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Research Article

Mapping Netizen Perception on COVID-19 Pandemic: A Preliminary Study of Policy Integration for Pandemic Response in Bandung City

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Abstract.
Social media is a product of technological advances that can influence how problems are formulated and act as a trigger for social change. Social media can provide data and act as a tool for policymakers to determine the effectiveness and acceptability of the current policy model, including the policy for handling COVID-19. Thus, this research analyzes the netizens' opinions and responses regarding the policies for handling COVID-19 in Bandung City. Data was collected through the interaction of network data between users on social media to describe the interaction pattern between netizens on Twitter and YouTube about handling COVID-19 in Bandung City. The results revealed that most netizens highlighted the emerging policies in the health sector before moving to other sectors. The highlighted result was proven by the most frequently used word on social media that is vaccines. The research results also had limitations because they did not compare how other cities handled COVID-19 with Bandung City while collecting the data online through interactions and discussions.

Keywords: policy integration, Netizen perception, COVID-19, social media, network visualization

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1. Introduction

Social media is a product of advancing technological developments and has evolved into a tool that affects how we engage with others in a network of actors while we live our daily lives [1]. The latest technological developments have led to digitalization's rapid and inevitable development, marked by blurring boundaries between the real and virtual worlds [2] . In addition to being used as a tool for communication, social media also serves as a very successful platform in various other areas, including public administration, higher education, product marketing, and customer relationship

management [3]. Many ideas have been raised on social media, especially concerning interesting contemporary issues that have been frequently discussed on Twitter, like COVID-19 [4][5] that affected many sectors of our daily life [6] [7]. Several public policies, particularly those relating to the treatment of COVID-19, have finally been acknowledged by social media users, leading to discourses that are highly sought after by all social media users [8].

The cross-cutting issues and trade-offs due to the COVID-19 pandemic crises have resulted in different challenges and policies for governments [9] [10] [11]. However, governments that have successfully managed the COVID-19 pandemic show good indicators of good governance [12]. Policy integration is one approach in analyzing cross-cutting issues. Where analytical capacity in the decision-making process, such as the exchange of information between actors, stakeholders, and support skills from policy actors in analyzing data, becomes one of the crucial capacities in policy integration [13] [14] [15] [16]. Nonetheless, data and information are often incomplete, uncertain, and difficult to analyze quickly due to the complexity and volatility of the pandemic phenomenon that tends to mislead decision-making and stakeholder perceptions [17] [18] [19].

Policies for handling COVID-19 are closely related to the processes formed behind them and how the evidence obtained can be turned into information-supported policies [20]. This information increases the effectiveness of related multi-sector public policies through integration and collaboration between policies [14]. In terms of public policy, social media has transformed into a tool that can affect how issues are formulated and act as a trigger for social change for future-oriented policy-making [21] [22]. In addition, many policymakers also use social media as a tool to determine the level of effectiveness and acceptability of the current policy model and insight into specific policy implications [23] [24] [25] [22] such as promoting vaccination against COVID-19 [26].

Mapping of communication networks in cyberspace is also vital as an effort to determine how information flows emerge and the potential for actors with strong influence, such as the potential emergence of buzzers, to have an impression on specific issues, primarily related to handling COVID-19 [27]. Twitter is one of the world's most popular microblogging social media platforms. Tweet-based sentiment analysis can measure public opinion, attitudes, and sentiment towards an entity [28]. This study aims to describe the most discussed issue obtained from conversation patterns on social media regarding policy on COVID-19 and map the network of actors' opinions that interact with

each other on several popular social media, such as Twitter and YouTube. Thus, the research question is

1. What are the most frequent words in conversation on Twitter and YouTube regarding the COVID-19 handling policy in Bandung City?
2. Who has the most influential opinion regarding the COVID-19 handling policy in Bandung City?

2. Theoretical Framework

Policy, which is understood as a decision-making process, involves many parties so that it is inseparable from the concept of governance which is related to the inter-related multi-level governance [29] [30]. In the development of public administration theory, governance has various meanings, one of which explains the efforts of cooperation or more precisely collaboratively in producing public policies [31]. Governance is part of the study of public administration, which is defined as a transformation from the traditional hierarchical concept to a more dynamic and holistic management in dealing with cross-sectoral public issues [32] [33] [31].

Policy integration is one of the public policy studies that continues to develop over time. The term 'policy integration' in this study was introduced by various intergovernmental organizations (IGOs) in the 1990s [15]. Comprehensive planning became the initial impetus for policy experts to study more deeply the issues that are related to cooperation within the government to achieve a policy alignment. There are several concepts in the alignment of these policies such as comprehensive planning, coherent policies, holistic government, joined-up government, to the whole of government [15]. The diversity of terms may be due to the fact that the concept of policy integration originates from the world of 'practitioners' [34].

In addition, it can be understood that the concept of policy integration talks about policy making in a particular policy domain that takes into account the policy objectives of other policy domains that are practically adjacent [15]. In contrast to studies on coordination or networking, 'integration' research does not only discuss how the interaction between actors in policy is, but also how these policy makers formulate problems, objectives and what instruments will be used in a policy process [32].

On the other hand, from the perspective of citizens, however, one may argue that social media play a substantial role in their daily lives and increasingly permeate the political discourse of many nations [21]. Social media provides an unprecedented

opportunity to understand values and expectations about health and to track healthy behaviors and outcomes in timely ways and may offer insight or suggest specific policy implications [22]. In addition, social media data can enhance well-established health indicators and provide fresh methods for tracking behavior change.

3. Methods

The dataset was taken from Twitter and YouTube via netlytics.org on June 10, 2022. The data consists of extracts of tweets and their metadata such as tweet-id, author, timestamp, followers, and others. The tweet-id was used as the primary key in the dataset to avoid duplicate tweet entries.

Table 1: Data Collection Stages.

	Tweeter
Dataset source	: netlytics.org
Keywords and search strings	: “COVID-19” AND “Bandung” AND “Policy”
Language	: Bahasa Indonesia
Date extracted	: 10 June 2022
Record identified and screened	: n = 1054
Record removed	: n = 0
Record included for analysis	: n = 1054

Meanwhile, for YouTube, we focus on comments made on one of the videos with the most views and with the highest number of words, which the author chooses on a news video titled ”189 Civil Servants and Bandung City Government Employees Exposed to Corona Virus”. An account posted this video with the username KOMPASTV on September 15, 2020. This account, which has 11.9 million followers, uploaded a video that had reached 109,460 views as of June 16, 2022, with 288 comments coming in. The author conducted data collection on June 16, 2022.

The Gephi 0.9 software analyzes network visualization and centrality calculations with the Yifan Hu proportional algorithm layout with degree ranking criteria because it presents data neatly and informatively in visualizing relationships between actors, determining characters, and central nodes [35] [36] [5] [37].

4. Results and Discussion

In general, there were three main cluster groups in data collection on Twitter regarding handling the COVID-19 pandemic in Bandung City based on the data visualization carried out. As a result, there were three major groups of opinions on handling COVID-19 in Bandung City, namely groups that support the handling of COVID-19 in Bandung City, which can be seen at the bottom left of the results of the visualization carried out (Figure 1).

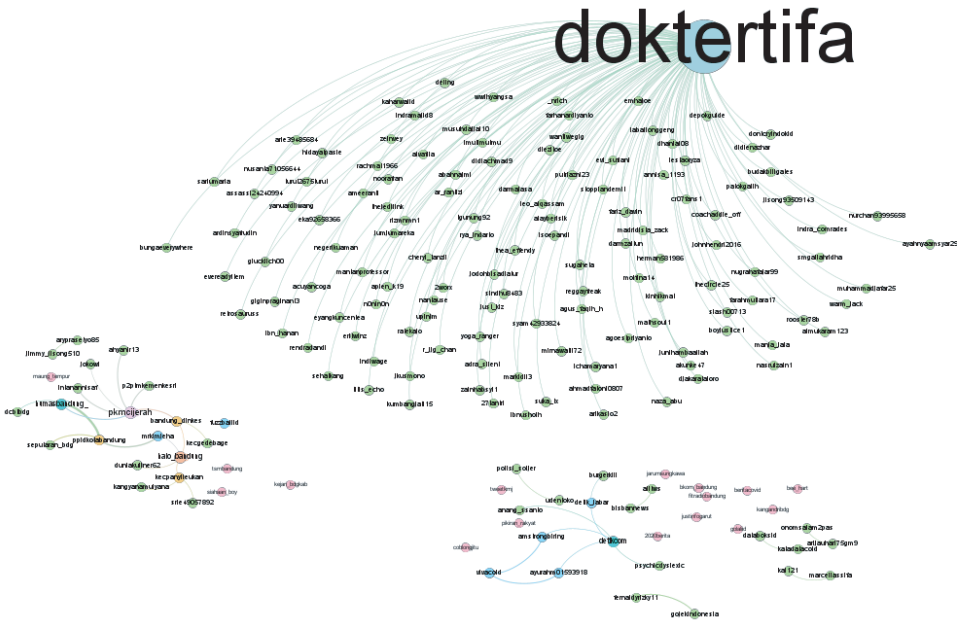

Figure 1: Gephi Visualization Results on the Most Discussed Keywords on Twitter Regarding the Handling of the COVID-19 Pandemic in Bandung City.

The central actor in this group was an account owned by the government, namely PKM Cijerah, which then networked with other actors to form a positive sentiment network. Furthermore, the most dominant group in the visualization was the group against the handling of COVID-19. The central actor in this group had a vital role, an account of social activists, namely doktertifa. The negative sentiment spread by this account was quite strong, as evidenced by many interaction connection activities with the account by other accounts. It seemed to form a rain visual, as shown in Figure 1. The last group was a group with any neutral or impartial sentiments in handling COVID-19. A critical actor in this group was an account belonging to the media, detikcom, the party that spread the news about handling COVID-19 in Bandung City.

The pattern of conversations on Twitter discussing the handling of COVID-19 in Bandung City formed a word cloud, which shows the most frequent words in interaction

patterns. The word cloud (Figure 2) shows the word pattern in the conversation. This conversation pattern generated several keywords about how often a word or topic is discussed in conversation on Twitter.

Figure 2: Analysis of the Most Discussed Keyword on Twitter Regarding the Handling of the COVID-19 Pandemic in Bandung City via netlytic.

In the Word Cloud above, the word that appears the most is depicted by the most powerful words, gradually decreasing following the intensity of the word that appears. In general, most netizens talked about "*Vaksin* (Vaccines)" as one of the efforts to deal with the pandemic in Bandung City. Thus, the most dominant words were "COVID-19" and "Bandung" as the location's focus that wanted to know how to handle the COVID-19 pandemic. In addition, there are words with particular sentiments such as "expired," "*ugal-ugalannya* (reckless)," "*kadaluarsa* (expired)," "*kebijakan* (policy)," "*malas* (lazy)," and "*patuhi* (to obey)." Based on the word cloud above, words with particular sentiments dominated the discussion regarding handling the COVID-19 pandemic in Bandung City, even though the most dominant words were not words with particular sentiments.

In addition to collecting data through Twitter, the researcher also collected data through social media that focuses on sharing videos, namely YouTube. After successfully obtaining it through netlytic.org, the researcher processed the data concerning the relationship between the actors in the video's comments section and tried to conduct visualization mapping through the Gephi software with the following visualization results.

The results of the following visualization show how the network that appears in the comments section of netizens on videos reporting that 189 civil servants and Bandung City Government employees have been exposed to the coronavirus. Visualization was carried out using the form of presentation of layout data of the type of Fruchterman Reingold. The visualization results above were obtained through the criteria of closeness centrality. Based on the visualization process, no actor became the central actor in the conversation, even though the interaction was carried out several times and resulted in several dominant actors. In the comments section, there were

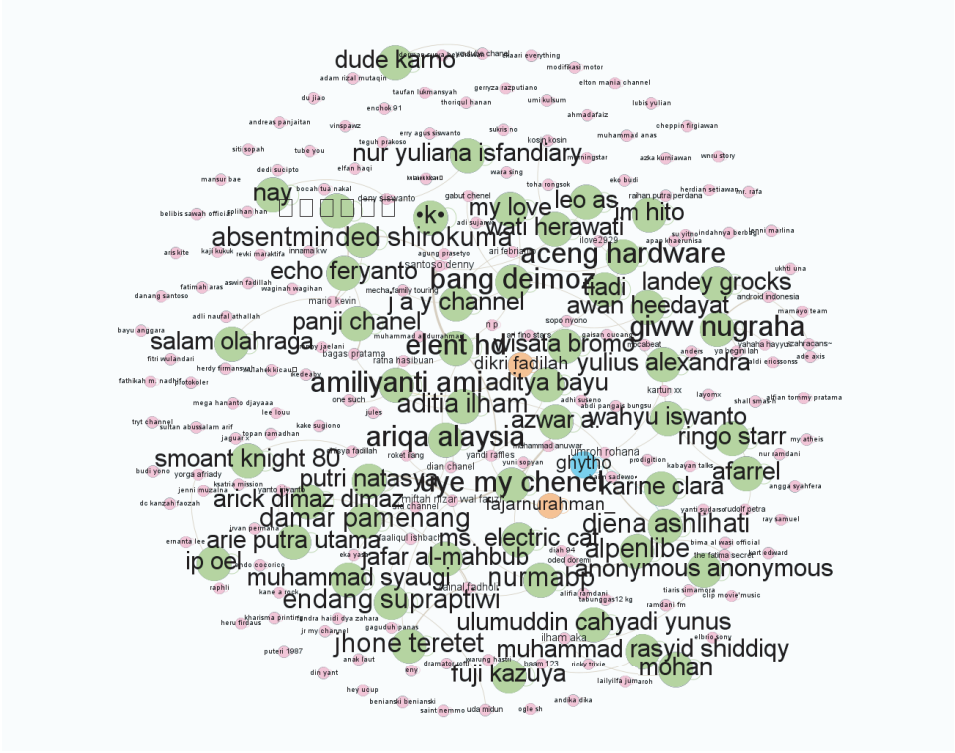

Figure 3: Gephi Visualization Results of Comments on Responses to YouTube Videos regarding Reports of 189 Civil Servants and Employees at the Government of Bandung City Exposed to the Coronavirus.

several networked comments and independent comments without any interaction with other actors. The large green nodes visualized the dominant actors involved in the conversation. Based on data collection, several relevant keywords were also found, regarding what conversations they had in relation to videos discussing the COVID-19 cluster that occurred precisely in the body of the main element of handling COVID-19 in Bandung City. These keywords can be presented in the word cloud as follows.

Figure 4: Analysis of the Most Frequently Appearing Keywords in the Comments Section on YouTube Videos Reporting 189 Civil Servants and Employees at the Government of Bandung City Exposed to Coronavirus via Netlytic.

The collected words generally highlighted many infected government employees based on the following word cloud. Like the previous word cloud, the most common words in a conversation are represented by the largest word size. The words that most often appeared in the word cloud include “corona” or “covid,” “kena (hit),” “Bandung,”

“PNS,” “positif (positive),” “politik (politics),” to “mengkritik (criticize).” There were also those who mentioned the policies for handling COVID-19 in Indonesia through the application of health protocols as a form of irony of violations committed by government elements, even though they were not significant, such as the spotlight on ”pegawai (employees)”, the use of ”masker (masks)”, the application of ”PSBB”, and the “politik (political)” process that characterizes the emergence of this policy. In addition, the handling of other cities was also often discussed in this conversation. This can be seen from the conversations that mentioned the words ”Jakarta” and ”Anies”.

This evidence shows that public communication related to handling the COVID-19 pandemic has also shaped and influenced public perceptions of how to respond to the pandemic. Based on data collection from social media, words containing particular sentiments towards pandemic handling policies are some of the most frequently used words, even though they are not the dominant words that appear in the conversation. The sentiment that develops in society is closely related to successfully handling the pandemic. The better the sentiment that develops, the more successful the handling can be.

5. Conclusion

The results show that most netizens have highlighted policies that have emerged in the health sector before moving on to other sectors. Vaccines were the most apparent word on Twitter, while corona disease or COVID-19 was the most apparent on YouTube. Therefore, these results concluded that the health sector played a key role and had the highest centrality in handling the COVID-19 pandemic in Bandung City. Based on the degree analysis, there were several central actors in the flow of interaction and information from netizens on social media. It was divided into three major groups, namely groups that respond positively, negatively, and neutrally. It also found from mapping and visualization of the word cloud that has been successfully drawn and described through the tools that have been set.

The research results also had limitations. These limitations include the fact that the researcher only collecting data on netizens who interact and discuss the handling of COVID-19 in Bandung City without carrying out similar activities in other areas as a comparison. Thus, the research was still not comprehensive because it is only limited to what is happening in Bandung City without any description of similar depictions in other areas as research input. Therefore, further research is expected to explore the weaknesses that have emerged in this research, such as data collection on other

social media besides Twitter and YouTube. Thus, further exploration of other models is encouraged to improve the number and variety of similar studies in the future.

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