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Psychological Analysis of Jokowi's First 100 Days and *Nawacita* from Text in *Twitter*

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Abstract

In recent days, the public often uses social media such as Twitter for delivering critics; appreciation and campaign related to Government and political issues. The existence of Twitter is changing human behavior rapidly. This study aims to identify Twitter as a medium to generate public opinion concerning two political issues, the 7th Indonesian President first 100 days and public response towards his strategic plan, *Nawacita*. Method applied in this study is a combination of contemporary research instruments that combines technology and psychology. In this study, the authors examined conversation on Twitter by using *Tracker* and *Algoritma Kata* (AK, words algorithm). *Tracker* is used to collecting conversation on twitter regarding Jokowi's first 100 days and *Nawacita*, whereas AK is applied to identify *valence* and *arousal* in each tweet collected by *Tracker*. The finding shows the domination of positive tweets in every week. However, there is a moment where the number of positive tweets was close to negative tweets. In *Nawacita* issue, law reformation and enforcement was the issue that has highest negative sentiment among others.

Keywords:

social media; *Twitter*; public response; president; psychological analysis.

Introduction

Current digital movement nowadays encourages many countries around the world to be prepared for the social change. Rapid growth in the digital environment causes certain impacts, whether it is positive, such as economic growth or negative like massive terror through the digital system (e.g., ISIS; *ransomware*). Even though there are two kinds of impacts, this phenomenon cannot be avoided easily by all countries around the world. In this situation, the economic status (developed or developing country) did not play a significant role for one country in facing this rapid change. Rapid change in technology is also allowing people around the world to make the connection just in short period of time, and this connection is possible to accelerate some of the positive effects in helping human solving their problems. However, this open world situation also produces some of the negative consequences, such as cyber-crime and cyber-terrorism. By these consequences and change,

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it is now the moment where countries around the world need to invest some of their resources in this current issue.

The establishment of digital space drives people around the world to visit it and leave traces. It seems that there is no limitation on digital connection since people around the world can discuss some issues, deliver critics, give comments and share their personal life. This freedom makes digital space become a democratic room for everyone involved. In a political context, digital space can become unique for Government and stakeholders to monitor the political condition and public opinion in grassroots, especially in a democratic country like Indonesia, where Government ensures the freedom of speech for everyone in the exact corridor. One of the significant aspects of a democratic country, public opinion should be captured from digital space especially from social media like from *Twitter*, *Instagram*, *Facebook* or *Path*.

In a democratic country, public opinion is considered as the primary source of data for government in policy-making process (Burstein, 2003). The principle of democracy mandates Government and other stakeholders from district to the national level to serve people as their superior body. Serving people in this context means developing policies and programs that bring profit and well-being for them. However, sometimes these two purposes were not supported by valid and reliable data. The principle of *evidence-based policy making* (EBPM; Gray, 2004) should be considered to reach effective and on-target policies and programs. EBPM is a principle where empirical evidence based on several steps analysis is considered for policymakers as their guidance. To support that kind of paradigm, analyzing digital space with proper instruments can be a low-cost and real-time alternative in this current situation.

Even though EBPM has become the global principle around the world for policy making (Parsons, 2002; Marston & Watts, 2003; Gray, 2004), in this situation, we cannot deny that policies were often made from political process due to limitation and urgency needed for the nation. In this situation, we cannot rely on common research method to deliver their choired evidence. Research needs to be prepared and plan carefully to gain significant results. In this fundamental situation, analyzing public through digital space should be the solution to overcome the obstacle. In Indonesia for now, mostly Joko Widodo, popularly called *Jokowi*, current Indonesia President mostly using *Twitter*, *Facebook* and *Youtube* as guidance to make political statements and promoting policies. This is the moment for Indonesia to consider digital space as a source of useful data to identify how the public response to several national issues, such as corruption, education, well-being, and economy.

As a country with the third biggest Twitter users (Kominfo, 2013), Indonesia was blessed with numerous conversation, opinion, and discussion on Twitter that can be used for sources of analysis. If this blessing could be managed in the appropriate corridor, all of those conversations could be transformed into readable data for policymaking and political monitoring. Conversation, opinion, critics, question, and discussion between users on Twitter emerge with words and sentences. In psychological point of view, words and sentences are medium for a human to express emotion and thought (Pennebaker & King; 1999; Pennebaker, Booth & Francis, 2007; Bradley & Lang, 1999) that is possible to analyze into insight and evidence. By combining computer science and psychology as a branch of behavioral sciences, conversation in Twitter could be analyzed for various purposes, including policymaking and conducting political responses.

In a democratic country, where Government should consider public as the single source of truth, public opinion plays a crucial role here. Due to this paradigm, public

opinion is seen as a crucial aspect of governance and political process which has to be considered by political party and Government to guide them in the policymaking process. In empirical term, public opinion is defined as the thought that emerged in public towards specific objects or issues (Blumer, 1948; Noelle-Neuman, 1974; Burstein, 2003). As one of the largest democratic country along with decentralization governance (Fossati, 2016), the role of public opinion is crucial for the national development. Public opinion should be sacred guidance for Government in its purposes. In recent days, many political research institutions already measured public opinion by conducting a field survey as an input for governance process. However, common public opinion investigation by polling or survey mostly is not addressing the opinion as to the object of study (Blumer, 1948). Polling or survey often only calculates and analyzes the quantity of opinion, but not the generic object of the opinion itself. This limitation drives authors to propose the new alternative in identifying public opinion by calculating and analyzing words in *tweets*.

Words we used are the product of thought and emotion which represent human psychological condition (Pennebaker & King, 1999; Pennebaker, Mehl & Niederhoffer, 2003). Studies related to word analysis have been conducted to analyze various sources of text, including fragment (Cabana, Caballero, Perez, Garcia & Mateos, 2013); blog (Cohn, Mehl & Pennebaker, 2004; Dodds & Danforth, 2010); song's lyrics (Petrie, Pennebaker & Sivertsen, 2008; Adinugroho, Muhamad & Susianto, 2016) and twitter conversation (Adinugroho, Sjahputri, Budiarto & Muhamad, 2017). This kind of studies has been applied to identify and examine the psychological condition of individual or groups which cannot be identified by applying common methods such as self-report instrument; interview and behavioral observation due to various external factors. Even though word analysis is considered as the new alternative study in behavioral science, for now, word analysis still has limitations. The limitations are related to the number of variables that could be examined by analyzing words. Only several variables can analyze by words analysis including emotion and emotional tone, personality, cognitive process, social function and time orientation.

As an attempt to analyze psychological meaning behind words and/or sentences in twitter, there are two well-established instruments to analyze words, namely *Linguistic Inquiry and Word Count* (LIWC; Pennebaker, Booth & Francis, 2007) and *Affective Norms of English Words* (ANEW; Bradley & Lang, 1999). Both of these instruments are English words collection (word bank) which rated by some experts for various psychological aspects. Each word has psychological meaning represented by a numerical score. Words collection in ANEW was only focusing on emotional aspect with the guidance of Russell's framework, *circumplex model of affect* (Russell, 1989; 2003), whereas LIWC has more than one psychological variables, such as emotional tone, cognitive process, and time orientation. Both of these instruments have been applied for various purposes in analyzing numerous text sources, for example, LIWC to analyze The Beatles's lyrics (Petrie et al. 2008), to identify the personality and cognitive ability of each band member, and ANEW to analyze blogs for reference in constructing public policy (Dodds & Danforth, 2010). Unfortunately, these two instruments cannot be applied in Indonesian context due to different language and structure.

To overcome this limitation, authors used *Algoritma Kata,* Indonesian words collection with emotional meaning in each word constructed based on Russell's framework (Wenas, Sjahputri, Takwin, Primaldhi & Muhamad, 2016) to analyze twitter conversation regarding two political issues, *Jokowi's first 100 days* and *Nawacita*. These two topics were chosen based on the level of importance in Indonesia's

political situation post Presidential election in 2014. First 100 days of Jokowi is a strong indicator to evaluate whether Jokowi kept his political promises or not, whereas *Nawacita* itself refers to Jokowi's core program. AK has been applied to examine another political topic such as song lyrics developed by SBY, the 6th President of Indonesia (Adinugroho et al., 2016) and Twitter conversation related to current political issues in Indonesia (Adinugroho et al., 2017). Analysis processes were started with data collection by using the tracker, specialized computer software developed by *Provetic Lab* in searching for numerous tweets related to Jokowi as our primary keyword. After that, two analyses were conducted, first was valence and arousal analysis, and the second was related to coding specific keyword related to Jokowi's political agenda, *Nawacita*.

Jokowi and His Political Career

Jokowi, the 7th Indonesian President is considered as the new hope for Indonesia (Beech, 2014). He began his political career as city mayor in Solo, a small town in central Java. In his early career as mayor, Jokowi was known as an entrepreneur who successfully transforms his ideas into reality. When he was mayor in Solo, one of the fascinating breakthroughs was moving traditional sellers from pedestrians and green line territory, places where market and selling were prohibited, into legal traditional market namely *pasar*. The process was conducted with more than 100 lunch meetings (Advertorial, 2014). With his unique political communication, he could successfully move more than 200 traditional sellers into the traditional legal market without any conflict at all. All of these policies and breakthroughs have been succeeding to deliver Jokowi won his second election phase in Solo without any political campaign with more than 90% victory.

After his political career in Solo was seen throughout Indonesia and the world, finally, in 2012, Jokowi came to Jakarta, carried by *Indonesian Democratic Party* (PDI-P) as the candidate for gubernatorial election along with Basuki Tjahaja Purnama (Ahok) as the candidate for Vice Governor. The election came in two rounds, wherein the final round; Jokowi-Ahok had to compete with Fauzi Bowo, the incumbent along with Nachrowi Ramli. Finally, with the support of two political parties and grassroots volunteers, in 2012 Jokowi and Ahok had won the competition and elected as Governor and Vice Governor (Afifah, 2012). The victory of Jokowi-Ahok was also contributed by the role of social media as their primary political marketing (Utomo, 2013). For over two years Jokowi had acted as Governor before he became President-elect in 2014. Even though Jokowi only has a short period to implement his political promises, he actually had his monumental breakthrough. His decision to build *rapid mass transit* (MRT) which had been planned for over 10 years for Jakarta as the special district was finally executed. Finally, in 2014, Jokowi was elected as Indonesian President along with Jusuf Kalla as his Vice President. Ahok, Jokowi's vice governor also elected as Jakarta's governor in the same year to replace Jokowi.

In his presidency period, Jokowi had set up a primary agenda namely *Nawacita*, a national agenda developed by *Tim Transisi*, a team of remarkable members which established in the transition period before Jokowi officially in office as Indonesian President ("Visi, Misi dan Program Aksi," 2014). *Nawacita* contains nine national priority programs, such as (1) protection for all Indonesian citizens, especially who works in overseas; (2) planning and constructing good governance to enhance public services; (3) strengthening district government by decentralization; (4) corruption eradication and legal reform; (5) building educational system for all; (6) infrastructure development to enhance domestic growth; (7) supporting domestic economic system; (8)

revolution in national identity and (9) social restoration through diversity and pluralism. All of these programs will be implemented in 33 ministries, police, the national army, and other state institution through various national policies and actions.

In order to see how *Nawacita* is being implemented in various national programs, examining public opinion in Jokowi's first 100 days is crucial. Public opinion becomes a crucial aspect of the democratic country due to the fact it represented the voice of highest authority, the people. Jokowi's first 100 days represents a picture of how Jokowi realized his political promises. In many democratic countries, evaluating first 100 days of the presidency is becoming a common method to measure political commitment towards people in a nation of President as the highest administrator (Dominguez, 2005). In regards to its importance, however, public opinion is like a puzzle that needs to be solved to find a clear picture. The biggest question according to Jerre (2013) which public and which opinion should we hear? Sometimes this question cannot be solved by only applying common research methods. We need to find the meaning of public opinion through a comprehensive method where we can analyze the statement within its context. Twitter can be the solution to understand the opinion along with its context and situation. This study will try to examine it within the context of two issues.

Public Opinion on *Twitter*

Twitter has been a medium for numerous users to make conversation, discuss, and propose new products and also delivering critics to Government. Since its establishment in October 2006, Twitter has been a popular online medium to share ideas, opinion and delivering critics towards specific issues. Twitter is often classified as micro-blogging, a form of digital medium that allows the user to write a brief text update regarding current life or activities and share it to other users (Java, Song, Finin & Tseng, 2007). The term micro is referring to the limitation of character in Twitter, which only provides 140 maximum characters. However, this kind of limitation does not preclude twitter to act as micro-blogging medium which able to connect people (users) around the world (Kwak, Lee, Park & Moon, 2010). Through its various commands, Twitter is used by various users not only to accomplish their social needs but moreover function as an economic tool, such as digital marketing. Those commands are a *reply*, *re-tweet*, like and *direct message*. All of these commands are constructed to facilitate users on Twitter to make "real" conversation.

The Twitter phenomenon happens around the world. If in the past, a group of people must gather together in specific place to plan activities, nowadays they are facilitated with twitter. Indonesia as developing country also listed as the third biggest Twitter user behind the United States of America and China in 2017 (Herman, 2017; Maulana, 2017). In Indonesia's political context, the existence of Twitter also plays a big role for all citizens. Twitter is not only considered as social media, but also political media. A study from Wenas et al. (2016) and Adinugroho et al. (2017) have explained that users are open to talking about political issues in Indonesia through twitter. Some topics that has been publicly discussed in Indonesia are president, Jokowi; local leaders; and also various city issues. All of these data captured on twitter are considered as human behavioral data or can be named as opinion. In psychological point of view, opinion is produced from the dynamic between cognitive function, memory, emotion, and attitude (Fiske & Taylor, 2008). As one of the branches of behavioral science, psychology is facilitated by various psychological instruments to analyze behavioral data in two kinds of forms, quantitative and qualitative data.

Nowadays, Twitter is not only used by ordinary citizens but also President and other

Officials of the world. In Indonesia, Jokowi as the President has used Twitter known as *@jokowi* as his official account to distribute various news regarding national issues. His official account has been verified by Twitter with blue check sign which means Twitter has recognized *@jokowi* as the official account who distributes valid information from Indonesian President regarding His current activities as President. Figure 1 shows the official account of Indonesian President, with an example of his tweet in the Indonesian language. In this study, the analysis process would not be focusing only on Jokowi's official account, but also numerous tweets mentioning Jokowi as the primary keyword on Twitter. The existence of this official account facilitate all users in Indonesia to give critics, insight, input, and insight for the President that can be managed as consideration to execute policies and programs.

Circumplex Model of Affect and The Role of *Algoritma Kata* (AK)

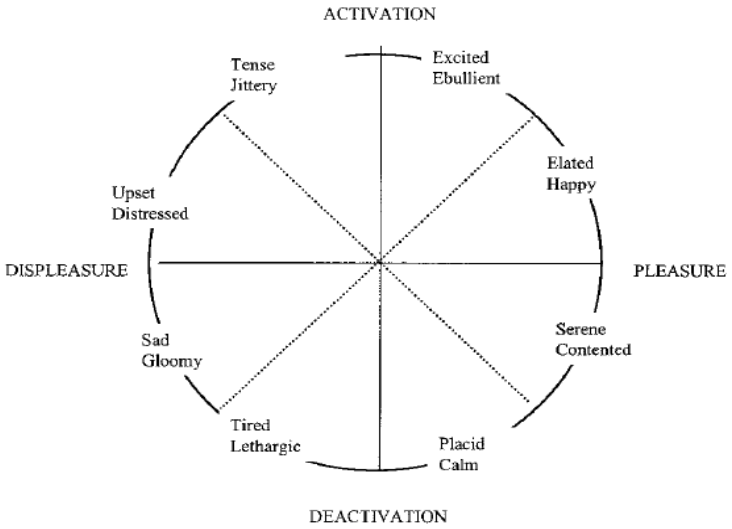
As an attempt to give a meaningful analysis of public opinion on twitter, this study was applying the psychological framework to analyze various tweets, valence (VA) and arousal (AR) analysis. Valence and arousal are two psychological variables which constructed through *circumplex model of affect* (CA), the theory of emotion developed by James Russell (1980; 2003). Valence refers to the psychological condition of a human, whereas arousal refers to physical condition. VA and AR are represented with bipolar poles ranged from calm to exciting for arousal and positive to negative for valence. The interaction between valence and arousal poles will form four (4) different quadrants. Each quadrant has specific emotional labels that produced the interaction between valence and arousal level. These specific emotional labels are namely as *core affect* (Russell, 2003). The emotion was chosen as the primary variable in this study due to its function to predict human behavior (Russell, 2003; Fiske & Taylor, 2008). In politics, predicting public is crucial for various purposes, such as policymaking. Figure 2 describes CA model and the interaction between valence and arousal poles which categorized 16 emotional labels in the *circular model* also described in Figure 2.

As an attempt to translate CA framework into word analysis instrument, Wenas et al. (2016) have developed AK. In specific, AK is words collection collected from Twitter as the main corpus within 2012-2014. All of these words were randomly collected through specific computer software developed by *Provetic Lab*. All of these collected words then were rated by raters in two aspects, VA and AR. VA score is

Figure 1.
Official Twitter Account of Joko Widodo in @jokowi

Source: https://twitter.com/jokowi

Figure 2.
Circumplex Model of Affect and 16 Core Affects



Source: Psychological Review, 2003

ranged from 1 (negative) to 5 (positive), whereas AR score is ranged from 1 (calm) to 4 (excited). Each word in AK has VA and AR score based on the mean from independent raters. In practice, AK was constructed by replicating *Affective Norms of English Words* (ANEW; Bradley & Lang, 1999), English words collection also with valence and arousal score in each word. In this study, AK is functioned as the instrument to examine numerous tweets concerning two issues, Jokowi's first 100 days and his primary agenda, *Nawacita*. The first issue, Jokowi's first 100 days only examined with valence analysis due to the limitation of computer algorithm developed by *Provetic Lab* in its first development in 2014-2015. In *Nawacita* analysis, the author conducted the examination of both psychological aspects, VA and AR.

Methods

Tweets Collection

In this study, authors had collected primary data with two steps. In the first step, the author collected all the tweets that related to the primary keyword, Jokowi. Tracker, specialized computer software developed by *Provetic Lab* was applied to track and examine specific tweets (Adinugroho et al., 2017). Tracker functioned as the software to collect all the tweets with "Jokowi" as the keyword regardless its forms whether it was *repl*ied, *re-tweet* or original tweet from users. By specific command, keyword and period of time, the tracker would automatically examine all of the tweets originated from all languages with Jokowi word. In this study, authors had collected numerous tweets regarding two issues. For over 2,030,738 tweets concerning Jokowi's first 100 days were collected from October 2014 until January 2015. For the second issue, *Nawacita*, 2,124,897 tweets were collected from November 2015 until May 2016. A different period of time collection was conducted to avoid issues contamination related to first 100 days euphoria.

Word Grouping for Valence and Arousal Analysis for Nawacita

As an attempt to analyze valence and arousal of public response towards *Nawacita*, authors conducted two steps analysis. The first step is related to tweet collection by applying Jokowi as the primary keyword. Authors collected over two million tweets

from November 2015 until May 2016 and examined the most frequent words emerged from those tweets. For over 9,975 words and symbols were tracked from around two million tweets collected. These words and symbol were collected based on the amount of appearance in two million tweets collection. The number of words and symbols reached 213 until 1,992,899. We named all of these as *popular words* in Jokowi's topic. In the second phase, we conducted word grouping analysis based on Jokowi's popular words. Each author wrote 2 words which best represent each point in *Nawacita*. Then, each point in *Nawacita* is represented with 10 unique words derived from authors. These 10 unique words then matched with Jokowi's popular words to identify how many of these words emerge in collected tweets. These 10 specific words in each issue also used to calibrate valence and arousal score in each issue.

Valence and Arousal Analysis for Two Issues

After all of the tweets concerning Jokowi were collected, authors examined the meaning of each tweet by VA and AR analysis with AK for both issues. Jokowi's first 100 days issue was analyzed by Tracker, combined with AK words bank. Tracker was used for track, identify and collect various tweets that contain Jokowi as a keyword. Calculation of valence and arousal score for each tweet and each *Nawacita*'s issue was following Dodds and Danforth (2010) formula. The formula was focusing on the calculation of mean score for VA and AR by using total score derived from AK and the frequency of unique words captured (see Figure 3). Unique words itself refers to words that match with AK words bank. We used unique term due to its characteristic as words with valence and arousal score.

The formula in Figure 3 is focusing on calculating mean score derived from the total score that was calculated from each unique word and its frequency. Not every word emerged was calculated as unique words; it depends on the words collection in AK. For example tweet from *@ayubpongrekun: Ini baru keren. Tol laut mengecilkan kesenjangan* (*This is awesome. Sea Highway reduces inequality*). From this tweet, there are four (4) unique words (underlined) that match with AK words bank which conceives of valence score. Those words are *baru*/new (4); *keren*/awesome (4.21); *tol*/highway (3.35) and *laut*/sea (3.71). Based on the calculation with formula in Figure 3, valence score for a tweet from *@ayubpongrekun*

Table 1.
Summary of Jokowi's Nawacita and The Unique Words

Point	Description	Unique Words
1	Protection towards all Indonesian citizens, especially who work or live in overseas	*Warga* (citizen) *Hukum* (law) *Perlindungan* (protection)
2	Building good governance to enhance trusted public services	*Efektif* (effective) *Ruang* (space) *Publik* (public)
3	Accelerating decentralization governance for every district in Indonesia	*Desa* (village) *Nasional* (national) *Rakyat* (people)
4	Conducting law reform and enforcement in national level	*Hukum (law)* *Mati (dead)* *Narkoba (drugs)*
5	Increasing social welfare through accessible education for all	*Belajar (learn)* *Pendidikan (education)* *Sekolah (school)*

Source: "Visi, Misi dan Program Aksi Jokowi-Jusuf Kalla," 2014

Figure 3
Formula to Calculate Valence (1) and Arousal (2) Score from Text in Twitter

$$a_{text} = \frac{\sum_{i=1}^{n} a_i f_i}{\sum_{i=1}^{n} f_i} \quad (1)$$

$$a_{text} = \frac{\sum_{i=1}^{n} a_i f_i}{\sum_{i=1}^{n} f_i} \quad (2)$$

Source: Journal of Happiness Studies, 2010

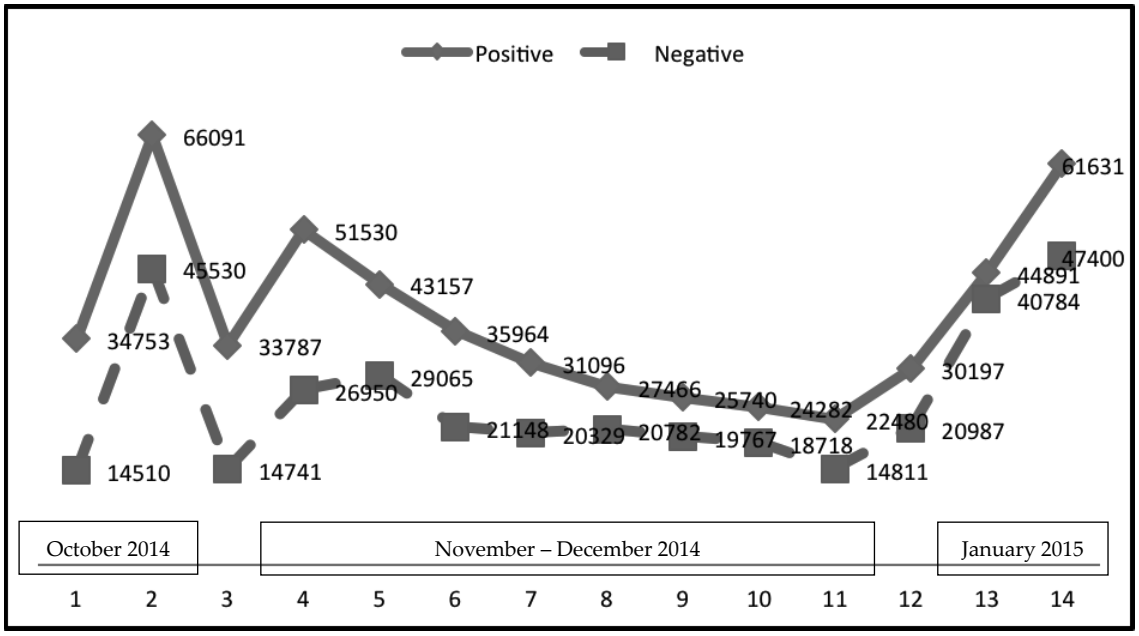
is (4+4.21+3.35+3.71)/4 ≃ 3.81. Based on the poles score which categorized from 1 (negative) until 5 (positive), a tweet from *@ayubpongrekun* was placed above the median. Based on Dodds and Danforth (2010), this score was categorized as positive valence.

Results

Valence analysis on Jokowi's first 100 days

As an attempt to describe public response towards Jokowi on his 100 days, we clustered all tweets that emerged in October 2014 until January 2015 in week categories. Specifically, the data started on October 21st, 2014 until January 29th, 2015. There will be 14-week clusters which described the different amount of tweets that indicated positive and negative tweets. Each week cluster consists of 7 days, only in week 14, it consists of 8 days. As an attempt to categorize the valence score in two poles, positive or negative, authors used the median score from 1 (negative) to 5 (positive) as the score to classify negative or positive tweets. Valence score which indicated three (<3) is categorized as negative valence and vice versa. This classification is also used by Dodds and Danforth (2010) as a mathematical guideline to classify score in emotion in written text and song's lyrics. Figure 4 draws a picture of the

Figure 4.
Tweets with Positive and Negative Valence Regarding Jokowi's First 100 Days



Note. Time Series Chart indicates Valence and Arousal Movement from the first day until 100 days of Jokowi based on Tweet Analysis on Calculating Unique Words

Source: Research Results

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dynamics of valence score in tweets which discussed public response towards Jokowi. Line chart in Figure 4 has shown three significant movements of increasing and reduction of the number of tweets. All the tweets are moving in the similar pattern, however, from week 7 to week 12, the gap between positive and negative is getting closer each other.

Figure 4 has shown the dynamic movement of tweets in each week for over 100 days since Jokowi was inaugurated as President in October 2014. Three (3) significant movements of positive and negative tweets regarding Jokowi is positioned in week 1, 2 and 3. After these weeks, both positive and negative tweets are moving in the similar pattern where positive valence is always greater than negative tweets. To examine more detail, we also calculated the difference in score gap between positive and negative tweets and calculated whether the difference is statistically significant or not. We named this examination as *gap analysis* (GA). Significance in statistics explains the difference or similarity between tweets score and it's caused by the empirical pattern, not by coincidence (Field, Miles & Field, 2012). We used a *t-test* for the independent sample to calculate the difference between positive and negative tweets in each week. The analysis unit which was used for statistical calculation is the amount of positive and negative tweets in each day/ week. Table 2 shows the description of the difference in score between positive and negative tweets and also with *t-test* score. There is seven (7) weeks cluster which has a significant difference between positive and negative tweets.

Table 2.
Difference Score between Positive and Negative Tweets in Each Week

Week	Difference Score	*t-test*
1	20,243	1.12
2	20,561	1.22
3	19,046	2.02
4	24,580	1.67
5	14,092	2.55*
6	14,816	4.84*
7	10,767	4.02*
8	6,684	2.75*
9	5,973	1.76
10	5,564	2.64*
11	7,669	3.17*
12	9,210	2.55*
13	4,107	0.54
14	14,231	1.22

**Significance in 95% confidence interval*
***Significance in 99% confidence interval*
Note. The calculation of t-test indicates whether the difference between positive valence and negative valence caused by empirical pattern (and **) or coincidence.*
Source: Research Results

Word Grouping and Nawacita

Word grouping analysis has been selected to examine public response towards *Nawacita*, Jokowi's primary presidency agenda for over 5 years. There are nine priority programs in *Nawacita*. In each program, authors have written 10 specific words (unique) to represent each issue (i.e., for point No.1, some written words that related are citizen and law). Then, those written words were matched with collected unique words that emerged from Tracker analysis. Only words that matched were selected to represent each *Nawacita* point. When the process was completed, valence and arousal analysis were calculated from these unique words (see Table 3).

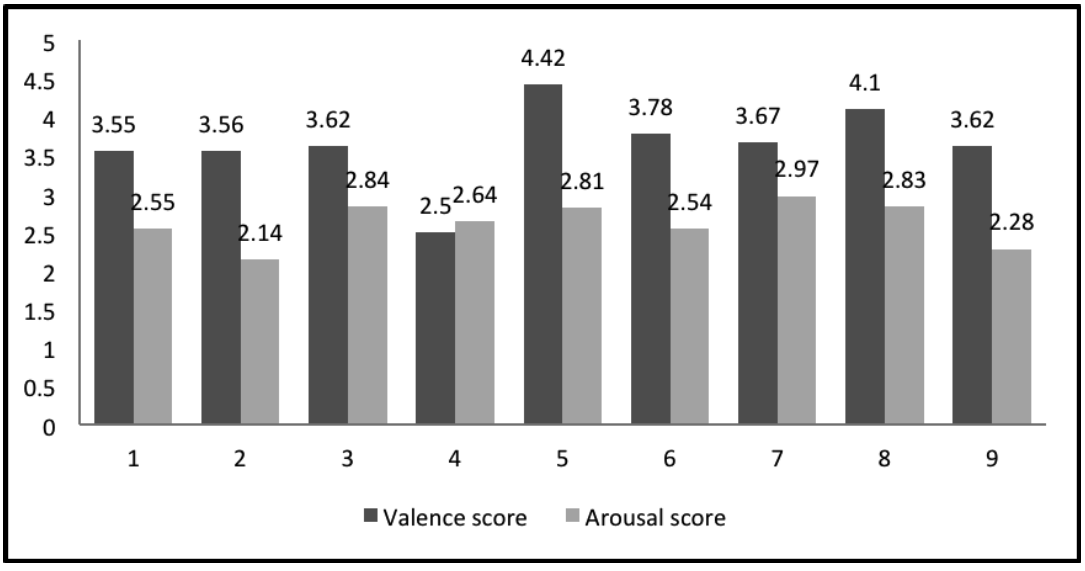
As an attempt to analyze more detail on the psychological point of view, we also examined VA and AR score in each program. We used calculation formula in Figure 3 which focused on calculating mean score based on VA and AR score in each unique word and also the frequency of unique words. Median from the two poles is used by authors as the cut-off score to differentiate between positive and negative words. From the analysis process, it shows that eight from nine issues in *Nawacita* are perceived with positive emotion, only one issue is perceived below cut-off score (negative), which focuses on law reform and law enforcement.

Table 3.
Description of Top Three Unique Words in Each Nawacita Program

Point	Description	Top 3 Unique Words	Frequency
1	Protection for all Indonesian citizens	*Hukum* (law)	33,321
		Warga (citizen)	27,744
		Terorisme (terrorism)	13,127
2	Establishing good governance	*Kebijakan* (policy)	14,020
		Publik (public)	11,271
		Percaya (trust)	7,141
3	Supporting decentralization in districts	*Rakyat* (people)	119,199
		Nasional (national)	24,740
		Daerah (district)	18,004
4	Law reform and enforcement	*Hukum* (law)	33,321
		Korupsi (corruption)	23,839
		Tegas (firmly)	15,134
5	Accessible education for all Indonesian citizens	*Belajar* (learn)	10,708
		Pendidikan (education)	10,509
		Sekolah (school)	6,225
6	Building infrastructures to support economic growth	*Jalan* (road)	21,735
		Infrastruktur (infrastructure)	9,873
		Jembatan (bridge)	8,799
7	Supporting domestic economy	*Rakyat* (people)	119,199
		Negeri (country)	22,431
		Lahan (territory)	6,362
8	Mental revolution through civic education	*Bangsa* (nation)	28,304
		Nasional (national)	24,740
		Kebijakan (policy)	14,020
9	Enhancing diversity through social restoration	*Beda* (different)	5,831
		Agama (religion)	5,005
		Toleransi (tolerance)	3,478

Source: Research Results

Figure 5.
Valence and Arousal Score in Each Nawacita Program



Note. Bar Chart indicates the degree of valence and arousal form tweet analysis by using unique words.
Source: Research Results

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For AR aspect, the analysis shows two issues are located below the cut-off line (<2.5). Those two issues are (1) protection for all Indonesian citizens and (9) enhancing diversity through social restoration. Both of these two aspects, VA and AR, can be an input for Government and other stakeholders to plan and deliver appropriate response for Indonesian.

Discussion

Analyzing public response in Twitter is a promising methodology for examining the real situation in the field is rapid. Even though text analysis still has limitations, utilizing Twitter as a source of analysis to gather data regarding public response towards Government and various political issues in Indonesia is an alternative. This analysis can be very useful for Government and President to plan, develop and execute policies and programs for the nation. By examining emotional response in public, Government and related stakeholders can make a political plan to execute policies and programs which can avoid social conflict and chaos in grassroots. Also, by applying this kind of analysis, Government also can rapidly evaluate the impact of policies and/or political action that have been conducted. Specifically, if we can measure the impact directly after the policy or program was being implemented, we also can make a time-series analysis that could be useful to understand how public or crowd moves in a democratic country (Indonesia) in responding to new policies or programs from Government. The capacity of rapid data collection is the excellence of tweet analysis compared to another method such as field survey and in-depth interview.

Besides its capacity to give input as a political reference, analyzing tweets also can be useful for many political parties to track and identify political movement among its rival and colleagues. In many situations, communication in politics is a significant issue for every politician. In order to communicate, a politician as a human is using words and language not just to deliver a political message, but also political attack towards parties and politicians. In Indonesia, many politicians are moving their message to Twitter. For example, Fadli Zon, Vice Chairman of *Gerindra* (Great Indonesia movement party), who often deliver a strike for Jokowi regarding his political movements through his phenomenal tweets. In the context of big data analysis, his tweets regarding Jokowi and some of the current issues are a source of analysis that can be used for profiling material. For some people, the tweet is a just common message in the online medium, but for some analysts, it can be a source of analysis that can deliver impactful social change.

Conclusion

Jokowi's victory is often perceived as the new hope for Indonesia where grassroots finally dominate the power of political elites (Mietzner, 2014). In 2014 presidential election, Jokowi along with Jusuf Kalla as President and Vice President candidate were only supported by four political parties. This condition was significantly different from his rivalry with Prabowo, who was supported by seven political parties. By political calculation (7 vs. 4), Probowo would have won the election due to more political supporters. Prabowo's coalition was strongly supported by many political elites that have impactful social networks among politicians in Indonesia. However, the reality said differently. Even though Jokowi dan JK were only supported by minor political elites and parties in parliament, they could transform common citizens became political machine who moved in grassroots level through the online machine. These militant people were called as *relawan Jokowi* (RJ; *Jokowi's volunteer*). RJ was not moved based on the political fund; most of them were using their own money and resources to support Jokowi and Jusuf Kalla in 2014 presidential election (Mietzner, 2014).

As a political leader like the others, Jokowi was charged for his political promises

which were published in his campaign. Public response in his first 100 days is the indicator to measure Jokowi's political commitment not just to his constituency, but also all Indonesian people. In this study, authors had proposed a new alternative in measuring public response by analyzing twitter conversation with Jokowi as the keyword. Based on Figure 4, there was significant dynamic from week 1 until week 3 where both positive and negative tweets were fluctuating in the high range. This phenomenon could be explained due to the political euphoria that just happened after Jokowi was elected as President. After week 3, the fluctuation pattern of positive tweets was slowly decreased until week 11, whereas for negative tweets seems stagnant from week 3 until week 11. In our analysis, this could happen due to Jokowi's political decision to raise basic fuel price for all three variants, *premium*, *pertamax*, and *pertamax plus* (Asril, 2014). Based on the data, the increase in fuel price was not a good choice for Jokowi to create an impression in his first 100 days. However, with this analysis, we can quickly get the insight of public emotional condition after several policies have been implemented. In a political setting, this insight is very powerful to create political stability.

A second analysis was focused on examining Jokowi's priority agenda, *Nawacita*. *Nawacita* is a strategic program developed by *Tim transisi* (transition team) after Jokowi was officially elected as President. *Nawacita* is called a strategic program that differentiates Jokowi from other former Presidents. *Nawacita* is described with nine priority points that have been addressed as a national issue. Based on the principle of word analysis where words can represent expression towards various objects (Wenas et al., 2016; Adinugroho et al., 2017), each of author had written 10 unique words to represent each issue in *Nawacita*. These unique words then analyzed by tracking and matching process with Jokowi's popular words derived from numerous tweets. Based on these unique words, we also could calculate valence score in each issue by applying words collection in AK which matched with our unique words.

Valence and arousal analysis by utilizing unique words is alternative to describe public opinion regarding Indonesia's national issues. Result in Figure 5 has described different public response towards nine national issues captured in *Nawacita*. This analysis is also valuable for Government and another stakeholder who has responsibility for developing policy and national programs. Even though it is quite difficult to describe public invalid, word grouping analysis (unique words) can become an opening gate to understand public, the most significant aspect in a democratic country (Beerbohm, 2015). Word grouping based on Twitter (big data) also can be implemented as guidance in the policy-making process. By examining every detail of words, researcher or policy analyst can make an empirical pattern which can describe the real situation in the field. For Indonesia itself, Jokowi has been using Twitter for his medium to communicate with all people across Indonesia (users), from inviting people to report illegal charges in district office (Damarjati, 2016) until making an interaction with his family in twitter that invites laugh (Wahono, 2016).

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