interesting virtual network to discuss. This network discussion will use several relevant measurement concepts, such as modularity, betweenness centrality, indegree, and eigenvector centrality [8-11].

The first is modularity, where the strength of the relationship between nodes will be seen, where a strong relationship between nodes will form a module in a network. With this measurement, we can also see how the same conversation topics related to Covid-19 in West Java are discussed by modules that are formed in a network.

The second is Betweenness centrality where this measurement can show the role of a node as a funnel to receive information from several nodes which then pass it on to several other nodes. The potential role as a bridging hub of information can be seen through this measurement.

The third is indegree measurement. The indegree value can provide an idea of how well-known an account is by referring to how often the account is mentioned by other accounts. This logic illustrates that the higher the indegree value of an account, the higher the potential for the account to act as a central store in a communication network both as the upstream and downstream of the flow of information.

The fourth is eigenvector centrality or eigen centrality, which is the connection of an account with other accounts that have a high level of connection. An account is not assessed based on the number of networks formed, but is assessed based on the account's relationship with other accounts that have a large network of relationships.

III. METHODS

The scrapping process of Twitter conversations in this study is based on the Get Old Tweets application developed by Erasmus University Rotterdam and GitHub. This application uses Python scripts that scrape Twitter data directly from search.twitter.com bypassing the Application Programming Interface (API). On the other side, the network graphic data resulted from scrapping process is analyzed and displayed using the Gephi application.

A combination of keywords, namely "Covid-19" OR "Covid19" OR "Covid19" OR "Covid19" OR "Covid 19" OR "Covid" OR "Corona" AND "West Java" OR "Jabar," is used to scrap the West Java community network on Twitter related to Covid-19. The scrapping's range time is from 2 March 2020 to 2 May 2020. This time range is considered to be the initial phase of the outbreak of the Covid 19 case in Indonesia, which was indicated by the announcement of the first case on 2 March 2020. From this limitation, both from the combination of keywords and also the time range, 2812 conversations were successfully scrapped along with the network graphics data.

A similar method and time limitation were used to scrap Ridwan Kamil's posts. Using a combination of keywords "from: ridwankamil," as many as 220 posts were successfully scrapped. Ridwan Kamil's posts were then classified according to their topic. The topic's classification was done manually, adopting the principle of grounded theory research. Labelling the categories is the extraction of the substance from the Ridwan Kamil posts itself, not predetermined on the basis of the extraction of the literature.

IV. FINDINGS AND DISCUSSION

4.1 COVID-19 in West Java Twitter Conversation's Network

Based on the Social Media Network analysis, a conversation network was found involving 592 nodes. The network that is built is quite dense with a modularity number close to 1, it is 0.887, of which there are 104 modules or. This indicates that the communication that is built up between actors in a conversational community is strong enough. One of the modules with the highest number of nodes, namely 79 nodes or 13.34% of the total nodes, is a light purple module (see Figure 1). This module is assumed to be the core module of this network. Other modules that are also strong and connected to the core network are green with 8.78% nodes, light blue with 6.59% nodes, brown and orange with 3.72% nodes each, magenta with 3.55% nodes, green toska with 2.87% nodes and some other grey modules.

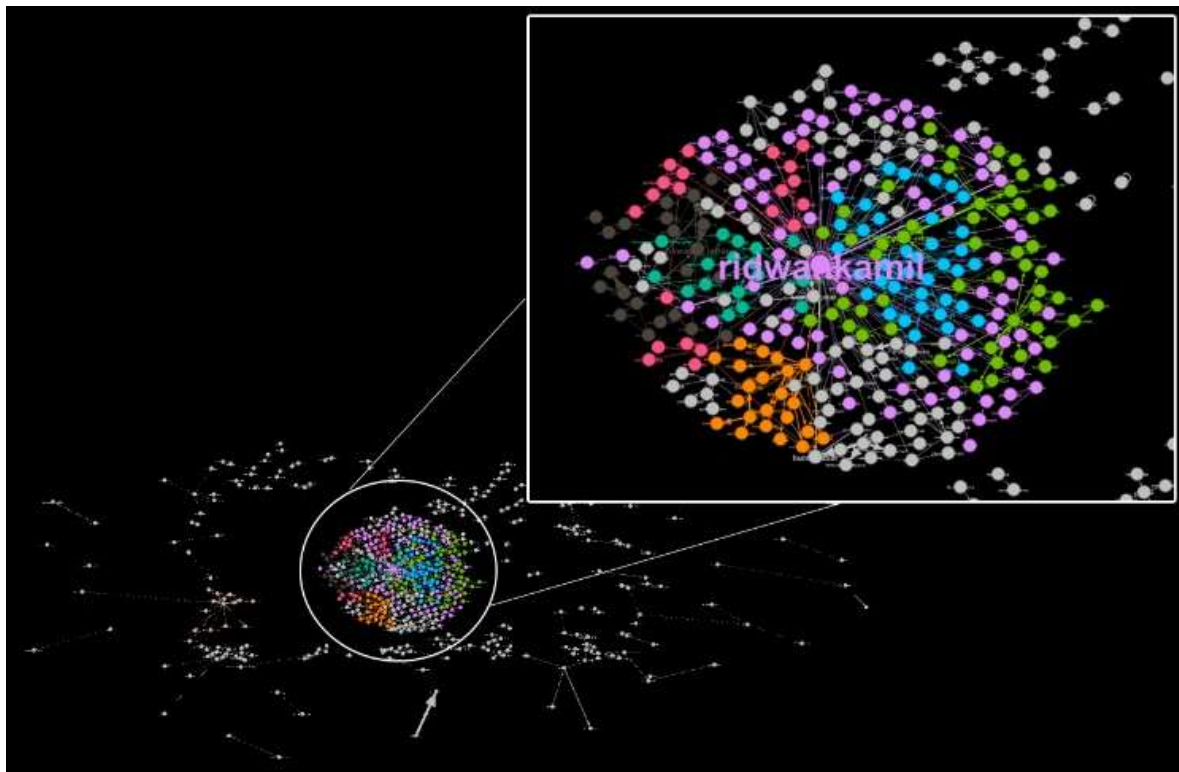


Figure 1. Twitter Conversation's Network about Covid-19 in West Java Province, Indonesia

Even though these modules are at the core of the network, they are not directly connected to one central node except for the light purple one, but with intermediaries of several actors who have high betweenness centrality values, these modules are then connected to the central actor in this network, namely the Twitter account of Ridwan Kamil. Among the 10 accounts with the highest betweenness centrality in this network (see Table 1), 4 of them played a role in connecting modules directly to Ridwan Kamil's account, namely @tmcrestabandung, @humasjabar, @radioelshinta, and @pikobar (see Figure 2).



Figure 1. Cross Modules' Connection to the Core of Covid-19 related Twitter Conversation's network

Table 1. Top 10 the highest value of Betweenness Centrality

| Account's ID | Betweenness Centrality |
|-----------------|------------------------|
| humasjabar | 28 |
| bawaslu_jabar | 23 |
| tmcrestabandung | 12 |
| radioelshint | 4 |
| fpd_dpr | 4 |
| jabarprovgoid | 4 |
| okezonenews | 3 |
| pikobar | 3 |
| sonorafm92 | 2 |
| galxxs | 0 |

The centrality of Ridwan Kamil's account role in this network can also be seen from several other things. First, eigenvector centrality or eigen centrality is the connection between Kamil's account and other accounts which have a high level of connection as well. The second is the popularity of Ridwan Kamil's account which is seen from the indegree value it has. In this network, the Ridwan Kamil account has the highest eigen centrality value, which is the first. The main reason behind this is, the Ridwan Kamil account was mentioned by accounts that were also mentioned a lot by other accounts. Such as accounts that have a high betweenness centrality value. These accounts are very popular accounts owned by the police, government, media and representative accounts of a government innovation application owned by the West Java provincial government. On the other hand, in terms of popularity as measured by indegree value, Ridwan Kamil's account is the highest. 80 times this account was mentioned by other accounts.

Table 2. Top 10 most popular accounts with their Eigen-centrality values

| Account's ID | Indegree | Eigen-centrality |
|-----------------|----------|------------------|
| ridwankamil | 80 | 1,000000 |
| bawaslu_jabar | 14 | 0,392480 |
| humasjabar | 11 | 0,123857 |
| jokowi | 10 | 0,095822 |
| wahhabicc_jabar | 9 | 0,086240 |
| bapenda_jabar | 7 | 0,067076 |
| polres_bandung | 5 | 0,089283 |
| aniesbaswedan | 5 | 0,047911 |
| ganjarpranowo | 5 | 0,047911 |
| humasbdg | 5 | 0,047911 |

Based on the central position of Ridwan Kamil's account, this study then continues to look further about Ridwan Kamil's Twitter activity during the same period. The explanation regarding this matter will be discussed in the next subsection

4.2 Ridwan Kamil's Twitter Activities

Following the classification of 220 posts from Ridwan Kamil 's account from 2 March 2020 to 2 May 2020, there are 213 Covid-19 related posts were identified. Among these 213 posts, there are at least 12 topics that have been manually extracted from the posts itself. Not every post is exclusive to the topic's categorization. Some of the posts found can be categorized into two or more topic categories.

Table 3. Ridwan Kamil's Twitter Posts' Classification

| Topics | Number of Tweets |
|------------------------------|------------------|
| Policy Promotion | 154 |
| Prevention | 13 |
| Personal Expression | 19 |
| Recent Update | 10 |
| Assistance Provision | 67 |
| Cross Agencies Collaboration | 51 |

| | |
|---------------------------|----|
| Policy Obstacle | 20 |
| Positive Policy Impact | 13 |
| Advice | 21 |
| Non-Governmental Action | 32 |
| Sanction | 4 |
| Combating Negative Stigma | 3 |

Some topics that are found repeatedly posted by Ridwan Kamil were about policy promotion, assistance provision, cross agencies collaboration, non-governmental action, advice, and Policy obstacle. The largest number of which reached 154 were related to policy promotions, in which Ridwan Kamil tried to introduce and explain a series of policies adopted by the West Java Provincial Government to mitigate the Covid-19 Pandemic Disaster. Some examples of the topic, such as a post about The West Java Provincial Government's planning to produce mask that can meet the local provincial needs and also national, the provision of 5-star hotel accommodation facilities owned by the government to medical staff in West Java, and video links on procedures for administering the massive Covid-19 test in The West Java Province. The three examples of posts are those with the highest level of public involvement, indicated with the largest number of likes compared to other posts, totaling 58.573, 19.759 and 18.523 likes, respectively.

It should also be emphasized that one of the reasons for the large number of posts related to policy promotion is that this topic is most closely intersecting with other topics, such as examples of cash assistance posts as a measure to deal with the economic impact of various restrictions on community mobilization. In addition to being categorized as policy promotion, this post was also categorized as assistance provision. Ridwan Kamil also often shares information on cooperation between the West Java Provincial Government and other government agencies, including the private sector. Most of these posts are related with providing assistance in the provision of medical devices, and supporting tools. This type of post also often generates high levels of engagement.

Apart from being massively educating the public with positions related to policy promotion and collaborative cross-sectoral movements, Ridwan Kamil is also quite open about the barriers to the implementation of the policies. Although the amounts of likes he got around hundreds, and the highest was around 1200s. The problems that Ridwan Kamil repeatedly raised in social media were the barriers to the distribution of direct cash assistance, budgetary limitation, geographical constraints in carrying out massive covid-19 tests to villages, and the difficulties faced by the government in decreasing the rate of people mobility when social restrictions were imposed. This shows that, in terms of coverage, Ridwan Kamil's publications on "good news" and problems can be said to be balanced, although the number of posts was very different.

What is interesting is that, when policies related to the handling of this pandemic require strict implementation, the publications of Ridwan Kamil on sanctions that are applied are relatively few. The engagement that was made wasn't much, only about hundreds of likes. There was one post related to this that has received as many as 14029 likes. The post was related to the prohibition of going back to hometown during the holidays of Eid al-Fitr, which was accompanied by strict police sanctions for violators, although the details of the strict measures in had not been stated.

Ridwan Kamil's least published topic is about campaign to combat the negative stigma that is growing in society towards people infected with Covid-19. No more than 3 posts related to this subject. The posts were concerned about the refusal of the funeral of infected residents, the story of the nurse who had been rejected by the house lady in the boarding house for being a Covid-19 mitigation officer, and the announcement to give priority to science rather than emotion.

V. CONCLUSION AND LESSONS LEARNED

From this study we can see that the Twitter account of Ridwan Kamil played a central role in the traffic of Covid-19-related social media information in West Java, especially in the early pandemic period. There are several reasons for this, such as Ridwan Kamil's position as governor, and Ridwan Kamil's popularity on social media, especially Twitter, which has reached 4.2 million followers. Not only position and popularity, the social media strategy that has been applied was also relatively unique, where Ridwan Kamil often uses informal daily grammar, and even often wrapped the posts with jokes. In addition, the study notes that the topics of the posts broadcasted by Ridwan Kamil on Covid-19 was quite varied and transparent, in the sense that he openly delivered both good news and bad news but in different proportions.

Strategies like this had been effective in increasing the involvement of the virtual community with Ridwan Kamil's account. Apart from being indicated by the number of likes, there was also a large number of retweets. In this study, Ridwan Kamil's most retweeted post was about the ability of West Java to produce masks to meet local and national needs. This post has been retweeted by the public up to 25.352 times.

This indicates that Ridwan Kamil was a virtual source of information that the public trusts, and the coverage of the information's dissemination through Ridwan Kamil's Twitter account was relatively large. From this study we can see that Ridwan Kamil's Twitter account plays a central role in the traffic of social media information related to Covid-19 in West Java. Several things can be assumed to be the reasons behind this, such as Ridwan Kamil's position as Governor, and Ridwan Kamil's popularity on social media, especially Twitter, which has reached 4.2 million followers. This huge number of followers were actually a captive audience in information dissemination [12]. Not only position and popularity, the social media strategy that is applied is also relatively unique, where Ridwan Kamil often uses everyday grammar even though he is often wrapped in jokes. In addition, the study notes that the topic of posts disseminated by Ridwan Kamil regarding Covid-19 is quite varied and open, in the sense that it openly delivers good news as well as bad news in different proportions.

Strategies like this have been effective in increasing virtual community engagement with Ridwan Kamil's posts. Apart from being indicated by the number of likes, the number of retweets is also large. In this study, Ridwan Kamil's most retweeted posts are an expression of West Java's ability to produce masks to meet local and national needs. This post was retweeted up to 25,352 times by the public. This indicates that Ridwan Kamil is a virtual source of information that is trusted by the public, and the reach of information dissemination via Ridwan Kamil's Twitter account is relatively wide.

However, several important topics had not been fully explored by Ridwan Kamil, such as the socialization of sanctions for violations of social restrictions, and education on combating the negative stigma of infected people that developed in a society that was still very minimal in the early days of the pandemic. Posts related to law enforcement were considered important to be intensified, because community discipline in complying with various health protocols that the government implements is the key to the success of pandemic mitigation. Regarding the negative stigma, the authors see this as crucial, where a pandemic situation like this is not a common emergency situation in Indonesia. It can be assumed that the Indonesian people were shocked by this incident, and had limited knowledge to respond to this pandemic rationally. This is also exacerbated by the massive distribution of fake news, invalid and irresponsible in the virtual world. Therefore, posts related to education about the substance of a pandemic scientifically need to be put forward and maximized, and even should be emphasized from the beginning of the pandemic.

REFERENCES

- [1] Graham M W, Avery E J and Park S 2015 The role of social media in local government crisis communications *Public Relat. Rev.***41** 386–94
- [2] Linders D 2012 From e-government to we-government: Defining a typology for citizen coproduction in the age of social media *Gov. Inf. Q.***29** 446–54
- [3] Houston J B, Hawthorne J, Perreault M F, Park E H, Goldstein Hode M, Halliwell M R, Turner McGowen S E, Davis R, Vaid S, McElderry J A and Griffith S A 2015 Social media and disasters: a functional framework for social media use in disaster planning, response, and research *Disasters***39** 1–22
- [4] Kim J, Bae J and Hastak M 2018 Emergency information diffusion on online social media during storm Cindy in U.S. *Int. J. Inf. Manage.***40** 153–65
- [5] Wukich C 2016 Government Social Media Messages across Disaster Phases *J. Contingencies Cris. Manag.***24** 230–43
- [6] Wukich C 2015 Social media use in emergency management *J. Emerg. Manag.***13** 281–94
- [7] Luna S and Pennock M J 2018 Social media applications and emergency management: A literature review and research agenda *Int. J. Disaster Risk Reduct.***28** 565–77
- [8] Angadi A and Suresh Varma P 2016 Finding hubs and outliers in temporal networks *Indian J. Sci. Technol.***9**
- [9] Riquelme F and González-Cantergiani P 2016 Measuring user influence on Twitter: A survey *Inf. Process. Manag.***52** 949–75
- [10] Riquelme F, Gonzalez-Cantergiani P, Hans D, Villarroel R and Munoz R 2019 Identifying Opinion Leaders on Social Networks Through Milestones Definition *IEEE Access***7** 75670–7
- [11] Isa D and Himelboim I 2018 A Social Networks Approach to Online Social Movement: Social Mediators and Mediated Content in #FreeAJStaff Twitter Network *Soc. Media Soc.***4**
- [12] Yusriyah K, Fatoni A and Mansyur M A 2020 Communication Networks Analysis on Information Dissemination of the Moving of Capital City From Jakarta to East Kalimantan *Aspiration J.***1** 31–55