Data Analytics to Examine Trending Topics for Indonesian Election 2019

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Abstrack - Understanding public interest and opinion are necessary tasks in high intense political competition. Utilizing big data analytics from social media provide an important source of information that candidates can utilize, manage and even engage them in targeted political campaigning agenda. One of the sources in big data is social media's interactions. Social media empowers public to participate proactively in the campaigning activities. This paper examines trends gathered from data analytics of two contenders' group for Indonesian Election in 2019. It tracks the recent patterns of people engagement via social media analytic specifically Twitter. The study developed the analysis into the proposed model based on their trends and patterns. The study revealed that political parties are building online social networks to enable them to engage with the public, disseminate ideas and information, gauge public opinion, monitor trends, and obtain immediate feedback. It provides a platform as a listening tool that can be used to capture information and conversations about parties or candidates, and analysis of the data to monitor trends in a candidate's acceptability.

Keywords - Big Data, Twitter, Data Analytics, Indonesia, Election

I. INTRODUCTION

Different forms of information sharing and distribution are fundamental processes in the fabric of advanced societies including politics and political campaigning [1]. Political campaigns are designed to influence how people vote [2], and social media can be an effective means as campaigning tool to deliver the message to the public. Political parties have been taking advantage of recent developments in ICT, which are increasingly being seen as an integral part of their campaign strategies. Social media strategies can create opportunities to meet the challenges related to designing political campaigns and election.

Since, the use of social networks has been discussed in many fields, such as business, health care, science, and technology [3]. The rise of social networking has created opportunities to explore its potential in relation to designing political campaigns and election-winning strategies. However, the topic of big data analytic especially through social networks and its use in political campaigns in the context of Indonesia has not yet been discussed. This study is therefore important because emerging technologies like big data can deliver significant benefits and add value to political parties and candidates' election campaigns. A model is derived from examining of the data analytics to customize campaigning strategies. The model integrates the broad scope of big data into political campaign strategies, and is expected to lead to consideration of multiple sources of data by those engaged in the political process.

The significance of study to assess the use of social media in the political campaign as a tool for developing information literacy of citizens, then improve the efficiency and

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effectiveness of political campaigning activities in the digital era. In addition, the paper will contribute to the body of knowledge by examining the recent Indonesian election 2019 that was heavily also influenced by social media activities from both contenders.

The paper uses big data analytics in examining trends of presidential campaigning race in Indonesia. The paper is organized as follows. In the next section presents a literature review. Section 3 contains the methodology. Section 4 presents analysis and Section 5 is discussion, and thensection 6 concludes the paper.

II. SIGNIFICANCE OF STUDY

Social media has had a major effect on the level of public interest in many fields, including politics. Barack Obama's United States presidential campaign in 2008 utilized the power of the social media as a campaign tool. The current Indonesian president Joko Widodo (known colloquially as "Jokowi") and Obama share a similar story of success in that both gained their positions after utilizing the power of social media. The use of social networks and social media in political campaigning is changing the landscape of information sharing with the public, and intensifying Internet-based battles among supporters of rival parties and candidates.

The 2019 Indonesian presidential election again 'rematch' of the two contenders between Jokowi and PrabowoSubianto (known commonly as Prabowo). Jokowi is current President of Indonesia who popular especially in the media including social media compared with Prabowo, who was a former general in the Indonesian army. Jokowi is running for candidacy for the second term. This study is concerned with the role of big data, especially as it applies to social networks, in supporting both candidates during the election campaign.

2.1 Social Media

Web 2.0 that affects all organizations either public or private in dealing with the data and information drove social media's technology. The use of social media arose from the rapid growth in Web 2.0 that cannot be managed using conventional media techniques. Web 2.0 enables people to easily participating in multichannel interactions and conversations[4]. People can share their opinions, expectations, and other related information with political candidates. This is often in the form of unstructured communication, which can provide new insights for candidates involved in gauging public interest and conditions. A social network is a collection of social processes and characteristics designed to involve the people in a collaborative conversation to provide mutually beneficial value in a trusted and transparent environment[4].

The rapid spread of mobile technology and social networking sites has also dramatically increased the availability of information. People with a smartphone can transmit images and videos to the world instantly and use social media to mobilize groups in support of a cause without having to expose themselves to the risks and costs of alternative methods. However, there has been criticism of the large numbers of Twitter and Facebook followers that some politicians have gathered, and there have been allegations of politicians hiring firms to increase their Twitter follower count by creating fake accounts. According to Mayfield, a social media team should contain a broad range of skills to be effective. The team will require members with local language skills, cultural understanding, and a high degree of familiarity with social media tools and protocols.

Social networks have become an important source of structured big data, and therefore an effective campaign tool for politicians. Nowadays, almost all politicians and public figures communicate with their supporters and the greater public directly through social networks such as Facebook, Tweeter, WhatsApp, and Instagram. In fact, these channels have become "must-have" media for politicians engaging in conversations to understand people's opinions, expectations, and interests.

In 2014, Indonesia's official population was 254,971,986, with 51% located in urban areas and 49% in rural areas[5]. Internet penetration has reached 29%, and 25% of the population are active Facebook users, with mobile subscription penetration at 112%. The average time users spend online each day using either a desktop or a laptop computer is 5 h 27 m. Mobile Internet penetration is at 14% and the average time mobile Internet users spend online each day is 2 h 30 m. The level of social media penetration is 15%, with users spending an average of 2 h 54 m on social media sites each day Ninety-nine percent of all mobile subscriptions are prepaid. Twenty-two percent of all mobile subscriptions are 3G connections There are 80.1 million active mobile broadband subscriptions, representing 32% of the total population, and 52 million users accessing social media on a mobile device, a penetration level of 21%.

2.2 Big Data Technology

Big data was a buzzword that used to describe the explosion of data surrounding every aspect of our life. It signified that every idea that nearly every human action could be measured and recorded in a bank of data that was growing in an extraordinary rate. Big data analysis was the process of looking at huge amount of data sets containing a variety of data types (big data) and tried to decipher hidden patterns, unknown correlations, latest market trends, consumers' choices, preferences, and other valuable business information. This analysis provided effective marketing, new revenue opportunists, customer relation services, improved value chain efficiency, sustainable competitive advantages over rival organizations, and many other benefits.

According to [6], 38.2% of all big data and advanced analytical apps that was created for customer-facing departments which was used in departments such as marketing, sales, and customer service.A survey conducted by Evans Data Corporation on big data and advanced analytics survey 2015v2 showed marketing department had the most common users (14.4%) of big data and advanced analytic apps, followed by IT (13.3%) and Research and Development (13%).

With mobile devices, public and communities generate a huge amount of data anywhere and anytime. The recent discussion of big data, cloud computing, social networks and its related technologies contributes towards the tendency to utilize Internet of Things (IoT) including in political campaign for the purpose of prevailing election. Big data offers the ability to have greater control of information flow in driving public opinion at the public spaces. The new thinking of big data and political agenda related to empirical analysis and experimental design that these approaches can be tailored for understanding transformations in how we study social science phenomena especially in political science. This will allow practitioners and researchers to achieve a meaningful observation of political campaign phenomena. We believe big data analysis will be widely used in many political campaign worldwide in near future. The model is derived based on contemporary literature on big data, social networks and political campaign. This model is expected to fill the gap in identifying a strategy of utilizing big data for the campaign purposes.

Big data technologies had developed at a scorching speed and it did not show any sign of slowing down in the near future. According to the report from An Initiative of the Economic Time (2014), there were 10 emerging technologies for big data, namely column-orientated databases, Schema-less databases, or NoSQL databases, MapPeduce, Hadoop, Hive – Hive, PIG, WibiData, PLATFORA, Storage Technologies and finally SkyTree. Hadoop was by the most widespread and it was executed in MapReduce, which was using entirely open source platform for handling big data. CEO and co-founder of Hadoop distribution specialist MapR, John Schroeder predicted five major developments that would dominate big data technology in year 2015.
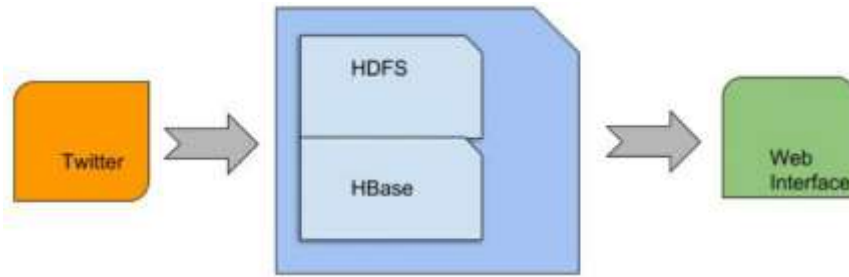
Figure 1. Modelling Data Extraction (Source: Authors' compilation, 2018)

Data analytic platform in this research uses Hadoop that easily and efficiently run large calculations over the Twitter dataset, and ultimately for turning that data into value that helps to understand the trending topics for coming Indonesian presidential election (Figure 1).Hadoop is a distributed computing framework with two main components: a distributed file system and a map-reduce implementation. It is an Apache project with fully open source and has a vibrant community behind it. While, HBase is a distributed, column-oriented data store built on top of Hadoop allowing for structured data storage combined with low-latency data serving[7].

III.   RESULT AND DISCUSSION

This study builds on recent reviews of big data, social networks, and the recent Indonesian presidential election. Searches were conducted on Google Scholar and the Scopus bibliographic database using the keywords "big data AND politics," and "Indonesian election 2019." We chose both Indonesian and English-language articles published in peer-reviewed journals and main media in Indonesia. After removing duplicates and articles beyond the scope of this study, we selected relevant only articles for review. In order to develop big data analytic, the study installed and deployed Hadoop as a platform to extract data mainly from Twitter. Researchers employed a thematic literature analysis and results from big data analytics to form a recommendation.

The competition's nature in politic is similar with the business competition. Both share a basic social media's strategies such as attract new customers, retain them in the business, and make them a loyal customer [8]. Social networks change the nature of political parties from one-to-one interaction to multi channels interactions.

Figure 2. Systems Interface (Source: Authors' compilation, 2018)

In addition, data analytic is useful in political campaigns that the systems can be obtained from various sources such as social media (Facebook or Twitter posts, for example), and then be used by the political party or individual politician to understand the public's interests and

patterns of behavior. That is, it can help political organizations to understand the needs of constituents, and to use this information to their advantage.

With regard to managing relationships with the public, social network has become a crucial medium in political campaigns [9]. Indeed, social networks provides a powerful channel through which candidates can develop and enhance interactions and relationships with potential voters [9-10]. Using social networks is common in Indonesia, which as noted earlier, is the fourth-largest user of Twitter worldwide. Figure 3 shows spread of Twitter' users for the topic of "Jokowi", "Prabowo", hashtag "#2019gantipresiden" (2019 change president), and hashtag "#2019prabowopresiden" (2019 Prabowo president). It shows that majority of the tweet came from major big cities in Indonesia.

Figure 3. Data Spatial for each City in Indonesia (Source: Authors' compilations, 2018)

Data analytic is designed to extract value from a wide variety of data gathered from customers in social networks beyond what traditional processing tools are able to manage or analyze people preferences. There are many benefits of big data analytic in politics; First, political parties and politicians have access to more accurate information, as data analytics can discover hidden connections and patterns in people's behavior through social media. Second, it can improve decision-making because it provides comprehensive information from multi channels interactions. Decision-making is important in political campaigns. For instance, a candidate needs to understand interesting topics in his or her electorate to create a favorable impression with potential voters. Decisions on the appropriate discussion topics or agendas in specific campaign locations can be aided by reports and then analyzing these data to discover trends and key issues. Third, it generates value to understand people's needs and preferences. Value is added when the candidate is able to trust the information that is being provided and is then able to make the appropriate decisions with regard to his or her political strategy. Politicians who can identify problems and propose solutions are able to gain a greater understanding of people's desires [11]. Therefore, political campaign needs to extract the value for each community with the interest from various data source of Web log files, social media, enterprise content, transaction, and the team must ensure its authenticity and reliable a valid information derived from data analytic.

Figure 4 shows data analytics for both supporters taking an active role in campaigning activities. For instance, #2019prabowopresiden and #2019gantipresiden (2019 change president aka Prabowo) are hashtag from Probowo's supporters in social media. The time this data was analysed those two-hashtag leading conversation in social media compared to #2019tetapjokowi (2019 still Jokowi). Though, the keyword's 'Jokowi' is still leading from the overall keywords and hashtag. Both online supporters team strategically involved in observation, monitoring, collecting information, distributing campaign messages, and attacking opponents, all using social media.
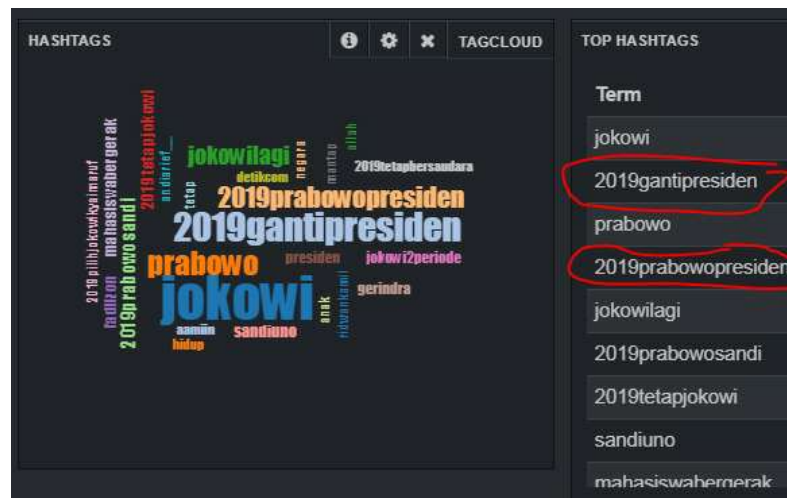
Figure 4. Hashtag War between Supporters (Source: Authors' compilations, 2018)

The study focuses on the use of data analytic from Tweeter's war in political campaigns, for the coming Indonesian presidential election in 2019. The use of social media in political campaigns is aimed at developing the information literacy of the public and public trust towards the candidate thorough social networks, which in turn will influence the decisions to choose the candidate and win the election to the office. Social networks can improve the efficiency and effectiveness of campaign messages due to attract potential voters based on their personalized preference, retain them with the political membership, and extend the voters potential to take part as volunteers campaigning team.

To compare two approached; in a conventional campaign, a political party or candidate perceives voters as passive recipients of the information they deliver. Their task is to convince voters to accept their predetermined policies. If the party or candidate is successful, the voters are barely involved at all in influencing policy and the political agenda. Conversely, campaigns using social networks enable the party or candidate to establish a conversation with the voters, who are actively involved in the campaign process. Furthermore, this engages supporters, who effectively become a massive campaign team, which then works to persuade those who have not yet decided which party or candidate they will support. Voters have much more control over their relationships with politicians and political parties than was previously possible.

In traditional campaigning, the success of information distribution depended solely on how proactive the campaign team were in sharing their political agenda with the public. However, campaigning through social networks can create a sophisticated viral effect whereby it is not only supporters of political parties who are motivated to vote for the party and their candidates, but also the general public who share the same interests and thus identify with the candidate's policies.Conventional election campaigns have traditionally focused on individual relationships such as voter to party and campaign team to voter. However, campaigns using social networks provide the opportunity for collaborative relationships involving complex relationship networks. Conventional campaigns feature one-way communication that results in less well-informed voters. In contrast, social networks enable multichannel communication that allows richer information sharing and thus more knowledgeable voters. Value creation in conventional campaigns is achieved via targeted messages, while in social network campaigns value is created through the public's ownership of the conversation. Social media offer diverse value creation possibilities, including informal conversations with voters via social media.

Politicians and political parties are building online social networks to enable them to engage with the public, disseminate ideas and information, gauge public opinion, monitor trends, and obtain immediate feedback. Social networks provide a listening tool that can be

used to capture information and conversations about parties or candidates, and analysis of the data provided by social networks enables the strategy team to monitor trends in a candidate's acceptability.

Furthermore, in the traditional participation paradigm, empowerment is neglected because citizens are viewed as a recipient of service and administrative decisions and decisions and government solely decides policies of public interests. This implies that there is very minimal or no participation from citizens [4]. This mindset is the main obstacle for the empowerment of citizens [8].

These were just some of the benefits for using big data in marketing. The combination of using big data in marketing could certainly enhance long-term marketing potentials and manifest into an impressive set of new ones. There were many benefits for using big data for campaign activities. Some of the benefits are develop strategies and collect public opinions, profiling each and every potential voters based on their conversation, understanding trend on public reaction toward candidate messages and program offerings, customizing appropriate and personalize message according to their concern and interest, effective online campaigning strategies due to customization and personalization, efficient in term of campaign budgeting.

The benefits of social networks have the potential to make a profound impact on voters' support for political parties and candidates. The booming number of social networking groups and support groups for political campaigns on the Internet and their influence on voter behavior are only just starting to be explored, and this remains an important area for future research. Social networks in politic changes the way political candidates and parties communicate with the public. In conventional campaign strategies, candidates push information out to potential voters using traditional methods such as door knocking, television appearances, and brochures. These methods mostly involve one-way communication to voters. Nowadays, social networks provide candidates with tools and strategies they can use to engage the public as their partner in the campaign process. Campaigning through social networks facilitates multichannel interactions such as audience-to-audience, campaign team to audience, and even candidate to audience conversations.

IV.   CONCLUSION

Big data has been discussed in many fields such as business, health care, science, and other service industries, however, big data in politic has not yet much been discussed. Big data analytic designed to extract value from managing public interests for preserving public services in the long term and winning political race in the short term. Big data analytics is able to reveal patterns in customer management, behavior, or anything related to the multi channels customers' interactions. The study examined the usage of social media in 2019 Indonesian election by using data analytic from Tweeter's war in political campaigns. Both contestants were heavily deployed social media to understandthe patterns and people interests and leading to derive strategies and better precise analysis possible based on people conversation in social media. Thus, helps political parties and contestants to provide more accurate political programs or activities leading to people interests and preferences.

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