

Covid-19 and Hoax on Social Media: Comparing Tweets in the United States and Indonesia during the Pandemic

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ABSTRACT

COVID-19 has changed the way we live our lives, but it has not stopped people from using social media to spread misinformation. This study looks into tweets related to Covid-19 and hoax in the United States and Indonesia and to determine the types of tweets posted by users from both countries. Tweets related to Covid-19 and hoax were retrieved from the United States and from Indonesia using the keyword “Covid” and “hoax”. Content analysis was used to categorize each tweet into one of the six categories. Our findings indicate a significant difference between the types of tweets in the US and in Indonesia. While in the US, many tweets are used to share political opinions, the Indonesian tweets are mostly used to debunk hoax and to share useful information related to Covid-19. Politically motivated tweets are relatively rare in Indonesia.

Keywords: Covid-19, Pandemic, Social Media, Twitter, Hoax, Indonesia.

1. Introduction

The Covid-19 pandemic is currently the biggest challenge for all governments in the world nowadays. The virus has been associated with China as the main outbreak came from Wuhan, China. On December 31st, 2019, the World Health Organization’s (WHO) China office learned of a media statement by the Wuhan Municipal Health Commission from their website on cases of ‘viral pneumonia’ in Wuhan (World Health Organization, 2020). The following day, the WHO requested information from the Chinese authority regarding the cases. On January 4th, 2020, the WHO tweeted about those cases and on the following day, the WHO issued its first Disease Outbreak News report available to the scientific and public health communities. The first reported case outside of China was reported on January 13th, 2020 from Thailand, followed by a report from Japan on January 16th. The first confirmed case in the US was reported on January 20th, 2020 (Michelle L. Holshue, et al., 2020), and until September 20th, 2020 there have been more than 194,000 reported coronavirus related deaths (John Hopkins University, 2020).

While the victims are real, this pandemic has become a political issue and a hot topic for conspiracy theorists. A significant portion of the US population downplayed the

danger of coronavirus due to messages sent by the Trump administration (Breuninger, 2020). At the same time, various false, as well as, unfounded information was shared through various media platforms including social media. Most of the information was related to cures for the virus. The posts included information about hydroxychloroquine, an anti-malaria drug, as a ‘game changer’ in the fight against coronavirus, a theory pushed by the President Trump himself during in March 2020 (Cathey, 2020).

As President Trump uses Twitter as his main platform for communicating his ideas, he has amassed more than 86 million followers on the platform, which puts him in 7th place of the most followed accounts behind Barack Obama, Justin Bieber, Katy Perry, Rihanna, Cristiano Ronaldo, and Taylor Swift (Boyd, 2020). Therefore, the combination of Covid-19, false information or hoax, and Twitter is an interesting topic for a research project to see how this social media platform is used to spread false information related to Covid-19. More specifically, we are comparing the use of this platform in two different countries, i.e., the United States and Indonesia. We have chosen Indonesia, as it is one of the Top 10 countries in term of Twitter users with 11.2 million users (vs. 62.55 millions in the US) (Clement, 2020). The result of this initial study would inform us on how Americans and Indonesians used Twitter and whether there are any similarity or differences between the two countries.

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The remainder of this paper is organized as follows: next we will review literatures related to Twitter and hoax. After that, we will describe the methodology used in this study. The result of this study will be presented, followed by discussion about it. At the end we will conclude this paper with limitation and some future research discussion.

2. Literature Review

Twitter is one of most used social media platforms. It has around 330 million users worldwide with 126 million daily active users (Shaban, 2019). It is known as the platform of President Trump to share his thoughts. Besides President Trump, many head of states and governments use Twitter. The Top 10 World Leaders with the most Twitter followers include Narendra Modi (India – 57.9 Millions), Pope Francis (Vatican – 51.2 Millions), Recep Tayyip Erdogan (Turkey – 16.1 Millions), Joko Widodo (Indonesia – 13.8 Millions), Imran Khan (Pakistan – 11.8 Millions) and Queen Rania (Jordan – 10.4 Millions) (Clement, 2020).

Studies have been conducted on Twitter in relation to various topics including natural disasters, such as tsunami (Brajawidagda & Chatfield, 2012), hurricane (Goudarzi & Mondaresnezhad, 2020), earthquake (Oh, Kwon, & Rao, 2010), political events, such as, the Egypt revolution (Oh, Eom, & Rao, 2012), Swedish election campaign (Larsson & Moe, 2011), and public health issues, such as malaria (Boit & Alyami, 2018) and ZIKA virus (Juric, Kim, Panneerselvam, & Tesanovic, 2017). Most of those studies are based on events limited to certain geographical areas. Covid-19, or the coronavirus pandemic, on the other hand, is a public health issue that has spread over multiple continents in which cases can be found in almost every country in the world except for a couple of small island countries in the Pacific, such as Tonga, Tuvalu, and Kiribati (World Health Organization, 2020).

Social media has expanded its use from connecting people to becoming the first source of information for a large number of its users (Westerman, Spence, & Heide, 2014). While information or news available through the traditional media outlets, such as newspapers, TV news, or radio news, has gone through venting and quality control by its reporters and editors, information spread through social media is lacking that kind of venting making social media susceptible to falsehood and incorrect information. As social media increases its platform as a news source, it helps in spreading false information, which leads to negative consequences to society (Patel & Constantiou, 2020). In the case of Covid-19, social media is used to spread information that does not align with scientific evidence, information against the advice of public health experts, and questioning the credibility of top public health experts in the country. Misinformation, also known as fake news, can be defined as the intentional deception of a mass audience by nonmedia actors via a sensational communication that appears credible, but is designed to manipulate and is not revealed to be false (Finneman & Thomas, 2018).

Creators of fake news try to promote a certain point of view or specific political belief (Thompson Rivers

University Library, 2019). Furthermore, perpetrators of fake news create articles that prey on emotions and bias (Thompson Rivers University Library, 2019), which causes people to react and share the false information (Fédération professionnelle des journalistes du Québec, 2019). Most people have a difficult time distinguishing real and fake news. This is because fake news can be found next to accurate information (Thompson Rivers University Library, 2019). A study found that 86% of adults admitted report having initially believed that the news was real (ISPOS, 2019). Data from the Indonesian Ministry of Communication and Information reports that 60% of social media was fake news (Iswara & Bisena, 2020). During this pandemic, people have shared information about Covid-19 medicine (Marhaenjati & Saudale, 2020), as well as, the legitimacy of Covid-19 itself (Reuters Fact Check, 2020). The Ministry of Communication and Information found 857 fake news items related to the virus until the second week of June (Dursin, 2020). This is a stark contrast to the six pieces of COVID fake news in January (Dursin, 2020).

To retrieve tweets from certain country or region, we can use the geo-coordinate field in a tweet. Geo-coordinate is just one of the three options in Twitter to share one's location (Kumar, Singh, & Rana, 2017). The other two options are user location and place name. A user's location is something that a user entered when they created their profile. There is no guarantee that the location is accurate, and it can be arbitrary. A study by Hecht et al. (2011) found that 34% users do not provide real location information in their profile.

3. Methods

The tweets were retrieved using R package for Twitter called *rtweet*. This package is designed to collect and organize Twitter data via Twitter's representational state transfer (REST) and stream application program interfaces (API). Twitter API enables programmatic access to Twitter in a unique and advanced way (Twitter, 2020). The *rtweet* package has several functions including the *search_tweets* function. This function will return Twitter statuses matching a user provided search query (Kearney, Heiss, & Briatte, 2020). However, it only returns data from the past 6 – 9 days. Some of the arguments used in this function are query to be searched, number of desired tweets to return, including retweets or not, and geographical limiter.

Content analysis is used to analyze qualitative data (Bengtsson, 2016). Content analysis can be defined as “a research technique for making replicable and valid inferences from texts (or other meaningful matter) to the context of their use” (Krippendorff, 2013, p. 24). As we analyze text from tweets, content analysis is appropriate for our study because it uses a naturalistic paradigm to interpret meaning from computer-mediated discourse (Pal, Chua, & Goh, 2017). A content analysis was conducted on those 1,000 tweets (500 from the US in English, and 500 from Indonesia in Bahasa Indonesia). The unit of analysis was each is each tweet. Tweets are coded into categories based on Stephen Dann's classification framework (Dann, 2015),

i.e. *Conversational* (query/response), *Pass Along* (sharing information), *News* (sharing news), *Status* (Opinion), *Phatic* (greeting), and *Spam*. Content analysis has been used in studies analysing tweets such as Brunner et al. (2019) in their research about Tweets by people with traumatic brain injury.

4. Results

The tweets were retrieved on August 24, 2020. Various search terms were used with the *search_tweets* function to look for tweets from the US and Indonesia related to coronavirus hoax. While it was easy to retrieve huge number of tweets from US based users, it was challenging to collect sufficient number of tweets from Indonesian users. Table 1 shows searches that we did with various combination of hashtags, keywords, with geographical information on or off. We decided to use tweets retrieved with the keywords ‘covid hoax’ as our data for content analysis in this study as that keyword gave 500 tweets for each language. The commands using the *rtweet* package are as follows:
`search_tweets("covid hoax lang:id", n=500, include_rts = FALSE, token=bearer_token(), parse = TRUE)`
`search_tweets("covid hoax",n=500, lang="en", geocode = lookup_coords("usa"),include_rts = FALSE, token = bearer_token(), parse = TRUE)`

Table 1a: Attributes used with *search_tweets* function in retrieving tweets in Indonesian language (limit to 500 Tweets)

Keywords / Hashtags	Language	Geo-location	Total tweets
#coronahoax	id	no	1
#coronahoax	-	Yes - Indonesia	4
corona hoax	-	Yes - Indonesia	75
corona hoax	id	no	197
covid hoax	id	no	500
covid hoax	-	Yes - Indonesia	226

Table 1b: Attributes used with *search_tweets* function in retrieving tweets in English in the US (limit to 500 Tweets)

Keywords / Hashtags	Language	Geo-location	Total tweets
#coronahoax	en	no	353
#coronahoax	en	yes	93
corona hoax	en	yes	315
corona hoax	en	no	500
covid hoax	en	no	500
covid hoax	en	yes	500

Content analysis was carried out by the both authors on

the tweets retrieved using the keyword “covid hoax”. The unit of analysis is the individual tweet as this helped in investigating users’ textual posting intention. As training for coding those 1000 tweets, 20 tweets from each were used. After discussion on rules and agreeable definitions for each category, both authors carried out coding on those 40 tweets independently. There was an agreement in coding 33 out of those 40 tweets (82.5%). As the interrater reliability was relatively high, this allowed for each author to code the tweets independently. Each of the coders worked on coding 240 tweets from each language.

Table 2 shows the coding results of all 1,000 tweets into the six categories based on Dann’s classification framework.

Table 2: Number of tweets in each category for Indonesia and USA

Indonesia		USA	
Category	Total Tweets	Category	Total Tweets
Status	79	Status	269
News	104	News	188
Conversational	15	Conversational	23
SPAM	33	SPAM	0
Pass Along	265	Pass Along	20
Phatic	0	Phatic	0

5. Discussions

As we can see, there are significant differences between the type of tweets in Indonesia and in the United States. More than half of the tweets in the US are in the Status category. This category can be defined as “positive or negative sentiment in the form of personal opinion or emotional status” (Dann, 2015). Many of the tweets in this category include political tweets such as:

TRUMP IS MAKING UP STORIES AGAIN. I BELIEVE HE WILL TRY TO SWAY PEOPLE WITH SOME KIND OF COVID 19 NEWS. A HOAX OF COURSE

Pretty certain the Venn diagram of people who say “don’t run from cops/break the law and you don’t get shot” and the “mask mandates are unconstitutional/Covid is a liberal hoax” folk is a perfect circle.

I’ll name a few. sexual assault/harassment, collusion with Russia, bounties on American soldiers, lies about voter fraud, sending secret police to kidnap protesters, mock a disabled man, had police assault protesters for a photo op, called covid 19 a hoax, Epstein involvement

Looking forward to hearing about Covid infections

spiking in NC in 2 weeks, if not sooner. The "Hoax" does not play games like the GOP do.

Following the Status category was the News category which was the second highest category in the United States. This category includes breaking news from reputable news source. One of the reasons why this category was high in the US is because there was a report on many news outlets about a Florida man who lost his wife. His wife's death became viral because the man did not believe in Covid-19. Therefore, many Twitter users tried to make a case that Covid-19 is real and if you don't believe it, you could end-up like this family. Some of those tweets related to this news are:

Even this weekend an unmasked patron standing outside a store asked me if I believed in the "pandemica" ... For those who still don't believe... Man who believed virus was hoax loses wife to Covid-19 <https://t.co/6jaFMRb7Li>

"The human cost of coronavirus misinformation - BBC News - Man who believed virus was hoax loses wife to Covid-19 <https://t.co/qxmTKrTx2m>"

On the other hand, the virus sceptics also used this news to make their points such as by pointing to possible underlying health conditions that led to the death, as we can read in the following tweet:

"What the BBC ""disinformation specialist"" failed to tell us in this story, is that both Brian & his wife were extremely obese & had other underlying health conditions. Did she die to covid-19 ????" 🤔

It is interesting to see how the same piece of news could be used by both sides to make their cases of believing or denying the danger of Covid-19.

On the other hand, in Indonesia, most of the tweets is of the Pass Along category. This category includes links not created by the sender. Many tweets in this category are tweets posted by the so called #relawankemdikbud. Their tweets are many times related to address common hoax related to Covid-19. Examples of their tweets include:

"Edukasi dan HOAXBUSTER: Edukasi kalian buat AKB di hotel atau penginapan dan HOAX menyemprotkan hand sanitizer ke tubuh dapat membunuh covid... <https://t.co/HvtJkrFXVu>"

"MINUM AIR/TEH PANAS DENGAN LEMON MEMBUNUH CORONAVIRUS SECARA TOTAL? HOAX! Meski mengandung antioksidan dan mampu meredakan gejala batuk ringan, lemon dan teh belum terbukti mencegah ataupun mengobati COVID-19. ... <https://t.co/JfsSzaocHj>"

They also posted tweets explaining safety guideline of a new normal such as:

Halo semua! Yuk baca info ini mengenai Adaptasi Kebiasaan Baru di Salon, serta HOAX Asap Menularkan Covid-19! Semoga bermanfaat :) ... <https://t.co/OnHgwfqBhe>"

Simak poster di bawah untuk adaptasi kebiasaan baru di hotel/penginapan/homestay/asrama dan sejenisnya bagi tamu maupun karyawan. -Dan hoax buster hari ini: "Menggunakan disinfektan pada tubuh dapat mematikan covid-19?" #RECONSIGAP #RelawanKemdikbud #SiapAdaptasi <https://t.co/SudZ5MDFQ0>

In this Pass Along category, there are also tweets posted by government entity such as police:

"Pemilihan Bupati/Wakil Bupati Pemalang tanggal 9 Desember 2020, jangan lupa gunakan hak pilih kalian dengan tetap memperhatikan protokol Covid-19. Stop hoax. #polrespemalang <https://t.co/gAFc3vsHOZ>" (Note: the link is to the Twitter account of Polres Pemalang)

Or the Indonesian Broadcasting Commission (KPI): *KPI Ingatkan Ancaman Hoax Covid-19 Saat Pilkada 2020 <https://t.co/VBZSkNtyQ0> (Note: the link is to the KPI website)*

The political related tweets in Indonesia were relatively low. And if there were some tweets related to politics, it was mostly in the positive tone, such as:

Penyelenggaraan Pilkada 2020 harus berjalan dengan wajib mematuhi Protokol Kesehatan untuk melawan covid-19. Dan jangan patuhi Hoax untuk melawan Blackcampaign.

However, there were a small number of tweets that showed a negative tone toward the government such as:

Kok jokowi nyebarin hoax, Katanya udah belo obat covid 2 jt butir . . .Pake duit pribadi apa duit rakyat ?? Mana hasilnya.

There were a significant number of tweets in Indonesia related to the news category. Those tweets include links to some of the Indonesian news outlets such as:

Beredar surat dari PGRI Kota Surabaya permintaan kegiatan belajar dari rumah. Surat itu ditujukan untuk Wali Kota Risma. Namun gugus tugas sebut hoax. <https://t.co/C5nxMhtmnY> (Note: link to Detik.com)

Beredar Surat PGRI Ada Puluhan Guru Meninggal COVID-19, Satgas Sebut Hoax <https://t.co/4dQqL1PhKt> (Note: link to SpiritRiau.com)

As we also do the word counts on those 500 collected tweets from the United States, we can see a significant

number of words associated with politics, such as, GOP, Dems (refers to the Democrats) and Election. However, the word “Trump” is the most frequently used political word, as it was used in more than 70 out of 500 tweets. The following Figure 1 show the top 25 words in those 500 tweets in the US.

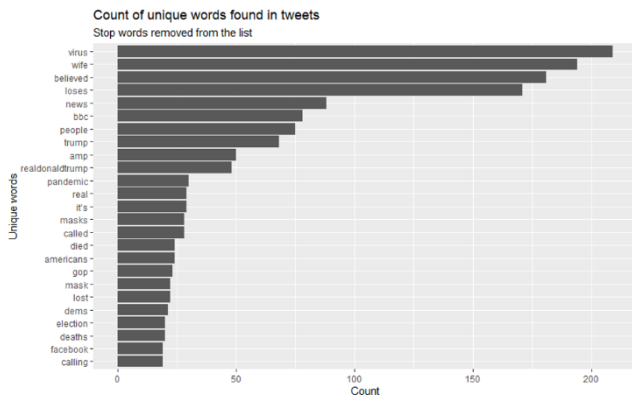


Fig. 1. Result of unique word count on 500 US tweets

One of the possible explanations as to why political tweets in Indonesia are relatively rare is because of the Indonesian Information and Electronic Transaction Law (No. 11/2008) amended by ITE Law No. 19/2016 which punishes anyone who is guilty of defamation. In article 27(3), it is stated: “Any person intentionally and without right distributes and/or transmits and/or causes an electronic information and/or electronic document with defamation and/or slander contents to be accessible.” In Law No 19/2016, *distributing* is defined as sending or distributing to many people; *transmitting* is defined as sending electronic information to one party through an electronic system; and *causing to be accessible* is defined as all acts other than distributing and transmitting which made the electronic information accessible to another party or the public (Freedom House, 2017). Those offenses are punishable up to 4 years prison time, and/or up to Rp. 750,000,000 (equal to US\$50,000) fine. This law has been used many times and has resulted in jail times for the offenders. On the other hand in the United States, it is difficult to prosecute someone for committing those actions online, as the 1st Amendment of the U.S. Constitution states: “Congress shall make no law respecting an establishment of religion, or prohibiting the free exercise thereof; or abridging the freedom of speech, or of the press; or the right of the people peaceably to assemble, and to petition the Government for a redress of grievances.”

6. Conclusion

Our study indicated a significant difference between tweets from both countries related to Covid-19 and Hoax. In the US, political opinions play a significant role in users’ tweets. President Trump’s name was mentioned in more than 10% of the tweets. Many of those tweets are about blaming him for considering Covid as a hoax initially. Other

political words often used include GOP, Dems, and election. On the other hand, for Indonesian Twitter users, politics do not play a significant role as the name of President Jokowi was only mentioned in one tweet. Most of the Indonesian tweets is about debunking claims regarding possible cures for Covid-19, or for informing safety guidance in the new normal era.

This study, however, has several limitations. First, this is our initial study looking at tweets related to Covid-19 and hoax. Another limitation is that we only retrieved the tweets for a day and limited our search to 500 tweets for each country. As mentioned in the discussion, one or two significant events during that time could dominate tweets from users. This in turn would tilt most of the tweets toward those events. A larger number of tweets and a longer collecting time would help in compensating for those issues. We also found the use of only six categories as another limitation. Including subcategories in each of those categories could bring more richness in our content analysis results.

In the future, we are planning to collect tweets for a longer period of time. This would result in an increase of tweets to be analyzed. At the same time, we are going to explore other hashtags or keywords that could result in higher number of possible tweets, especially those in Bahasa Indonesia. Furthermore, we are going to explore other possible analysis methods on those tweets such as sentiment analysis.

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