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Sentiment Analysis of Ampera Bridge as a National Tourism Destination

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Article Info	ABSTRACT
	Ampera Bridge is one of the leading tourism icons in Palembang which attracts thousands of visitors every year. This research aims to analyze visitors' opinions about the Ampera Bridge using opinion mining techniques in Google Review reviews. Research methods include collecting review data from Google Reviews, data preprocessing, sentiment analysis, and aspect analysis. The data collected includes 307 reviews taken in the period April 2024. These reviews were analyzed using the Support Vector Machine (SVM) algorithm to classify sentiment as positive, negative, or neutral. The analysis results show that 83% of reviews have positive sentiment, 9% are negative, and 8% are neutral. The main aspects often discussed by visitors include the view and beauty of the bridge, historical and cultural value, accessibility and transportation, facilities and cleanliness, as well as tourist experiences and activities. Positive sentiments were mainly related to the beauty of the bridge's architecture and lighting, as well as its historical value. However, negative sentiment was mainly caused by cleanliness issues and traffic jams around the bridge. Based on these findings, several recommendations put forward include improving cleaning facilities, better traffic management, developing public facilities, and diversifying tourist activities. It is hoped that the implementation of these recommendations can improve the quality of the visitor experience and the attractiveness of the Ampera Bridge as a major tourist destination. This research provides valuable insights for tourism managers and local governments to improve the quality of services and facilities at the Ampera Bridge. *Copyright © 2024 Puzzle Research Data Technology*

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1. INTRODUCTION

The The beauty of the architecture and its historical value make the Ampera Bridge not only a vital infrastructure but also an attractive tourist destination that draws thousands of visitors every year. With the increasing use of the internet and social media, many tourists share their experiences through various online review platforms, one of which is Google Review [1]. These reviews provide valuable information about visitors' perceptions and satisfaction with the tourist attraction, which can be utilized to enhance the quality of service and management of the destination [2]. However, the vast and diverse number of reviews often makes it challenging to obtain a clear picture of the overall public opinion. Therefore, an effective analysis method is needed to extract information from these reviews.

Opinion mining, commonly known as sentiment analysis, is one method that can be used to automatically identify and classify opinions in text [3]. This technique allows researchers to extract valuable

information from large and unstructured text data, such as Google Review [4]. By employing opinion mining, we can identify common patterns of public opinion, measure the level of satisfaction, and pinpoint specific aspects frequently discussed by visitors [5][6].

This research aims to analyze visitors' opinions of the Ampera Bridge using opinion mining techniques on Google Review. The specific objectives of this study include: identifying the general sentiment of visitor reviews, whether positive, negative, or neutral; identifying the aspects frequently discussed in the reviews; and providing recommendations to enhance visitor experience at the Ampera Bridge.

In recent years, several studies have demonstrated the effectiveness of opinion mining in analyzing tourism reviews. [7][8] explain that sentiment analysis can be used to understand customer perceptions and satisfaction in various contexts, including tourism. Meanwhile, [9] highlights the importance of this technique in automatically classifying text sentiment, which is highly beneficial in processing large and diverse datasets [10][11].

To achieve the objectives of this research, review data about the Ampera Bridge will be collected from Google Review. The analysis process will involve several stages, ranging from data collection, data preprocessing, sentiment analysis, to result interpretation [12]. Data collection will be carried out using the Google Places API to obtain the latest reviews from visitors [13]. After data collection, the preprocessing stage involves cleaning the data from noise such as punctuation, numbers, and irrelevant words, as well as tokenization and stemming to prepare the data for analysis [14].

Sentiment analysis will be conducted to classify reviews into positive, negative, or neutral sentiment categories [15][16]. Additionally, aspect analysis will be performed to identify specific aspects frequently mentioned by visitors, such as scenery, accessibility, and facilities [17]. The results of this analysis are expected to provide deeper insights into public opinion of the Ampera Bridge and assist tourism managers in enhancing the quality of services and facilities provided [18].

Thus, this research not only aims to understand visitors' perceptions of the Ampera Bridge but also to provide practical recommendations for tourism managers to improve visitor experience and the attractiveness of the tourist destination.

2.   RESEARCH METHOD

This research utilizes review data from Google Review about the Ampera Bridge collected during the period of April 2024. The research stages consist of several steps, namely data collection, data preprocessing, sentiment analysis, and result interpretation [19][20][21]. The research stages are illustrated in Figure 1.
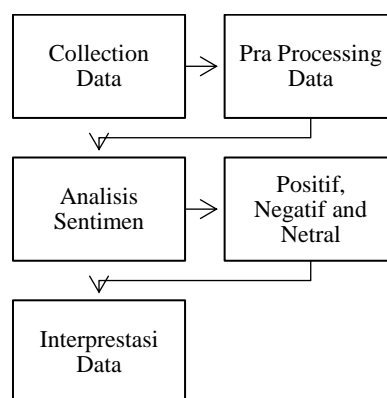

Figure 1. Research Stages

In the research stages, several steps are taken to conduct sentiment analysis so that the reviews provided by visitors can be interpreted, including:
1. Data Collection Reviews are extracted from Google Review using the Google Places API. The collected reviews encompass various languages, which are then translated into Indonesian for consistency in analysis.
2. Data Preprocessing: This stage involves cleaning the data from noise such as punctuation, numbers, and irrelevant words. Additionally, tokenization and stemming are conducted to prepare the data for analysis.
3. Sentiment Analysis Using the SVM sentiment analysis algorithm, reviews are categorized into positive, negative, or neutral sentiments. Moreover, aspect analysis is performed to identify specific aspects frequently mentioned, such as scenery, accessibility, and facilities.

4.   Result Interpretation The results of sentiment and aspect analysis are then interpreted to provide a general overview of public opinion. Data visualization is also conducted to facilitate understanding of the results.

3.   RESULTS AND ANALYSIS
3.1. Collection Data

      In this study, review data about the Ampera Bridge was collected from the Google Review platform using the Google Places API. The collected reviews encompassed the period from April 2024, totaling 307 reviews analyzed. These reviews are from visitors, with various languages translated into Indonesian for analysis purposes. The collected data includes review text, star ratings, review dates, and anonymous reviewer identities.
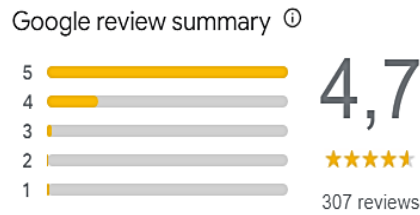

Figure 2. Google Review Data

3.2. Pre-Processing Data

      The data involves several important steps to clean and prepare raw data into a format ready for analysis. These steps include:

1. Data Cleaning: Removing punctuation, numbers, and irrelevant special characters.
2. Tokenization: Breaking down review text into smaller units (tokens) such as words or phrases.
3. Stemming: Converting words into their base form to reduce unnecessary word variations.
4. Removal of Stop Words: Eliminating common words that do not carry significant meaning (e.g., "and", "the", "with").

      After the preprocessing stage, the data, which is now clean and structured, is ready for analysis using opinion mining techniques as seen in Table 1.

Table 1. Preprocessed Data

Aspect	Keyword	Review
Scenery and Beauty of the Bridge	"beautiful", "lamp", "night", "fotogenik". "activity", "Tourism", "Photo", "Boat".	Visitors often praise the beauty of the architecture of the Ampera Bridge, especially at night when the bridge lights up.
History and Culture	"History", "Culture", "Icon", "Symbol".	Many visitors appreciate the historical value of the Ampera Bridge as a symbol of struggle and history of Palembang..
Aksesibility and Transportation	"Jam", "traffic", "transportation", "maps".	Some visitors complain about the traffic congestion around the bridge, while others appreciate the ease of access from various points in the city.
Facilities and Healt	"Cleanliness", "toilets", "parkig", "spam".	Some visitors appreciate the available facilities such as parking areas and public toilets, but there are also those who complain about the cleanliness around the bridge..

3.2. Sentiment Analysis

      The analysis was conducted to identify and classify sentiment in visitor reviews using SVM. The sentiment analysis results show the distribution of visitor reviews on the tourist attraction of the Ampera Bridge as seen in Graph 1. With a positive opinion of 83%, negative 9%, and neutral 8%. This condition is based on visitor satisfaction while at the location of the Ampera Bridge tourist attraction, as depicted in Figure 3.
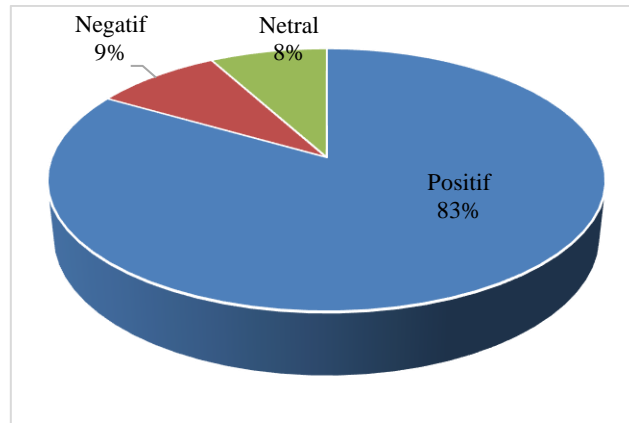
Figure 3. Sentiment Analysis Diagram

Aspect Analysis In addition to sentiment analysis, aspect analysis is conducted to identify and understand specific aspects frequently discussed in reviews. The techniques used include keyword extraction/ grouping related keywords into specific aspect categories. The main aspects identified are shown in Table 1.

3.4 Interpretation Data

The results of sentiment and aspect analysis provide a clear picture of public opinion regarding the Ampera Bridge. The majority of reviews indicate positive sentiment, with an emphasis on the beauty and historical value of the bridge. This indicates that the Ampera Bridge successfully attracts visitors by offering stunning views and a rich cultural heritage.

Tabel 2. Analysis Sentimen Result

Sentimen	Review
Positif	- "The Ampera Bridge looks very beautiful at night with its colorful lights. It's a great place to take photos and enjoy the view of the Musi River." - "This bridge is a very important historical symbol for Palembang. I am very impressed by its historical and cultural value."
Negatif	- "Unfortunately, the area around the bridge is not clean. There is a lot of scattered garbage, and cleanliness facilities are very minimal." - "The traffic congestion around the Ampera Bridge is very severe, especially during rush hours. There needs to be better traffic management."
Netral	- "The Ampera Bridge is easily accessible from the city center. There is a fairly large parking area nearby." - "This bridge is one of the icons of Palembang and is often visited by tourists."

Positive sentiment is dominated by praise for the bridge's aesthetics, especially at night. These reviews indicate that visitors greatly enjoy the beauty of the bridge's architecture and lighting. Many visitors feel that the Ampera Bridge is the perfect place to take photos and enjoy the view of Palembang city from above. Additionally, the historical and cultural value of the bridge is also highly appreciated, with many visitors feeling connected to the history and struggles represented by the bridge.

Negative sentiment is mostly related to cleanliness issues and traffic congestion around the bridge. Some visitors complain about scattered garbage and lack of adequate cleanliness facilities. Traffic congestion, especially during busy hours, is also a major complaint, making the experience of visiting the bridge less enjoyable for some people. Reviews with neutral sentiment typically focus on factual descriptions without strong emotions. Visitors provide informative reviews about facilities and their experiences without giving clear positive or negative judgments [11].

This research shows that the Ampera Bridge remains a major attraction for visitors with the majority of reviews showing positive sentiment. The beauty of the bridge's architecture and lighting, especially at night, are often mentioned as the most captivating aspects for visitors [10]. Praise for the beautiful scenery and photo opportunities indicates that the bridge meets tourists' expectations of aesthetics and visual experiences. Additionally, the historical and cultural value contained within the Ampera Bridge is also a major attraction, where many visitors feel connected to Palembang's history and cultural heritage represented by the bridge. This indicates that the educational and narrative aspects of this tourist attraction are well-received by visitors. However, this research also reveals some areas that need improvement.

4. CONCLUSION

The Ampera Bridge was analyzed through reviews on Google Review using opinion mining techniques. The majority of reviews show positive sentiment, with visitors often praising the beauty of the bridge's architecture and lighting, especially at night, as well as its historical and cultural value. This indicates that the Ampera Bridge successfully meets visitors' expectations of aesthetics and education.

However, some areas require more attention. Cleanliness issues and traffic congestion around the bridge often appear in negative reviews, indicating the need for improvement in cleanliness and traffic management facilities. Additionally, enhancing public facilities such as parking areas and toilets, as well as diversifying tourism activities, can improve visitor comfort and experience.

The recommendations proposed include improving cleanliness, better traffic management, developing public facilities, and diversifying tourism activities. Thus, tourism managers and local governments are expected to take concrete steps to enhance the quality and attractiveness of the Ampera Bridge as a major tourist destination, thereby providing a more satisfying experience for visitors.

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