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Government Social Media in Indonesia: Just Another Information Dissemination Tool

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ABSTRACT

Indonesia is the largest social media market in Southeast Asia with approximately 79 million active users. Since 2015, government agencies have been actively using social media as one of their communication channels. This study aims to analyse whether the advent of communication technologies of social media has made Indonesia government to perform a long-term two-way communication with the citizens. The social network analysis (SNA) method was used to analyse four types of government-citizens' conversations on social media: daily communication, campaign communication, crisis, and emergency communication. Two Indonesian government agencies' social media accounts at the national level were selected as samples. One was a policy-based government agency and the other was a service-based agency. This study found that a two-way communication happened in a limited way, which was mainly in the daily conversation. The policy-based agency used social media as a channel to disseminate information, thus they had a low number of interactions. Although the agency allows comments from every follower on Facebook page, there was no interaction between the agency and the public. The agency apparently was more active to reply messages via Twitter. The high number of fake followers and political buzzer on Twitter support the finding that the only interest for the agency to be on Twitter was to disseminate information. Lack of interaction happened in the campaign communication, also in crisis and emergency communication — types of communication that are urgent and important.

Keywords: *SNA, Indonesia, government social media, symmetrical communication, interaction*.

INTRODUCTION

As the advent of communication technologies and the Internet enable citizens to be actively promoting their agendas and mobilize socio-political actions (Debatin, 2008), both technologies have been playing a vital role in Indonesia's politics. Since his election to the office in 2014, President Joko Widodo recognizes the importance and relevance of public relations (PR) to promote the Indonesian government's image and diplomacy. In June 2015, he instructed PR officials in all government agencies to work on a single/cohesive narration (Narasi Tunggal) to support the government's programmes and optimize the social media to inform the government's agendas (Perkasa, 2016).

How technology impacts democratic governments divides scholars into two distinct camps (Lips, 2014). On one hand, the optimistic view holds that technologies will transform governments to become more transparent and more accessible to their citizens. Scholars in this view consider that the development of communication and information technology has changed the way the government communicates with the public (Avery & Graham, 2013), from propaganda to two-way communication (Chen, 2003). The view is based on the nature of social media that enables interactive, two-way, open, targeted communication and participation (Avery & Graham, 2013; Bertot, Jaeger, & Grimes, 2012). Social media also has the potential to promote a positive perception of the government through the

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dissemination of information and by providing a platform for citizen-and-government interaction (Magro, 2012).

On the other hand, the pessimistic view holds that governments are still doing the same job, spreading the same old propaganda messages with new forms of technologies (Lips, 2014; Sweetser, 2011; Sanders, 2009). As technology develops, the government recognizes its function as a 'useful instrument' or 'enabler' rather than a 'driver' of transformation (Lips, 2012). The pessimistic camp reckons that neither governments nor citizens can be benefitted from feedbacks and collaboration that new technology could facilitate (DePaula & Dincelli, 2016).

Based on the background provided above, this study takes Indonesian government as the case study, to analyse the government communication on social media in the country where freedom of information is guaranteed by the Public Information Act and where citizens are active users of social media. Will the optimistic view happen in Indonesia's government or will the pessimistic view be supported?

In examining the topic, this study focuses on the Indonesian government public relations' communication performed on social media. The optimism perspective means that Indonesia government at some degree will perform two-way dialogic communication and if not, the communication will only be aimed to disseminate government information (Grunig, 2009). Thus, the following research question is suggested:

RQ: To what extent does the Indonesian government employ symmetrical communication through social media?

LITERATURE REVIEW

The essence of communication between government and citizen is an equally mutual relationship based on two-way dialogue, more intensive after facilitated by new media. Government communication can be analysed from a PR perspective that conceptualizes communication as a management function between the organization and its public, aimed to achieve a mutually beneficial relationship (Strömbäck & Kiousis, 2011).

PR, being one of the communication functions of any organization, institution, and corporation, has its root from propaganda. Edward L. Bernays, widely known as the father of modern PR, laid the foundation of this field predicated on propaganda theory (Bernays, 1955). His idea in using a social psychological approach to molding people's opinions embedded in propaganda is the basic principal in PR campaigns. Today, PR theories have moved to the direction of two-way dialogic communication (Kent & Taylor, 2002; Grunig & Gruning, 1992) and have set apart the propaganda at the end of the opposite direction.

PR theories nowadays claim that their main function is to serve the company or organization as well as their stakeholders through dialogue and symmetrical communications. The notion of symmetry, introduced by James E. Grunig (Grunig & Grunig, 1992), is based on "asymmetrical process of compromise and negotiation […]. In symmetrical worldview, organisations get more of what they want when they give off some of what they want." (Grunig & Grunig, 1992, p.39). On the contrary, the asymmetrical communication is based on the viewpoint of authority and elitism of the organization when interacting with its stakeholders. Moreover, PR is motivated by mixed-motives to serve both the organization that they are working for and to the public of the organization.

According to Stacks & Watson (2006), the survey-based method that assesses individuals' perceptions of their behaviors cannot capture the exchange of information and communication between individuals, resulting most of the research fall in one-way and asymmetrical communication. To analyze the mutual causal loops of two-way symmetrical communication, applying communication network analysis is best to investigate the features such as mutually causal feedback (Monge & Contractor, 2003), network connectedness, and a high information density (Stacks & Watson, 2006).

Understanding Social Network Analysis (SNA)

The conversation between the government and its citizens on social media can be examined through SNA. Communication networks are defined as the pattern of interaction, shown by the exchange of messages and information among communicators through time and space (Monge & Contractor, 2003). Previous research indicated that interactions and relationships maintained online are as real as offline forms of interaction (Gruzd & Haythornthwaite, 2011). The growth of data and online conversations now enables social researchers to collect data and analyse online social interactions. All interactions in online communication can be traced and connected (Himelboim, Golan, Moon & Suto, 2014). In this study, the connections were traced from the Indonesian government agencies' posts on social media, including all comments, all replies to followers, and each post from followers mentioning a government account or a keyword of an issue. These connections as manifested in those interactions on social media were used to analyse the Indonesian government's communication patterns.

A communication network constitutes actors and the interactions among them (Monge & Contractor, 2003; Himelboim, Golan, Moon & Suto, 2014), including the direction of interaction and its intensity. In analysing online conversations on social media, the actors are social media users and the interactions consist of posts, replies, and comments. With the SNA method, actors are called "nodes or vertices", and their interactions are called "edges, ties, or links" (Golbeck, 2013. p.8-9). In this study, social media accounts were called nodes and the social media posts were called edges. In the network visualization, actors were visualized as dots and in interactions were visualized as links/lines.

In SNA, the number of connections a node has is called a degree, meaning that it can tell how well-connected the node is to other nodes in the network (Golbeck, 2013). In an undirected graph of networks, degree simply reveals how many edges a node has (Scott, 2017). Nevertheless, if the direction of edges is part of the analysis, then the network should be treated as a directed network (Scott, 2017). In this study, the directions of the edges were part of the analysis because they demonstrated whether the conversations came from the government agencies' social media accounts or from the followers. The number of edges coming into a node is called indegree and the one coming from a node is called an outdegree (Golbeck, 2013). In this study, social media posts sent out from government agencies' social media accounts were defined as outdegree and the ones coming from the followers were called indegree.

Both actors and interactions can occur in either a whole network or an egocentric network (Marin & Wellman, 2011). A whole network features actors and interactions in one topic of conversation, for instance, the network of conversation related to the

government's activities, regulations, or policies (Marin & Wellman, 2011). The whole network data can be divided into one-mode data or two-mode data (Marin & Wellman, 2011). One-mode data refer to the network in which the nodes within represent one datum, such as names of actors or organizations (Golbeck, 2013). The two-mode data refer to nodes that have two types of data: representing people and their organization (Golbeck, 2013). The egocentric network features nodes and interactions that surround one node and are therefore called an ego node (Golbeck, 2013).

In analysing the Indonesian government's conversations on social media, this study analysed both the whole network and the egocentric network. The whole network was formed from Twitter conversations that use particular hashtags (#) related to the topic of conversation. When using hashtags as keywords to collect data, all tweets with the hashtag within were gathered. The data were also counted as one-node data because the study was to only analyse the social media accounts by their names, not their organizations or types of stakeholders. The egocentric network was formed from all the Facebook and Twitter conversations collected by using names of the government agency accounts. In analysing the two-way communication networks formed on Twitter, the edges were limited to "reply to" tweets only. Tweets containing "reply to" were not initial tweets but responses. In order to analyse two-way communication networks, the "reply to" tweets were collected so the responses can be seen. To analyse the two-way communication networks, this study only included Facebook users who interacted at least twice in the gathered conversation networks. Facebook users who had only one interaction were excluded because this study assumed that a conversation needs more than just a one-time interaction.

To analyse if the Indonesian government practiced two-ways communication, the network indexes must show direction, density, and centrality (Stacks & Watson, 2006). Two-way symmetrical communication occurs when the conversation networks exhibit mutually causal feedback, network connectedness, and a high information density (Stacks & Watson, 2006). In addition, Monge and Contractor (2003) state that "relations" in communication networks must possess properties such as "strength, symmetry, transitivity, reciprocity, and multiplexity" (p. 30).

Based on Brass' definitions (1995), the network measurements are contextualized to analyse Indonesian government communication patterns on social media. Connectedness is the degree to which an actor connects to all other actors in the network. Density compares the number of actual connections with possible connections. Stacks and Watson (2006) states that a two-way symmetrical communication model occurs when the density is higher in the network of symmetrical links compared to the whole network. The last measurement is reciprocity or the extent to which a relationship is bi-directional (Brass, 1995). The two-way symmetrical communication model occurs when the conversation networks exhibit mutually causal feedback (Stacks & Watson, 2006), meaning that reciprocity exists.

The following hypotheses are concluded to examine the Indonesian government communication on social media (Brass, 1995; Monge & Contractor, 2003; Stack & Watson, 2006):

H1: Reciprocity in the Indonesian government's two-way communication network is higher than the reciprocity in the whole network.
H2: Information density in the Indonesian government's two-way communication network is higher than the density in the whole network.
H3: Connectedness in the Indonesian government's two-way symmetrical communication networks is higher than the connectedness in the whole network.

METHODS

To answer the research question, this study implemented social network analysis (SNA) to examine the symmetrical communication network in the Indonesian government's conversation via social media. This study analysed two government agencies that specifically provides health services as it is accessed widely and tends to receive most of the attention from the public. The first sample was the Indonesian Social Security Administrator (*Badan Penyelenggara Jaminan Sosial/BPJS Kesehatan*) which manages the health care system in Indonesia and provides the services. The second sample was the Indonesian Ministry of Health (*Kementerian Kesehatan*) which regulates, manages, and provides health services.

Data was gathered for four weeks starting December 2017 until January 2018 by using the social network analyser software Netlytic (Gruzd, 2016) and analysed using the visualization and exploration software Gephi Version 0.9.1 (Bastian, Heyman & Jacomy, 2009).

The conversation networks were analysed separately based on Mergel (2017) classification of government social media tactics: *day-to-day communication, campaign communication, organizational crisis*, and *emergency communication*. The unit of analysis of this study covered four egocentric networks and six one-mode data of conversation networks from Twitter and Facebook. For daily communication, two egocentric networks from the Indonesian Social Security Administrator were collected using the agency social media accounts: *@BPJSKesehatanRI* (Twitter) and *@BPJSKesehatanRI* (Facebook). The other two egocentric networks from the Indonesian Ministry of Health were *@KemenkesRI* (Twitter) and *@KementerianKesehatanRI* (Facebook).

For *campaign communication*, this study collected tweets that used *#DukungGermas*—a campaign from the Ministry of Health to encourage a healthy society (*Kementerian Kesehatan Republik Indonesia*, 2016). The *organizational crisis communication* networks were gathered using hashtag *#KemenkesBekerja* on Twitter. *#Kemenkesbekerja* means "the Ministry of Health is working" and was used to communicate that the ministry was working on the health issues in Indonesia. The word "work" was emphasized to delivery President Widodo administration's motto: work, work, work (Istman, 2017). During data collection, the hashtag was used to counter criticism on the malnutrition problem in the Asmat Regency of Papua Province—one of the most underdeveloped areas in Indonesia.

The last social media tactic, *emergency communication* network, was gathered using hashtag *#imunisasicegahdifteri*. The hashtag means 'immunization prevents diphtheria' and was used by the Ministry of Health because of the diphtheria outbreak in December 2017 (Kapoor, 2017). The hashtag was used to spread information about

diphtheria to the public in large as well as to urge them to participate in the vaccination program (Kapoor, 2017).

The ubiquity of misinformation, rumours, fake followers, and bots were challenges in analysing conversations on social media (Shao, Ciampaglia, Varol, Flammini & Menczer, 2017). Therefore, it was important to first identify which data were going to analysed or excluded (Barberá, Jost, Nagler, Tucker & Bonneau, 2015). In this research, clusters of conversation that were suspected as fake accounts and political buzzers were deleted and excluded from the analysis. The reason was that those accounts demonstrated fake interactions or conversation, while this study aimed to investigate the actual two-way communication between government agencies and citizens. Due to huge numbers of fake accounts and social media buzzers, of all seven conversation networks, gathered in this study, three conversations networks were cleaning before they are analysed: the Indonesian Ministry of Health communication network on Twitter, the Indonesian Healthcare Agency's conversation networks on Twitter, and the *emergency communication* network.

FINDINGS AND DISCUSSION

Day-to-day Communication Network

The first day-to-day communication conversation network was taken from the egocentric network of the Ministry of Health (*@KementerianKesehatanRI*) on Facebook. There were 931 Facebook posts collected of which the ministry account sent 227 posts. Table 1 depicts that network properties in the two-way communication networks (D = 0.042) on Facebook are denser than in the whole conversation networks (D = 0.002). The average path a node needed to get connected to every other node in the network was shorter in the two-way communication networks (l = 1.89) than in the whole network (l = 2.03). Likewise, in the two-way communication network, the average number of interaction (degree) was higher (k = 1.73) compare to the whole networks (k = 1.063). All of them indicated there were more intensive conversations in the two-way communication networks than in the whole networks.

Table 1: Network level properties of the Ministry of Health.

Networks	Nodes	Edges	Network Density	Average path length	Average degree	Network diameter	Clusters
Facebook	495	526	0.002	2.032	1.063	4	20
Facebook two-way network	42	73	0.042	1.894	1.738	4	4
Twitter	5,136	10,736	0,0004	3.932	2.096	8	106
Twitter two-way network	1,191	2,366	0.002	2.335	1.987	5	97

On the Facebook conversation network, the ministry's account had 463 comments (indegree), but the ministry only replied twice in the comments (outdegree). In the two-way communication networks on Facebook, the ministry's account got 57 comments, but they only replied once. That was when a user account named 'Faisal MaTs' wrote a comment on the ministry's Facebook post about HIV/AIDS. 'Faisal MaTs' said that it was too bad that HIV/AIDS does not get covered by Indonesian national healthcare. The ministry's account replied by explaining that patients with HIV/AIDS were now covered by national healthcare.

The second egocentric network was collected from The Ministry of Health account on Twitter (*@KemenkesRI*). Table 1 shows the number of accounts in the two-way communication networks on Twitter was only 23.18% of accounts in the whole network. This occurred because of the high number of retweets the ministry's Twitter account had. This was also shown from the number of edges (tweets) in the two-way networks, which was only 21.75% percent of the tweets in the whole network. However, the average number of tweets sent in the two-way communication network (k = 1.987) was slightly different from the number of tweets in the whole network (k = 2.096). At first, the whole conversation network on Twitter seemed to have more fake accounts than the two-way communication network, which consisted of 'replied to' tweets. However, in a closer look, the two-way communication network also contained fake accounts and buzzers that were actively mentioning and replying to each other, thus still counted as 'replied to' tweets in the data collection process.

Figure 1 shows that positions of the ministry's account in all conversations were at the centre of the networks. Networks on Facebook formed star-shaped structures, described as an in-hub network or broadcast network (Himelboim, Smith, Rainie, Sheneiderman & Espina, 2017). A broadcast network means that all social media users are connected to a small number of users (Himelboim, Smith, Rainie, Sheneiderman & Espina, 2017). Since the data was gathered from the Ministry of Health's Facebook timeline, all users must be those who wrote something directed at the ministry's account. The visualization of both networks (Figure 1) shows how the network becomes less dense from the whole network (left) to the two-way communication network (right).

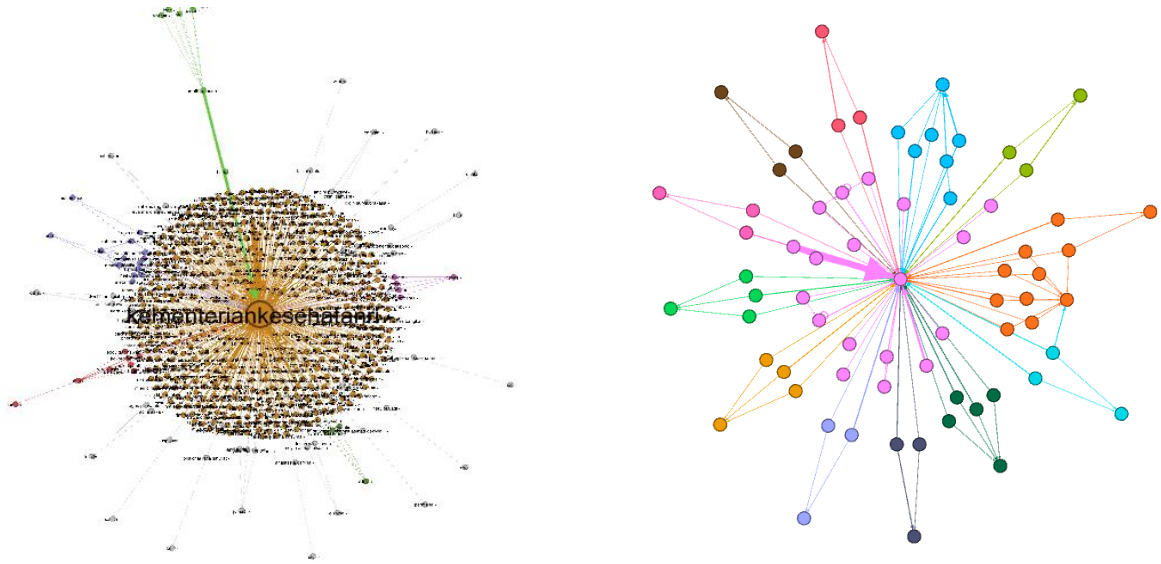

Figure 1: Visualizations of Indonesian Ministry of Health conversation network on Facebook: whole network (left) and two-way communication network (right).

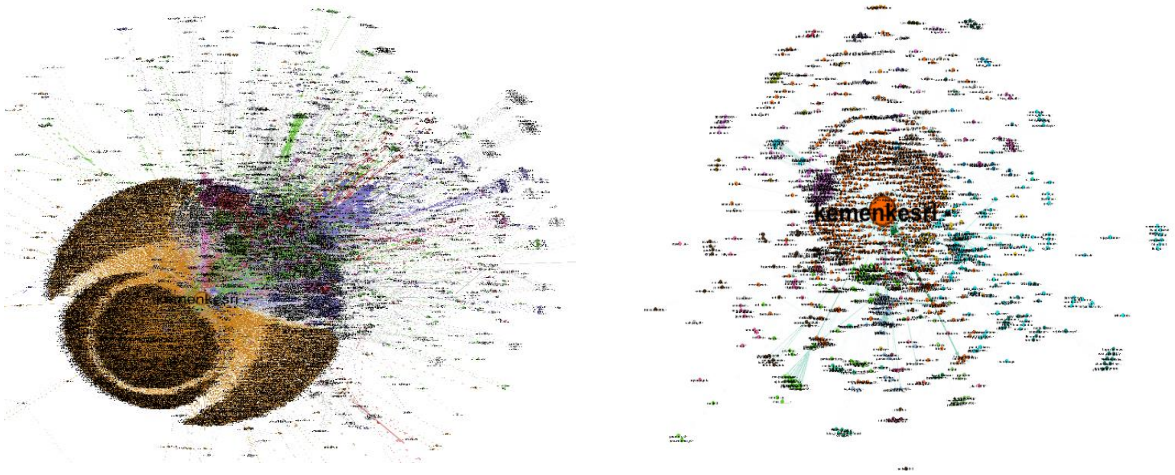

Figure 2: Visualizations of Indonesian Ministry of Health conversation network on Twitter: whole network (left) and two-way communication network (right).

In the visualizations of the ministry's Twitter networks (Figure 2), the whole network was low in density and high in isolates, meaning that users attracted to popular topics that were tweeted by the Ministry of Health, but they did not engage with other users (Himelboim, Smith, Rainie, Sheneiderman & Espina, 2017). The two-way communication network formed a star-shaped broadcasting network, meaning that most of the conversation was aimed at the ministry's accounts, specifically to get information.

The third egocentric network was collected from the Indonesian Healthcare Agency *@BPJSKesehatanRI* conversation network on Facebook. There were 16,739 posts that were collected in a month in which the agency itself sent out 1,466 messages (out-degree) and got 2,493 comments (indegree). Network visualization shows that there were more accounts involved in the whole network than in the two-way communication network on Facebook (Figure 3). The networks' properties also support the visualization (Table 2). The two-way communication network (D = 0.001) on Facebook was two times denser than the conversation of the whole network (D = 0.002). The average degree in the two-way communication network was higher (k = 2.873) than the average degree in the whole network (k = 2.008). While at the same time, and the average path in the two-way communication network (l = 2.008) was shorter than the whole networks (l = 2.047). Both average degree and average path showed an intensive conversation in the two-way communication network. The agency itself sent out 1,427 messages (out-degree) and received 1,447 comments (indegree). The agency's outdegree was 49.65% of its total degree, meaning that on average almost all comments on the Facebook posts were replied to at least once by the agency.

Table 2: Network level properties of Indonesian Healthcare Agency (BPJS).

Networks	Nodes	Edges	Network Density	Average path length	Average degree	Network diameter	Clusters
Facebook	2,616	5,463	0.001	2.047	2.088	4	88
Facebook two-way network	1,480	4,252	0.002	2.008	2.873	4	14
Twitter	3,251	5,208	0.0004	2.39	1.602	9	88
Twitter two-way network	2,705	5,142	0.001	2.07	1.901	5	77

The fourth egocentric network was taken from the Indonesian Healthcare Agency *@BPJSKesehatanRI* on Twitter. Over one month, 8,463 tweets were collected. Similar to the Indonesian Ministry of Health, the Indonesian healthcare agency Twitter conversation network also contained fake accounts. Surprisingly, the number was not as big as the number of fake accounts in the ministry's network. In total, there were only 64 nodes deleted from the two-way communication network. Compared with the number of nodes deleted in the ministry's Twitter conversation network that reached 9,600 nodes, the number of fake accounts in the healthcare agency was quite small.

In the whole network, the Indonesian Healthcare Agency posted 81 tweets (out-degree) and got 2,803 mentions (indegree). From Table 2, the network properties such as average degree and average path length indicated there were more interactions in the two-way communication network (k = 1.901; l = 2.07) than in the whole network (k = 1.602; l = 2.39). In fact, the agency's indegree (2,037) was not so different from its outdegree (1,919), meaning that the healthcare agency replied to almost all the mentions it received on Twitter.

Based on the Facebook and Twitter two-way communication networks, the Indonesian Healthcare Agency used social media more often than the Ministry of Health. The agency was also more active in replying to mentions or comments on social media (Table 2). In general, the conversations in the Indonesian Healthcare Agency were related to technical issues such as the healthcare premiums, health services, coverage plans, and problems related to accessing the services. Based on the observation of the conversations, the agency utilized social media as a channel for customer services, public information and publication. In the whole network conversation, the agency used hashtags such as *#TahukahAnda* (Do you know?) or *#SebaiknyaAndaTahu* (You better know this), and they sent pictures with the title *Berita BPJS* (BPJS news) or testimonials from people who were satisfied with the services.

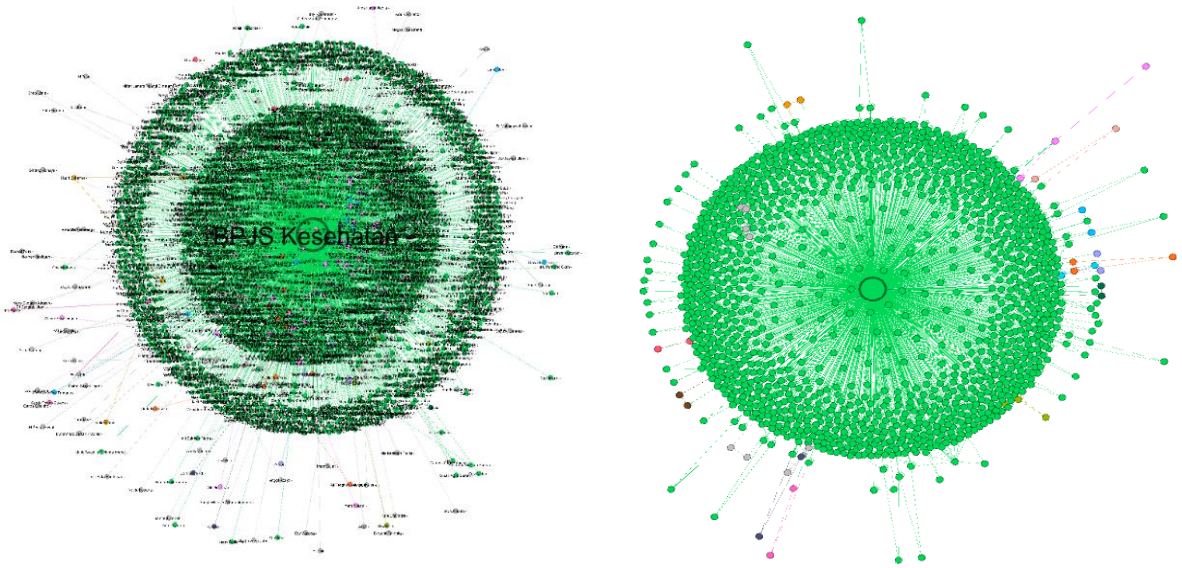

Figure 3: Indonesia Healthcare Agency communication network on Facebook: whole network (left) and two-way communication network (right).

In figures 1, 2, 3, and 4, the network visualization graph show that the positions of the Indonesian ministry's accounts in all networks were central. Although the conversation networks of the Ministry of Health and the agency seemed the same at first glance, the directions of the edges were different. In the Ministry of Health, the directions of edges were into the ministry, indicated by the high number of indegree and very small number of out-degree, thus they formed broadcast networks (Himelboim, Smith, Rainie, Sheneiderman & Espina, 2017). However, in the Indonesian Healthcare Agency, the directions of edges were mostly from the agency, indicated by the large number of outdegree. Thus, they formed 'customer support' networks (Himelboim, Smith, Rainie, Sheneiderman & Espina, 2017).

Visualization of the two-way communication networks on Twitter (figure 2) shows that the communities formed in the Ministry of Health networks were tightly closed. Two-way communication networks of the Indonesian Healthcare agency on Twitter (figure 4), however, shows that communities were not formed as individuals did not interact amongst themselves. According to Himelboim, Smith, Rainie, Sheneiderman and Espina (2017), communities in the 'customer support' network cannot really be considered communities because all users have exclusively different questions and interests within the hub. It is different with the 'broadcast network', such as what the Ministry of Health communication networks formed, where the users have interests to share to their friends the information from the hub.

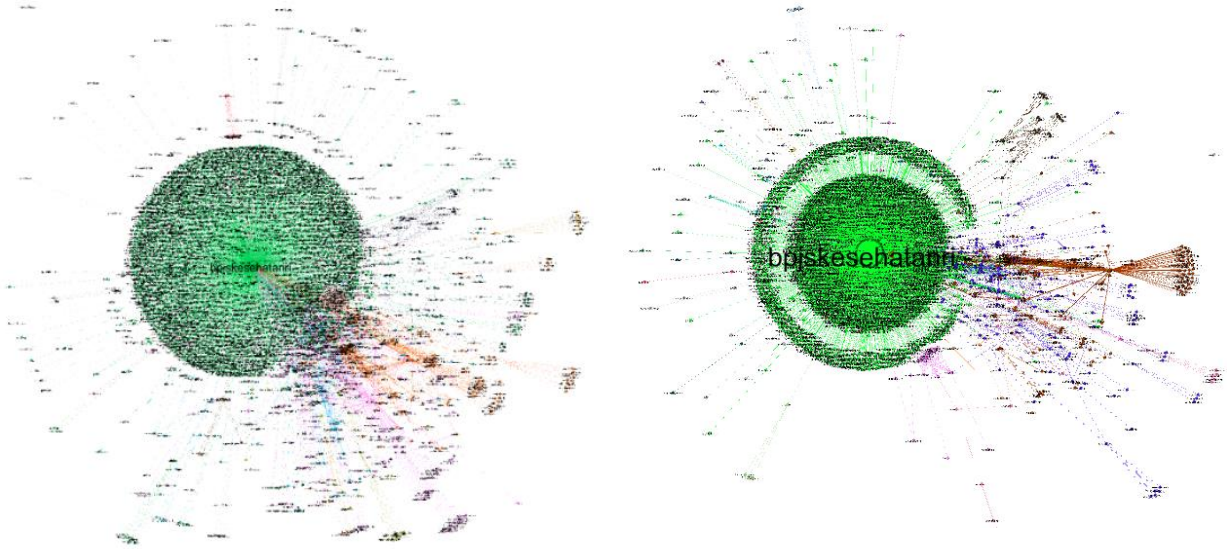

Figure 4: Indonesia Healthcare Agency communication network on Twitter: whole network (left) and two-way communication network (right).

Campaign Communication

Campaign is a strategic communication, and carefully planned by an organization to change stakeholders' opinions, attitudes, or behaviors. On social media, campaign communication is indicated by the domination of volume and frequency of social media interactions by organization (Mergel, 2017). During data collection, some hashtags appeared frequently and became headlines in Indonesia national news. This study used *#DukungGermas*

(*Dukung Gerakan Masyarahat Sehat*/Support the healthy lifestyle movement) on Twitter to collect conversation related to campaign communication.

There were 1,251 tweets collected, but a small network diameter and an average number of tweets only 1.2 (Table 3), meaning that the conversations were not intensive. Visualization of the whole conversation network of *#DukungGermas* (Figure 3) shows there are three big clusters, which are all dominated by the government agencies: the Indonesian Ministry of Health, the Directorate General of Disease Prevention and Control (*Direktorat Jenderal Pencegahan dan Pengandalian Penyakit Tidak Menular*/P2PTM), and the Directorate General of Public Health (*Direktorat Jenderal Kesehatan Masyarakat/Kesmas*).

Table 3: Network level properties of Campaign Communication, Organizational Crisis, and Emergency Communication.

Networks	Nodes	Edges	Network Density	Average path length	Average degree	Network diameter	Clusters
Campaign	512	585	0.002	1.647	1.205	3	18
Campaign (Two-way)	7	4	0.095	1	0.571	1	3
Crisis	444	489	0.002	1.917	1.101	4	3
Crisis (Two-way)	4	4	0.333	1	1	1	1
Emergency	2,072	2,502	0.001	1.533	1.208	4	33
Emergency (without spams)	1,610	1,958	0.001	1.605	1.216	4	29
Emergency (Two-way)	16	16	0.067	1	1	1	4

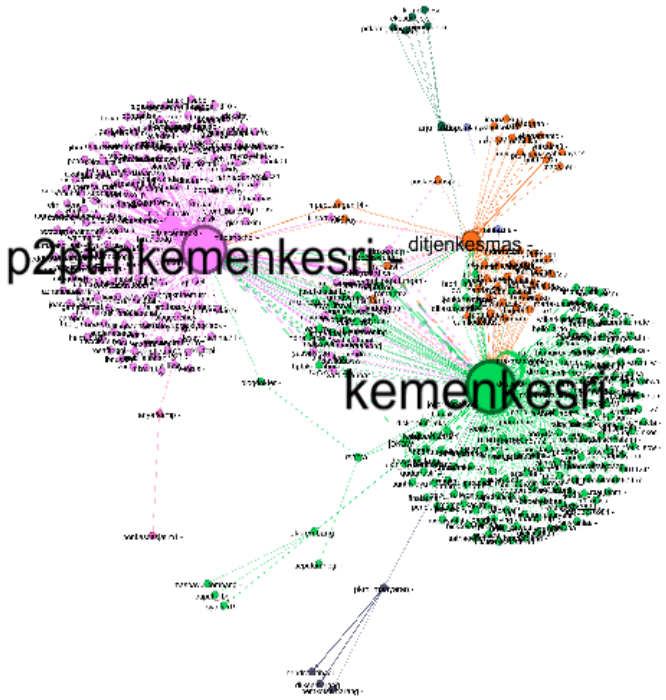

Figure 3: The whole conversation network of campaign communication *#DukungGermas* (left).

The Ministry of Health only sent out five tweets using hashtag *#DukungGermas* and got 240 mentions. What is interesting about *#DukungGermas* is how other government agencies at the local level supported the hashtag. The conversation networks of campaign communications demonstrated that *#DukungGermas* was supported by the ministry and government agencies at the local level. From the messages sent by the ministry, the campaign objective was to provide information about disease.

Organisational Crisis

Organisational crisis in this research was observed following public discourse of a malnutrition problem and measles outbreak in the Papua province. At first, criticism was aimed at the Ministry of Health in January 2018, but attention from public increased in February 2018. At that time, the student senate of the University of Indonesia criticized President Widodo for being ignorant in handling the health problems in the Papua province. The critics were countered by several government agencies, including the Ministry of Health. In countering the criticism, the ministry used the hashtag *#KemenkesBekerja* to inform followers that the ministry was working on the issue. There were also two other hashtags used, which were *#KemenkesUntukAsmat* and *#SaveAsmat*, to emphasize the ministry's work in the Asmat region. There were 782 tweets collected in a month, from February 3 to March 3, 2018.

Table 3 shows that users in this network sent an average of 1.1 tweets, and they mostly just retweeted the ministry's posts. Figure 3 demonstrates that the network shape is as a broadcast channel (Himelboim, Smith, Rainie, Sheneiderman & Espina, 2017), in which the ministry account sent out 12 tweets and got 432 mentions. The nodes with a high betweenness centrality value were government agencies under the Ministry of Health and one mass media organization, which was the Radio of the Republic of Indonesia (RRI Program 3). This network showed that the only interest that the Ministry of Health had during the crisis was to send out information and get the messages amplified on social media.

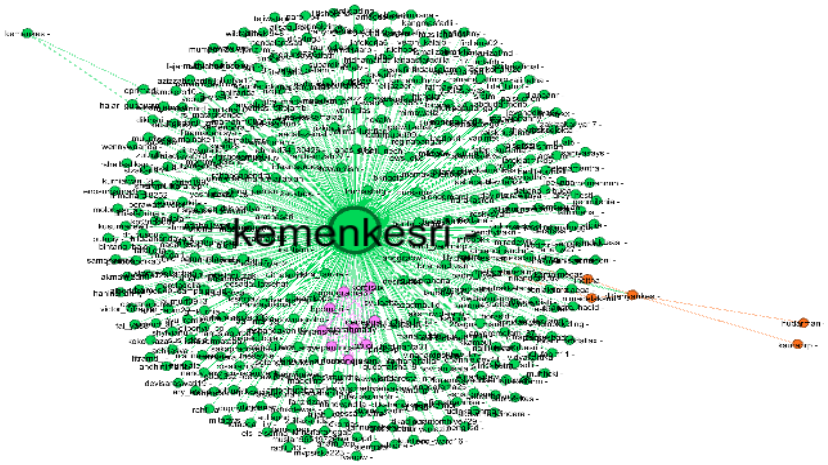

Figure 3: The whole conversation network of organisational crisis *#KemenkesBekerja.*

Emergency Communication

The emergency communication in this research was observed in December 2017 when there was a diphtheria outbreak, and the Ministry of Health urged everyone, at all ages, to get vaccinated. At that time, the Indonesian government even announced the diphtheria outbreak as a catastrophic event. The hashtag *#ImunisasiCegahDifteri* was used as a call to everyone to get vaccinated. There were 3,558 tweets collected from December 11, 2017 to January 13, 2018. At first, there were 2,502 interactions from 2,072 Twitter users in the network. However, the visualization shows that there were some suspected clusters located far away from the ministry's account. The clusters were later confirmed were spams posts, promoting pornography contents and excluded from the analysis.

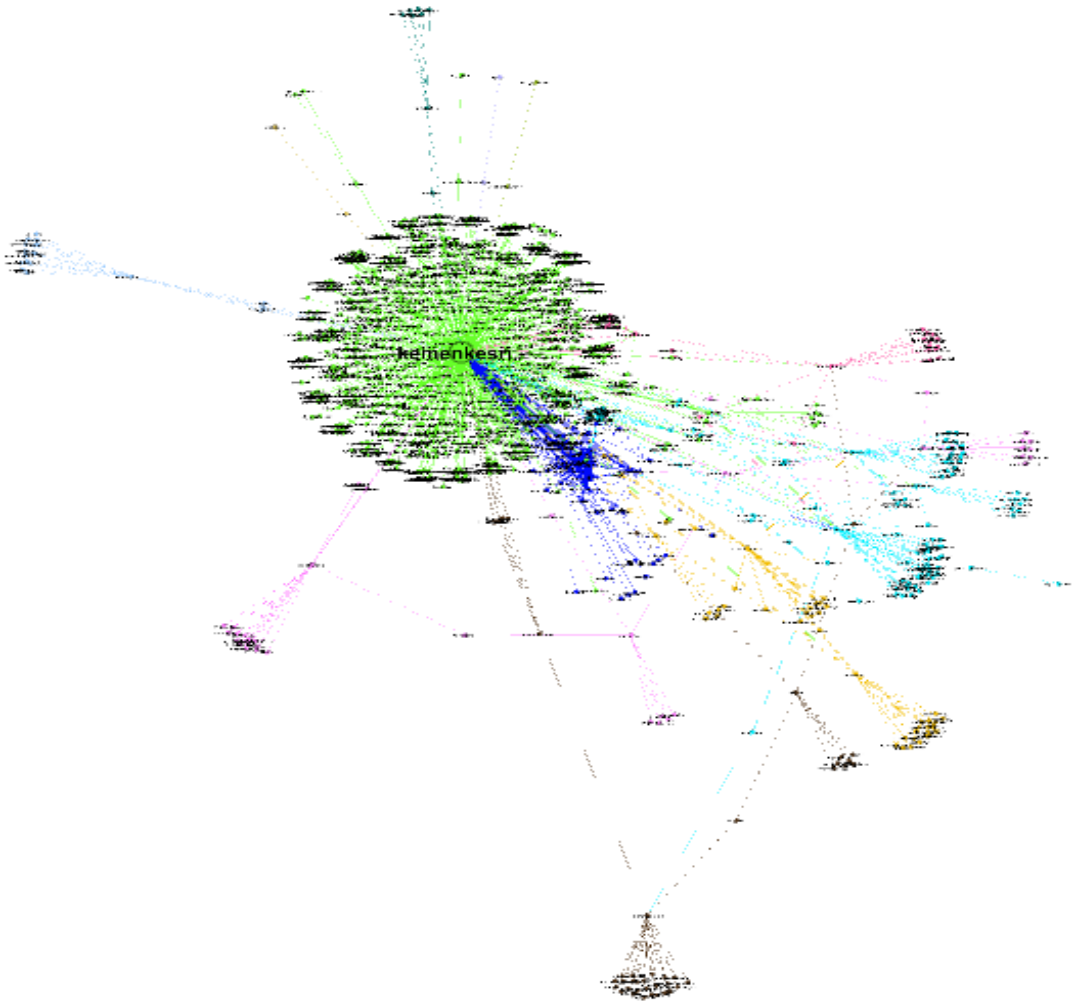

Figure 4: The emergency communication network on Twitter after the spams' clusters were deleted.

Figure 4 demonstrates that after being cleaned, several clusters were still located far from the focal node that were checked and still related to the diphtheria outbreak, so were included in the analysis. The ministry agencies found within the network were The Ministry of Education and Culture, the Ministry of State Secretary, the Ministry of Village,

Development of Disadvantages Regions, and Transmigration, the Coordinating Ministry of Maritime Affairs, and the Indonesian Institute of Science.

Besides the government agencies, government employee and government PR officers were also actively sending messages in the network. The closest cluster to the Ministry of Health was the dark blue cluster that apparently also contained the *#sinergimediasosialASN* (Figure 4). The users in this cluster have high betweenness centrality value, meaning users function as the bridges to other clusters. In other words, these were users who can effectively pass information from the ministry's account to other government agencies. The hashtag *#SinergiMediaSosialASN* were verified sent from government officers who joined the social media unit in their agencies. The social media unit was formed in the President Widodo's administration and coordinated by the Coordinating Ministry of Politics, Law, and National Security. The team was called the synergy of government apparatus' social media. The objective of this team is to counter negative opinions about the government and at the same time to make government information go viral (Lemhanas RI, 2018). During emergency communication, SIMAN team was intensively sending messages and actively mentioned other government agencies to make sure their tweets were being seen.

The presence of spams, fake accounts, and unrelated conversation in this emergency communication network was also supported by the networks' properties in table 3. It shows that the diameter of the two-way conversation network was only one-fourth of the whole network. The number of nodes in the two-way communication network was only 16, very small compared to the 1,610 number of nodes found in the whole networks. At the same time, only four communities found in the two-way communication networks, while there were 29 communities in the whole networks. Most of the communities formed in the whole network were based on the accounts interaction in retweeting the same messages. In other words, the communities were formed because they were amplifying the same messages in this emergency related conversation.

Two-Way Symmetrical Communication

To analyse the two-way symmetrical communication of the Indonesian government social media conversations, three network indicators were used: reciprocity, density, and connectedness. The reciprocity, or the portion of two-way communication ties the agencies had and the number of ties it had (Monge & Contractor, 2003), is the portion of the outdegree and the total degree ties. A high value of reciprocity indicates more two-way communication. The research hypothesis for this indicator was: H1: Reciprocity in the Indonesian government's two-way communication network is higher than the reciprocity in the whole network.

The reciprocity values in Table 4 show that the two-way communication networks had a higher value for the social media conversation in daily communication tactic. This means that the Indonesian government agencies conversation network conducted more two-way communication in the 'reply to' conversations. In the campaign communication networks, the hashtag *#DukungGermas* government agency did not conduct two-way communication, thus the reciprocity values were 0. Table 4 also shows that in crisis and emergency communication, government agencies were not replying to any messages. In conclusion, the higher values of reciprocity were only found in the routine communication.

Meanwhile, the focus of the campaign, crisis, and emergency communications were to only disseminate information.

Table 4: Reciprocity value of the whole conversation network and two-way communication network.

MoH Facebook		**MoH Twitter**		**BPJS Facebook**		**BPJS Twitter**		**Campaign**		**Crisis**		**Emergency**	
Whole	Two-way	Whole	Two-way	Whole	Two-way	Whole	Two-way	Whole	Two-way	Whole	Two-way	Whole	Two-way
0.004	0.039	0.041	0.086	0.0694	0.922	0.018	0.624	0.006	0	0.008	0	0.0123	0

The second indicator for two-way symmetrical communication is density (Stacks & Watson, 2006, p.76-77) which measures the ratio between interactions (either two-way or one way) with all the possible interactions within the network (Brass, 1995). The hypothesis for this was H2: Information density in the Indonesian government's two-way communication network is higher than density in the whole network.

The comparison of density between the two-way communication network and the whole networks was presented in Table 5. This shows that all the two-way communication networks were denser than the whole conversation networks. This means that there was more intensive conversation in the two-way communication network than the whole network. The network density in the campaign, crisis, and emergency communications were higher than the density of daily communication. However, the higher values do not mean that there were more interactions in the campaign, crisis, and emergency communication. The small number of the nodes in the networks made the density values higher in those three networks.

Table 5: Density table.

MoH Facebook		**MoH Twitter**		**BPJS Facebook**		**BPJS Twitter**		**Campaign**		**Crisis**		**Emergency**	
Whole	Two-way	Whole	Two-way	Whole	Two-way	Whole	Two-way	Whole	Two-way	Whole	Two-way	Whole	Two-way
0.002	0.042	0	0.002	0.001	0.002	0	0.001	0.002	0.095	0.002	0.333	0.001	0.067

The reciprocity table (Table 4) shows that compared to the ministry, the Healthcare Agency as a service-based government agency had higher values both in Facebook and Twitter. Reciprocity value of whole network of the Healthcare Agency on Twitter (Table 4) was 0. It does not mean that the *@BJSKesehatan* did not communicate, but the agency only sent 1 message. However, on Twitter, the agency was more active in replying to messages, thus made the outdegree in the two-way communication network higher. The agency mostly used Twitter as the channel of customer service, but the tweets were sent to the followers' timeline and counted as 'replied to' messages, while at the same time the messages were not shown on the agency's timeline. The Healthcare agency also performed intensive interaction on Facebook. The highest value of the average degree was found in

the agency's Facebook communication network (Table 2). There were 2.088 average posts in the whole network and 2.873 in the two-way communication network, indicating the agency used social media as a customer service channel.

The last network indicator for a two-way symmetrical communication is connectedness (Stacks & Watson, 2006). Connectedness is a reversed of inclusiveness because it measures the ratio of reachability of the nodes. The third hypothesis (H3) stated that the connectedness in the Indonesian government's two-way symmetrical communication networks is higher than the connectedness in the whole networks. In this study, the connectedness values in the whole networks of daily communication conversations are lower than the connectedness values in the two-way communication networks (Table 6). It means that in daily communication on social media, the reachability of the nodes in the two-way communication networks was higher than in the whole network. Similar result was found in the campaign communication using hashtag #Healthies. The connectedness of the nodes in the two-way communication network of #Healthies was fifty times larger than connectedness in the whole network. However, the number of nodes in the two-way communication network was only 8, compared to 1,982 nodes in the whole networks (Table 6).

Table 6: Connectedness table.

MoH Facebook		**MoH Twitter**		**BPJS Facebook**		**BPJS Twitter**		**Campaign**		**Crisis**		**Emergency**	
Whole	Two-way	Whole	Two-way	Whole	Two-way	Whole	Two-way	Whole	Two-way	Whole	Two-way	Whole	Two-way
0.0019	0.017	0.020	0.045	0.532	0.855	0.036	0.454	0.003	0	0.004	0	0.006	0

The campaign communications, organizational crisis communication, and emergency communication networks were not able to be analyse due to a low level of interactions in the two-way communication networks. The values of connectedness in all these networks were zero and the nodes found are quite small (Table 3 and 6). This finding is in line with the result of reciprocity (H1) that only a very small number of interactions found in the two-way conversation networks of campaign communication, organizational crisis, and emergency communication.

This study on the Indonesian government's communication via social media revealed that advanced communication such as social media was just utilized as a "useful instrument" or an "enabler" rather than a "driver" of transformation (Lips, 2012). Findings from the conversation network showed that the Indonesian government mostly used social media to disseminate governmental information, to dominate social media conversation, and to amplify governmental messages. The function of social media as a useful instrument can be seen from network visualizations that formed star-shaped networks of broadcasting channels or customer-service channels. Thus, advanced communication technology was not used to transform the government to become more engaging and transparent. In the social media conversations during an organisational crisis or campaign communication, the government agencies in this study did not even collaborate with other government agencies and did not engage with its followers.

The unexpected finding of fake accounts and social media buzzers in this study also becomes one of the limitations of the study. Although steps were taken to clean the data before analysing it, there was still the possibility that fake accounts or social media buzzers were not deleted. On the other hand, because the procedure removed clusters that were flagged as containing fake accounts or buzzers, there is the possibility that real accounts that connected to the cluster(s) were deleted as well. Fake interactions on social media, whether by bots, humans, or algorithms, not only manipulated the conversation but also posed a risk of erroneous findings in social science. For future research in analysing social media, these fake interactions could mislead researchers in social science and should be taken into consideration.

Furthermore, social media conversation data on Twitter were gathered through Twitter's Application Programming Interface (API) that allowed users to gather Twitter's data, but also limited the publicly available data (Ausserhofer & Maireder, 2013). Consequently, there is a possibility that not all social media conversation related to topics in this study were fully gathered.

In addition, the measurements of symmetrical communication used in this study (Watson & Stacks, 2007; Brass, 1995) were originally used to measure communication networks in offline communication and PR practices. Contextualizing it to online communication was challenging because there were calculations that resulted in a higher value, while in fact, this was due to the lack of interaction, so the denominator value was smaller. For future research, network properties indicating symmetrical communication in an online context should be established.

CONCLUSION

Based on social network analysis of the Indonesian government agencies social media conversations, it can be concluded that two-way symmetrical communication happened, but in a limited way. Two-communication mostly happened in daily conversation, both on Facebook and Twitter. The networks visualizations were the star-shaped but had different functions. The Ministry of Health used social media as a channel to broadcast information, thus they had a lower outdegree (sent messages). Although the Healthcare Agency opens the comment section for every follower on their Facebook page, there was no interaction between the agency and the public. The agency apparently was more active in replying messages via Twitter. The high number of fake followers and political buzzers on Twitter support the finding that the only interest for the Ministry of Health to be on Twitter is to disseminate information. A different strategy is used by the Healthcare Agency, which used the social media as a channel for customer service or to provide information.

The two-way communication was not occurred in the campaign communication by the Indonesian Ministry of Health promoting a healthy lifestyle using the hashtag *#DukungGermas*. The values of reciprocity and connectedness in the two-way communication networks were zero, meaning that campaign communication was intended to occur one way.

Little interactions were found in the conversation networks during the organisational crisis and emergency communication, despite these types of communication tactics being urgent and important. However, in these situations, the agencies showed a lack of response by sending a small number of messages and relying more on the fake

accounts and political buzzers to amplify the messages. During the organisational crisis and emergency, in which the ministry's reputation was at stake, the organisation did not even reply to a single question.

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