PalArch's Journal of Archaeology of Egypt / Egyptology

SOCIAL NETWORK ANALYSIS ON TWITTER SOCIAL MEDIA USING THE SOCIAL NETWORK ANALYSIS (SNA) APPROACH

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Hari Supriyadi. Social Network Analysis On Twitter Social Media Using The Social Network Analysis (Sna) Approach-- Palarch's Journal Of Archaeology Of Egypt/Egyptology 17(10), 3102-3111. ISSN 1567-214x

Keywords: Social Network, Social Network Analysis (SNA), Key Player, Relationship Pattern.

ABSTRACT

This study aims to analyze the pattern of relationships between stakeholders who utilize social media and their level of participation in the interaction and dissemination of information related to large-scale social restrictions (#psbb) via Twitter social media.The approach method used in analyzing the determination of the key player which has a role in the interaction and dissemination of information related to large-scale social restrictions (#psbb) through social media Twitter uses Social Network Analysis (SNA), which has stages, including: Preparation Stage, Stage Data Collection, Data Processing Stage, Data Analysis Stage and Data Reporting Stage. The findings of this study can provide analysis of conversation and interaction patterns with the help of several supporting tools in the form of crawling and ghepi to process data from Twitter which can provide stakeholder information based on interaction patterns and the level of their contribution in a social network using the Social Network Analysis (SNA) method. , with SNA, it can be seen who is the key player in a network based on the value of degree centrality between centrality and closeness centrality of a node. This key player information can be used by companies to maximize their marketing efforts. The results of the analysis can be used to implement e WOM with Twitter as a medium for disseminating information. This research is expected to be a reference in analyzing the pattern of relationships between stakeholders who utilize social media and their level of participation in the interaction and dissemination of information so that it can be seen that the key players are very influential in the dissemination of this information.

INTRODUCTION

The development of social networks is currently growing rapidly. In a social network community, the community or group is a forum for exchanging

information between group members. This makes a group on social media a field of information, both information that is stated explicitly or implicitly. Social Network Analysis or commonly abbreviated as SNA is a social network analysis process that is related to the structure and patterns of interaction between the entities in it. SNA has the advantage of exploring and studying a phenomenon in depth because the focus of an SNA study is to find out who the actors or nodes are involved in and how a relationship can occur. SNA is suitable to be applied to analyze a phenomenon that occurs, one of which is the COVID-19 virus pandemic that is currently happening.

In the SNA analysis regarding the COVID-19 virus that is currently happening around the world, we will focus on the phenomenon of the COVID-19 virus pandemic that is happening in Indonesia. In the midst of the COVID-19 virus outbreak or also known as the corona virus, the government has prohibited people from carrying out activities outside the home and carrying out Large-Scale Social Restrictions (PSBB). This was done as one of the government's efforts to suppress the chain of spread of the corona virus. Therefore, the government has declared an appeal for people to stay silent at home in order to prevent the spread of the virus more widely. At present, all activities are carried out at home, starting from working from home, conducting lectures from home, conducting meetings from home, even concerts, seminars or events are carried out from home online.

In this research, retrieve and analyze data using #psbb via the social media Twitter, to know the Social Restrictions Large-scale phenomena (PSBB) against public opinion against #psbb, what are the concerns that have been felt by people related to the Large-scale Social Restrictions (PSBB). Because now, many people are complaining about the existence of Large-Scale Social Restrictions (PSBB), many websites are competing by providing an attractive appearance that discusses Large-Scale Social Restrictions (PSBB) on their own website, by providing different information sharing so that the information seekers do not hesitate to look for information.

This research is expected to be a reference in analyzing the patterns of relationships between stakeholders who utilize social media and the level of participation in the interaction and dissemination of #psbb information on Twitter social media, which is often discussed about Large-Scale Social Restrictions (PSBB), so that it can be seen that the role of players the key is very influential in the phenomenon that occurs.

LITERATURE REVIEW

Social media

Social media is a medium for humans to socialize with each other online which allows humans to interact with each other without being limited by space and time. Social media is very much needed today because it can remove human boundaries for socializing, space and time constraints, with this

social media human can communicate with each other anywhere and anytime (Rustian, 2012).

Social network

Social Network Analysis (SNA) has a special view, especially in the aspect of detection and interpretation of social relationship patterns. SNA fundamentally emphasizes the network in the form of nodes and edges and takes different / unique characters or features from the network based on the results of the analysis. Data mining is a process to determine patterns and insights / knowledge that have not been revealed in Big Data. The Data Mining method is one of the most frequently used methods on social networks (Tayebi & Glasser, 2016).

SNA has made use of a visual analysis mode, where information contained on social networks can be analyzed visually which makes it easy for researchers to draw conclusions related to social networks including information that has been difficult to access. The virtual analysis mode on this social network has collaborated between color, size, shape and spatial position in order to display information that is considered important and needed (Tayebi & Glasser. 2016).

Linkage-based social network analysis

a. Degree centrality refers to the association of several external parties originating from a user on one of the nodes that have many relationships will have a greater Degree Centrality value. Users/actors that have a high degree of value are basically related to other users. This user can be said to be the main user who disseminates information, as a very important element that has a major position in a social network, so that other users must acknowledge its existence. On the other hand, actors with low degrees are peripherals in the network and these actors are not active in the connection process (Tayebi&Glasser, 2016). The degree of centrality can be extended to the network level, so that it can be used to measure network heterogeneity (Panda et al., 2019).

b. Betweennes centrality is the sum of the shortest paths of a number of paired nodes passing through special nodes. The magnitude of Betweennes centrality refers to the thought pattern if the user is a key player who has many pairs of routes among other users; this is the shortest route that can connect various pairs of users/actors (Tayebi&Glasser, 2016). Nodes with higher betweenness values can act as cut nodes between two communities, in software defined network. This information can be used to find a suitable position for the controller (Panda et al., 2019).

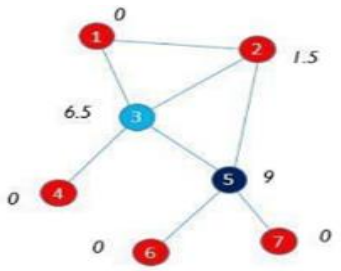


Fig.1 Betweennes centrality

c. The closeness centrality of users/actors on a social network can be said to be the opposite of the shortest route distance between users and other users in the same social network. This provides an understanding of the level of efficiency of each user/actor in disseminating information to other users. The greater the level of fidelity for the user, it can be said that the route is short from one user to another and it can be said that the user's position can be said to be good in social networks (Tayebi&Glasser, 2016).

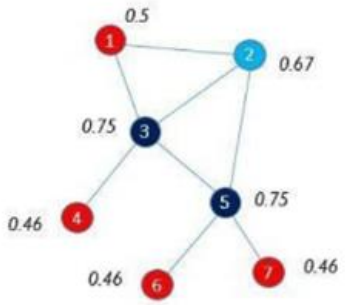


Fig 2 Closeness Centrality

d. Eigenvector centrality Eigenvector centrality can be defined as the main eigenvector based on the matrix in social networks. This means that the user / actor who has a close relationship with the actor who is considered the main actor, it can be interpreted that the actor is the main actor as a bridge in the dissemination of information in social networks (Tayebi&Glasser, 2016).

Twitter

According to Saputra (2017), Twitter is a social media that can make users communicate. Twitter users can send messages and read messages which are called tweets. Tweets coming from other users who are followed can appear on the home for the user to read. Users can resend messages sent by other users or called retweets. Users can also mention other usernames in tweets that are written if they are followed by an @ sign followed by a username, and users can use the # sign or so-called hash tags to write tweets based on the intended topic.

Network structural properties

The following is the definition of Enterprise Architecture (EA):

a. The degree of a node can be defined as the level of relationship between nodes. Research has shown that real-world networks from fields ranging from sociology to biology to communication follow the power-law distribution. The power-law distribution means that if a node has a low level of connection with other nodes, it can be said that it is a network with free scale (Tayebi&Glasser, 2016).

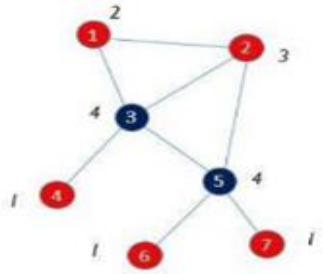


Fig. 3. Degree

b. Average Path Length
The average path length of the graph is the average distance between all pairs of vertices in the graph (Raj et al., 2018). The average network distance is defined as the average path distance of the pair of connected nodes. The average path distance shows the speed at which messages spread across the network (Tayebi &Glasser, 2016).

c. The graph diameter is the maximum distance between all pairs of vertices in a network graph (Raj et al., 2018). Diameter is the length of the longest shortest path between a pair of nodes, describing network density and connectivity. Networks with small diameter are well connected but networks with large diameters are connected rarely (Tayebi&Glasser, 2016).

METHOD

The methods of measurement and data processing described in the research stages such as can be seen in Figure 1. In general, the study is divided into five stages, namely preparation, data collection, data processing, data analysis, and preparation of research reports.

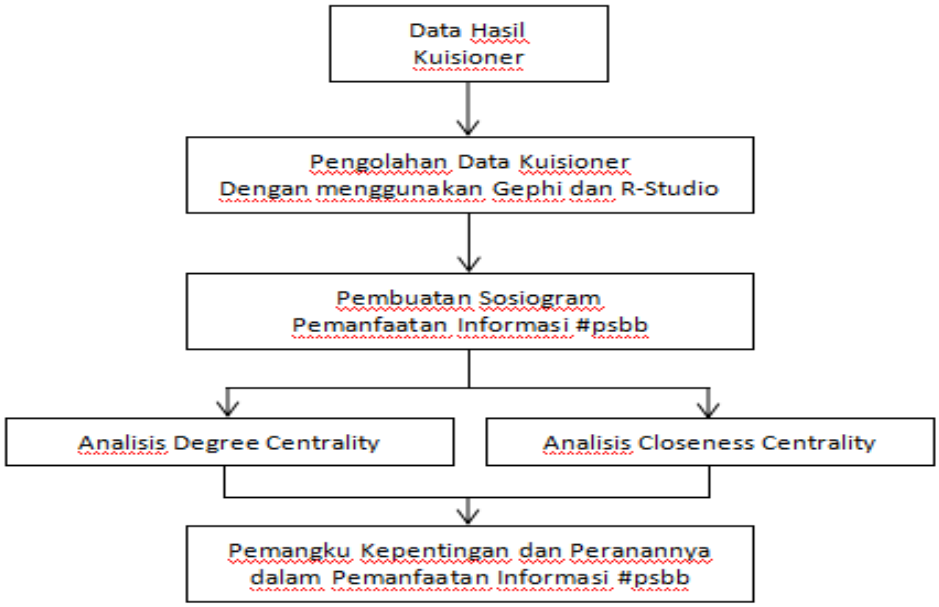


Fig 4 Research Stages Flowchart

RESULTS

Data characteristics

The characteristics of the data in this study are to obtain data as much as 1000 tweets with the keyword #psbb. The data will be saved in .csv format. The stored data will be cleaned by the researcher in order to minimize the noise contained in the data, then visualize the data with the Gephi application to make the pattern more visible.

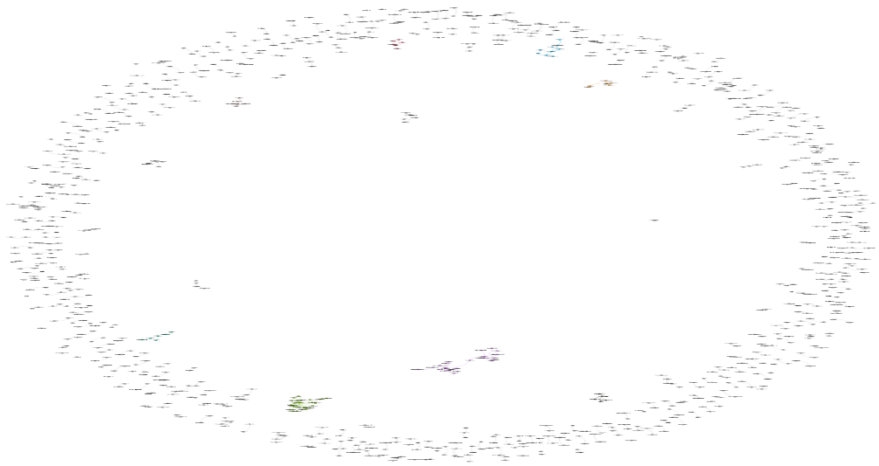


Fig. 5 Social Network Visualization for #psbb

This picture shows each actor who talks about #PSBB on Twitter social media using the keyword #PSBB along with the relationships formed between actors in the conversation.

Interaction network on tweet "#psbb"

In this step we will look at interactions on social networks with the topic '#psbb. Each interacting actor is described as nodes and the interactions between the actors will form edges in the network. Data nodes and edges are applied in the form of a network graph so that you can see the cluster clusters formed and the most influential actors in them. Network visualization is done with the Gephi application.

After making the network model, the graph property value is calculated in the Gephi application. From these calculations, we get the actor property values for the #Work-From-Home network as a key player determinant. From the network, the total Average degree is 1,294, Average path length is 1.0, Network diameter is 1, and Modularity is 0.917.

Key player in twitter network "#psbb"

In the key player measurement is done to find out or see the most influential actors in the network. In this study, the key player is from the @workforce_group twitter account, which affects the appearance of the hash tag #Work-From-Home.:

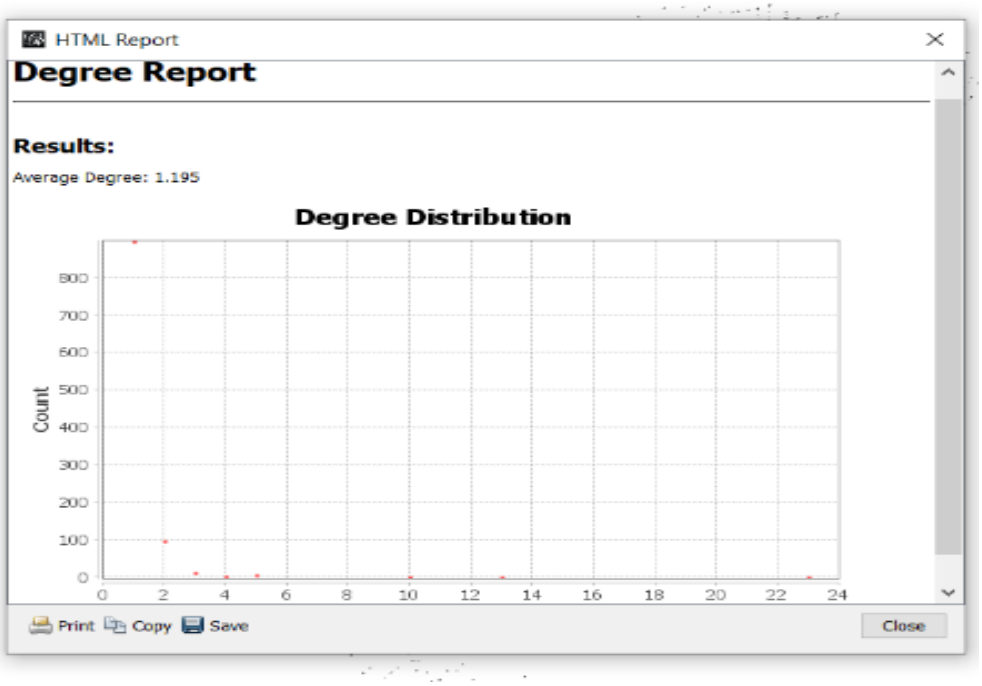


Fig. 6 Degree Distribution

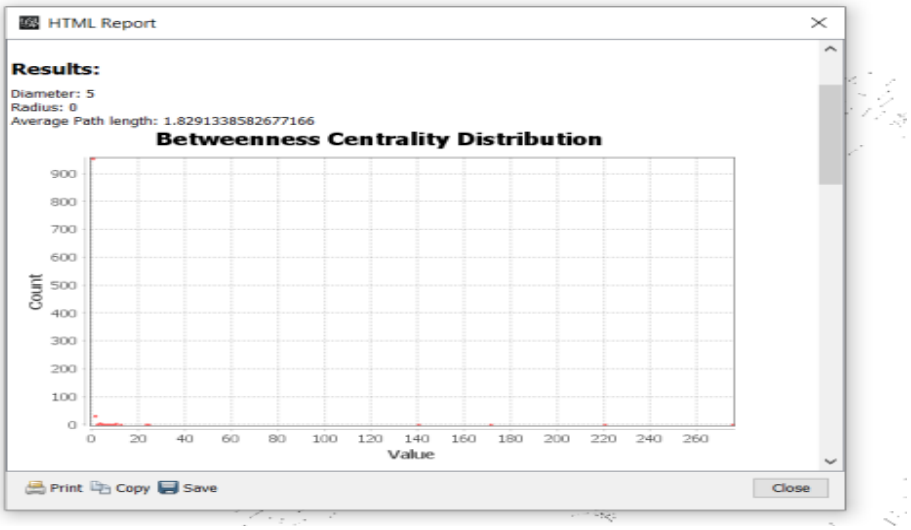


Fig. 7 between Centrality Distributions

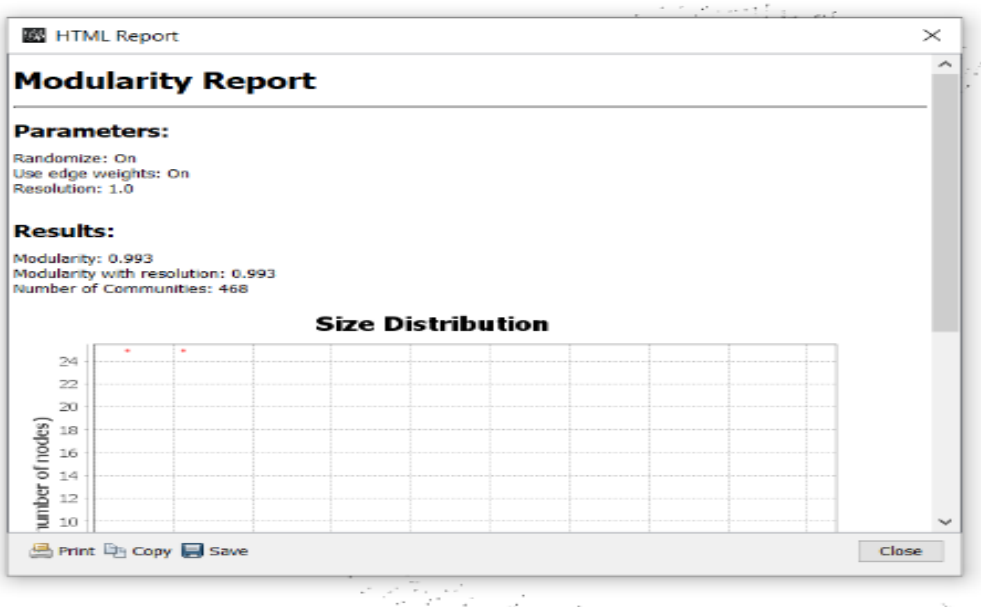
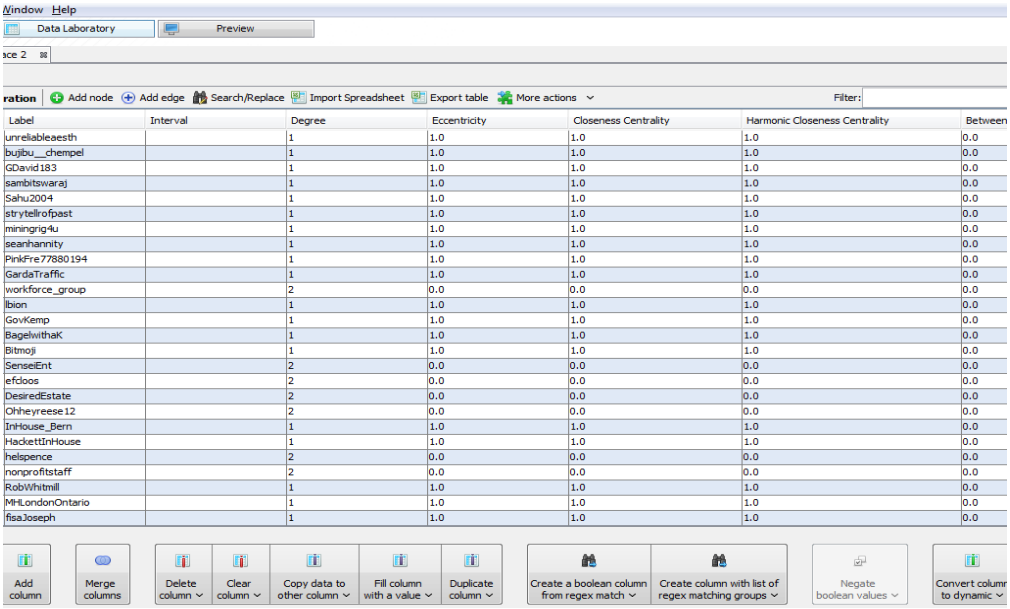


Fig. 8 Modularity Report



Label	Interval	Degree	Eccentricity	Closeness Centrality	Harmonic Closeness Centrality	Between
unreliableaesth		1	1.0	1.0	1.0	0.0
bujibu__chempel		1	1.0	1.0	1.0	0.0
GDavid183		1	1.0	1.0	1.0	0.0
sambitswaraj		1	1.0	1.0	1.0	0.0
Sahu2004		1	1.0	1.0	1.0	0.0
strytellrofpast		1	1.0	1.0	1.0	0.0
miningrig4u		1	1.0	1.0	1.0	0.0
seanhannity		1	1.0	1.0	1.0	0.0
PinkFre77880194		1	1.0	1.0	1.0	0.0
GardaTraffic		1	1.0	1.0	1.0	0.0
workforce_group		2	0.0	0.0	0.0	0.0
Ibion		1	1.0	1.0	1.0	0.0
GovKemp		1	1.0	1.0	1.0	0.0
BagelwithaK		1	1.0	1.0	1.0	0.0
Bitmoji		1	1.0	1.0	1.0	0.0
SenseiEnt		2	0.0	0.0	0.0	0.0
efcloos		2	0.0	0.0	0.0	0.0
DesiredEstate		2	0.0	0.0	0.0	0.0
Ohheyreese12		2	0.0	0.0	0.0	0.0
InHouse_Bern		1	1.0	1.0	1.0	0.0
HackettInHouse		1	1.0	1.0	1.0	0.0
helspence		2	0.0	0.0	0.0	0.0
nonprofitstaff		2	0.0	0.0	0.0	0.0
RobWhitmill		1	1.0	1.0	1.0	0.0
MHLondonOntario		1	1.0	1.0	1.0	0.0
fisaJoseph		1	1.0	1.0	1.0	0.0

Fig. 9 Key Player Data Results

Based on laboratory data on the Gephi software. It can be seen which actors have the highest centrality value compared to other actors. Based on the measurement of degree, closeness centrality, between's centrality, the @workforce_group account is the actor with the greatest value.

Fig. 10 Twitter account @workforce_group

The @workforce_group twitter account is one of the twitter accounts related to business consulting which has a significant influence on the @workforce_group hash tag which has 2,860 followers.

CONCLUSION

Based on the description of each stage that has been carried out, the following conclusions can be drawn:

1. The appearance of #psbb has made a trending topic in the world through social media twitter. From the results of the analysis in launching the hashtag #psbb on social media twitter using the Social Network Analysis (SNA) method, it is found that the @workforce_group twitter account has the greatest value in the network. Twitter account @workforce_group is a twitter account related to business consulting which has a significant influence on the hashtag #psbb which has 2,860 followers.

2. This research is expected to be a reference in analyzing the pattern of relationships between stakeholders who utilize social media and their level of participation in the interaction and dissemination of information so that it can be seen that the key players are very influential in the dissemination of this information.

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