



# Sentiment Analysis of the MK Decision Trial of the Result of the 2024 President and Vice President General Election on Social Media X Using the Support Vector Machine Method

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## Abstract

Support Vector Machine (SVM) is a method of machine learning often used in classification and regression issues, especially in the classification of commentary reviews on social media such as Twitter. The Constitutional Court (MK) has the authority to resolve disputes resulting from the general election, including the 2024 presidential election. As an institution that maintains fairness and transparency in the democratic process, the Constitutional Court's decisions are often at the center of public attention and debate, especially on social media. In the 2024 general election, various allegations of fraud led to protests from several parties who felt aggrieved. The final and binding Constitutional Court's decision is expected to resolve the conflict that arises, but it often does not satisfy all parties, causing political and social tensions. This conflict can be reflected through public opinion expressed on social media, such as Twitter, where various responses and sentiments to the decision are essential analysis materials. This Research uses the Support Vector Machine (SVM) algorithm with a dataset of 1383 review comments divided by an 80:20 ratio for training and testing. The system was implemented using the Python programming language, with evaluations showing the highest accuracy at 61.00%, precision at 61.00%, and recall at 62.00%. This study aims to analyze public sentiment regarding the Constitutional Court's decision using the SVM method and identify the tendency of public opinion as positive, negative, or neutral. Through this study, it is expected that a deeper understanding of the public's perception of the Constitutional Court's decision is obtained. In addition, this Research is likely to contribute to developing sentiment analysis methods in the future and provide a basis for recommendations for the Constitutional Court in handling election result disputes better.

**Keywords:** Confusion Matrix, Constitutional Court, Presidential Election 2024, Election Result Dispute, Support Vector Machine.

## 1. Introduction

Elections are one of the foundations of democracy, and they serve as a means of expressing the sovereignty of the people to form a democratic government [1]. The government formed from the election results is expected to have strong legitimacy and carry out its mandate well. Elections are also a significant pillar in upholding democracy, where people are actively involved in determining the direction and policy of the country's politics for the coming period of government.

The 2024 presidential election was marked by accusations and controversies that showed a discrepancy between the results announced by the Central General Election Commission (KPU) and the information held by several political parties participating in the election [2]. According to Margarito Thursday, this shows how vital the role of the Constitutional Court is as an institution that not only resolves disputes but also maintains transparency and justice in the democratic process.

According to Duverger, political conflict can trigger social unrest. This conflict arises from political opposition driven by the interests of individuals or groups. These forms of conflict may include class struggle, racial conflict, conflicts between groups, and conflicts between regions [3]. X (Twitter) is a short message full of slang, so we did a sentence-level sentiment analysis [4]. This is done in three stages. In the first stage, preprocessing is performed. Then, feature vectors are created using the relevant features. Finally, tweets were classified into positive and negative classes using different classifiers. The final sentiment was obtained based on the number of tweets in each class.

The Research will use the Support Vector Machine (SVM) algorithm to classify positive and negative opinions on (X) Twitter. SVM is a powerful and versatile machine-learning algorithm that can be used for most machine-learning problems. SVM algorithms are efficient and can handle large amounts of data. SVMs were chosen because they were accurate and suitable for the dataset sourced from (X) Twitter. This was supported by research results (Neethu & Rajasree, 2013) showing that SVMs achieved 90% accuracy while Naive Bayes scored 89.5% on classification testing. Later Research was conducted by [5]. In 2017, SVM received 90% accuracy for SVM in Twitter's text (X) data classification.



The urgency of this Research arises from the increasing impact that the Constitutional Court (MK) ruling session has on the results of the 2024 presidential and vice presidential elections. In a tense political situation, public opinion conveyed through social media such as X (Twitter) greatly influences public perception and social stability. Dissatisfaction with the outcome often leads to mixed responses, ranging from support to solid protests, potentially disrupting democratic order and public confidence in the election system. Analyzing sentiments on reviews and opinions spread on social media has become crucial to understanding how the public responds to the Constitutional Court's decision. If left without proper follow-up, widespread negative opinions can worsen the political and social situation. Therefore, this study is highly relevant in providing insight into public perception and the potential to assist the Constitutional Court and related parties in evaluating and improving the process of resolving election disputes in the future.

Through this Research, a deeper understanding of the public's perception of the Constitutional Court's (MK) decision regarding the results of the 2024 Presidential and Vice Presidential Elections are expected to be obtained while also providing concrete recommendations for the Constitutional Court and related parties to increase transparency and fairness in the decision-making process. The findings of this study are also expected to serve as a reference for similar Research in the field of sentiment analysis on future political decisions and election disputes.

## 2. Literature Review

### 2.1. Previous Research

The Research by Mahmud Isnain et al. (2023), titled Sentiment Analysis For Customer Review Traveloka Case Study, shows public opinion of the Traveloka application based on data collected from Twitter. Based on 1,200 tweet data collected, our classification method proves that 610 positive and 590 negative tweets have relatively high scores. Still, positive tweets have higher scores than negative tweets. We also use word cloud to categorize and discover which vocabulary or keywords are often used in data sets that describe Traveloka users' performance and satisfaction [6].

General Sentiment on Face-to-Face Activities During the COVID-19 Pandemic in Indonesia, Based on the results of sentiment analysis, the public's response to face-to-face activities is dominated by negative sentiments, followed by neutral and positive feelings. Then, the grouping of public opinion with the LDA method results in 6 topics: vaccination, community preference, school reopening, community sentiment, and students. The government can ensure the implementation of health protocols, accelerate vaccination, and improve the use of the system. Take into account the worst possible future Research, which is expected to have a more in-depth analysis of face-to-face activities. The study can be done by listing the location of posted tweets or involving a combination of likes and retweets in determining public sentiment. The analysis can also be expanded by estimating the spread of COVID-19 and preparing for mitigation as best as possible. Longing for face-to-face learning and implementation of face-to-face learning plans [7].

The Research was conducted by Mahmud Isnain et al. (2023) and was entitled Sentiment Analysis for TikTok Reviews Using VADER and SVM models. This Research investigates sentiment analysis in TikTok reviews using VADER sentiment and SVM models. VADER sentiment labels reviews as positive, neutral, and hostile. The results show that users enjoy playing TikTok, as most reviews are positive. Data resampling methods (RUS and ROS) were also used because the data was imbalanced and then compared with SVM performance. The SVM model without data resampling performed better, with an F1 score of 0.80. These findings suggest that handling data using RUS and ROS does not continually improve validation performance because resampling may result in the loss of valuable information [8]. Sentimental Analysis of Public Opinion Of CFW (Citayam Fashion WEEK) On Twitter Social Media Using Naïve Bayes Classifier. From the trial results, the Naïve Bayes Classifier algorithm showed several findings were obtained by the author. The Naïve Bayes Classifier method proved effective in the Citayam Fashion Week sentiment classification. However, with the addition of the Confusion Matrix tool, an accuracy result was obtained, which increased to 84%. Naïve Bayes Classifier's method was tested to classify sentiment towards Citayam Fashion Week very well [9].

Sentiment Analysis of Google Maps User Reviews on the Play Store Using Support Vector Machine and Latent Dirichlet Allocation Topic Modeling This Research discusses sentiment analysis of Google Maps user reviews on the Google Play Store platform. This Research aims to evaluate user satisfaction based on reviews divided into positive and negative sentiments. This Research also uses the Latent Dirichlet Allocation (LDA) topic modeling method to find the main topics users often discuss regarding Google Maps services. The method used in this Research involves two main techniques: Sentiment Analysis Using Support Vector Machine (SVM): SVM is used to classify user reviews into positive and negative sentiments. The data is processed to identify review polarity after the data preprocessing stage (data cleaning, normalization, tokenization, and stemming). The results of sentiment analysis show that the SVM algorithm achieves an accuracy of 86%, with a precision of 93%, recall of 53%, and f1-score of 52%. Topic Modeling Using Latent Dirichlet Allocation (LDA): LDA is used to discover hidden topics users often discuss regarding Google Maps services. The topic modeling results show five main topics, namely Google Maps route accuracy, system and service errors, navigation directions, lost time history, and complicated routes. The LDA model produces a coherence value of 33.39%, with five topic models selected. This Research concludes that the SVM algorithm can effectively classify user reviews and that LDA can identify the main topics frequently discussed by Google Maps users [10].

Sentiment Analysis of User Reviews on BSI Mobile and Action Mobile Applications on the Google Play Store Using Multinomial Naïve Bayes Algorithm. This Research discusses sentiment analysis of user reviews of the BSI Mobile and Action Mobile applications on the Google Play Store using the Multinomial Naive Bayes algorithm. This Research aims to understand user experiences regarding the BSI and Action Mobile mobile banking applications and classify user reviews into positive and negative sentiment categories. The research method used is Data Collection: User review data is taken from the Google Play Store using web scraping techniques. This Research collects BSI Mobile and Action Mobile user review data for further analysis. Text Preprocessing: Includes case folding, tokenization, stopword removal, and stemming to clean text data so it is easier to process. Dataset Division: The dataset is divided into 80% for training data and 20% for testing data. Training data is used to train the model while testing data is used to evaluate the model's performance. Sentiment Classification: Multinomial Naive Bayes algorithm is used to classify review sentiment into positive or negative based on the frequency of words in the review. Evaluation: Algorithm performance is evaluated using the Confusion Matrix method to calculate accuracy, precision, recall, and f1-score values. BSI Mobile: The algorithm produces 78.7% accuracy, 76.5% precision, 86.2% recall, and 80.6% f1-score. Of the 55,059 reviews, 52.8% were positive in sentiment, while 47.2% were negative. Action Mobile: The algorithm produces 85.6% accuracy, 75% precision, 75% recall, and 75% f1-score. Of the 615 reviews, 35.1% were positive, while 64.9% were negative. This Research shows that the Multinomial Naive Bayes algorithm effectively classifies user review sentiment [11].

The Research conducted by Adi Prasetyo et al. (2024), with the title Comparison of Triple Exponential Smoothing and ARIMA in Predicting Cryptocurrency Prices. This Research compares two cryptocurrency price forecasting methods, Triple Exponential Smoothing

(TES) and Autoregressive Integrated Moving Average (ARIMA). This Research aims to evaluate and compare the effectiveness of these two methods in predicting the prices of five major cryptocurrencies: Bitcoin (BTC), Ethereum (ETH), Binance Coin (BNB), Solana (SOL), and Ripple (XRP). The research method used was Data Collection: Daily cryptocurrency price data from January 2021 to December 2023 was taken from financial sources such as Yahoo Finance. This data includes each cryptocurrency's open, close, high, and low prices. Data Preprocessing: Data is cleaned of missing values, outlier detection is carried out using Z-scores, and divided into 80% for training data and 20% for testing data. Model Development: TES uses three smoothing components (level, trend, and seasonal), while ARIMA models autoregressive, differencing, and moving average components. TES parameters such as alpha (level), beta (trend), and gamma (seasonal) are optimized, as are ARIMA parameters (p, d, q). Model Evaluation: Model performance is evaluated using the Mean Absolute Percentage Error (MAPE) and Root Mean Squared Error (RMSE) to measure prediction accuracy. TES is superior in predicting Bitcoin and Binance Coin prices, with MAPEs of 10.38% and 13.81% respectively. ARIMA provided better results for Ethereum, Solana, and Ripple, with MAPE ranging from 8.78% to 32.84%. Ethereum had the lowest MAPE (8.78%), and Ripple recorded the smallest RMSE (0.08). This Research concludes that TES is more effective for stable cryptocurrencies. At the same time, ARIMA is more suitable for more volatile assets, and model selection should be based on the predicted volatility characteristics of the cryptocurrency [12].

## 2.2 Definition of Presidential General Election

According to Ramlan, elections are understood as a mechanism for selecting, delegating, or handing over sovereignty to individuals or trusted parties [13]. When discussing elections, it is inevitable to explain the significance of democracy. The two things are strongly linked and cannot be separated in their analysis. An article written by Syamsurrijal and his colleagues regarding the 2024 presidential election identified the names of potential candidates for presidential candidates. They started an analysis of the conversation on Twitter [14]. The three official presidential candidates are Anies Baswedan, Prabowo Subianto, and Ganjar Pranowo, based on data from Twitter (X). In the 2024 presidential election, claims and competition showed discrepancies between the results announced by the General Election Commission (KPU) and data held by several election participants [2]. As revealed by Margarito Thursday, this confirms the importance of the Constitutional Court as an institution that not only serves to resolve disputes but also serves as a guard of transparency and justice in the democratic process.

## 2.2. Definition of The Constitutional Court (MK)

In Indonesia, a state institution called the Constitutional Court judges and maintains the Constitution. The institution emerged due to the third amendment to the 1945 Constitution, which took place in 2001, aiming to strengthen democracy in Indonesia's systematic structure. In carrying out its duties, especially constitutional responsibilities, the Constitutional Court seeks to realize a vision as a guideline for exercising judicial power. The Constitutional Court serves as the first and last level of justice, where the decision is unanimous [15]. The Constitutional Court is the only constitutionally authorized legal institution to resolve disputes over the outcome of legislative elections. This follows Article 24C paragraph (1) of the 1945 Constitution of the Republic of Indonesia, which states that the Constitutional Court (MK) has this authority. As a final judicial institution, the Constitutional Court's decision is final and binding in resolving disputes over election results. Therefore, the Constitutional Court must provide constitutional mechanisms or legal pathways to resolve disputes over election results. Disputes over election results so that the conflict does not escalate into a political crisis or even trigger a social conflict [16].

## 2.3. Text Mining

Text mining is text data whose source of information is obtained from documents, and the goal is to find words that represent the contents of documents, which can then be implemented in the analysis process and search for relationships between documents [17]. Text mining is the process of extracting pattern data in the form of knowledge and helpful information from a wide variety of text data sources, such as Word, PDF, and other documents in the form of text extraction. The application of text mining is not only a tool for analysis but also a valuable contribution to the management and understanding of ever-increasing text data. By helping people process and understand large amounts of text efficiently, text mining opens the door to insights that may be difficult to find using traditional methods.

## 2.4. Web Scraping

Web Scraping is retrieving semi-structured document data from the internet, usually web pages that use markup languages such as HTML or XHTML. Then, it's analyzed to get the data. Web scraping is often referred to as screen scraping. However, web scraping cannot be considered part of the mining data, as the mining data focuses more on analyzing semantic patterns or trends from large data sets [18].

## 2.5. Sentiment Analysis

Sentiment analysis is a classification task because it aims to classify text orientation as positive or negative [19]. Sentiment analysis is a branch of data mining that analyzes and processes data text in the form of opinions on a topic. Text data is then classified as whether it contains a positive or negative orientation toward the related topic.

## 2.6. Support Vector Machine

Support Vector Machine (SVM) is a relatively new technique for predicting classification and regression. SVMs are part of a supervised learning group, where implementation requires a training stage using sequential SVM training, then continued with a trial stage [20]. The classification concept with Support Vector Machine aims to find an optimal hyperplane that serves as a barrier between two data classes. This technique is capable of working on high-dimensional datasets by utilizing kernel tricks. SVMs use several support vector data points to build the model used for classification. The following is an overview of the support Vector Machine method shown in Figure 1.

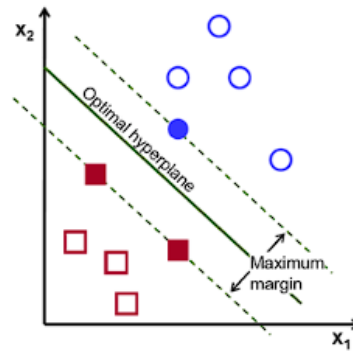


Fig. 1 SVM Illustration

### 2.7. Classification

Classification is part of the task of data mining. Its job is to identify data that does not yet have a data name or class. Classification is a form of data analysis that creates predictive models for describing data labels or classes. Building predictive models and writing labels has the following essential components:

1. Classes are variable, categorical models that describe the specificity of a goal after the classification step.
2. Predictors (Predictors) are independent variables. It is represented by the characteristics (attributes) of the data to be classified and based on the classification already made.
3. Training data is the overall data containing the values or records of the two preceding components (class variables and predictors) of continuous or categorical variables, and it is trained for use in making prediction models.
4. Test data is an initial dataset categorized by a predictive model constructed to measure the degree of accuracy of the classification (model performance) and can evaluate the performance of the classification model.

### 2.8. Text Preprocessing

Text preprocessing converts unstructured data into structured data (converting text into term indices) to minimize data dimensions and make computer processes more efficient. And accurate [17]. This stage aims to improve the accuracy of the sentiment classification of the constitutional court's decision on the presidential election's outcome.

### 2.9. TF-IDF

The term weighing method or weighting chosen in this study is term frequency, the inverse document frequency (TF-IDF). The term frequency of a given word ( $t$ ) is calculated as the number of times a term appears in a document and the total number of words in that document. IDF (Inverse Document Frequency) calculates how vital a word or term is [21]. The more frequently a word appears in the eating document, the more meaningless it becomes.

### 2.10. Confusion Matrix

Confusion Matrix is a technique for assessing the classification of a model. The method works by comparing the matrix of the predictors with the original class and the prediction of classification values. The confusion matrix in this study uses four conditions: True Positive (TP), True Negative (TN), False Positive (FP), and False Negative (FN) [22].

### 2.11. System

An Information System is a set of components that work synergistically to collect, manage, store, process, and disseminate the information needed to support decision-making within an organization or entity. A system consists of various interconnected elements that cannot be separated from each other, operating collectively to achieve the desired goal [23].

### 3. Methods

#### 3.1 Research Workflow

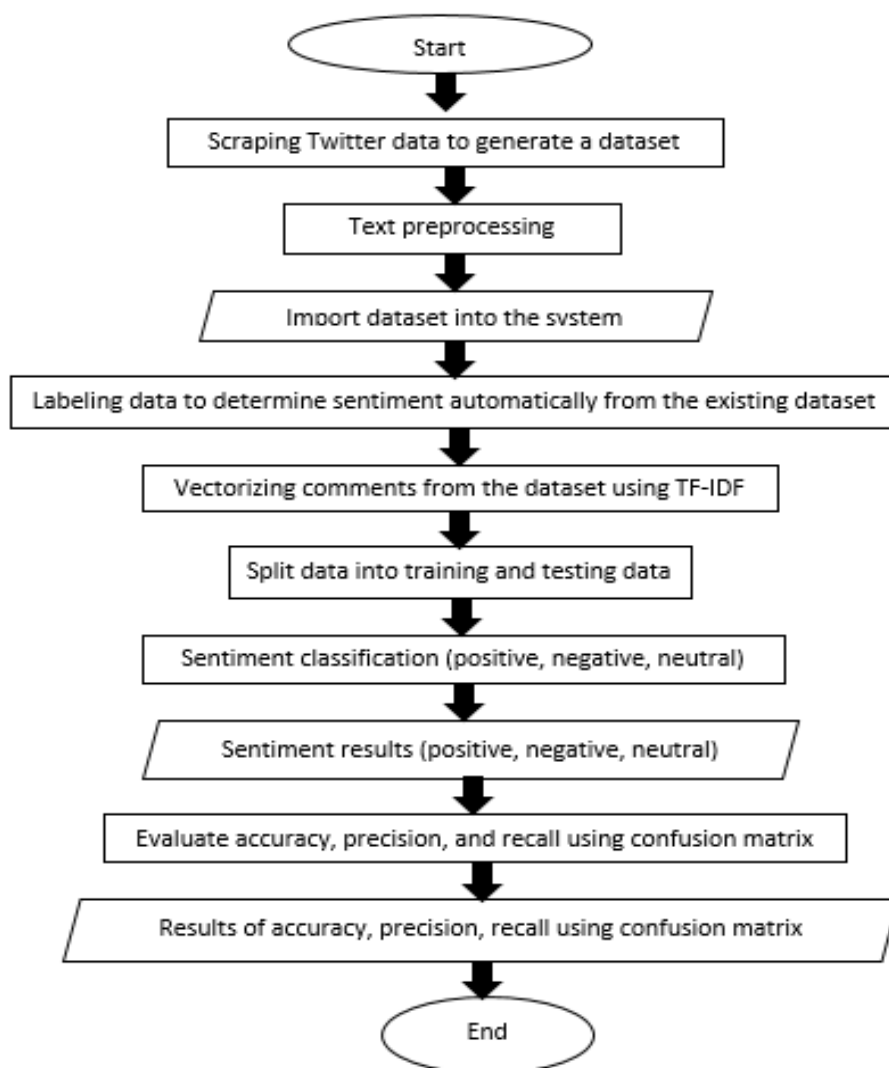


Fig. 2 Research Workflow

"Input Dataset": This process aims to input user review data from Twitter comments under the hashtag of the MK ruling into the system for further processing. Next, the "Text Preprocessing" stage is a crucial step that transforms raw data into cleaner data. The steps involved in this preprocessing include case folding, tokenization, stopword removal, and stemming. After that, in the "Split Dataset" stage, the dataset will be divided into two parts in an 80:20 ratio, where 80% will be used as training data and 20% as testing data. The training data will be used to train the model to recognize patterns, while the testing data will be used to evaluate the model's performance. The next stage is "Classification using the Support Vector Machine Algorithm," where the system will classify the sentiment of user comments to determine whether the sentiment is positive, negative, or neutral. The result of this process, referred to as the "Classification Result," will provide sentiment categories for these reviews. After the classification is complete, the next step is "Evaluation," which aims to assess the performance of the classification model using the Support Vector Machine algorithm. This evaluation will use the Confusion Matrix method to provide an accurate overview of the model's effectiveness. The process concludes with the "Finish" stage, indicating that the system has functioned as expected.

Some methodologies used to obtain data or information to solve problems include:

1. Library Studies

In data retrieval, literature studies are obtained from various references, ranging from journals, books, to papers that address relevant topics or issues that are the object of this study, especially on the Support Vector Machine algorithms available in the field.

Has a relationship with the sentimental analysis research conducted, then evaluation, study, and analysis will be performed, which can be used as a reference in carrying out this Research.

2. Data Collection

This study collected data that will be used by taking tweets containing opinions according to search to get appropriate data on social media X (Twitter). In data retrieval using the data scraping technique, the data is saved in an Excel (CSV) format. The dataset used in this study was 1000 data.

3. Labeling of data

After creating the dataset, continue labeling data to manually provide a label or sentimental class for each tweet, using three categories of sentiment preferences: positive, negative, and neutral.



#### 4. Data Processing

In the early stages of data processing, text preprocessing was first performed, aiming to aggregate the data to a smaller scale so that the computing process eliminated unnecessary data to produce higher data accuracy. The text preprocessing stage consists of cleaning, case folding, tokenization, stopwords, stemming, and lemmatization.

Text preprocessing is followed by TF-IDF weighting, which transforms comment/tweet data into numbers to help the algorithm read the data. Then, the training and test data are divided by a 7:3 ratio of the entire dataset.

#### 5. Classification of Data

The final step is classification using the Support Vector Machine algorithm; at this stage, test data is measured at a distance similar to the corpus from the classification results of the training data, which will later produce positive, negative, or neutral sentimental predictions.

### 4. Results and Discussion

#### 4.1. System Analysis

The system used is a system that can assess the sentimental data tweets about the Constitutional Court's (MK) decision as a result of the presidential and vice presidential elections on X Twitter and how accurate and performing SVM algorithms are used on the system. The system uses Python. The weighting of words with TF-IDF will be calculated which results are included in the Support Vector Machine (SVM) algorithm classification process. Then, split the data into training and test data. The classification process was then carried out in the test data that would result in positive, negative, or neutral sentiments

#### 4.2. Data Analysis

In this study, data scraping technology required a Python library called sncrap. Data obtained through the data scraping technique produces a dataset of 1383 data, and data obtained in Excel format (csv). Then, tweet data will be automatically labeled based on sentiments so that the data can be input into the system.

#### 4.3. UML System Design

The design of the UML system begins with the Use case diagram, a tool to help users visualize a system from their perspective. The following is a use case diagram for the Sentiment Analysis Application at the Constitutional Court Decision Session regarding the Election Results of President and Vice President 2024 on Social Media X (Twitter). Then, we continued with the Activity Diagram, which visualizes a system's workflow or sequence of activities.

#### 4.4. Text Preprocessing

The process for text preprocessing is as follows:

1. Case Folding  
Case folding is making all words in the text lowercase or lowercase.
2. Tokenization  
Tokenization is the process of separating or cutting each word in a sentence. The tokenization process uses the NLTK Python library.
3. Lemmatization  
Lemmatization/normalization is a word normalization process that changes non-standard words into standard words.
4. Stopwords Removal  
Stopword removal is the process of removing words that repeat meaningless vocabulary in a sentence, such as "and," "in," "by," "this," "from," and others. The Stopwords process uses a Python library, namely NLTK.
5. Stemming  
Stemming is the process of removing the suffix from a word to get the base word of the word. This process removes various kinds of affixes, such as suffixes, prefixes, and confixes found in words in sentences. Such as removing the affix in the word "government," which then becomes "order," "suffocation," "suffocation," "need" becomes "need," and so on. This stemming process uses a Python library, namely Satrawi.

#### 4.5. Labeling Data

At this stage, the tweets in the dataset are labeled automatically to determine which tweets fall into positive, negative, or neutral sentiment classes. The sentiment class is determined based on the meaning of the tweet data. Tweet data is positive if it contains words with a positive meaning, while tweet data is negative if it contains words with a negative meaning. Meanwhile, tweet data is neutral if it contains neither positive nor negative words. As an example in the following table:

**Table 1.** Labeling Data

No	Text	Sentiment
1	Let us pray that our beloved country will not be divided and that nature will not help legitimize cheating amen.	Positive
2	Disbanding the Constitutional Court is useless. It just wastes the state budget in vain!!!!	Negative
3	May Allah open the way	Neutral

#### 4.6. Evaluation Of System Classification

This evaluation was carried out to determine the model's success level in carrying out the classification process. From the confusion matrix, accuracy, precision, and recall can be determined. In this study, three classes were used so that the confusion matrix calculation parameters consisted of 6 things, namely True Positive (TP), True Negative (TNg), True Netal (TNt), False Positive (FP), False Negative (FNg), False Neutral (FNt ).

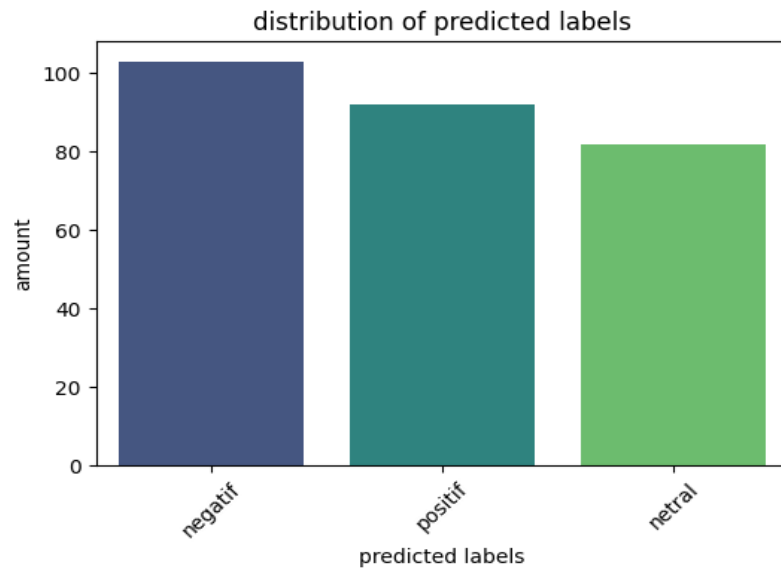
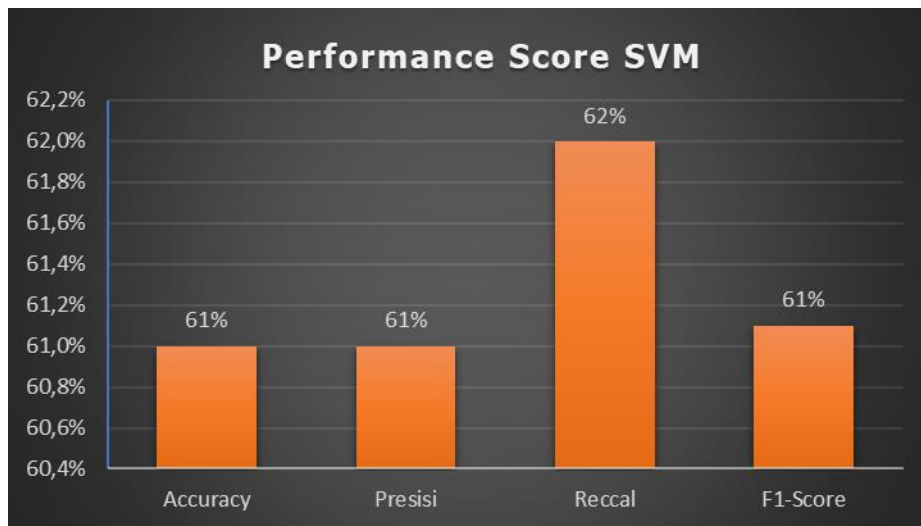


Fig 3. Classification

The following is a graphic image of the results of the performance of the Support Vector Machine (SVM) algorithm, which has been evaluated using the Confusion Matrix, the results of which are the accuracy, precision, and recall of the sentiment analysis system as follows:



4.7. Result Of System Implementation

SVM Classification Report:

	precision	recall	f1-score	support
0	0.56	0.62	0.59	94
1	0.59	0.69	0.63	70
2	0.68	0.56	0.61	113
accuracy			0.61	277
macro avg	0.61	0.62	0.61	277
weighted avg	0.62	0.61	0.61	277

This page displays a graph of the performance of the SVM algorithm in the sentiment analysis system for the Constitutional Court's decision on the results of the 2024 presidential election in the form of accuracy, precision, and recall. This SVM algorithm produces an accuracy value of 61%, a precision value of 61%, and a recall value of 62%. It can be concluded that the performance of the SVM algorithm in the sentiment analysis system for the Constitutional Court's decision on the 2024 presidential election on Twitter is sound and accurate.

4.8. Positive & Negative Sentiment Result Chart

The following is a graph of the positive and negative sentiment research results.

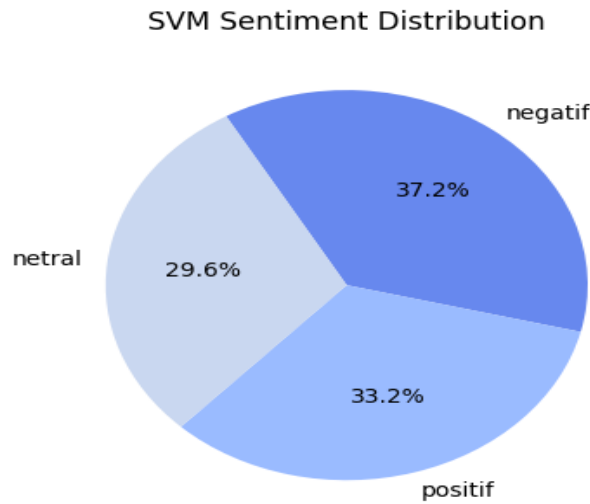


Fig 5. Result Graphic

**4.9. Interpretation of Positive Sentiment Result**

The interpretation of the results further shows the topics often talked about by Twitter users. Twitter user review topics will be displayed using word cloud visualizations and diagrams. The following, shown in Figure 5, is a topic of discussion for users who provide positive sentiment.

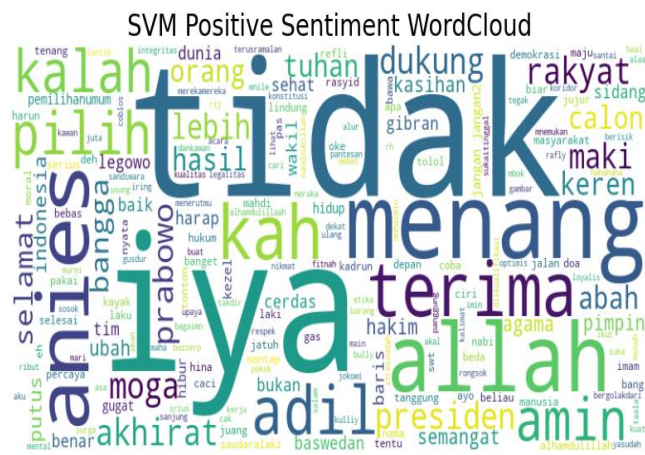


Fig 6. WordCloud Positive Review

**4.10. Interpretation of Negative Sentiment Result**

The interpretation of the results further shows the topics often talked about by Twitter users. Twitter review topics will be displayed using word cloud visualizations and diagrams. The following, shown in Figure 6, is the topic of discussion of users who gave negative sentiments.



Fig 7. WordCloud Negative Review





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