

# Social Network Analysis of Citizen Initiated Vaccination Campaigns on Twitter

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## ABSTRACT

During the Covid-19 pandemic, opinions in the form of hashtags related to the early vaccination period are trending in early 2021. Among those hashtags, two hashtags that will be discussed here are #TolakDivaksinSinovac and #JokowiDivaksin. In this paper, those hashtags will be analyzed in the context of public communication related to the vaccination policy program. Thus, this study aims to determine the movement of opinions related to government policies on pro- and contra account through hashtags on Twitter. The main concept underlying this study was the citizen-initiated campaign (CIC), which originates from communication theory on social media. The method used is social network analysis at three levels, which are network, group, and individual. Through the Netlytic application software, data was collected and analyzed at network and group levels. The rest of the analysis at the individual level was performed using Gephi that helps in calculating an actor's centrality. From the analysis, it is observed that the digital opinion character was common in both hashtags, whereas the CIC character was found only in the #JokowiDivaksin, referring to the congruence of the hashtag message content of pro-government public policy. Furthermore, the #JokowiDivaksin is more rational than the #TolakDivaksinSinovac, which is more emotional. The implication was that the #JokowiDivaksin had a slightly longer lifespan than the boycott hashtag #TolakDivaksinSinovac, hence the safe vaccination frame was also circulated longer on Twitter. Furthermore, it can be observed that such negative hashtag is a form of cognitive dissonance process, which explains why the public rejected vaccination at the time.

**Keywords:** *citizen-initiated campaign, social network analysis, Twitter, public relation, cognitive dissonance*

## 1 . INTRODUCTION

The presence of new techniques in the discipline of information and communication technology have created various opportunities, especially in communication science. Various phenomena of digital activism have emerged using the hashtag (#) on social media as a form of communication development in cyberspace. Social media users show an attitude towards agree or disagree to an issue in a particular event in the form of a hashtag (#) such as on Twitter. This is known as a digital social movement [1]. Compared to other social media, Twitter is attached to the hashtag movement, social movements, and various forms of social campaigns compared to other social media [2].

Entering the end of 2020, the development of efforts to procure the corona vaccine has been quite rapid. There is a report from WHO as of November 3, 2020, which states that several corona vaccine candidates are currently being clinically tested [3]. Several hashtags such as #VaksinMerahPutih, #VaksinUntukKita, #DivaksinJokowiDivaksin, #WaspadaVaksin,

#TolakDivaksinSinovac have arisen in Twitter in response to the national vaccination plan on January 2020.

The hashtag #JokowiDivaksin became trending on Wednesday, January 13, 2021 [4], when President Joko Widodo (Jokowi) became the first person to receive the vaccine in Indonesia. The injected vaccine was Sinovac from China. The publicity of Jokowi's injection moment was one of the health campaigns by Indonesian government. However, many citizens were still doubtful and refused to be vaccinated. Their response was the hashtag #TolakDivaksinSinovac on social media [5].

The communication in the pros and cons of Sinovac vaccination issues involved Twitter accounts from various circles, especially ordinary citizens. This is because the egalitarian system in social media allows anyone to initiate social movements [6][7].

In the context of digital social activities, people can be the party that carries out a campaign, which is called a citizen-initiated campaign (CIC) [7]. It is a new movement in social media in contrast to ordinary campaigns held by government, political parties/politicians, corporates, schools, etc.

This study is intended to identify when a social campaign characterized by CIC occurs, and see how a hashtag related to the CIC maintains its lifespan under the pressure of an opposition (boycott) hashtag. Through network analysis on Twitter, vaccination campaigns on the #JokowiDivaksin network and anti-vaccine campaigns on the #TolakDivaksinSinovac network will be compared. At the end of the discussion, the implications of data findings on vaccination campaigns in Indonesia will be reviewed.

## **2 . THEORETICAL PERSPECTIVE**

### ***2.1. Citizen Initiated Campaign in the Context of Digital Public Relations Campaign***

Citizen initiated campaign (CIC) is a practice conducted or initiated by the people themselves to support an issue outside of formal campaign teams. It is unnecessarily for the supporter to become the member of the official campaign team [7]. CIC emerged as a form of shifting netizen behavior from consumptive to productive. Characteristics of campaign are: outsource of core campaign, run by ordinary supporters, less control from the official campaign, high dependence to communication technology (mediated communication) and have a large exposure to the public [7]. The common purpose of CIC is for fund raising or canvassing, similar to traditional campaign. Mentioning, replying or retweeting an account on social media are examples of digital canvassing.

There are several activities in CIC: community building, getting out the voice, generating resource and message production through message creation or distribution [8]. It is really important for CIC campaigner to build a larger community, to spread the voice out more. Creating right messages, which are easily distributed, will provide the formal campaign team with more supporters and wider network. Meanwhile, the government has conducted a health campaign for the Covid-19 vaccine in which some people support or refuse.

With the rapid development of technologies, campaigns can be conducted online using new approaches in the Electronic Public Relations (E-PR) domain. According to Darmastuti [9], E-PR is used by public relations to communicate with audiences via internet. E-PR aims to speed up the delivery of information and respond to existing problems quickly. The advantages of using internet are: wide networks, information are accessible 24 hours, and the latest information always available at low cost and easily distributed. With the existence of E-PR which is supported by the community, the dissemination of campaign information is well assured.

Government and campaigns are closely related. According to Budiarto [10], the government is an

organized activity that originates from sovereignty and independence based on a state, people (or population), and territory of a country that aims to realize a state based on basic concepts. The main purpose of forming a government is to serve public by creating conditions that allow every community to develop their abilities and creativity for mutual progress. One form of public service conducted by the government is the health campaign of the Covid-19 vaccine. The campaign is a series of planned communication actions to impact several targets where the campaign will be conducted continuously over a certain period.

Persuasive campaigns are divided into five categories, such as political, commercial, reputation, educational or public awareness, and social action. Health campaigns are included in the category of social action campaigns. This is a series of communications planned to promote a health issue of vaccination for the handling of Covid-19. Recently, campaigns have expanded from offline to online, from direct communication to mediated one. Furthermore, developments also occurred in the involvement of campaign implementers, which were originally initiated by professional and mass organizations but are now also being conducted by individuals, both pro and contra, that want to boycott the appeals in the campaign.

### ***2.2. Issues, Opinions, and Cognitive Dissonance***

Issues and crises are also closely related. For example, when Covid-19 vaccines enter Indonesia, they raise many issues in the community. The issues are related with herd immunity concept, success rate, free or pay, halal or haram, or even business conspiracy theory. An issue is a disputed difference of opinion, a matter of fact, evaluation, or policy important to the parties involved. From the vaccine issues, a crisis emerges where some people support and others reject the vaccination. This means that issues lead to opinions as a response to different views. Issues should be handled as early as possible to prevent crisis. Issues and crises may occur in social media as well, where people are free to talk, argue and take action based on the digital messages that they believe as truth.

Social media, such as Twitter, is a place for people to carry out various digital activities. Twitter is a great place to share ideas, gather information, provide inspiration, and see what fellow netizens are doing [11]. Twitter is also a place for campaigning and carrying out various political activities. Tweets made by leaders consist of distributing specific content that involve political activities, opinions, reflections on national issues, or discourse about one's feelings [12].

A Twitter hashtag is a tagging format created by Twitter account owners using a # prefix symbol [13]. The hashtag first appeared in 1988 on Internet Relay Chat (IRC) as a marker for groups or topics discussing the

same issue in digital communication networks [14]. Meanwhile, hashtags on Twitter were started by Chris Messina in 2007 to help grouping topics in this social media [15]. Since then, tweets with hashtags have become popular for classifying and popularizing issues, crises, politics, social, promotions, and others on Twitter [16]. The hashtag popularity will be even better if the initiating account has a vast network. Hashtags have become a liaison between social media users to form a communication network [15]. Some motivations that encourage users to use hashtags when expressing opinions on social media include reaching, endorsing trend gagging, and bonding.

On Twitter, hashtags are often used to indicate something is expressing an opinion. Graves et al. [17] stated that hashtags are the same word where people gather to share and talk about the same topic. After the Indonesian presidential election debate there was a hashtag war from two groups, namely #BohongLagiJokowi and #02GagapUnicorn. Prabowo's supporters were trying to show the dwarfism of language by replacing the subject with another word. Meanwhile, Jokowi's supporters made sentiments with the word "gagap (stutter)" because Prabowo did not understand well the e-commerce business issues. Based on these observations, it is concluded that the hashtag itself is also a form of an opinion symbol. Using a hashtag means that a netizen has an open opinion expressing his/her knowledge and feelings.

It is possible that digital opinion is a response of an issue. Divergence of opinion could lead a digital conversation into digital conflict. From the government perspective, any possibility of conflict should be handled properly, because a conflict could lead the communication crisis to an uncontrollable situation. In the context of emergency, a controllable national communication will help a country out of the pandemic. This concept should be understood by the citizen, including the netizen. Supporting effort from the netizen or the citizen is really valuable.

The possibility of opinion divergence proves that social media's public is an active audience. Moreover, there is a possibility that public could be in the situation of cognitive dissonance. Cognitive dissonance on political communication may polarize message responses because of participant selective cognitive process [18]. Cognitive dissonance leads human's action to be different with cognition preference [19]. There are two hypotheses related to the cognitive dissonance. First, people try to reduce dissonance to achieve consonance to create comfortable situation. Second, people with dissonance cognition will actively avoid situations and informations which will increase dissonance. Dissonance is naturally uncomfortable even if it is merely a cognitive process. On political communication, cognitive dissonance could demobilize people from obeying political actor or the

government policy [18]. The polarization of opinion is a form of cognitive dissonance.

### 3 . METHOD

This study uses a social network analysis (SNA) method, which applies to digital campaigns on Twitter. SNA is a method for mapping relationships between actors in a social network where each actor has a role. The network has implications in certain contexts. For example, an actor who acts as an opinion leader has the potential to direct his group [19]. This method produces an overview of the network structure and relations of actors' social media users.

In this work, the evaluated digital campaigns used the hashtags #JokowiDivaksin and #TolakDivaksinSinovac, which were collected in the period of 12 to 19 January 2021. This is the period when the first vaccine was injected into President Joko Widodo [4]. Initially, the number of samples used in this study is 2500 tweets containing the hashtag #JokowiDivaksin, and 2500 tweets containing the hashtag #TolakDivaksinSinovac. Data retrieval was performed using Netlytic software, which also provides web crawling facilities, sociograms, network data processing, and text analysis [20]. After data retrieval, the collected data was cleaned from parts that were not needed for analysis. The resulted final data was 1121 tweets containing the hashtag #JokowiDivaksin, and 1201 tweets containing the hashtag #TolakDivaksinSinovac.

After the filtering process, the collected data was then analyzed to produce an overview of the communication network at several levels, such as network, group, and individual [21].

At the network level analysis, the shape and the structure of the network will be described. Netlytic software provides two types of network structures, such as name and chain [22]. The difference between the two is in the mention and replies elements. The name network describes the relationship between Twitter accounts that mention other accounts, whereas the chain network describes the relationship between Twitter accounts that respond to other accounts. This study only presents the structure of the chain network because we are interested only on the direct relationship between Twitter accounts where one account responds directly to another account [21]. Therefore, this section presents the values of density, diameter, reciprocity, and centralization.

At the group level, the analysis was conducted on group formation by actors where the importance of modularity is presented. At the individual level, the analysis was focused on the individual where the actor's position and dominance in the network were described [23]. Data processing at this level utilized Gephi software for calculating the centrality of the main actors using data collected by the Netlytic software.

There are some limitations in this study. First, due to license limitation, this study only examines a subset of posts when the hashtags were still circulating on Twitter. The maximum number of posts are limited to 2500 when using the free version of Netlytic. For further study, seeing the continuation of the dynamics of the movement of each hashtag is needed because the vaccination program and campaign are still ongoing. For this, the use of web scraping with unlimited capacity is necessary. Second, this study only evaluates posts in the form of written messages, excluding audio and visual forms. These two limitations open up opportunities for future study with more diverse data to produce various results.

## 4 . DATA

### 4.1. Lifespan of Hashtag

The hashtag #JokowiDivaksin first appeared and trended on January 13, 2021, right on the first day of the official Sinovac vaccine injection in Indonesia. The number of repeated uses of hashtags on Twitter decreased in the following days. The number of posts with this hashtag increased again when the vaccine was injected the second time into Jokowi. This study is only limited to the discussion after the first vaccine injection.

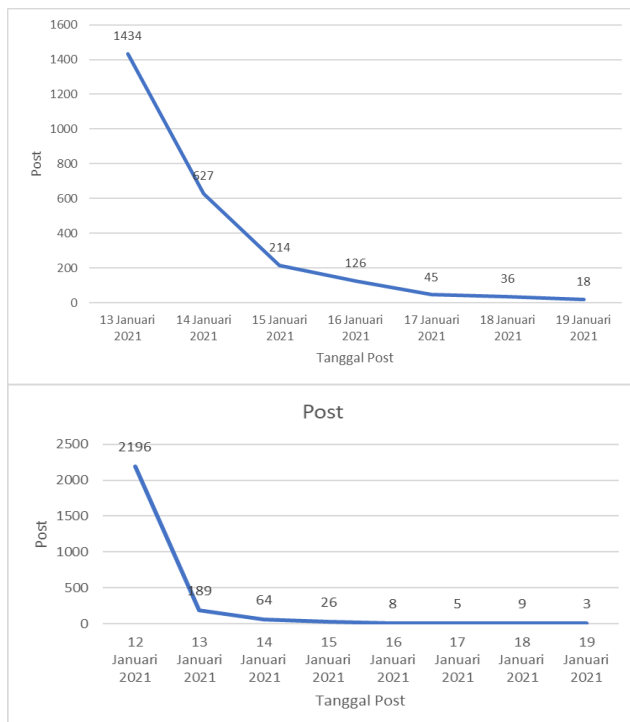


Figure 1 The lifespan of the #JokowiDivaksin and #TolakDivaksinSinovac graphs

Meanwhile, the #TolakDivaksinSinovac circulated a day earlier than the hashtag #JokowiDivaksin with a

higher usage rate but decreased faster on the second day of January 13, 2021, and others. Likewise, on the 7th day, the number of hashtag users was close to zero.

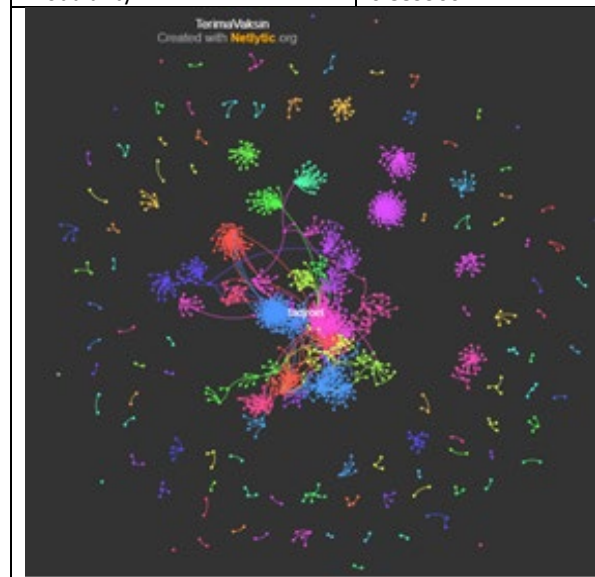
Compared to the #JokowiDivaksin, the #TolakVaksinSinovac was more successful in mobilizing Twitter users from a time perspective. This was seen from the speed and number of hashtags used by accounts on Twitter in a day, at the same time as it appeared. However, this hashtag's high number of users drastically decreased from the second day onwards.

### 4.2. Network Structure

The sociogram of #JokowiDivaksin distribution is shown in Table 1, whereas the sociogram of #TolakDivaksinSinovac is shown in Table 2.

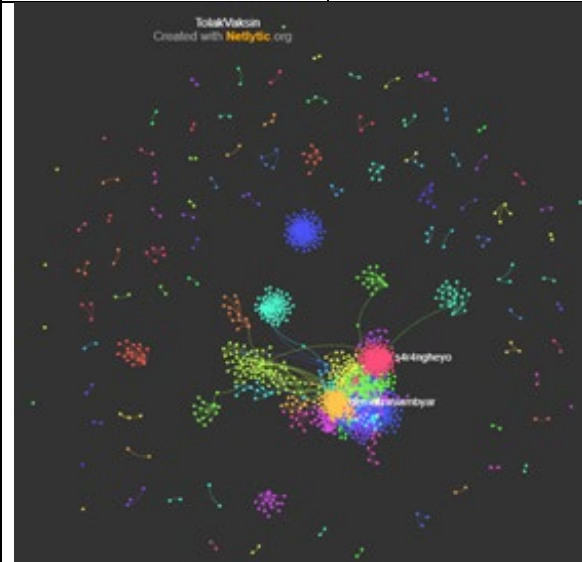
Table 1. Sociogram of #JokowiDivaksin

Analysis	Data
Diameter	17
Density	0.000817
Reciprocity	0.049470
Centralization	0.045020
Modularity	0.889900



**Table 2.** Sociogram of #TolakDivaksinSinovac

Analysis	Data
Diameter	35
Density	0.000807
Reciprocity	0.023340
Centralization	0.071410
Modularity	0.793300



The comparison between two networks structures of these two hashtags are as follows:

1. The diameter of #TolakDivaksinSinovac is longer (35 steps) then #JokowiDivaksin (17 steps). The spread of the hashtag #TolakDivaksinSinovac is wider than #JokowiDivaksin.

2. The equation is found in the density element, where the two hashtags have a density difference of only 0.0000010 (#JokowiDivaksin = 0.000817, #TolakDivaksinSinovac = 0.000807). This low-density number close to 0 indicates that network members are not diligent in interacting with each other.
3. This is confirmed by the equally low reciprocity rate (#JokowiDivaksin=0.049470, #TolakDivaksinSinovac=0.023340). However, the reciprocity rate of the #JokowiDivaksin is higher than the #TolakDivaksinSinovac, showing that the pro-vaccination group still communicates more frequently between accounts than the Sinovac anti-vaccination group.
4. The centrality figure shows that the two hashtags are similar in that neither main actor stands out (#JokowiDivaksin = 0.045020, #TolakDivaksinSinovac = 0.071410).

At the group level, the modularity number is close to 1, meaning that network members have a tendency not to cluster in one area but to split into several clusters that are spread across the network. The distribution of this group shows differences in the discussion in each cluster. Even though the two hashtags are close to 1, the modularity of #TolakDivaksinSinovac (0.793300) is smaller than #JokowiDivaksin. In other words, #TolakDivaksinSinovac has fewer cluster distributions than #JokowiDivaksin.

Table 3 reports the most mentioned, replied to, and retweeted by other accounts for the hashtag #JokowiDivaksin. Table 4 reports the most mentioned, replied to, and retweeted by other accounts for the hashtag #TolakDivaksinSinovac.

**Table 3.** The Dominant Actors of the #JokowiDivaksin

Clusters	Dominant Actor	Indegree	Outdegree	Total Degree	Closeness	Betweenness
1	fadjroel	120	7	127	1	707.25
2	kafiradikalis	101	0	101	0	0
3	jokowi	52	0	52	0	0
4	blackspyyder	36	5	41	0.67	617.33
5	Moelyonovdjalil	22	0	22	0	0
	Ch_chotlmah	20	2	22	0	0
	yradianto	17	1	18	1	18

The most mentioned account is @fadjroel. He is one of the special staffs for communications, and the spokesman for the President who often campaigns for vaccination. Meanwhile, mention of other accounts spread across various clusters. Indegree is the number of accounts that mention the dominant actor. The

higher the in-degree value, the more valuable the account is to other accounts. For example, @fadjroel's account has the highest in-degree value, hence, it is the account most valued by other accounts in this network. Meanwhile, outdegree is the number of mentions made by the dominant actor. The greater the outdegree value,

the more central the account is compared to other accounts. In this case, the account with the most significant outdegree value is @fadjroel, which means that this account has a central position in the network.

Furthermore, closeness and betweenness indicate the centrality of the dominant actor. Betweenness centrality shows how often another account traversed the account (bridge). The higher the betweenness centrality, the more central the account is among other accounts. Accounts that are among other accounts have

the potential to withhold or distort messages or have control over the messages [23]. Meanwhile, closeness centrality shows whether the position is getting more central or not. The higher the closeness, the more central the position. When the account holder disseminates the information with the highest closeness centrality, the message will be effectively spread across the network [23]. Several accounts with high closeness centrality are @fadjroel, @Hildassintiaa, @setkabgoid, and @Ana\_nfn.

**Table 4.** Dominant Actors in Hashtag #TolakDivaksinSinovac

Clusters	Dominant Actor	Indegree	Outdegree	Total Degree	Closeness	Betweenness
1	Demokrasiambyar	211	3	214	1	116
2	S4r4nghyeo	189	1	190	0.6	546.75
3	Elinmoenik2	10	10	20	0.72	397
	Jebulmania291	22	0	22	0	0
	Rifofficial_	45	0	45	0	0
	Cicitdatuaklbh	0	16	16	0.46	0
	imcmushroom	16	0	16	0	0
4	Permadiaktivis1	113	0	113	0	0
5	yaniarsim	50	1	51	0	0

In-degree is the number of accounts mentioning the dominant actor. The higher the in-degree value, the more valuable the account is to other accounts. For example, in Table 4 @Demokrasiambyar has the highest in-degree value, hence this account is most valued by other accounts in this network. Outdegree is the number of mentions made by the dominant actor. The greater the outdegree value, the more central the account is compared to other accounts. In this case, the account with the highest outdegree value is @Cicitdatuaklbh, meaning that this account has a central position in the network.

Figures of closeness centrality and betweenness centrality indicate the centrality of the dominant actor. The betweenness centrality number shows how often another account traverses the account (bridge). The higher the betweenness centrality number, the more central the account is among other accounts. Accounts that are among other accounts have the potential to withhold or distort messages circulating. In other words, they have control over messages circulation [23]. The closeness centrality number indicates the position is getting more central or not. The higher the closeness number, the more central the position. When the account holder disseminates the information with the highest closeness centrality, the message will be effectively spread across the network [23]. Several accounts with a

high closeness centrality value are @Demokrasiambyar, @Bkns4p4s4p4, and @dokterpodcast.

### 4.3. Messages

President Joko Widodo (Jokowi) is the recipient of the first vaccine in Indonesia. As shown in Figure 2, this moment was accepted with a lot of enthusiasm and optimism about the safety of this vaccine. Hence, many netizens called for their readiness to obtain this vaccine from actions taken by President Jokowi. This is certainly not for selfish purposes but to convince the public that the vaccine is safe and halal. Indonesia also does not want to be left behind by foreign countries that have issued vaccines.

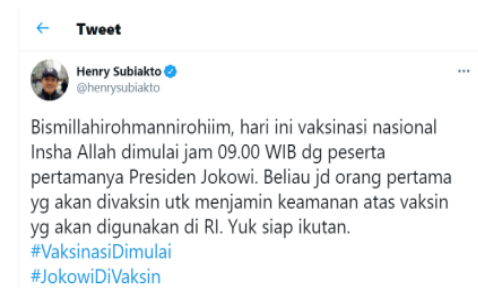




Figure 2 Positive and Negative Post about Vaccine

The frame of support and boycott for Jokowi's vaccination program is seen in the words that often appear in posts, as shown in Figure 3.

Keywords often used in a positive tone include (besides hashtags) safe, Indonesia, health, vaccines, and others. The disclosure of these positive words shows netizens' support for government programs, where this support is accompanied by the affixing of the #JokowiDivaksin.

Users of the #JokowiDivaksin supported overtly for the vaccination program by tweeting with the hashtag as shown on Figure 2. The post's content shows a clear frame of the problem, the cause of the problem, and recommendations for solving the problem. Posts generally show that the public agrees with President Jokowi's vaccine action. Twitter users have also posted many stories of happiness and faith in the Sinovac Vaccine. The stories are about how confident they are in the safety and resilience of vaccines.

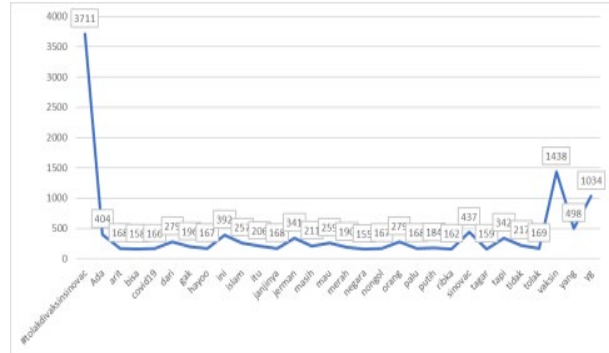


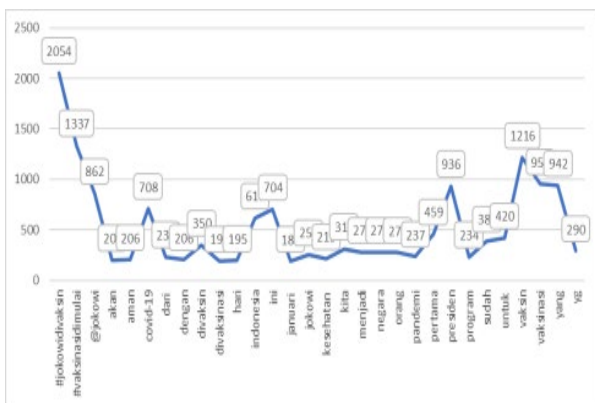
Figure 3 The graph of popular words in posts with the #JokowiDivaksin and #TolakDivaksinSinovac

In the other hand, critical tones came from Ribka (a member of Indonesian parliament which is mentioned in a tweet shown in Figure 2 about Sinovac, vaccine, and others. The expression of critical words in this negative hashtag shows that netizens do not agree with the government program requiring Sinovac vaccination injections, shown in their tweets accompanied by the hashtag #TolakDivaksinSinovac. Users who put the hashtag #TolakVaksinSinovac the day before the hashtag #JokowiDivaksin appeared with a frame rejecting the vaccine. It is coupled with a strong statement from one member of the parliament who is also a doctor, Ribka (mentioned in a tweet shown in Figure 2, on an account who vehemently refuses to be vaccinated. This makes netizens support Ribka to reject the safety and halalness of the Sinovac vaccine.

5 . DISCUSSION

Through his Twitter account @jokowi, the president stated that he was ready to become the first Indonesian citizen vaccinated with Sinovac [24]. This was revealed amid the pros and cons of the public's willingness or unwillingness to be injected with the Sinovac Vaccine purchased by the government from China [25]. This was followed by the public responded to the president's statement on social media. The day before the presidential inauguration, the hashtag #TolakDivaksinSinovac appeared, which became a trending topic on 12 and 13 January 2021 [26]. The originator and users of this hashtag were the public, where they voiced critical ideas questioning the effectiveness of Sinovac in preventing the spread of COVID-19.

The emergence of the hashtag #JokowiDivaksin, was a form of CIC whose phenomenon appears on social media. The hashtag #JokowiDivaksin appears as a counterbalance to the hashtag against vaccination that



appeared one day before. The mobility of messages on the hashtag #JokowiDivaksin is categorized as citizen-initiated campaigns (CIC) because several reasons as follows:

#### 1. Characteristic of Hashtag as a Campaign Message

Hashtag is a shorter type of longer sentences. A campaign uses hashtag to provide short information, to easily invite people to support the campaign. CIC is a kind of campaign which is initiated by common person to be included in a bigger official campaign without being a member of the official team. It is a voluntary action. Vaccination campaign was one of the official events conducted by the government to increase herd immunity among the society. The task force team has been made to promote vaccination program. Despite of just staying home, the citizens were joining the force willingly as volunteers to support the vaccination campaign through social media. It is obvious that there was no formal relationship between official team and those netizens. Consequently, the official team had less control over the action of the supporters on group level of the network. They could not supervise directly the message diffusion to the network. Despite the lack of control, supporters really helped in spreading the message with high speed on the digital network. Thus, this action had positive impact for the main campaign image.

#### 2. The action of mentioning, replying, or retweeting a message with a hashtag is a form of canvassing as in any traditional campaign. Canvassing means a person pokes another person/account with a hashtag as an invitation to join the campaign.

Moreover, in the social network analysis, there are several activities of CIC which could be explained by the sociogram or the social network measurement results as follows:

##### 1. Community building

There is reciprocity between accounts. It means that a large attempt has been made to collect more supporters for the main issue. In individual level, the number of indegree or outdegree explains the effort to move others by mentioning the other account names. Thus, people tried to build a community.

##### 2. Getting out the vote

The diameter of the network shows how many times a message circulating around. This could be a proper evidence of getting out the vote to wider network.

##### 3. Generating resource and messages production

The community of this hashtag produce and reproduce the key message to join force in supporting the campaign. The word cloud mentions supporting words from netizen. The life span of the positive hashtag is also longer than the negative one, means that the netizen kept the circulation of message production and distribution for a certain period of time. The message

embedded with the hashtag #JokowiDivaksin was more rational and persuasive by providing the fact that the president had dared to be vaccinated to dispel doubts over the vaccine's safety that was circulating in the #TolakDivaksinSinovac camp. Meanwhile, messages on the #TolakDivaksinSinovac were more emotional, as in "dead" and other words that show negative sentiments such as "sickle" and "hammer," which are not even directly related to the vaccination program.

The #JokowiDivaksin and #TolakDivaksinSinovac have the potential for success in different ways. The #TolakDivaksinSinovac managed to mobilize opinion in a short time, exceeding the number of posts #JokowiDivaksin. The use of emotional elements namely fears appeal, strongly supports the speed of hashtag circulation on the Twitter network of #TolakDivaksinSinovac, whereas the hashtag #JokowiDivaksin was indeed slower in mobilizing opinion but managed to maintain a longer lifespan than #TolakDivaksinSinovac. The lifespan of #JokowiDivaksin lasted longer due to the actor factor in the network. The @fadjroel account on the #JokowiDivaksin network with the most significant degree value has 1 million followers, far more higher than @democrasiambyar (4,238) on the #TolakDivaksinSinovac network. The lifespan of a hashtag depends on how many tweets are responded to (retweets, replies, mentions) by other accounts. Accounts like @fadjroel with a high betweenness value have the potential to act as an amplifier to maintain a high retweetability level. The lifespan of a hashtag is also be maintained longer. However, in reality, this account was not very active in producing tweets with the hashtag #JokowiDivaksin; thus, its potential as an amplifier is not entirely fulfilled.

#JokowiDivaksin had shown to the public that doubts about the Sinovac vaccine were unfounded, and had succeeded in reducing the issue of fear promoted by the hashtag #TolakDivaksinSinovac on Twitter. The implication of winning the hashtag war by the hashtag #JokowiDivaksin was a proof that the Sinovac vaccine image was good and acceptable. The Islamic Fatwa Commission (or MUI) stated that the Covid-19 vaccine produced by Sinovac is halal and sacred [27], thus can be used by everyone. Furthermore, the Food and Drug Supervisory Agency (BPOM) has issued a permit that Sinovac is safe to use [28]. This brand has received a permit and is halal to use, hence, the community doesn't need to worry about this vaccine.

Social media users who post tweets about #JokowiDivaksin are aware of the importance of vaccines in this situation. However, supporters of the hashtag #TolakDivaksinSinovac are not anti-vaccination actually.



They only defend their right to be vaccinated with other brands. Here, we find traces of cognitive dissonance characteristics as illustrated in Figure 4. Over an intrapersonal communication process, supporters of #TolakDivaksinSinovac agree that vaccination is an option to reduce covid-19 transmission and build herd immunity. However, they question the efficacy and Halal status of Sinovac. There is a clash between action and belief. They wanted to be vaccinated by another brand. So, public of #TolakDivaksinSinovac choose to reject vaccination at the moment. This effort reduces dissonance to increase consonance of public cognitive process. The rejection of vaccination on the early 2021 is the form of opinion polarization and demobilization of positive opinion toward health campaign during pandemic initiated by the citizen.

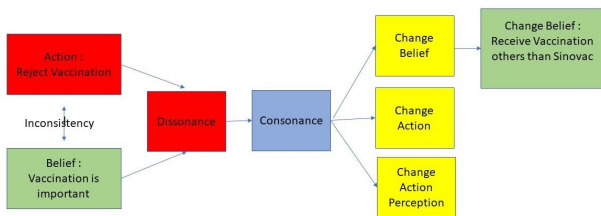


Figure 4. Mapping of cognitive dissonance.

## 6 . CONCLUSION

This paper gives an analysis of the movement of the #JokowiDivaksin and #TolakDivaksinSinovac on Twitter during the initial phase of Covid-19 vaccination in Indonesia. The analysis produces several significant results. First, the pro-Sinovac vaccination group was categorized as CIC because they are an arm of the government in popularizing Sinovac vaccination, which works outside the government structure. Second, both hashtags had been successful because of the message character of each post. The #TolakDivaksinSinovac has an emotional message that quickly increases its number of users, whereas #JokowiDivaksin has a logical message that reveals reasons and evidences that vaccination is not dangerous. More logical messages result in a slightly longer lifespan than emotional messages. However, these two hashtags didn't last more than a week in the Twitter network. Third, the success of #JokowiDivaksin implies that the issue of vaccine safety has been circulating longer on Twitter. This has further drowned the negative issue promoted by #TolakDivaksinSinovac. Safe vaccination frames circulated longer and eventually increased again when Jokowi was vaccinated for the second time. We

observe that polarization and demobilization of positive opinion during health campaign was found as the characteristic of cognitive dissonance.

There is a limitation of this descriptive study. In this work, the data only describes the tip of the phenomenon of citizen-initiated campaign on social media. Deeper inquiry would be needed to explore the existence of rational and emotional message, their usage, and also how a certain message could lead the longevity of an issue on social media. This will be our future work. Another possible future research would be the usage of social media as a health campaign channel, and how to increase effectiveness and good impact on its practice. The study of successful digital health campaign hopefully will reduce cognitive dissonance and polarization phenomenon. These two phenomena indicate a rejection of healthy lifestyle promotion.

## AUTHOR'S CONTRIBUTION

Astri Yogatama, Indar Sugiarto, and Agustinus Bimo Gumelar contribute to the design and writing of the research manuscript. Astri Yogatama analyses the data, discussion and conclusion.

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