Journal of Science and Social Research ISSN 2615 – 4307 (Print)
August 2025, VIII (3): 3705 – 3710 ISSN 2615 – 3262 (Online)
Available online at http://jurnal.goretanpena.com/index.php/JSSR

SENTIMENT ANALYSIS OF PUBLIC COMMENTS ON THE FREE NUTRITIOUS MEAL PROGRAM USING A RULE-BASED APPROACH

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Abstract: *The Free Nutritious Meal Program (MBG) is a government initiative aimed at improving children's nutrition and reducing stunting in Indonesia. This study applies a rule-based sentiment analysis approach to evaluate public opinion on the program by analyzing YouTube comments. The dataset was processed through standard text preprocessing techniques, including case folding, stopword removal, and emoji filtering. Sentiment classification was performed using a keyword-based labeling system that categorized comments into positive, negative, and neutral classes. The classification results, visualized using a bar chart, revealed that neutral sentiment dominated the overall public discourse. This suggests that most users expressed uncertainty, factual observations, or non-judgmental questions about the program. Positive sentiment followed, reflecting public support and appreciation for the initiative's goals. In contrast, negative sentiment accounted for the smallest portion, mainly expressing concerns about food safety and implementation. This study demonstrates that a simple and interpretable rule-based model, when combined with effective preprocessing, can serve as a practical and efficient tool for large-scale public sentiment monitoring. The visualization results provide initial insights for policymakers to improve communication strategies and address public concerns regarding the MBG program.*

Keywords: *Sentiment Analysis; Public Opinion; Free Nutritious Meal Program (MBG); Stunting Reduction; Policy Evaluation.*

Abstrak: Program Makan Bergizi Gratis (MBG) merupakan inisiatif pemerintah untuk meningkatkan gizi anak dan menurunkan angka stunting di Indonesia. Penelitian ini bertujuan mengevaluasi opini publik terhadap program tersebut melalui analisis komentar di platform YouTube dengan pendekatan analisis sentimen berbasis aturan (rule-based). Data dianalisis melalui tahapan preprocessing teks, seperti case folding, penghapusan stopword, dan penyaringan emoji. Klasifikasi sentimen dilakukan menggunakan sistem pelabelan berbasis kata kunci yang membagi komentar ke dalam tiga kategori: positif, negatif, dan netral. Hasil klasifikasi yang divisualisasikan dalam grafik batang menunjukkan bahwa sentimen netral mendominasi komentar publik, mencerminkan ketidakpastian, pertanyaan, atau tanggapan informatif tanpa opini eksplisit. Sentimen positif berada di urutan kedua dan menunjukkan dukungan terhadap program, sementara sentimen negatif paling sedikit, umumnya berisi kekhawatiran terkait pelaksanaan dan keamanan pangan. Temuan ini menunjukkan bahwa pendekatan klasifikasi sederhana yang dipadukan dengan preprocessing yang efektif dapat menjadi alat yang efisien untuk memantau opini publik secara luas. Visualisasi hasil dapat menjadi dasar bagi pengambil kebijakan untuk menyusun strategi komunikasi yang lebih responsif terhadap persepsi masyarakat.

Kata kunci: Analisis Sentimen; Opini Publik; Program Makanan Bergizi Gratis (MBG); Pengurangan Stunting; Evaluasi Kebijakan

INTRODUCTION

The Free Nutritious Meal Program (MBG) is part of Indonesia's national priori-ty agenda aimed at enhancing the quality of human resources, particularly school-age children. The program is designed to ensure access to healthy and nutritious food as a strategic measure to reduce stunting rates and strengthen future generations' competi-tiveness (Vanti et al., 2024), (Pasien & Studi, 2024). Like many public policies, the implementation of MBG has sparked diverse reactions among the public, expressed wide-ly through various social media platforms. In today's digital age, social media serves as a vibrant public space where citizens express their support, concerns, and criticisms of governmental initiatives (Utomo & Wibowo, 2025), (Zulfikar et al., 2023).

The proliferation of unstructured da-ta on social media presents both opportuni-ties and challenges for researchers in extract-ing meaningful insights. Public opinion, of-ten expressed informally and in large vol-umes, necessitates the use of systematic and technology-driven analytical methods. One widely adopted approach is text mining, par-ticularly sentiment analysis, which aims to identify emotional tendencies or public per-ceptions from textual content (Rizki Surya Pratama et al., 2024). While sentiment anal-ysis is commonly applied in commercial do-mains such as product reviews and customer service, its application in public policy eval-uation in Indonesia remains underexplored (Maslej-Krešňáková et al., 2020).

To address this gap, this study de-velops a public sentiment classification sys-tem for the MBG program using the Multi-nomial Naive Bayes algorithm. This algo-rithm is well-suited for high-dimensional, categorical text data and has demonstrated robustness in previous document classifica-tion studies (Gan et al., 2021; HaCohen-Kerner et al., 2020). The focus of this re-search extends beyond the technical perfor-mance of the classification model, aiming to provide a scientific overview of public sen-timent that can inform policy evaluation and decision-making processes.

Previous studies have shown the ef-fectiveness of Naive Bayes in sentiment classification within domains such as e-commerce and education (Anjas, 2024), yet few have explored its application in analyz-ing public discourse on national policies us-ing real-time social media data. Therefore, the novelty of this research lies in the aca-demic implementation of sentiment analysis to evaluate public perception toward gov-ernment programs in a data-driven and con-textually relevant manner. The findings are expected to yield an objective and compre-hensive understanding of public responses that can support policymakers in improving the program's implementation with greater precision and inclusivity (Tembusai et al., 2021).

METHOD

This study employed a descriptive qualitative approach using rule-based sentiment analysis to evaluate public opinion on the Free Nutritious Meal Program (MBG). The analysis was conducted through three main stages: text preprocessing, sentiment labeling, and result visualization. All processes were implemented using the Python programming language on the Google Colab platform.

In the preprocessing stage, the text data—collected from YouTube comments—was cleaned through case folding (conversion to lowercase), symbol and punctuation removal, emoji filtering using Unicode patterns, and stopword removal using a manually curated list of common Indonesian stopwords. The cleaning process aimed to reduce noise in the text and normalize it for classification.

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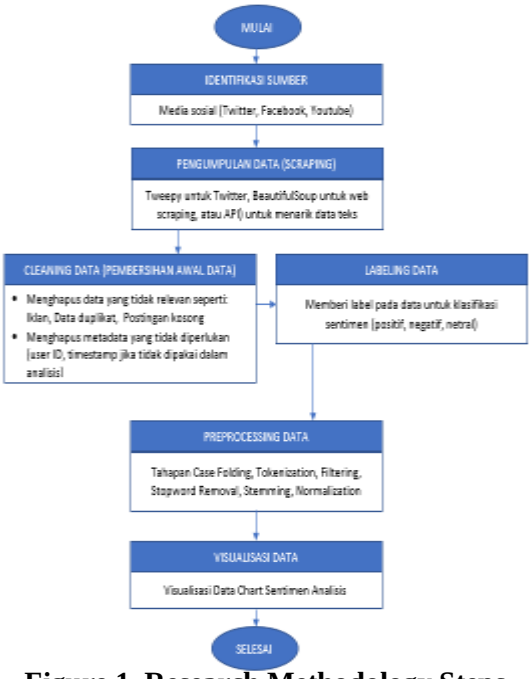

Figure 1. Research Methodology Steps

In the labeling stage, a rule-based method was applied. Sentiment labels were assigned by detecting the presence of predefined keywords: comments containing positive terms (e.g., dukung, bagus, baik) were labeled as positive, those containing negative terms (e.g., keracunan, korupsi, buruk) as negative, and comments with neutral or ambiguous expressions (e.g., harap, tunggu, netral) as neutral.

In the final visualization stage, the distribution of sentiment labels was presented in a bar chart using the seaborn and matplotlib libraries. This allowed for a clear depiction of sentiment trends within the dataset.

Although optional, this framework can be extended to support machine learning models such as Naive Bayes or deep learning models like BERT for more sophisticated classification, should annotated data and computational resources be available.

RESULT AND DISCUSSION

This study conducted a rule-based sentiment analysis to explore public opinion on the Free Nutritious Meal Program (MBG) using comments extracted from YouTube videos. The entire process was executed on the Google Colab platform, utilizing Python as the primary programming language for data cleaning, sentiment labeling, and visualization.

The dataset, uploaded in Excel format, was first imported and consolidated using the pandas library. Null entries and duplicate comments were removed to ensure data consistency:

```
df = pd.read_excel("dataset-
analysis-sentimen-MBG.xlsx")
df =
df.dropna(subset=['komentar'])
.drop_duplicates(subset=['kome
ntar'])
```

The preprocessing stage involved five main steps: case folding, emoji removal, symbol filtering, stopword removal, and token cleaning. The following code illustrates the core preprocessing logic:

```
import re

def remove_emoji(text):
    emoji_pattern =
re.compile(
        "["
        u"\U0001F600-
\U0001F64F"  # emoticons
        u"\U0001F300-
\U0001F5FF"  # symbols &
pictographs
        u"\U0001F680-
\U0001F6FF"  # transport & map
symbols
        u"\U0001F1E0-
\U0001F1FF"  # flags
        "]+",
flags=re.UNICODE)
    return
emoji_pattern.sub(r'', text)

def preprocess(text):
    text = str(text).lower()
    text = remove_emoji(text)
```

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```
    text = re.sub(r'[^a-z\s]',
'', text)
    tokens = text.split()
    stopwords_id =
set(['yang', 'dan', 'di',
'ke', 'dari', 'ini', 'itu',
'pada',

'dengan', 'untuk', 'juga',
'karena', 'ada', 'tidak',
'saja'])
    tokens = [t for t in
tokens if t not in
stopwords_id]
    return ' '.join(tokens)

df['clean_text'] =
df['komentar'].apply(preproces
s)
```

Sentiment classification was carried out by detecting the presence of predefined sentiment-bearing keywords. The following function categorized comments into positive, negative, or neutral classes:

```
positive_keywords = ['bagus',
'bantu', 'baik', 'mantap',
'dukung', 'setuju',
'apresiasi', 'terima kasih']
negative_keywords = ['buruk',
'gagal', 'keracunan',
'korupsi', 'bohong', 'parah',
'meragukan']
neutral_keywords = ['semoga',
'harap', 'netral', 'tunggu',
'lihat']

def label_sentiment(text):
    for word in
positive_keywords:
        if word in text:
            return 'Positif'
    for word in
negative_keywords:
        if word in text:
            return 'Negatif'
    for word in
neutral_keywords:
        if word in text:
            return 'Netral'
    return 'Netral'

df['sentimen'] =
df['clean_text'].apply(label_s
entiment)
```

After labeling, the sentiment distribution was visualized using a bar chart. The visualization provided a clear overview of how public opinion was spread across different sentiment categories:

```
import seaborn as sns
import matplotlib.pyplot as
plt

plt.figure(figsize=(8, 5))
sns.countplot(data=df,
x='sentimen', palette='Set2')
plt.title("Distribusi Sentimen
Komentar Publik terhadap
Program MBG")
plt.xlabel("Kategori
Sentimen")
plt.ylabel("Jumlah Komentar")
plt.grid(axis='y',
linestyle='--', alpha=0.7)
plt.tight_layout()
plt.show()
```

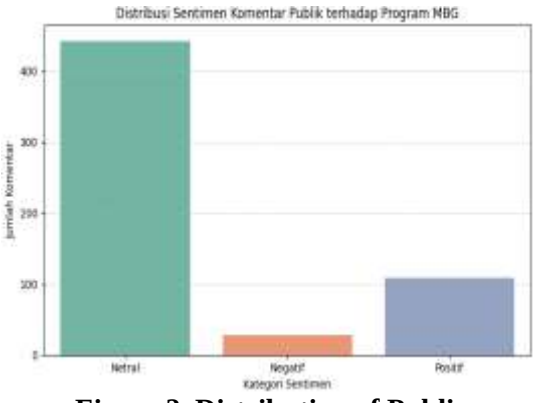

Figure 2. Distribution of Public Sentiment toward the MBG Program

The sentiment analysis results show that the majority of public comments regarding the Free Nutritious Meal Program (MBG) were classified as neutral. This indicates that many users expressed uncertainty, asked questions, or provided non-evaluative feedback such as

clarifications or factual statements without explicit emotion. The dominance of neutral sentiment suggests that the public is still observing the program's progress or lacks sufficient information to form a strong opinion.

A smaller, but still significant portion of comments exhibited positive sentiment, reflecting support for the program's objectives. These comments included expressions of appreciation and optimism, with common keywords such as "baik", "bagus", and "dukung". Meanwhile, negative sentiment appeared in the smallest proportion, consisting of comments expressing doubt or criticism related to food quality, implementation integrity, or potential misuse of funds.

This distribution is illustrated in Figure 1 (see bar chart), where neutral sentiment dominates the chart, followed by positive and negative categories. These findings reveal that public perception of MBG is still evolving and mostly cautious, indicating the need for more active communication and transparency from policymakers to encourage more public confidence and engagement.

The workflow, powered by Python in Google Colab, demonstrates that rule-based classification supported by effective preprocessing—such as emoji removal, stopword filtering, and lowercase normalization—can provide meaningful insight into large-scale public feedback. Despite its simplicity, the method offers sufficient performance for early sentiment monitoring and can be further enhanced with machine learning models in future research.

CONCLUSION

This study applied a rule-based sen-timent analysis approach to assess public opinion regarding the Free Nutritious Meal Program (MBG) using comments collected from various YouTube videos. Through a structured preprocessing pipeline involving case folding, tokenization, stopword remov-al, and keyword-based classification, the system successfully categorized public sen-timent into three primary classes: positive, negative, and neutral. The results indicated that while a significant portion of the public expressed support and appreciation for the MBG program, a notable percentage raised concerns regarding implementation, safety, and transparency. This diversity of opinion highlights the importance of incorporating public sentiment as a valuable component in evaluating government programs. Ultimate-ly, this research underscores the role of so-cial media analysis in policy evaluation and emphasizes the need for ongoing monitoring of public feedback to ensure that govern-ment programs align with the needs and ex-pectations of the people.

REFERENCES

Anjas, M. (2024). *Optimization of Classification Algorithms Performance with k-Fold Cross Validation*. *2*.

Gan, S., Shao, S., Chen, L., Yu, L., & Jiang, L. (2021). Adapting hidden naive bayes for text classification. *Mathematics*, *9*(19), 1–14. https://doi.org/10.3390/math9192378

HaCohen-Kerner, Y., Miller, D., & Yigal, Y. (2020). The influence of preprocessing on text classification using a bag-of-words representation. *PLoS ONE*, *15*(5), 1–22. https://doi.org/10.1371/journal.pone.0232525

Maslej-Krešňáková, V., Sarnovský, M., Butka, P., & Machová, K. (2020). Comparison of deep learning models and various text pre-processing techniques for the toxic comments classification. *Applied Sciences (Switzerland)*, *10*(23), 1–26. https://doi.org/10.3390/app10238631

Pasien, P., & Studi, H. (2024). *3 1,2,3*. *4*, 2020–2025.

Rizki Surya Pratama, D., Munandar, T. A., & Fadhilla Ramdhania, K.

(2024). Multinomial Naive Bayes Algorithm for Indonesian language Sentiment Classification Related to Jakarta International Stadium (JIS). *International Journal of Information Technology and Computer Science Applications*, *2*(1), 12–22. https://doi.org/10.58776/ijitcsa.v2i1.118

Tembusai, Z. R., Mawengkang, H., & Zarlis, M. (2021). K-Nearest Neighbor with K-Fold Cross Validation and Analytic Hierarchy Process on Data Classification. *International Journal of Advances in Data and Information Systems*, *2*(1), 1–8. https://doi.org/10.25008/ijadis.v2i1.1204

Utomo, R. Y., & Wibowo, A. (2025). *IMPLEMENTASI TEXT MINING PADA ANALISIS SENTIMEN OPINI IMPLEMENTATION OF TEXT MINING IN THE ANALYSIS OF PUBLIC OPINION SENTIMENT TOWARDS THE MOVING OF THE CAPITAL TO*. *3*(September 2024), 594–602.

Vanti, M. E. D., Octaviani, V., & Maryaningsih, M. (2024). Analisis Framing Pemberitaan Program Makan Gratis Prabowo Subianto Di Media Online. *Professional: Jurnal Komunikasi Dan Administrasi Publik*, *11*(1), 427–436. https://doi.org/10.37676/professional.v11i1.6396

Zulfikar, W. B., Atmadja, A. R., & Pratama, S. F. (2023). Sentiment Analysis on Social Media Against Public Policy Using Multinomial Naive Bayes. *Scientific Journal of Informatics*, *10*(1), 25–34. https://doi.org/10.15294/sji.v10i1.39952