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COMMUNICATION EFFECTIVENESS AND IMAGE OF THE NATIONAL AGENCY FOR DISASTER MANAGEMENT (BNPB) IN DISSEMINATING COVID-19 INFORMATION IN INDONESIA (Analysis of BNPB's Information Sources Network Mapping Through SNA)

Nikmatus Sholikah, Saza Azizah Anindyo

Study Program of Communication Science, Faculty of Social Science and Political Sciences, Brawijaya University, Malang, Indonesia.

nicmah21@gmail.com

sazaazizah@gmail.com

ABSTRACT

Indonesia is a country that has a fairly high positive number of COVID-19 in the Asian continent. In the context of dealing with the virus, this study aims to examine the effectiveness of the government's public relations performance in delivering messages on handling COVID-19 through BNPB Instagram, namely @bnpb_indonesia and images from BNPB. We use the Social Network Analysis (SNA) analysis method which measures the degree of centrality, closeness centrality and betweenness centrality. This type of descriptive qualitative research and data collection techniques used is the questionnaire method and involves 112 respondents spread across several regions in Indonesia. The results of our research conducted in April 2020 show that BNPB through the @bnpb_indonesia Instagram account has a good image. This can be seen from the survey conducted showing that 92.9% knew about the BNPB instagram, BNPB's performance and completeness of information was ranked first out of 14 other reference instagram accounts regarding information related to COVID-19. Then the effectiveness of BNPB's communication through the @bnpb_indonesia instagram account is considered good, it can be seen from the mapping of networks on social media using the SNA method, the results of degree centrality or key actor @bnpb_Indonesia rank first of 14 information references. Then betweeness Centrality and Eigenvector or the most connected actor is the instagram node @bnpb_indonesia, which is ranked first.

Keyword: Government Public Relation, BNPB, Social Network Analysis (SNA), Image.

INTRODUCTION

In this time, the world is in uproar with a virus outbreak that was detected in early December 2019 in the city of Wuhan, China and it is more familiar called as corona virus or COVID-19 which has taken tens of thousands of lives. It was recorded that until Friday, April 3,2020, the number of confirmed corona cases was 1,018,845. There are 204 countries and territories around the world that have reported cases of COVID-19, the number of deaths are 53,292 cases, and 213,524 patients have been declared cured (Setyvani, 2020). Then for Indonesia, the number of positive cases of the Corona virus or COVID-19 until April 3, 2020, there were 1,986 cases, 181 people died and 134 people were declared cured. However, if we

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look at the death rate or mortality rate of Corona positive cases reaching 9.1%, of course this cannot be taken lightly by the Indonesian government.

Indonesia first detected by the COVID-19 virus outbreak was on Monday, March 2, 2020. Two *Depok* residents aged 64 and 31, their relationship between mother and child detected as the positive COVID-19 virus (Prabowo, 2020). The World Health Organization (WHO) stated on March 12 through its official website that COVID-19 is a pandemic, namely a global disease outbreak when a new disease spreads across the globe beyond limits. This was explained by WHO as follows (WHO, 2020):

> *"The meeting follows the announcement yesterday by Dr Tedros Adhanom Ghebreyesus, WHO's Director-General, that COVID-19 can be characterized as a pandemic. This is due to the rapid increase in the number of cases outside China over the past 2 weeks that has affected a growing number of countries".*

Along with the increasing number of COVID-19 cases in Indonesia, the *National Agency* for *Disaster Management* (BNPB) Indonesia took part in handling COVID-19 after WHO declared that this was a pandemic. BNPB in collaboration with other members of the COVID-19 Acceleration Task Force (Indonesian: Gugus Tugas Percepatan Penanggulangan COVID-19) always updated in providing good information from press conferences, websites, and also their social media, that is by Instagram. BNPB performs one of the functions of public relations, namely communication with the public. On the website page, there is a column containing public information and other services that can be accessed openly by the public. Likewise with the Instagram which updates in informing news related to disasters and COVID-19. Until May 3, 2020, it was recorded that BNPB Indonesia had an Instagram account called @bnpb_Indonesia, 1971 photo uploads, 254,000 followers, and 297 followings.

Furthermore, to be able to convey all the information, BNPB made various communication strategy efforts. Communication strategy is a combination of communication management and communication planning to achieve a goal. The communication strategy must show how to implement it tactically, it must use a dynamic approach depending on the conditions and situations to achieve the desired goals"(Effendy, 2008).

Instagram is an application created by Mike Krieger and Kevin Systrom which was first released on October 6, 2010. Instagram is used by its users to share photos and videos that allow users to take videos, photos, apply digital filters and share them on various social networking services. This application can be a means to build a community and a means of virtual world communication so that information can quickly be disseminated and accepted by the public, including BNPB Indonesia, which they use this feature to share the latest information.

Then researchers also pay attention to the image of the Task Force to accelerate the handling of COVID-19 in the eyes of the public. Katz in Soemirat and Ardianto (2004) explained that image is the way other parties perceive a company, committee, person or activity (Ardianto & Sumirat, 2004).

However, to analyze the effectiveness of the communication strategy and BNPB, the researchers use the Social Network Analysis (SNA). SNA is a method used to analyze a social relationship by looking at measures such as cohesion, density and dimensions of individuals or actors in a network (Wasserman & Faust, 1994). SNA views social relations in terms of network theory consisting of knots and bonds (also called edges, links, or connections).

On the other hand, according to Müller-Prothman (2006), Social Network Analysis (SNA) is useful for identifying and examining the information transformation process between each actor, so that actors who are key players in a network can be identified (Pratama & Iqbal,

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2018). With SNA, researchers look at the interactions of the Indonesian people to find sources of information related to COVID-19.

The purpose of this research to find out how is the effectiveness of communication on Instagram social media through network mapping and communication interactions? How is the image of BNPB in the eyes of the public? The relationship patterns that can be analyzed through the concept of Social Network Analysis (SNA) which are measured based on network cohesion and density include degree centrality, closeness centrality and betweenness centrality and eigenvector centrality.

LITERATURE REVIEW
Social Network Analysis (SNA)

Social Network Analysis (SNA) is a method for visualizing the activities and strength of connections between users on social networks, as well as a step to identify interactions in sharing knowledge. This SNA can also map and measure the relationship between people, groups, organizations, computers or information/knowledge bodies and other processing in the network.

According to Agneesens et al (2017), Social Network Analysis (SNA) is a set of actors who may have a relationship with one another. The basic perspective in social networks is that through social ties, individuals gain access to information, social support, and other resources. SNA is also a technique for studying social relationships or relations between members of a group of people or organizations (Waryanto and Insani, 2012).

Social networks are formed because of mutual knowledge, mutual information, mutual reminding, and mutual assistance in implementing or overcoming something. SNA has a concept that shows a social relationship that is linked by the existence of trust, and that trust is maintained and controlled by existing norms. SNA is also a social structure consisting of individuals or organizations called "nodes" which are connected by one or more relational (Scott, 2011).

According to Agusyanto (2014), the components that model the Social Network consist of:
a. Nodes or vertices (nodes): a group of people, objects, or events that are represented by ducks or in other words as actors.
b. Tie (bond): a link between one point and another in the network represented by a line.
c. Flow: in the diagram represented by arrows which depict something that flows from one point to another through bonds that connect each point in the network.

Then, Centrality in SNA, actually centrality measurement is used to determine which actor plays the most important role in a social network, this shows the degree of a person's center (Mincer and Niewiadomska-Szynkiewicz, 2012). There are four centrality measurements, namely: degree centrality, betweenness centrality, closeness centrality, and eigenvector centrality.

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Table 1. *Centrality* measurements in Social Network Analysis (Scott, 2011)

CENTRALITY	EXPLANATIONS
a.) Degree Centrality	Degree centrality is determined by the number of edges corresponding to the nodes.
b) Betweenness Centrality	Identify the nodes that will be the information intermediaries.
c) Closeness Centrality	Closeness centrality is the average distance from a given node to all other nodes in the social network.
d) Eingenvector Centrality	Eigenvector centrality shows the most important nodes in the network based on the connections that nodes have and the nodes associated with these nodes.

Image

The image of a company or agency according to Jefkins (2003: 22) is the image of an organization as a whole, so it is not just an image of its product or service (Mujianto, 2018). Kotler (1995) more broadly defines image as the sum of the beliefs, images, and impressions that a person has on an object. The object in question can be a person, organization, institution or group of people. If the object is an organization, it means that all beliefs, images, and impressions on the organization of a person are called images. The image of an organization represents the values of a person and community groups that have a relationship with the organization (Trimanah, 2012).

Soemirat and Ardianto (2004) explain the cognitive effects of communication greatly affect the process of forming a person's image. Image is formed based on knowledge and information received by a person. Communication does not directly lead to specific behaviors, but tends to influence the way we organize our image of the environment.

On the other hand, Public Relations (PR) is described as input-output, the internal process in this model is image formation, while input is a given stimulus and output is a particular response or behavior (Ardianto, 2004). Thus, the appropriate communication strategy process will also affect the image of the institution or organization to the public.

The meaning of image is actually abstract (intangible), cannot be described in real terms, physically and cannot be measured mathematically, because images only exist in the mind. However, its form can be felt from the results of good or bad research, such as the acceptance and responses both positive and negative that come from the public (target audience) and the wider community in general. Image can be known, measured and changed (Trimanah, 2012). Research on corporate image has proven that images can be measured and changed, although image change is relatively slow. In other words, an image will last quite permanently over a certain period of time.

RESEARCH METHOD

This research uses a descriptive type of research with a qualitative approach. This type of descriptive research is making systematic, factual and accurate descriptions of the facts and characteristics of a particular population or object. Researchers already have a concept and conceptual framework (Kriyantono, 2006).

The data collection technique used is a questionnaire or questionnaire method involving 112 respondents spread across several regions in Indonesia. The questionnaire is a list of questions that must be filled in by the respondent (Kriyantono, 2006)

The analysis used is the Social Network Analysis (SNA) which measures based on degree centrality, closeness centrality, and betweenness centrality.

The stages in the research are as follows:

1. **Data Collection:** Data collection was carried out using a questionnaire method that was distributed in several regions in Indonesia which was carried out for four days, namely April 8-11 2020.
2. **Network Model Making:** The data that has gone through the questionnaire is then reprocessed using the NodelXL Pro application to create a network model visualization of information sources related to COVID-19 in Indonesia.
3. **Identify Network Properties:** Each network model that has been processed with the NodelXL Pro application has several properties that will be calculated in value. The network properties that will be calculated are: nodes, edges, average degree, diameter, and average path length.
4. **Centrality Analysis:** To determine the key players in social networks, a centrality analysis is carried out. Centrality analysis is carried out using the NodelXL Pro application to see the value of each centrality for each actor in the social network. Centrality calculations are carried out, namely: degree centrality, betweenness centrality, closeness centrality, and eigenvector centrality.

FINDINGS AND DISCUSSION

After we conducted a survey of 112 respondents on 16-17 April 2020 who came from several regions in Indonesia (Java Island 82.1%, Madura Island 2.7%, Sumatra Island 2.7%, Kalimantan Island 0.9%, Pulau Sulawesi 6.3%, Lombok Island 1.8%, Bali Island 2.7%, Sumbawa Island 0.9%), then we get 99 nodes or vertices (from 112 respondents to 99 respondents, 13 respondents didn't enter the criteria) plus with 14 information source nodes so that it becomes 113 nodes. Then form an information network in finding news sources about Corona Virus or COVID-19, consisting of 14 information sources and 99 respondents who entered the criteria.

Network

Network is a network made up of several vertices. In this case, the authors found 14 sources of information or nodes from Instagram social media accounts which were formed from 113 nodes (99 respondents and 14 sources of information on IG). Here are 14 nodes that are a source of information to find information on updates related to COVID-19 that establishes the Network,:

Table 2. "*Network*" in the network of information sources related to COVID-19 on instagram accounts in Indonesia

RANK	INFORMATION SOURCES	SCORE
1	Instagram BNPB (@bnpb_Indonesia)	27
2	Official Instagram Regional Government (PEMDA)	22
3	Instagram Ministry of Health (KEMENKES)	21
4	Instagram Detik.com	7
5	Instagram @kawalcovid19.id	6
6	Instagram @narasi.tv	3

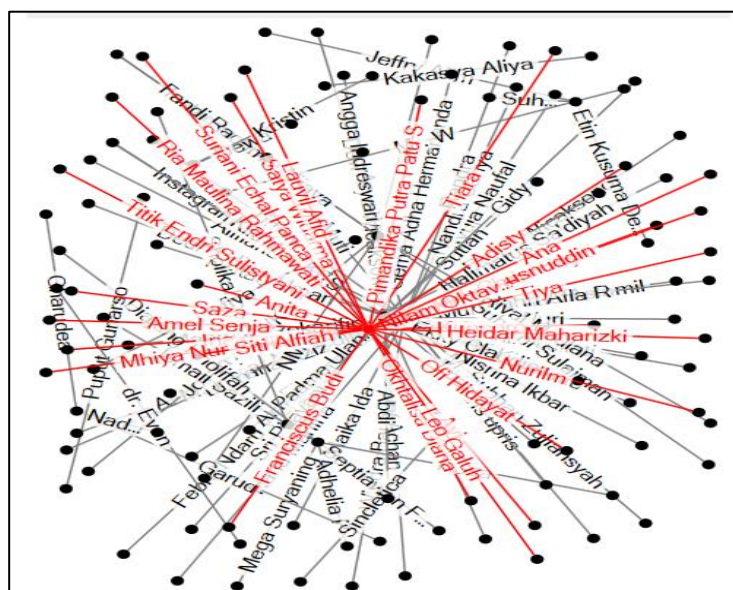| 7 | Instagram Ministry of Communication and Informatics (Kemenkominfo) | 3 |
8	Instagram Liputan6	2
9	Instagram World Health Organization (WHO) @who	1
10	Instagram @bbcindonesia	1
11	Instagram @suarasurabaya	1
12	Instagram @lambeturah	1
13	Instagram @tvrinasional	1
14	Instagram @mediascmp	1

Figure 1. Image of a *network* of sources for information on COVID-19 in Indonesia on instagram using the SNA method (red color, BNPB's Instagram)

Tie Strength

Tie Strength is a link between one point and another in the network which is represented by a line (Agusyanto, 2014). On the network of information sources related to COVID-19 on Instagram accounts in Indonesia, BNPB's Instagram, @bnpb_Indonesia, has the highest tie-strength of 113 nodes, namely 99 respondent nodes and 14 reference nodes for information sources related to COVID-19 through Instagram social media in Indonesia.

Table 3. *Tie Strength"* in the network of information sources related to COVID-19 on Instagram accounts in Indonesia

RANK	INFORMATION SOURCES	SCORE
1	Instagram BNPB (@bnpb_Indonesia)	27
2	Official Instagram Regional Government (PEMDA)	22
3	Instagram Ministry of Health (KEMENKES)	21
4	Instagram Detik.com	7
5	Instagram @kawalcovid19.id	6

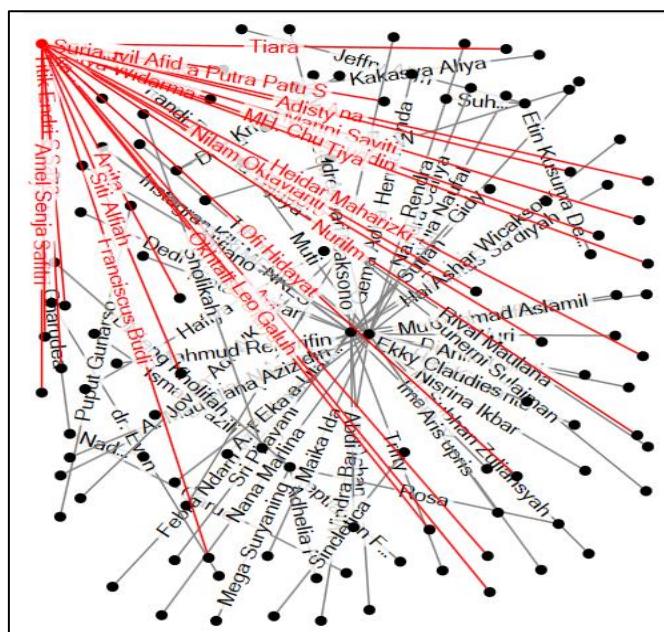| 6	Instagram @narasi.tv	3
7	Instagram Ministry of Communication and Informatics (Kemenkominfo)	3
8	Instagram @liputan6	2
9	Instagram @bbcindonesia	1

Figure 2. Image of a "*Tie Strength*" in the network of information sources related to COVID-19 on Instagram accounts using the SNA method (red color, BNPB's Instagram)

Centrality

Centrality in the Social Network Analysis (SNA) method is a measure of centrality to determine the most important actors in a social network, this shows the degree of a person's center (Mincer and Niewiadomska-Szynkiewicz, 2012). In the strongest actors, there are four measurements:

1. Degree Centrality

Degree centrality is a measure that shows the level of connection an actor has in an SNA network. The degree of centrality is also a 'key player' in a network (Cheliotis, 2010). In investigating the network of information sources used for referrals by the public regarding the COVID 19 pandemic information on Instagram social media accounts, @bnpb_Indonesia ranks first, with a score of 27. In the second place official local government accounts in each region in Indonesia score 22.

Table 4. *Degree Centrality* to determine the *key player* in the Covid-19 information source network on Instagram.

RANK	INFORMATION SOURCES	SCORE
1	Instagram BNPB (@bnpb_Indonesia)	27
2	Official Instagram Regional Government (PEMDA)	22
3	Instagram Ministry of Health (KEMENKES)	21
4	Instagram Detik.com	7

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5	Instagram @kawalcovid19.id	6
6	Instagram @narasi.tv	3
7	Instagram Ministry of Communication and Informatics (Kemenkominfo)	3
8	Instagram @liputan6	2
9	Instagram @bbcindonesia	1

From the table above, instagram BNPB @bnpb_Indonesia, is enough to be taken into account by the public for reference sources of information related to COVID-19 on instagram social media.

2. Betweenness Centrality

Betweeness Centrality is a connecting actor in a network (Cheliotis, 2010). The highest score for the reference network for information sources related to COVID-19 on social media Instagram is @bnpb_Indonesia which is the official account of the National Disaster Management Agency (BNPB), namely 351,000, second is the official Regional Government IG, which is 231,000. So that the most important liaison actor in the COVID-19 network of social media accounts for Instagram is BNPB (@bnpb_Indonesia).

The table shows that the IG @bnpb_indonesia and the official IG accounts of the LGs in each region in Indonesia are the most dominant actors based on the size of 'betweenneess'. The two actors are in the path of other actors, these accounts are actors who become facilitators for other actors as a reference source for information related to COVID-19. This is in accordance with the theory put forward by Freeman (1979) that this measure can be said to be an actor capable of facilitating other actors in other words acting as a facilitator for other actors.

Table 5. *Betweenness to* determine the *key player* in the Covid-19 information source network on Instagram.

RANK	INFORMATION SOURCES	SCORE
1	Instagram BNPB	351.000
2	Official Instagram Regional Government (PEMDA)	231.000
3	Instagram Ministry of Health (KEMENKES)	210.000
4	Instagram Detik.com	21.000

3. Closeness Centrality

'*Closeness*' is a liaison actor between vertices or nodes in a network (Cheliotis, 2010). In a network of information sources related to COVID-19, the highest liaison actor between vertices is the @bbcindonesia Instagram account with a score of 1,000.

Table 6. *Closeness* in the network of information sources related to Covid-19 info on Instagram

RANK	RESOURCES INSTAGRAM ACCOUNT	SCORE
1.	BBC Indonesia	1.000
2.	IG Dr. Evan	1.000
3.	IG Hafiyah	1.000
4.	@lambe_turah	1.000

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5.	@mediascmp	1.000
6.	@who	1.000
7.	@kompas.com	1.000
8.	@suarasurabayamedia	1.000
9.	@tvrinasional	1.000
10.	IG Kakasya Aliya	1.000
11.	IG Mr. W	1.000
12.	IG Puput Gunarso	1.000
13.	IG Sholikah	1.000
14.	IG Cincletica	1.000
15.	IG LIputan6	0.500
16.	@narasitv	0.333
17.	IG Kemenkominfo	0.333

'*Closeness centrality'* is a measure that shows the average distance between one actor and another. The highest score is the BBC Indonesia node, so the BBC Indonesia Instagram account, @bbcindonesia, is the actor closest to other actors.

4. Eigenvectore

Then Eigenvector is an important actor who is connected with the key actor (the actor who is most connected) (Cheliotis, 2010). In the network of information sources related to COVID-19 on social media Instagram, an important actor connected with key actors is the Instagram node @bnpb_Indonesia with a score of 0.036, shown in the following figure 3.
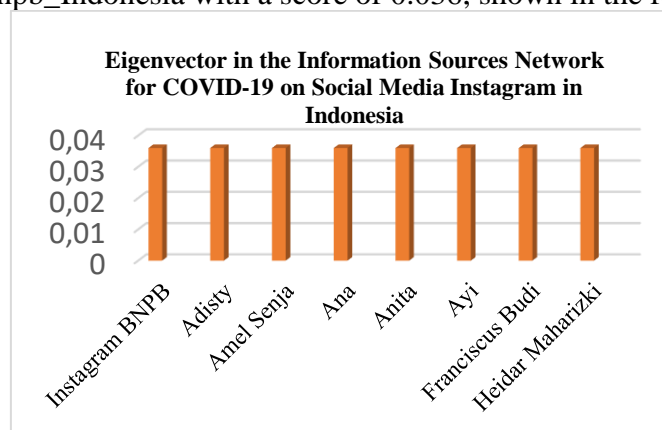

Figure 3. *Eigenvector* in the network of information sources related to Covid-19 info on Instagram

Performance Image BNPB

Image is formed based on knowledge and information received by a person. Communication does not directly lead to specific behaviors, but tends to influence the way we organize our image of the environment. Soemirat and Ardianto (2004) explain the cognitive effects of communication greatly affect the process of forming a person's image.

Based on the results of the analysis using the SNA method, it can be said that BNPB Indonesia has a good image. It can be seen from the respondent's decision to choose BNPB Indonesia as the main source in obtaining information about COVID-19 through the IG account

which has a score of 27 out of 112 vertices in degree centrality. This means that BNPB is the key actor or main reference that connects the government and the community.

Then IG BNPB and Betweeness Centrality are the liaison actors in the 'highest' network for the reference network for information sources related to COVID-19 on Instagram social media @bnpb_Indonesia. Then Eigenvector is the important actor who is connected with the *key actor* (the actor who is most connected). Eigenvectore on the COVID-19 information source network, the instagram node @bnpb_Indonesia came in first with a score of 0.036.

1. Public Response about BNPB

Then in the results of the survey the author conducted with 112 respondents in Indonesia (Java Island 82.1%, Madura Island 2.7%, Sumatra Island 2.7%, Kalimantan Island 0.9%, Sulawesi Island 6.3%, Lombok Island 1.8%, Bali Island 2.7%, Sumbawa Island 0.9%) getting results 92.9% knowing the National Disaster Management Agency (BNPB) and 7.1% of respondents not knowing. The indicator is that almost all people are aware of the National Disaster Management Agency (BNPB), shown in the following figure 4.
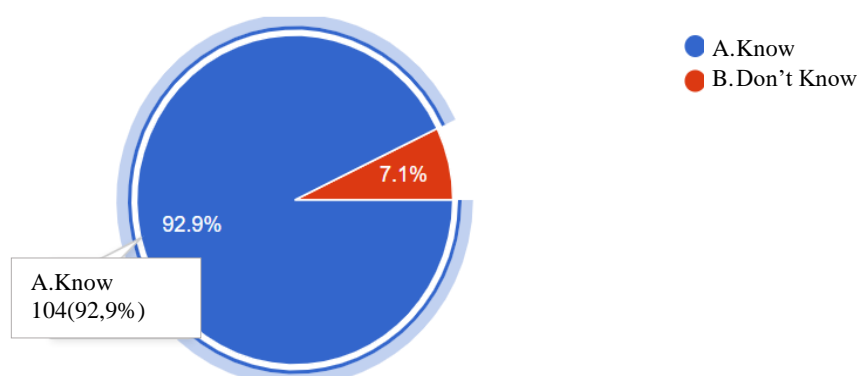

Figure 4. Information about the existence of BNPB

2. BNPB's Performance

The presence of the official BNPB IG shows the closeness between the government and the community, especially millennials who are predominantly using Instagram. BNPB's performance regarding the response to COVID-19 can be seen easily so that the public can provide an assessment of the image of BNPB Indonesia. Until now, there were 1947 uploads, 240 thousand followers, and 295 followers.

From the results of a survey conducted by the author with 112 respondents, the public assessed that 54.5% of BNPB's performance in disseminating information and disseminating it was Good, then 32.1% was normal, 11.6% was very good and 1.8% of the community considered BNPB's performance was bad, shown in the following figure 5.
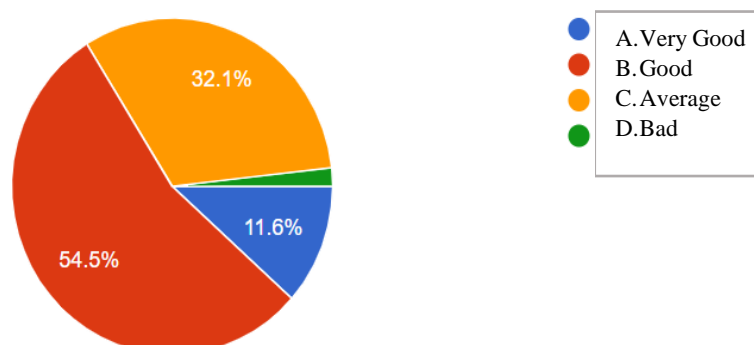

Figure 5. BNPB Performance Data

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3. Reference to COVID-19 Information

BNPB has an Instagram account that functions to inform and educate the public regarding natural disasters in Indonesia as well as education about COVID-19. The results of a survey of 112 respondents, when talking about reference to information on Instagram social media related to COVID-19, the IG @bnpb_Indonesia account was in first place 19.8%. Then the official Instagram of PEMDA 19%, Instagram KEMENKES 18.1%, Instagram Detik.com 6%, Instagram Ministry of Communication and Informatics @kemenkominfo 2.6%, Instagram @kawalcovid19.id 1.7%, Instagram @liputan6.com 1.7%, Instagram World Health Organization (WHO) @who 1.7% and etc 29.4%, shown in the following figure 6.
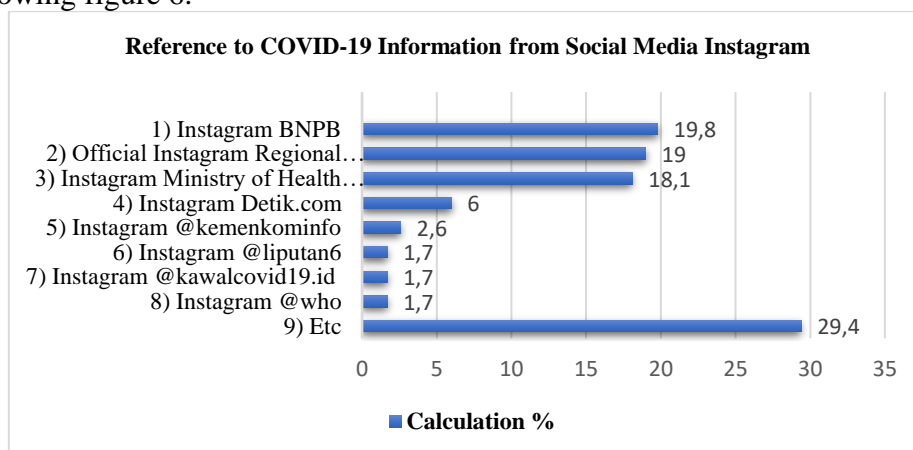
Reference to COVID-19 Information from Social Media Instagram

Category	Calculation %
1) Instagram BNPB	19,8
2) Official Instagram Regional…	19
3) Instagram Ministry of Health…	18,1
4) Instagram Detik.com	6
5) Instagram @kemenkominfo	2,6
6) Instagram @liputan6	1,7
7) Instagram @kawalcovid19.id	1,7
8) Instagram @who	1,7
9) Etc	29,4

Figure 6. Reference to COVID-19 Information from Social Media Instagram

Instagram users make BNPB accounts as references for COVID-19 information on verified Instagram accounts as evidenced by the presence of a blue check mark behind the BNPB username. This means that the information submitted by BNPB is valid and reliable so that it is worthy of reference. The @bnpb_indonesia account can be accessed easily by the public and can provide responses in the form of questions or comments in the posts they upload.

4. Completeness of information presented by BNPB

Regarding the completeness of the information presented by BNPB via Instagram @bnpb_indonesia, we found out through a survey we conducted. From 112 respondents consisting of several regions in Indonesia, it was found that 48.2% stated that they were complete, 43.2% were just ordinary, 5.4% were very good and 2.7% were incomplete, shown in the following figure 7. So that most people think that the IGBNPB account, @bnpb_Indonesia, is complete.
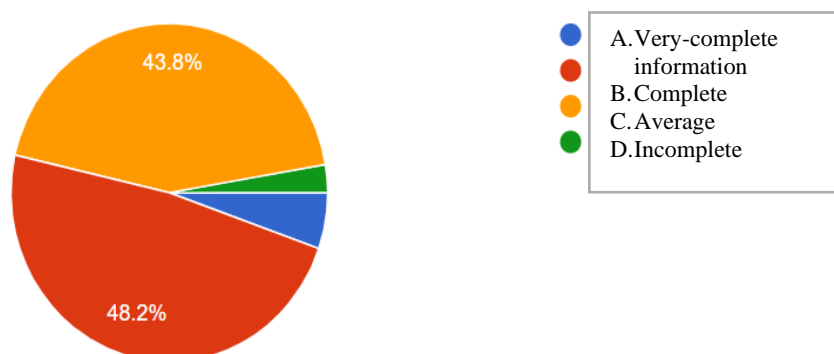

Pie chart legend:
- A. Very-complete information
- B. Complete
- C. Average
- D. Incomplete

Values shown: 43.8%, 48.2%

Figure 7. Complete data on COVID-19 information on the BNPB Instagram account social media Instagram only communicates one way

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Instagram social media users communicate with the admin by commenting on uploaded photos presented by the admin of the Instagram account source of information related to COVID-19. In this study, the authors compared 14 Instagram accounts for COVID-19 information sources: 1) BNPB, 2.) Official Instagram Regional Government (PEMDA), 3.) Instagram Ministry of Health (KEMENKES), 4.)@Detik.com, 5.) @Kawalcovid19.id, 6.) @Narasi.tv, 7.)@Kemenkominfo, 8.) @liputan6, 9.) @who, 10.) @bbcindonesia, 11.) @suarasurabaya 12.) @lambeturah (score 13.) @tvrinasional, 14.) @mediascmp.

In the Instagram social media feature, there are comments, likes and mantions. Comments consist of responses and a few questions. However, based on our analysis, only 15.5% of respondents made comments on the Instagram account that was selected as a reference for COVID-19 information sources, 84.8% of respondents did not comment. Then of the 112 respondents, only 0.6% of respondents were given feedback or responded to comments by the IG account for information sources related to COVID-19 and 96.4% were never given feedback.

CONCLUSION

Even though the image is intangible, the people's sensitivity regarding the presence of the BNPB Instagram account proves that the image can be measured and its form can be felt from the results of research such as a good image or a bad image, such as acceptance and both positive and negative responses that come from the public. The results of our survey research show that the IG BNPB account, @bnpb_indonesia, has a pretty good image.

The good image of the National Disaster Management Agency (BNPB) can be seen in a survey we conducted of 112 respondents with the public who knew about the instagram PNPB at 92.9%, BNPB's performance was in first place, namely 54.5% and from 14 Instagram accounts referencing related information. COVID-19, then related to the completeness of information, 48.2% of respondents stated that they received complete information about COVID-19 in the BNPB IG account, namely @bnpb_indonesia.

Then the results of network mapping on social media using the Social Network Analysis (SNA) method, Tie Strengh (a link between one point and another) @bnpb_Indonesia becomes the node that has the highest tie-strength of 113 nodes, namely 99 respondent nodes and 14 information source reference nodes. related to COVID-19 through Instagram social media in Indonesia.

In an information network on Instagram accounts about COVID-19 with SNA in Indonesia, Instagram BNPB @bnpb_indonesia in the dissemination of COVID-19 information until April 2020 has a high number. This can be seen from the results of degree centrality or the '*key actor*' @bnpb_Indonesia ranks first out of 14 information referrals on Instagram, namely with a score of 27, betweeness Centrality (liaison actor in a network) @bnpb_Indonesia is in first place 351,000. Then Eigenvector (the actor most connected) Instagram node @bnpb_Indonesia is ranked first with a score of 0.036. The results of this research show that the effectiveness of BNPB's communication through the @bnpb_indonesia Instagram account is considered good.

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