PUBLIC SENTIMENT TOWARDS THE COVID 19 VACCINE IN INDONESIA

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ABSTRACT

The provision of the COVID 19 vaccine in Indonesia has been going on since the end of 2020, but until now there are still many people who refuse to vaccinate. Their refusal was conveyed in various media, one of which was on social media, especially Twitter. Seeing these conditions, the researcher aims to prove public sentiment about COVID 19 using the Naïve Bayes algorithm on 10,000 tweet data. The results of this research on sentiment show that most Indonesian citizens show neutral sentiment, then negative sentiment and a small part give positive sentiment.

Keywords: Vaccine, COVID-19, Twitter, Sentiment, Naïve Bayes, Indonesia

I. INTRODUCTION

COVID 19 has been spreading in the world since 2019, but the first case in Indonesia since March 2020. This virus then became a very massive outbreak in Indonesia quickly. In May 2021, the number of positive sufferers of COVID19 was 1.8 million. This prompted the government to immediately initiate a vaccination movement, with several types of vaccines being offered to the public.

This vaccination program received mixed responses from Indonesian citizens. This is due to the 6 (six) highest reasons according to the results of a survey conducted by the Ministry of Health, ITAGI, UNICEF, and WHO, are not sure about its safety, not sure that it is effective, do not believe in vaccines, fear of side effects, religious beliefs, etc. (Kementerian Kesehatan RI, UNICEF, & WHO, 2020).

However, the survey was conducted before the implementation of the vaccine in Indonesia, namely on January 13, 2021. Researchers want to find out, the real response of Indonesian citizens when the COVID 19 vaccination program in Indonesia has been implemented until now, especially the responses of Indonesian citizens conveyed through social media, in particular. Twitter

II. LITERATURE REVIEW

Research in the area of sentiment analysis is getting more and more diverse. Along with the COVID 19 outbreak and vaccination program, research on sentiment analysis discusses these two issues. Some literature discusses these two issues with various methods and datasets from various countries.

The first study identified the causes of public doubt about vaccines delivered through social media. The researcher uses the Support Vector Machine (SVM) classifier to classify the sentiment results. Some of the keywords used are vaccine, vaccination, polio vaccine, polio, measles, mumps, rubella, flu shots, hpv vaccine. The results of this study show Positive 41%, Neutral 39% and Negative 20% (Rahim & Rafie, 2020).

The second study also analyzes sentiment regarding the use of two types of vaccines given to Indian society. Sentiment data is obtained from social media Twitter. The analysis showed that some gave positive sentiments...
(69% for the Covaxin vaccine and 71% for the Covishield vaccine), there were also negative sentiments (31% for Covaxin and 29% for the Covishield vaccine), related to emotions such as fear and anger (Dubey, 2021).

The third study uses data on the Philippines sentiment regarding the COVAX vaccine via Twitter. This sentiment data is trained and tested using the Naïve Bayes algorithm to classify tweets in English and Filipino. The result, as many as 8.38% gave a positive response to the use of the COVAX vaccine, 8.26% gave a negative response and 8.36% gave a neutral response (Villavicencio, Macrohon, Inbaraj, Jeng, & Hsieh, 2021).

Furthermore, the following two studies examine sentiment regarding the use of vaccines in Indonesia. The first study analyzed the sentiments of Indonesian people regarding the use of Sinovax and Pfizer vaccines through Twitter. The results are divided into two, namely for Sinovax there are 77% positive opinions, 19% negative opinions, and 4% neutral opinions (Nurdeni, Budi, & Santoso, 2021; Gonzalez et al., 2020; Veluturla et al., 2020; Kocak & Bozkurt, 2020; Dong et al., 2020;).

Furthermore, this research also analyzes the sentiments of the Indonesian people towards vaccines through social media Twitter, but only uses data in January 2020. The results of this sentiment analysis show 56% negative opinion, 39% positive opinion and 1% neutral opinion (Prystiyo, Ritonga, Ihsan, Anjar, & Rambe, 2021).

The next section describes the methodology used in this study.

**III. METHODOLOGY**

The methodology used in this study is as shown in Figure 1.

The first step is data collection, which is taking 10,000 data from social media Twitter. The tweet data was taken using the vaccine keyword, COVID19. The data taken is only tweets using Bahasa Indonesia and Bahasa Melayu. Bahasa Melayu is taken because it uses the Language ISO-coded “id” or “in” (Rumaisa, Basiron, Saaya, & Muchsam, 2020). If both codes are used, all Bahasa Indonesia and Bahasa Melayu tweets will be taken. Figure 2 shows the results of Twitter’s data collection on vaccines.
The next step is data preprocessing, which is cleaning the data, including cleaning duplicate tweets, removing punctuation marks, removing RT and others. Figure 3 shows the steps of the Twitter data retrieval process using Rapid Miner.

In the next subsection, the sentiment classification steps using Naïve Bayes will be explained and the score results will be explained.

IV. RESULTS AND DISCUSSIONS

This section will describe the sentiment classification of tweets that have gone through the preprocessing stage. Of the 10000 data collected from Twitter, after going through the preprocessing stage, it was reduced so that the remaining 8500 data, because there were a lot of duplicate tweets.

The 8500 tweets were classified using the Naïve Bayes algorithm, with the following formula:

\[ P(Y|X) = \frac{P(X|Y) \times P(Y)}{P(X)} \]

X : data
P(Y|X) : possible hypotheses to condition
P(Y) and P(X|Y) : previous probability based on hypothetical condition
P(X) : probability of Y

After going through the classification stage, the results of the sentiment analysis about the COVID-19 vaccine in Indonesia are shown in Figure 4.

Based on the results of the picture above, the result of sentiment in the form of negative opinions is very large, namely 75%, positive opinions 20% and neutral opinions 5%. This result is very different from the results obtained by the survey of the Indonesian Ministry of Health before the implementation of vaccination, where most of them gave a positive opinion (Kementerian Kesehatan RI et al., 2020). This is likely due to public fear or doubt about the side effects of the vaccine itself. However, further research must be carried out to determine the
cause of the majority of Indonesian people having a negative opinion about the provision of this COVID-19 vaccine.

V. CONCLUSION

The provision of the COVID-19 vaccine in the world, especially in Indonesia, is a government program to reduce the spread of the COVID-19 virus which is currently endemic. However, public acceptance and opinion are not all positive. So that triggers research to be carried out, to become one of the information that can be used by the government in making decisions to convince the public that this program is effective.

From this study, it can be seen that there are still many people who have negative opinions, as much as 75%. The next research should do research on the causes of the negative opinion, thus adding knowledge for the government to determine the next step.

REFERENCES