

# Big Data Analysis: How Public Response to Poverty Eradication Programs in Indonesia during COVID-19 Pandemic?

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## ABSTRACT

Poverty eradication is the main focus of the first Sustainable Development Goals (SDGs), namely 'No Poverty'. Nationally, poverty eradication is also implied in the 2020-2024 National Medium-Term Development Plan (RPJMN) on the first and second agendas. These are economic resilience and reducing disparities between regions. Various government programs are implemented to reduce poverty. The benefits obtained by the target community need to be measured to reflect the program's success and for government evaluation. Big data through social media analysis can be empowered to gain public perceptions of poverty eradication programs. Therefore, in this study, the Twitter social media analysis approach will be used to obtain public responses regarding various poverty eradication programs in Indonesia during the COVID-19 pandemic, especially the Family Hope Program (*PKH or Program Keluarga Harapan*), Cash Intensive Work (*PKT or Padat Karya Tunai*), Direct Cash Assistance (*BLT or Bantuan Langsung Tunai*), and Pre-Employment Cards (*Kartu Prakerja*). Those data were analyzed using the text mining method. The results of this study indicate that the public response generally accepts and supports the four poverty eradication programs in Indonesia. Those analysis results can be used as evaluation material and input for the Government to make the following policy.

**Keywords:** public response, government programs, poverty eradication, big data

## INTRODUCTION

Poverty eradication is the main priority of national development, aiming to improve general welfare (Bappenas, 2006). The importance of poverty eradication is the number one goal in the Sustainable Development Goals (SDGs) on the United Nations agenda and is expected to be achieved by 2030. Poverty eradication is also the ideal of the Indonesian nation, as stated in the Preamble of the 1945 Constitution (*Pembukaan UUD 1945*) in the fourth paragraph, "...untuk memajukan kesejahteraan umum... (to promote prosperity general)". Poverty eradication is also implied in the 2020-2024 National Medium-Term Development Plan (RPJMN) on the first and second agendas; these are economic resilience and reducing disparities between regions (Indonesian Government, 2020).

Poverty eradication is the task of the government, both central and local governments. The Government has made various efforts in Indonesia to reduce poverty by making national development policies that are well-targeted. Development policy programs that focus on reducing poverty include (1) Organizing comprehensive social protection, (2) Expanding and improving basic services, and (3) Developing sustainable livelihoods (Bappenas, 2017).

The social and economic impacts caused by the COVID-19 pandemic significantly affect community welfare due to the limitation of economic activity, which reduces economic growth at a macro level and causes many people to lose their jobs, potentially increasing the number of poor people. The Government has designed and implemented various programs in the context of poverty eradication during the pandemic, including the Cash Intensive Work (Padat Karya Tunai or PKT), Family Hope Program (Program Keluarga Harapan or PKH), Direct Cash Assistance (Bantuan Langsung Tunai or BLT), and Pre-Employment Cards (Kartu Prakerja).

Every poverty eradication program requires an evaluation of the level of acceptance by the public. According to Dunn (1999), there are three critical functions of evaluating government policies, namely (1) Providing valid and reliable information about policy performance to reveal how far specific goals and targets have been achieved, (2) Contributing to clarification and criticism of values that underlie the selection of goals and targets, and (3) contribute to the application of other policy analysis methods, including problem formulation and recommendations. Based on this statement, policy evaluation is the only way to prove the success or failure of implementing a government program, especially for poverty eradication programs.

The evaluation system used by the Indonesian Government is still conventional, in the form of tiered reports from the smallest units in the form of villages, sub-districts, districts, provinces, to the central Government. Collecting evaluations requires a long time and process related to the vast territory of Indonesia and the large population of Indonesia, especially with the many limitations during the current pandemic. A study from the United Nations Global Pulse (UNGP) and the World Bank Group (2015) in El Salvador suggests that social media monitoring can understand and provide feedback on policy reforms. Rounaq Basu (2015), in his research, indicates that social media can be used as an evaluation because it can cover a wide area, the volume of data taken is large, and the time is fast.

In Indonesia, online data sources from social media continue to grow as internet users increase. According to the Global Digital Statistics "Digital 2021: Indonesia" from We are Social (2021), 202.6 million internet users were in Indonesia. Then, 63.6 percent of internet users aged 16 to 64 were active Twitter users. The large percentage of active Twitter users can be used as an online data source to take public responses and opinions on government programs related to poverty eradication. Therefore, this study aims to analyze Twitter data to determine public responses and

views as an evaluation tool for poverty eradication programs in Indonesia during the pandemic. This research hopes to support the optimization of government policies to reduce poverty and protect the community's welfare from accelerating the national economic recovery during the pandemic.

## LITERATURE REVIEW

The response has a narrow meaning, namely a reply or response. Soekanto (1993) states that the response is a consequence of previous behavior or an answer to a particular problem. According to Azwar (1988), a person's response can be good or bad attitudes and positive or negative responses. According to the Big Indonesian Dictionary (KBBI), public means many people or general. Based on this theory, the public response refers to a response or reaction that results from positive and negative stimuli along with criticism and expectations conveyed by the general public regarding a matter.

In the context of poverty eradication strategies, poverty is defined as the condition of a person or group of people, men and women, whose basic rights are not fulfilled to maintain and develop a useful life (Bappenas, 2004). Poverty eradication in this study is an effort carried out to prevent, deal with, or overcome a situation through preventive activities and efforts to improve and fulfill the basic rights of the poor so that they can enjoy a dignified life and their rights are recognized in-laws and regulations. In this study, four poverty eradication programs organized by the Government will be analyzed.

Cash-intensive Work (PKT) is an activity to empower rural communities, especially the poor and marginal, which is productive by prioritizing the use of local resources, labor, and technology to provide additional wages/income, reduce poverty, and improve people's welfare. Cash labor-intensive activities are carried out independently by the village by utilizing natural resources, technology, and human resources (Kemendesa, 2018). The PKT program was launched by the Ministry of Villages, Development of Disadvantaged Regions, and Transmigration (*Kemendesa*).

The Family Hope Program (PKH) provides conditional social assistance to Beneficiary Families (KPM) designated as PKH beneficiary families. The program has been implemented by the Ministry of Social Affairs (*Kemensos*) since 2007, which is internationally known as Conditional Cash Transfers (CCT). PKH benefits are intended for poor families, especially pregnant women and children, persons with disabilities, and the elderly (Kemensos, 2018).

BLT is an abbreviation of Cash Direct Assistance, a government assistance program that provides cash or other assistance, both conditional (conditional cash transfer) and unconditional (unconditional cash transfer) for the poor. In the COVID-19 pandemic era, Direct Village Fund Cash Assistance (BLT-Village Fund) exists,

which is financial assistance to poor families in the village sourced from the Village Fund to reduce the impact of the COVID-19 pandemic. The value of the Village Fund BLTD is IDR 600,000 every month for every poor family that meets the criteria and is given for 3 (three) months and also IDR 300,000 per month for the next three months. BLT has been organized by the Ministry of Social Affairs (*Kemensos*) since 2005 (Bappenas, 2020).

The Pre-Employment Cards Program (*Kartu Prakerja*) is a training and incentive fee assistance program for laid-off workers/laborers, job seekers, as well as micro and small business actors who have lost their jobs and experienced a decline in purchasing power due to the Covid-19 pandemic and workers who need increased competence (Kemnaker, 2020). The Pre-Employment Cards Program aims to develop the workforce's competence, increase productivity and competitiveness, and develop entrepreneurship. This program is managed by the Ministry of Manpower (*Kemnaker*).

Related research is a journal entitled "Harnessing Twitter Data for Analyzing Public Reactions to Transportation Policies: Evidence from the Odd-Even Policy in Delhi, India" by Rounaq Basu, Arnab Jana, Aparup Khatua, and Saptarshi Ghosh (2017). The research contains an analysis of pre-post policies and challenges in collecting public response data. With the existence of social media, it is possible to evaluate the success of a policy more efficiently. This journal proposes using Twitter data to understand sentiment and reactions to public policy. Twitter data on the odd-even transport policy in Delhi is collected and analyzed. The results of the study show that Delhi residents mostly agree with the policy. Such research can also help identify policy problems so that the Government can take corrective action. This research aims to obtain a public response related to government policies in poverty eradication programs.

Another related research is the journal "Using Twitter Data to Analyze Public Sentiment on Fuel Subsidy Policy Reform in El Salvador" by The World Bank (2015). The World Bank and Global Pulse are working together to analyze public discontent with policy reforms for national subsidies to propane gas in El Salvador. The research results on the Twitter data help reveal public opinion and the unexpected impact of fuel reform policies. The results of this opinion can complement household survey data if they are not available in line with this research, which seeks to obtain public perceptions regarding government programs through big data analysis of social media to complement direct survey data, which is challenging to do during the current pandemic.

## **METHODOLOGY**

This study uses a qualitative method, namely text mining. Text mining is defined as extracting information where a user interacts with a set of documents using

analytical tools components in data mining (Feldman, 1995). Twitter data about public responses regarding various poverty eradication programs in Indonesia during the COVID-19 pandemic are used in this study. Twitter data used is the tweet in the Indonesian language. The processed data is sourced from all Twitter users with tweets related to the keywords '*program keluarga harapan*' (family hope program), '*padat karya tunai*' (cash-intensive work), '*bantuan langsung tunai*' (direct cash assistance), and '*kartu prakerja*' (pre-employment cards). Data retrieval is carried out by the scrapping method using the python application and the 'twint' scrapping tool. The tweet data were collected from 1 January 2020 to 31 May 2021.

The next stage after data collection is data filtering and text pre-processing using python. Twitter data usually has much noise, so filtering and text pre-processing need to be done (Go et al., 2009). Filtering is carried out on the scrapping data to obtain data related to the three keywords. Pre-processing text is done to correct data that is unsuitable and not ready for analysis through case-folding, URL removal, punctuation removal, stop words removal. Ready-to-analyze data for each keyword were 3,687 tweets for '*program keluarga harapan*', 6,632 tweets for '*padat karya tunai*', 16,568 tweets for '*bantuan langsung tunai*', and 69,082 tweets for '*kartu prakerja*'.

Sentiment analysis or opinion mining is a research branch of text mining that determines public perception or objectivity towards a topic, event, or problem. The lexicon-based approach is a sentiment analysis technique that involves calculating the polarity of sentiment by using the semantic orientation of words or sentences in a text or document (Collomb et al., 2014). This analytical research method uses sentiment analysis and descriptive analysis with R in the form of line chart visualization for descriptive tweet data as a whole, pie chart and line chart per keyword for visualization of sentiment analysis, and link words for visualization of the hope for Government contained in the tweet data. The steps taken in conducting analysis and visualization are as follows.

1. Sentiment data classification uses the manual weighting method for each word based on the lexicon dictionary (Shah, M., 2016) to identify negative, neutral, and positive sentiments. If the result is weighted less than one ( $<0$ ), then the tweet is classified as negative sentiment, if it is equal to zero (0), then it is classified as neutral, and if more than one ( $>0$ ), then the tweet is classified as positive sentiment.
2. After classifying the sentiment data for each tweet, it is followed by visualization using pie charts and line charts/data trends from each government program to see its sentiment development.
3. Tokenize and merge words in tweets. Tokenization is done to split two words, and then the second to third words are combined again. The first words that are still separated are selected for words that have a special meaning of hope so that the data can be classified, which means expectations of government programs in per keyword.

4. The last step is to visualize the sentence of hope with a link word.

## RESULT AND DISCUSSION

When a government program is launched to the public, it will get a response from the public itself, will the public respond in an accepting, neutral, or even rejecting manner. As stated by Swatyasti P. (2015), the existence of different public interests will impact the public's response to a government program. Sentiment analysis was formed for the four poverty eradication programs during the pandemic, as summarized in Table 1 below.

**Table 1.** Percentage of Public Tweets for Each Poverty Eradication Program in Indonesia during Pandemic (January 2020 – May 2021)

Program (1)	Sentiment (2)	Amount (3)	Percentage (4)
<i>Program Keluarga Harapan (PKH)</i>	Negative	289	7.84
	Neutral	876	23.76
	Positive	2522	68.40
<i>Padat Karya Tunai (PKT)</i>	Negative	754	11.37
	Neutral	3058	46.11
	Positive	2820	42.52
<i>Bantuan Langsung Tunai (BLT)</i>	Negative	1998	12.06
	Neutral	7854	47.40
	Positive	6716	40.54
<i>Kartu Prakerja (KP)</i>	Negative	11631	16.84
	Neutral	30966	44.82
	Positive	26485	38.34

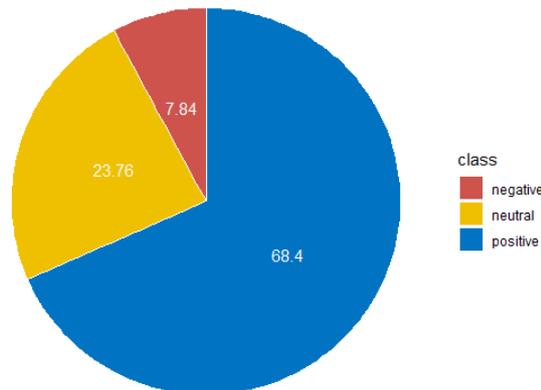
Source: Twitter, processed

Table 1 above is a table of public sentiment or opinion from Indonesia's four poverty eradication programs for the period January 2020 to May 2021. Public opinion on the four government programs is dominated by neutral sentiment and positive sentiment from the public. The neutral view is dominated by activity descriptions from photos or only in the form of hashtags for each program or better known as status updates by the public when participating in one of these programs. Words of support and usefulness dominate positive sentiment. The following is a sentiment analysis of each poverty eradication program.

### ***Family Hope Program or Program Keluarga Harapan (PKH)***

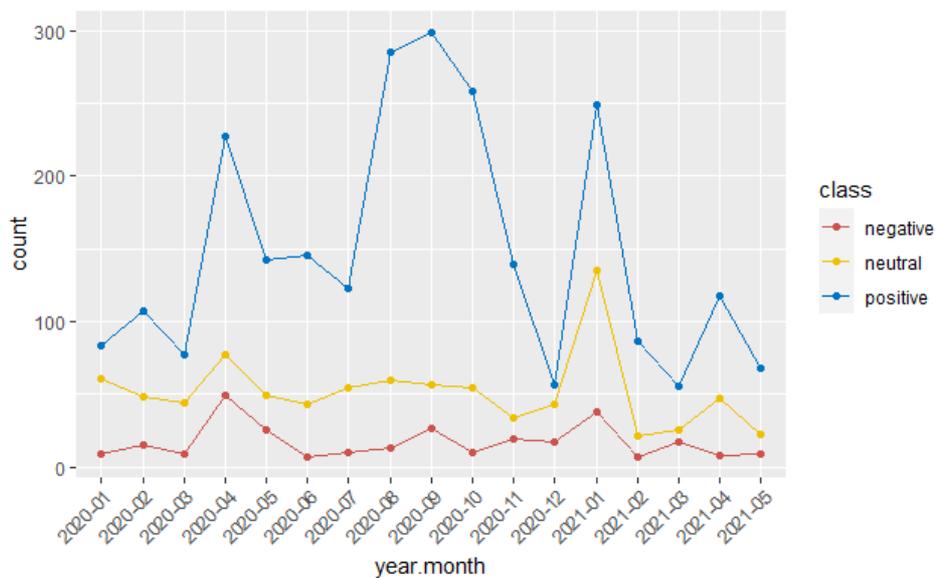
Most of the public accepts this PKH program; as shown in Figure 1, positive and neutral opinions dominate the percentage of public opinion about this program. The shares of neutral and positive public opinion are 23.76 percent and 68.40 percent. However, there is 7.84 percent of public opinion criticizes or disagrees with this

program. A large number of positive public opinion shows that this program is feasible to be continued by the Government.



**Figure 1.** Percentage of Public Opinion related to PKH Program for Jan 2020 – May 2021

The following is a trend of PKH program sentiment. Based on Figure 2, it can be seen that during the period between Jan 2020 to May 2021, tweets with positive opinions are much more significant than tweets with negative opinions. It was followed by a tweet with a neutral sentiment.

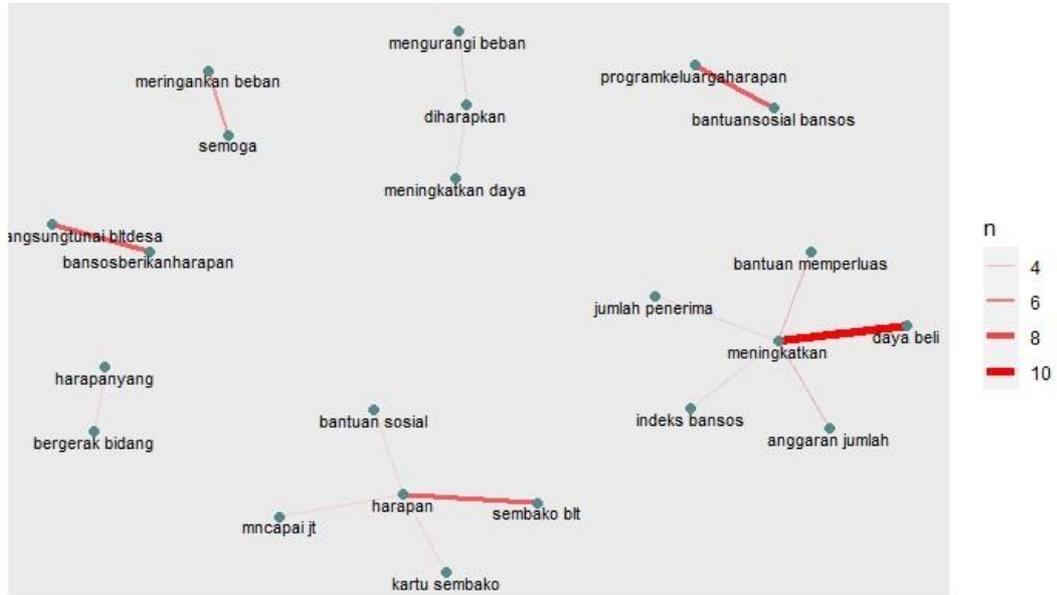


**Figure 2.** Trends in Public Opinion regarding PKH Program for Jan 2020 – May 2021

Figure 3 is a word cloud of public tweets against the PKH program. Wordcloud is a visualization of words that often appear in every public opinion about the PKH program on Twitter.



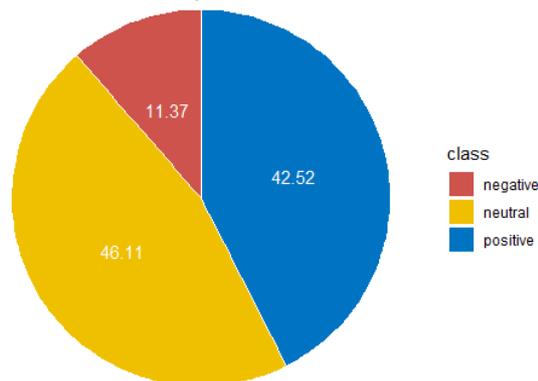
In addition to negative tweets as criticism, the public also gave hope for the PKH program in the future. Figure 4 is a visualization of some of the public's expectations for PKH policies in the form of link word visualization.



**Figure 4.** PKH program linkword

Based on Figure 4, public tweets regarding the PKH program expect to increase purchasing power, expand assistance, and reduce burdens. The public also gave input to this program, namely that the Government should improve and optimize the aid budget and an even number of recipients.

**Cash Intensive Work or Padat Karya Tunai (PKT)**



**Figure 5.** Percentage of Public Opinion regarding PKT Program for Jan 2020 – May 2021

Figure 5 shows the percentage of public opinion about the PKT program. Based on the picture, opinions are dominated by tweets with neutral and positive opinions, which are 46.11 percent and 42.52 percent. It can be concluded that most of the public accepts and support this PKT program. The amount of positive public opinion shows



Figure 7 is a word cloud of the PKT program, showing that public opinion about the PKT program is very diverse. The neutral opinion is dominated by descriptions of activities and some public expectations. Negative opinions are highlighted with the word 'impact' and 'pandemic', which show that this program is still not optimal enough to reduce the impact of poverty during the pandemic. The following is an example of a few tweets for each opinion. An example of a tweet with a neutral opinion sentiment is "The Government through @KemenPU is implementing the Cash-Intensive Work (PKT) program for Self-Help Stimulant Housing (BSPS) or popularly known as house renovation for 1,405 housing units that are unfit for habitation (RTLH) in Riau Province. @jokowi" (*translated*). The positive opinion was dominated by tweets from the public who received the assistance or from program implementers. An example of a positive tweet is, "Fortunately, the Government and other ministries and agencies issued various aids for the impact of this pandemic. Thank God I can help the community. Now, the cash-intensive program itself has at least launched a steady 5.9 trillion rupiah." (*translated*)

Furthermore, the following are examples of tweets with negative opinions against the PKT program, namely "@KemenPU Padat Karya Tunai P3TGAI Dusun Timbolasi Questioned, Allegedly Originated So Not Putting Up Information Boards" and "@VADUKA\_\_KOLAK The potential for corruption will be very high. It's just a cash-intensive form" (*translated*). Based on the example of the negative tweet, it can be seen that the negative opinion indicates a problem in the form of public criticism of the PKT program. The Government should pay more attention to the shortcomings that exist in the implementation of the PKT program, especially in preventing the potential for corruption of funds for the PKT program and the possibility of providing random and inappropriate PKT programs.

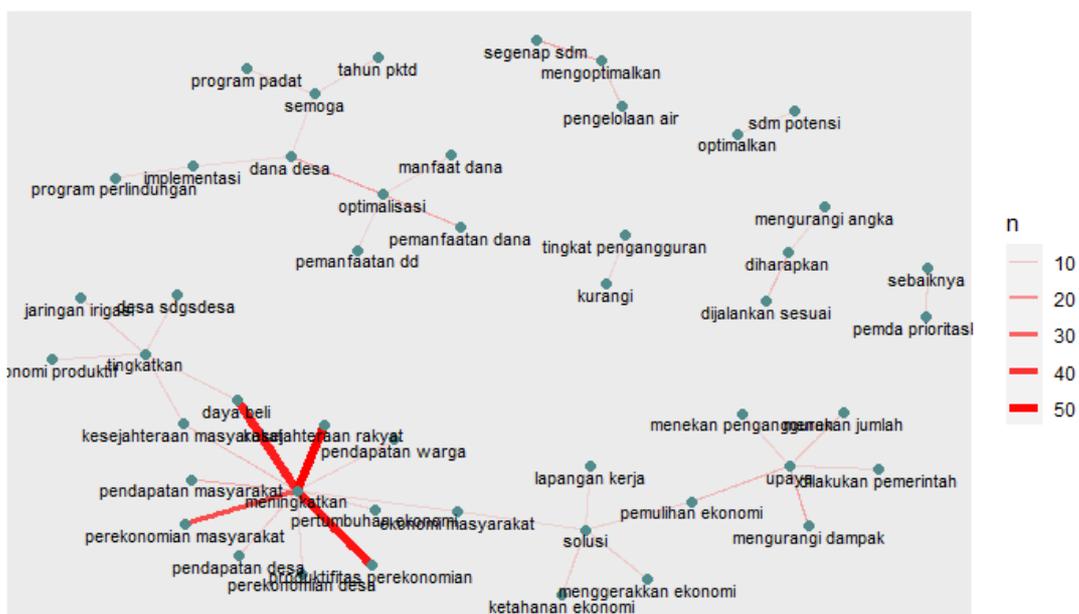
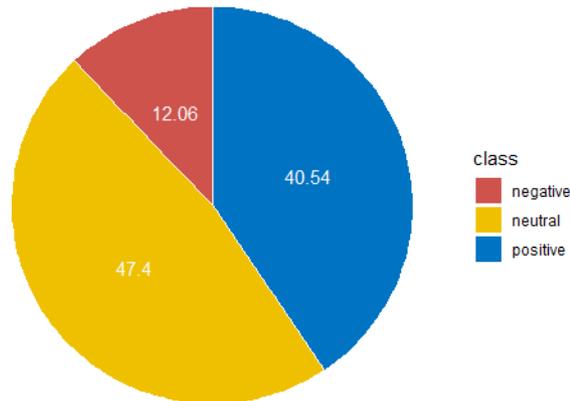


Figure 8. PKT program linkword

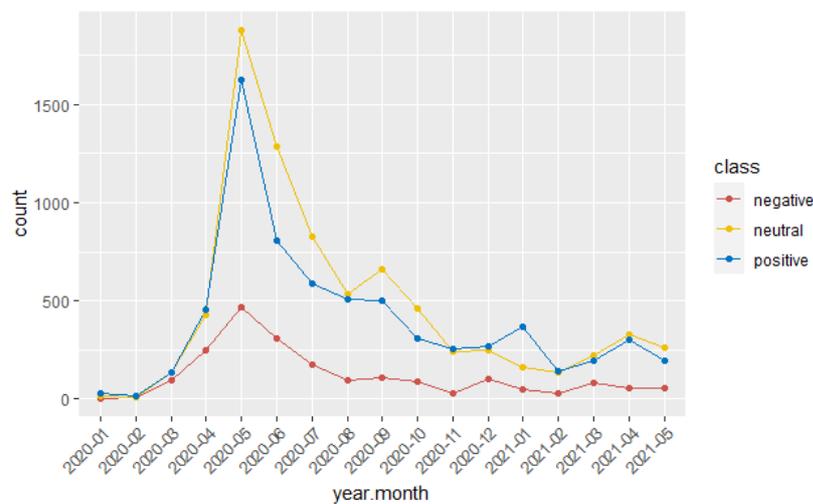
Figure 8 is a visualization of some of the public's expectations for PKT policies in the form of link word visualization. Based on Figure 8, the expectation that often comes out of public tweets related to the PKT program is that it can be a solution for job creation, optimizing human resource potential, increasing people's income, and driving the economy. The public also provided input on this program, namely that the Government should optimize the use of funds and prioritize activities to reduce the impact of the pandemic and accelerate economic recovery.

**Direct Cash Assistance or Bantuan Langsung Tunai (BLT)**



**Figure 9.** Percentage of Public Opinion related to the BLT Program for Jan 2020 – May 2021

Most of the public accepted the BLT program; as shown in Figure 9, neutral and positive opinions dominate the percentage of public opinion about this program. The percentages of neutral and positive public opinion are 47.40 percent and 40.54 percent. However, there is 12.06 percent of public opinion criticizes or disagrees with this program. A large number of positive public opinion shows that this program is feasible to be continued by the Government.

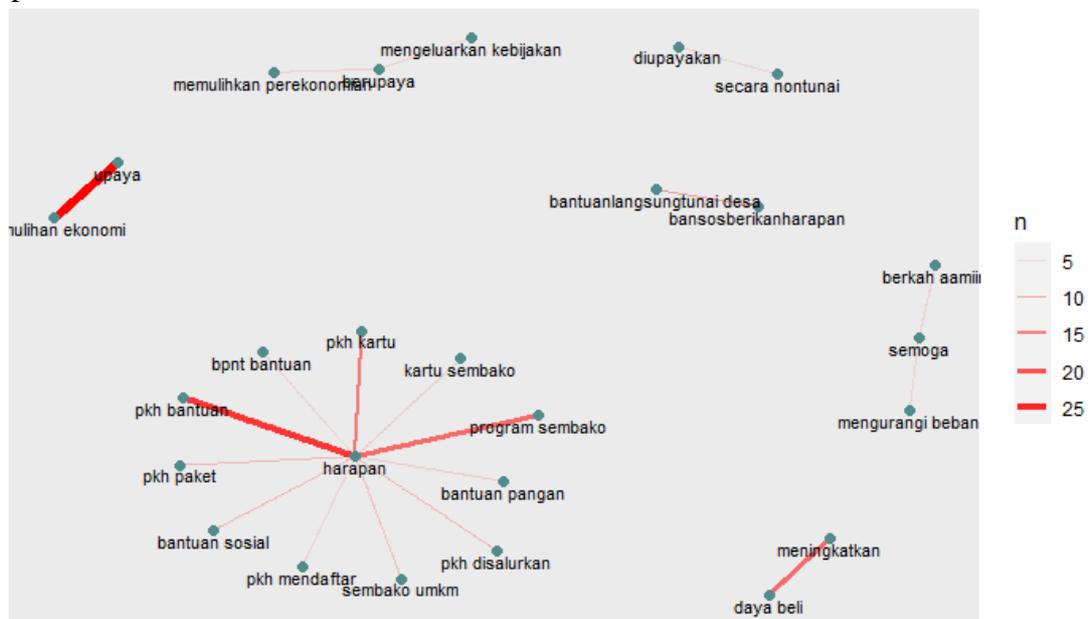


**Figure 10.** Trends in Public Opinion regarding BLT Program for Jan 2020 – May 2021



needs to re-adjust to the Village Budget due to the emergence of PMK NO 222 Years" and "Allegedly Uneven Distribution of BLT, Village Office Burned OTK in Sidrap #BantuanLangsungTunai #DesaPadangloang #KantorDesaDibakar #TrendingTopic" (*translated*). Based on the example of the negative tweet, it can be seen that negative opinion indicates a problem in public criticism of the PKH program. The Government should pay more attention to the segmentation of BLT recipients so that the distribution can be fair and equitable. The Government also needs to think about solutions to various obstacles in the distribution of BLT, including geographical constraints.

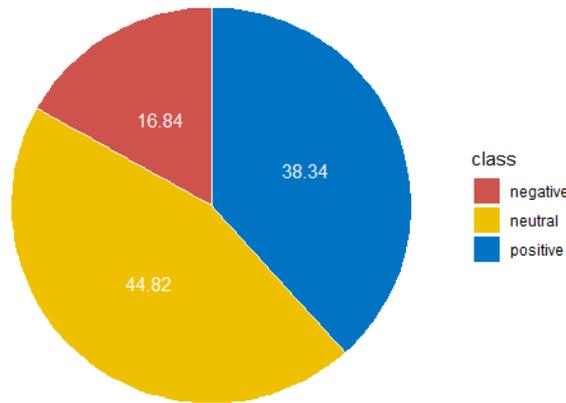
In addition to negative tweets of criticism, the public also gave hope for the BLT program in the future. Figure 12. It visualizes some of the public's expectations for BLT policies in the form of link word visualization.



**Figure 12.** BLT Program Link Word

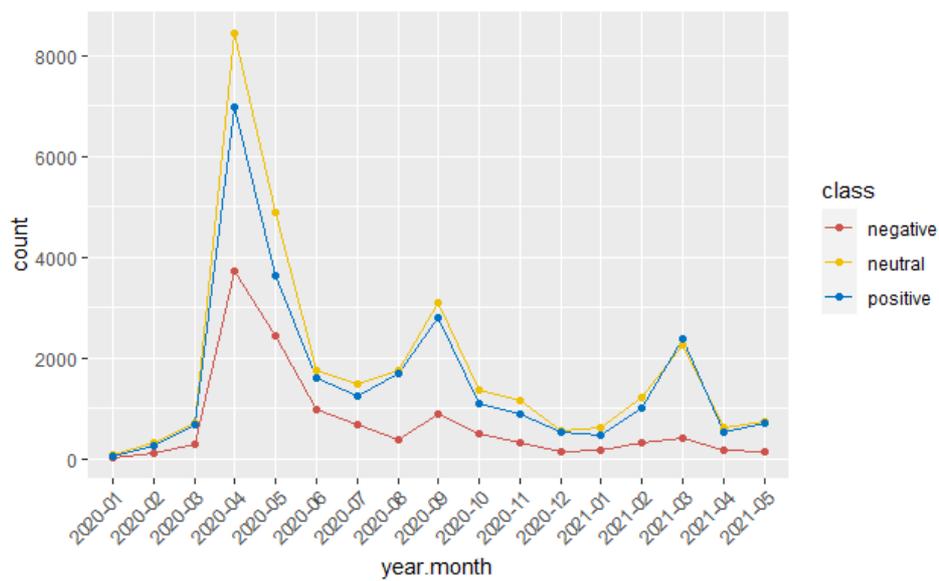
Based on Figure 12, public tweets regarding the BLT program expect to increase purchasing power and reduce burdens. The community hopes this BLT distribution can be integrated with other assistance such as PKH and MSME assistance (Micro, Small, and Medium Enterprise). The implementation of BLT is expected to support efforts to recover the economy during the pandemic.

**Pre-Employment Cards or Kartu Prakerja (KP)**



**Figure 13.** Percentage of Public Opinion related to KP Program for Jan 2020 – May 2021

Figure 13 shows the percentage of public opinion on the KP program. Based on the picture, opinions are dominated by tweets with neutral and positive opinions, which are 44.82 percent and 38.34 percent. It can be concluded that most of the public accepts and support this KP program. The amount of positive public opinion shows that this program is feasible to be continued by the Government. However, there is still 16.84 percent of public opinion who criticize or disagree with this program.



**Figure 14.** Trends in Public Opinion regarding PKT Program for Jan 2020 – May 2021

Figure 14 shows that the trend of sentiment for the KP program from early 2020 to May 2021 shows the dominance of tweets with neutral opinions and positive opinions, while negative opinions are below them. It is following Figure 13 regarding





The Family Hope Program (PKH) received the largest percentage of positive sentiment compared to the other three programs. PKH received a positive response of 68.40 percent, 23.76 percent of a neutral response, and only 7.84 percent of a negative response. The community hopes that the Government can increase and optimize the aid budget and an even number of recipients in the PKH program to prevent corruption. According to the public, PKH has increased purchasing power, expanded assistance, and reduced the burden on families during the pandemic.

Cash Intensive Work (PKT) had 42.52 percent positive responses and 46.11 percent neutral responses, while the remaining 11.37 percent were negative responses. Based on the negative response to the PKT, the Government needs to prevent the potential for corruption of funds for the PKT program and the possibility of giving the PKT in vain and not on target. PKT is expected to become a solution for villagers, especially farmers, to create job opportunities, optimize human resource potential, increase community income, and drive the economy.

Direct Cash Assistance (BLT) received positive sentiment of 40.54 percent, neutral sentiment of 47.40 percent, and negative sentiment of 12.06 percent. Based on negative tweets about BLT, the Government needs to optimize BLT segmentation fairly and equitably and prevent various obstacles in the distribution of BLT. The implementation of the BLT program is expected to increase purchasing power and reduce the burden on the community during the pandemic.

Pre-Employment Cards (KP) received positive sentiment of 38.34 percent, neutral at 44.82 percent, and quite a lot of negative sentiment compared to other programs, which was 16.84 percent. Based on negative tweets about KP, the Government must be able to manage KP transparently to prevent corruption, and the Government needs to take action against various fraud cases in the form of cybercrime against the implementation of KP. The public hopes that this KP program can improve human resources' competence, skills, and productivity.

## **Recommendation**

Based on the conclusions above, the Government needs to pay more attention to the program's shortcomings based on negative sentiments from the public. It can increase public trust in the program and can minimize problems in the field during program implementation. The Government can use social media with the text mining method as an alternative for evaluating government programs. In the future, it is necessary to create an application or dashboard system to display the evaluation of government programs in real-time through social media analysis. The system is expected to speed up the evaluation process to carry out other policies appropriately and responsively.

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