



Social Media Analytics of the Impact of Covid-19 Outbreak on Rural Economy in Indonesia Using Dcipheranalytics of Facebook Dataset

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ABSTRACT: Coronavirus Disease (Covid-19) firstly break out China as a source of viral pneumonia by December 2019. By March 2020, 3 months later, World Health Organization (WHO) has characterized the outbreak as a pandemic. Both pandemic itself and PSBB strike out people's daily life in Indonesia. It impacts many sectors including religion, socio-culture, education and mostly economic. Based on Susenas data, a study projected that the poverty rate would hit 12.4 percent. Regarding the major impact of Covid-19 outbreak on people's life, it is important to provide analysis of how the pandemic changes people's life especially in rural areas. The step of the study includes 3 steps i.e.: 1) Grabbing dataset from Facebook platform, 2) Apply Dcipheranalytics and 3) Analyze the result. From the grabbed dataset from Facebook, Dcipheranalytics reveals analysis in terms of 1) Bar Chart View, 2) Scatter Plot, 3) Table View, 4) Bubble View and 5) Active Learning. From the bar chart, there are 9 post with the highest relevance score of 5.750.

KEYWORDS: Pandemic, WHO, Facebook, Dcipheranalytics

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I. INTRODUCTION

Coronavirus Disease (Covid-19) firstly break out China as a source of viral pneumonia by December 2019. By March 2020, 3 months later, World Health Organization (WHO) has characterized the outbreak as a pandemic [1]. Of course, WHO did not use the word "Pandemic" haphazardly and slightly [2] since it may lead to unreasonable fear. To be noticed, by that time the infection has reached more than 118,000 cases worldwide. More than 4,291 people have been reported to lost their lives because of the virus infection. Two months later, based on the report of National Task Force for Covid-19, the confirmed positive cases in Indonesia has reached 14,032 cases with the number of death has attained 973 lives. As of 10 May 2020, the fatality per confirmed case has achieved 6.9%. Since DKI Jakarta had the highest number of confirmed cases (5,190 cases) among other provinces, the province implemented large-scale social restrictions (PSBB) [3]. In handling the spread of Covid-19, Indonesian government select large-scale social restriction (PSBB/Pembatasan Sosial Berskala Besar) instead of lockdown or quarantine. PSBB includes full suspension of school activities and restriction in several social activities involving crowd [4].

Both pandemic itself and PSBB strike out people's daily life in Indonesia. It impacts many sectors including religion, socio-culture, education and mostly economic. A study from SMERU Research Institute has modeled how the outbreak simulates the impact of Covid-19 on Poverty. The estimation includes simulating: 1) declining economic growth, 2) declining household expenditure and 3) distributional impact on household expenditure. The study focus on modeling how the growth decline impacts on poverty rate by analyzing data grabbed from National Socioeconomic Survei (Susenas). The result projected that the poverty rate would hit 12.4 percent [1].

Another study provides more extensive portrayal of the impact of Covid-19 pandemic on macroeconomic sectors. The study [2] discuss how the outbreak impacts on GDP Growth Rate, Inflation Rate, and Exchange Rate. This research also provide projection on sectors impacted by Covid-19 pandemic including manufacturing industry, trade and automotive, agriculture, construction, mining, transportation, financial and insurance. The study judge that Covid-19 has serious impact on food security indicated by drop of farmer's welfare rate by 2%.

However, both study cover nationwide analysis. Regarding the major impact of Covid-19 outbreak on people's life, it is important to provide analysis of how the pandemic changes people's life especially in rural

areas. Rural areas become important for national development since the policy of rural development regards rural areas as the subject of development not only the object of development according to Lav No. 6 about Villages [5]. Moreover, sectors in rural areas are more vulnerable to be impacted by the outbreak compared with urban areas. In normal condition, the rate of poverty in rural areas is higher than on the urban areas [5]. This study attempts to provide social media analytics of the impact of Covid-19 Pandemic on Rural Economy using Dcipheranalytics of Facebook Dataset.

II. RELATED STUDY

Social media analysis becomes important [6][7] with the growth of big data platform [8]. This study attempts to provide social media analytics of the impact of Covid-19 Pandemic on Rural Economy using Dcipheranalytics of Facebook Dataset. Social media analysis provides fast [9] yet cheap [10] and accurate insight [11] toward a social trend [12]. Previous related study focus on revealing dataset from National Socioeconomic Survei (Susenas) attempting to project the impact of Covid-19 outbreak [1]. The result projected that the poverty rate would hit 12.4 percent. Another study provides more extensive portray of the impact of Covid-19 pandemic on macroeconomic indicators of economic [2]. This study attempts to provide social media analytics of the impact of Covid-19 Pandemic on Rural Economy using Dcipheranalytics of Facebook Dataset.

Using modified Russell’s Circumplex Model, Park et al [13] attempted to envisage them park visitor’s emotions in order to provide suggestion based on a series of process to improve traveler’s experiences. As much as 19,809 Twitter dataset was filtered and classified in the Circumplex Model. The model provide four dimension of emotion based on two axes of pleasure and arousal. Moreover, spatial analysis based on GIS exploratory was also performed to relate topics with visitor’s emotion. The proposed platform has provided useful guide for both academia and practitioners to model emotion based on social media analysis pattern.

III. METHOD

The step of the study includes 3 steps i.e.: 1) Grabbing dataset from Facebook platform, 2) Apply Dcipheranalytics and 3) Analyze the result as presented in Fig 1.

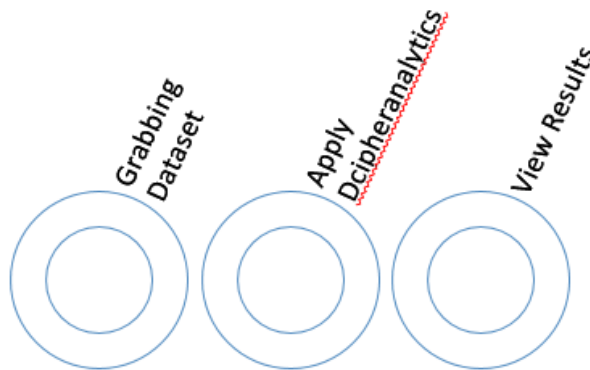


Fig. 1: Method

In the first step, we collect data from social media Facebook using import data features of Dcipheranalytics. In this step we successfully grabbed 497 Facebook posts. We use hashtags #Covid-19, #Ekonomi, #Desa to grab the Facebook post. The grabbed dataset included several field labels as presented in Table 1. In the first column we provide Field Labels and in the second column of Table 1, we provide The Type of the Fields Label.

Table 1 Fields of dataset

Num	Fields Label	Type
1.	Rural Facebook	entity collection
2.	id	id
3.	platform	categorical text
4.	type	categorical text
5.	created_at	short text
6.	indexed_at	short text
7.	updated_at	short text
8.	url	long text
9.	matches	entity
10.	content	entity

11.	engagement	entity
12.	attachment	entity
13.	author	entity
14.	location	entity
15.	page	entity

In the next step, we apply DcIPHERanalytics including: 1) Bar Chart View, 2) Scatter Plot, 3) Table View, 4) Bubble View and 5) Active Learning.

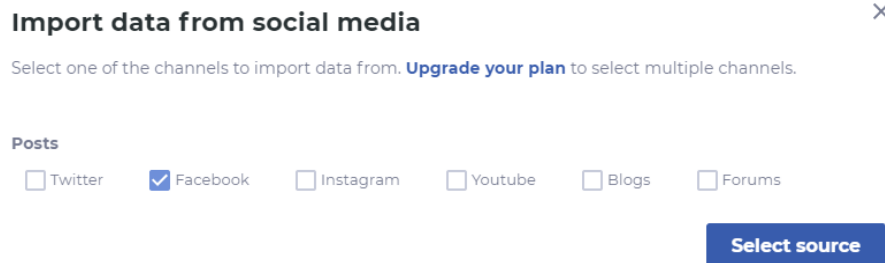


Fig. 2: Grabbing Dataset

IV. RESULT

We successfully grabbed 497 facebook post from social media platform of Facebook from December 11nd to December 14th. The grabbed dataset includes 15 fields of data as presented in Table 1. In Table 2, we provide example of the facebook post.

Table 2: Example of the Post

Hampir semua teman-teman konveksi terkena imbas dari pandemi Covid 19," ujar Nia Kurnia, calon Bupati Bandung, saat mengunjungi pelaku konveksi, di Desa. Menurut Nia, pelaku UMKM konveksi di Kabupaten Bandung sangat potensial. Tanah Abang dan Tamrin City Jakarta, masih menjadi magnet untuk teman-teman yang berupaya ataupun yang membuatkan konveksi dalam memasarkan produksinya. Tapi ada pemikiran canggih loh, jalan tol kita sudah punya, artinya secara akses ini akan bisa lebih mendekati.

From the grabbed dataset, we present bar chart that indicates Facebook relevance score of the post as presented in Fig 3.

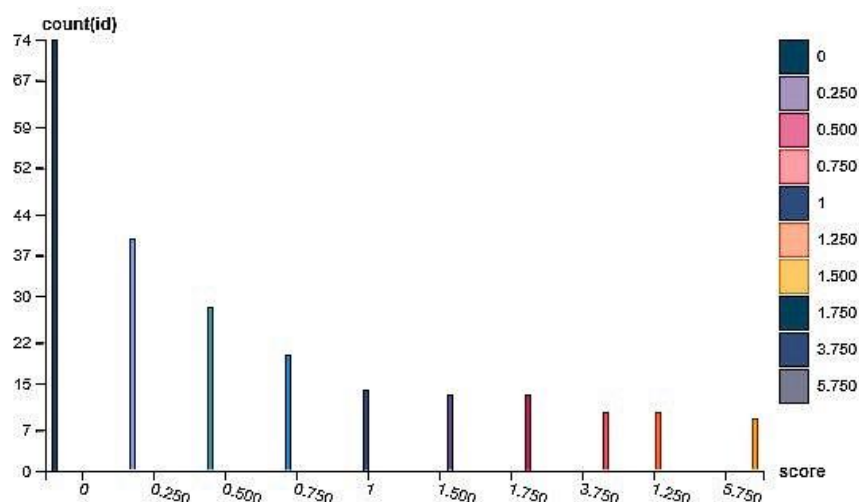


Fig 3: Facebook Relevance Score of the Post

Relevance Score represents the quality and engagement level of the ads. Relevance score measures relationship between 1) audience definition, 2) ad relevance and freshness, 3) expected feedback and 4) campaign objective as seen in Fig 4. From the bar chart, there are 9 post with the highest relevance score of 5.750.



Fig 4: Relevance Score

Almost all post collected using the hashtags #Covid-19, #Economy, #Desa discuss the similar topic covered by the meaning of those keywords. To proof this, we calculate semantic similarity between posts. The result of the analysis can be seen in Fig 5. Fig 5 presenting scatter plot calculating semantic similarity between post. The close distance between dots representing the close meaning between words used in the discussions. Only a post that seem discussing different topic. Dcipher also succeed to detect all location where the post comes from as seen in Fig 6. Meanwhile, Fig 5 reveals Precision of the Location detection. Of the post successfully detected, mostly comes from Jakarta as seen in Fig 7 highlighting that people in urban areas are more active in sharing ideas and information trough social media platform.

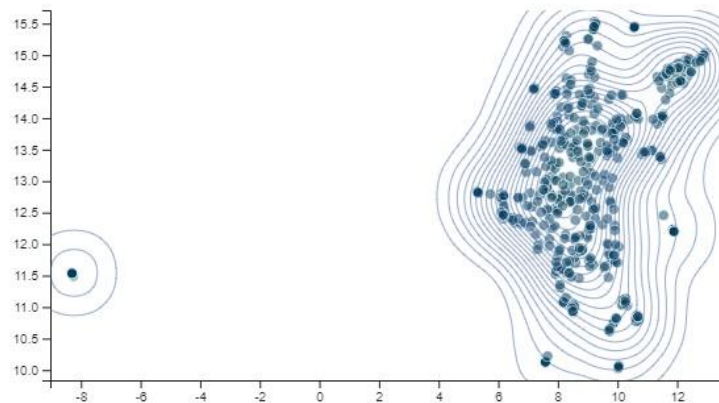


Fig 5: Scatter Plot of the Post

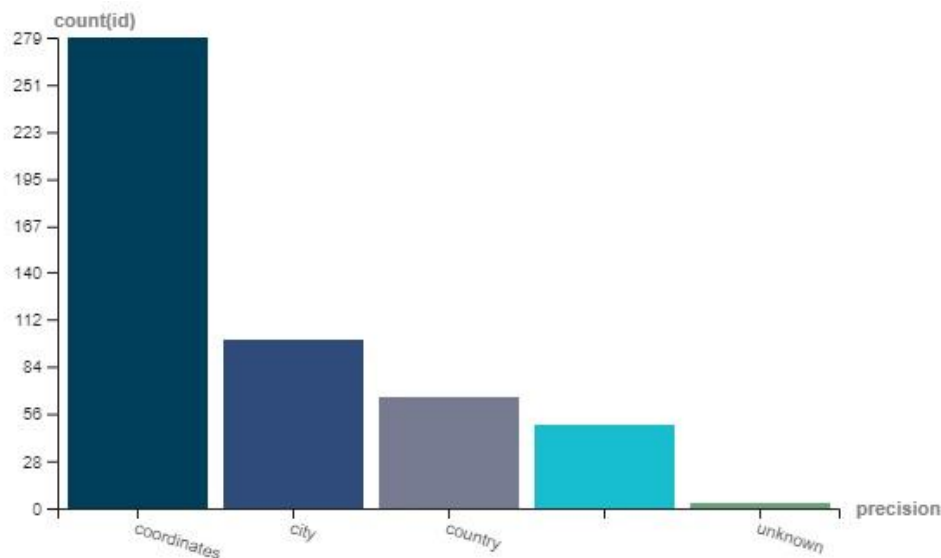


Fig 5: Precision of the Location Detection

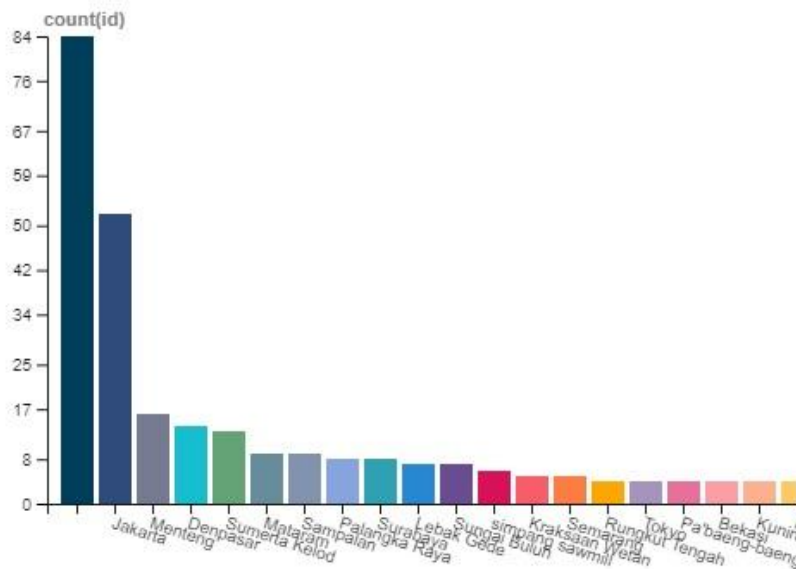


Fig 6.: Location Detection

V. CONCLUSION

Both pandemic itself and PSBB strike out people's daily life in Indonesia. It impacts many sectors including religion, socio-culture, education and mostly economic. Based on Susenas data, a study projected that the poverty rate would hit 12.4 percent. Regarding the major impact of Covid-19 outbreak on people's life, it is important to provide analysis of how the pandemic changes people's life especially in rural areas. The step of this study includes 3 steps i.e.: 1) Grabbing dataset from Facebook platform, 2) Apply Dciperanalytics and 3) Analyze the result.

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