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ASSESSING THE QUALITY OF TOURISM SERVICES AT MERANGIN GEOPARK, JAMBI THROUGH SENTIMENT ANALYSIS

Mailinar[1,2]*, Nursyirwan Effendi[1], Asrinaldi[1], Verinita[1]
[1]Pasca Sarjana Andalas University, Indonesia
Limau Manis, Kec. Pauh, Kota Padang, Sumatera Barat 25175, Indonesia
[2]Fakultas Adab dan Humaniora, UIN STS Jambi, Indonesia

*Corresponding Author: Mailinar
Email: mailinar78@uinjambi.ac.id
Telp: 0852 66 555 663

Abstract

This study aims to investigate the correlation between customer satisfaction and positive feedback posted on Google Maps, along with visitors' perceptions of the Geopark service. Geopark, a form of tourist destination highlighting natural beauty, environment, and sustainability, places significant emphasis on sustainable development principles to ensure its environmentally responsible and economically beneficial impact on local communities. Service satisfaction stands as a pivotal element in upholding Geopark tourism's success. Numerous researches have indicated that visitor contentment is intertwined with service quality, information provision, facilities, and pricing. Employing sentiment analysis techniques on Google Maps comments, the study unveiled that a majority of visitors expressed satisfaction with the Geopark service. Within the sentiment analysis of favorable comments on Google Maps, the agreement level displayed a moderate range of 0.41-0.60. This signifies that the Geopark service partially met visitors' requirements and offered a somewhat positive encounter. Certain visitors also contributed insights and recommendations for elevating service excellence and enriching the tourism venture. Nonetheless, alongside positive remarks, visitor sentiments exhibited variations concerning the Geopark service. Specific visitors raised concerns about

مستخلص البحث

Abstract

inflated ticket prices misaligned with the service quality, incomplete facilities, and unclear information. Consequently, ongoing endeavors are essential to enhance service caliber and address existing inadequacies.

To conclude, service satisfaction and the advancement of an environmentally conscious and sustainable Geopark tourism model in Merangin Jambi are pivotal for ensuring the sector's triumph. Positive comments on Google Maps can drive the continuous enhancement of service standards; however, it is equally crucial to consider visitors' diverse sentiments to rectify deficiencies and provide an enhanced tourism experience.

Keywords: *Customer satisfaction; Google Maps; Sentiment Analysis; Geopark Merangin Jambi.*

كلمات أساسية
Keyword

1. INTRODUCTION (مقدمة)

The Unesco Global Geopark (UGGp) (Hutabarat & Pratiwi, 2022) is a distinctive and integrated geographical area with the aim of conserving, developing, and managing internationally significant geological sites and landscapes using a comprehensive approach to preservation, education, and sustainable development (Shekhar et al., 2019). Initially designed to promote sustainable development and support the conservation of geological sites when tourism negatively impacted significant geoheritage sites (Matshusa et al., 2021)(Yuniarti et al., 2022), UGGp's emphasis has shifted over time to sustainable development as a means to enhance community well-being, reduce poverty, and utilize education as a tool for conserving and protecting geological heritage (Powell et al., 2018).

The concepts of sustainable tourism development and geopark management within UGGp have a direct impact on geopark service users, including both tourists and local communities (Yuniarti et al., 2022). Geopark service users are individuals who benefit from and enjoy the facilities and services provided by UGGp (Allan, 2014). In the pursuit of sustainable tourism development, geopark service users must consider sustainable development principles (Lestari & Indrayati, 2022) such as empowering local communities (Putra, 2020), conserving and protecting the environment (Bangli & Pamularsih, 2021), promoting education (Hardoyo et al., 2016) and community awareness, and striking a balance between development and conservation. This approach benefits both geopark service users and the surrounding environment (Budhi Pamungkas Gautama et al., 2020).

Regarding geopark service users, the principle of empowering local communities can be applied by involving them in geopark management and providing equitable benefits to the local community (Alviorita & Putri, 2021)(Darsiharjo et al., 2016). In the context of tourism, local communities should be key participants in tourism development, ensuring fair benefits for them (Baiq Niswatul Khair, Khusnul Khotimah, 2018). The principle of conserving and protecting the environment in sustainable tourism development brings benefits to tourism service users (Ivone Wulandari Budiharto & Yorinta Ferisa, 2021). By preserving the environment and geological heritage, geopark service users can appreciate the natural beauty and geological uniqueness offered by the geopark (Razak et al., 2022).

Education and community awareness are vital principles in sustainable tourism development within UGGp (Baiq Niswatul Khair, Khusnul Khotimah 2018). This enhances the knowledge and awareness of geopark service users about the environment and geological

heritage. By elevating awareness and knowledge about the environment among geopark service users, responsible environmental conservation and heritage protection can be fostered. Maintaining a balance between development and conservation in sustainable tourism development is also crucial for geopark service users. Striking this balance allows geopark service users to experience an integrated and diverse tourism encounter while upholding environmental sustainability and geological heritage, ultimately benefiting local communities, visitors, and the surrounding environment. Futhermore, the principles of sustainable development and geopark management within UGGp are closely linked to geopark service users, exerting direct economic, social, and environmental impacts on them (Hutabarat & Pratiwi, 2022)(Xu & Wu, 2022). As a requirement for applying to become a UGGp (Hutabarat & Pratiwi, 2022), geopark management must provide a detailed and comprehensive management plan to aid in achieving its objectives (Darsiharjo et al., 2016).

This plan should encompass all aspects of preservation, education, and sustainable development, while integrating all stakeholders into the management process. One of the primary challenges in maintaining UGGp's success lies in sustainable tourism management. Geotourism (Hutabarat & Pratiwi, 2022) offers essential components such as necessary food access, transportation, accommodation facilities, and visitor amenities, being a focal point in sustainable tourism development within geoparks. Therefore, geopark management must balance between enhancing tourism and preserving environmental sustainability and geological heritage. To achieve sustainable development goals, geopark management should collaborate with government, private sector, and local communities. This partnership can mobilize resources and develop economically and socially sustainable projects. Furthermore, such partnerships can enhance local community participation and involvement in geopark management.

In the effort to gain recognition from UNESCO, the Merangin National Geopark has formulated various policies and evaluated their implementation. Since 2014, this geopark has been nominated but has not received recognition due to unmet criteria. The Merangin Jambi Geopark comprises five regions, including the 1,551 square kilometer Paleobotani Park Merangin, the 944 square kilometer Highland Park Kerinci, the 1,428 square kilometer Geo-Culture Park Sarolangun, and the 531 square kilometer Gondwana Park Pegunungan Tiga Puluh. Encompassing 12 sub-districts—Tabir, Sungai Manau, Renah Pembara, Bangko Bara, Bangko, Pamenang Barat, Pamenang, Tabir Lintas, Muara Siau, Lembah Masurai, Jangkat, and Jangkat Timur—these areas lie within the Merangin Regency, Jambi (Tashandra, 2022).

Presently, Merangin Regency boasts 37 natural attractions and 19 artificial tourist spots (Dinas Pariwisata Pemuda dan Olahraga Kabupaten Merangin 2023). Figure 1 illustrates the development model of the Merangin Jambi Geopark using the PBRW (Sustainable and Tourist-Friendly Development) method.

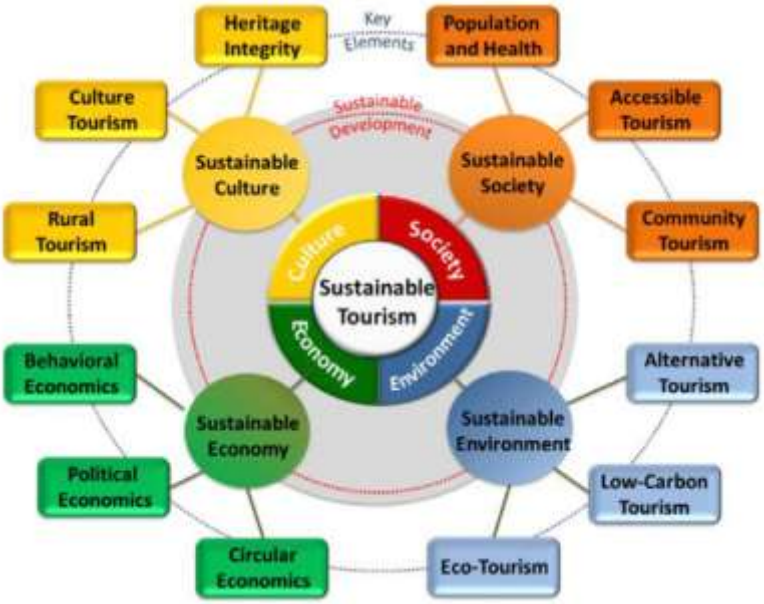

Figure 1. Sustainable Tourist-Centric Development Model for Merangin Jambi (Wibowo et al., 2019)

The quality of tourism management significantly influences visitor satisfaction (Alana & Putro, 2020). The better the quality of geopark management, the higher the level of visitor satisfaction with the provided services. Good management quality encompasses several aspects, such as accurate and clear provision of information about the geopark, well-maintained and adequate facilities, as well as friendly and responsive visitor services. This facilitates visitors in enjoying and understanding the uniqueness and beauty of the geopark, enhancing their experience during their stay. Conversely, if the quality of regional tourism management is poor, visitors tend to feel dissatisfied with the provided services and are less assisted in exploring the beauty (Painan & Kepuasan, 2013). Hence, maintaining good geopark management quality is crucial to enhancing visitor satisfaction and providing them with a memorable experience.

Assessing geopark services through comments on platforms such as Google Maps or Tripadvisor can provide insights into visitors' experiences while at the geopark. These comments can range from positive to negative reviews about the facilities, services, or uniqueness of the geopark. Tourist satisfaction is a key metric in evaluating the performance of tourist destinations (Malik et al., 2020). Positive reviews indicate that the geopark's services are commendable and capable of providing an enjoyable experience for visitors, while negative reviews suggest that improvements are needed. Studies related to assessing tourist destinations through visitor sentiment have been conducted, such as those in Bali via Google Maps (Sentimen et al., 2022), Ubud as a destination (I Wayan Budi Suryawan et al., 2023), Mount Bromo as a tourist attraction (Arifiyanti et al., 2022), and Mount Rinjani via Tripadvisor (Singgalen, 2023).

Tourist attractions have a correlation with visitors' intention to return (Batubara & Putri, 2022). Positive reviews can serve as an indication that the geopark has been well-managed, as they reflect visitors' satisfaction with the provided services and facilities. Positive reviews also highlight the geopark's uniqueness and beauty that leave a lasting impression on visitors. However, it is advisable not to solely rely on positive reviews for assessing geopark management quality. Constructive negative reviews and criticism can also provide valuable information to enhance service and facility quality in the geopark. Additionally, considering other factors like environmental sustainability and the involvement of local communities in geopark management is important. Therefore, for a more accurate assessment of geopark management quality, a holistic

approach should be taken, considering various aspects including services, facilities, uniqueness, environmental sustainability, and the engagement of local communities in geopark management.

Sentiment analysis has been widely utilized to gauge service quality (QORITA, 2022)(Lal & Kamath, 2022)(Rodrigues et al., 2022). This method offers insights into visitors' emotional responses and evaluations of the provided services (Kpiebaareh et al., 2022). For example, in the article titled "Tourist Satisfaction with Heritage Sites: A Sentiment Analysis Approach," the authors demonstrate how positive online reputation can attract more visitors (Wang et al., 2021).The analysis results show that most positive reviews are related to service quality, facilities, and the uniqueness of the site, while negative reviews are associated with issues such as accessibility, crowds, and cleanliness. Moreover, numerous other articles and studies have employed sentiment analysis to assess service quality across various sectors, including tourism (Sentimen et al., 2022), hospitality (Mansouri et al., 2022), and foods (Junaid et al., 2022). This method provides valuable information in identifying issues and visitor needs, thereby assisting in improving service quality and visitor satisfaction.

This article will discuss the service quality at the Merangin Geopark using sentiment analysis. The sentiment analysis method will be used to evaluate visitors' emotional responses and evaluations of the provided services at the Merangin Geopark. This analysis aims to provide a more accurate understanding of visitor satisfaction and areas that require improvement in the management of the Merangin Geopark. It is hoped that this article will contribute to enhancing service quality at the Merangin Geopark, ultimately providing a better experience for visitors and supporting the sustainability of the Merangin Geopark as a tourist destination.

2. THEORETICAL FRAMEWORK (نظريات)

The concept of the UNESCO Global Geopark (UGGp) serves as the theoretical foundation for understanding sustainable management and development in geotourism. According to Shekhar et al. (2019) and Hutabarat and Pratiwi (2022), UGGp emphasizes a holistic approach to conservation, education, and sustainable development of geological heritage. This framework highlights the importance of integrating natural preservation with community participation and sustainable economic activities (Powell et al., 2018). Geopark service users—both tourists and local communities—are directly affected by the quality of management and services within the geopark, making the relationship between sustainable development principles and visitor satisfaction a key theoretical connection (Yuniarti et al., 2022).

In the context of tourism, sustainable development is achieved by empowering local communities, conserving the environment, promoting education, and balancing development with preservation (Putra, 2020; Bangli & Pamularsih, 2021; Hardoyo et al., 2016). These principles align with theories of community-based tourism, where local involvement in tourism management leads to equitable benefits and stronger conservation practices (Darsiharjo et al., 2016; Alviorita & Putri, 2021). From a theoretical perspective, community empowerment and participation reinforce social sustainability, while conservation ensures long-term ecological viability of tourism destinations (Ivone Wulandari Budiharto & Yorinta Ferisa, 2021; Razak et al., 2022). Thus, sustainable tourism theories provide a critical lens to evaluate how geopark service quality reflects the integration of social, environmental, and educational dimensions.

Visitor satisfaction is another theoretical construct underpinning this study, often explained through the Expectancy-Disconfirmation Theory (EDT). According to Oliver (1980), satisfaction arises when visitor experiences meet or exceed prior expectations, whereas dissatisfaction occurs when expectations are not met. In tourism studies, this is supported by findings that service quality directly influences satisfaction, which in turn shapes tourists' intention to revisit and recommend destinations (Alana & Putro, 2020; Batubara & Putri, 2022). The SERVQUAL model by Parasuraman, Zeithaml, and Berry (1988) is particularly relevant for analyzing service quality in tourism, as it evaluates tangibility, reliability, responsiveness, assurance, and empathy. These dimensions align with factors that geopark visitors value, such as accurate information, well-maintained facilities, and responsive service (Painan & Kepuasan, 2013).

Recent advances in tourism research demonstrate that sentiment analysis provides an effective theoretical and methodological extension of traditional service quality and satisfaction theories. Sentiment analysis, as part of natural language processing (NLP), allows for systematic examination of emotional responses expressed in online reviews (Qorita, 2022; Rodrigues et al., 2022). Studies show that positive sentiments typically relate to service quality, facilities, and destination uniqueness, while negative sentiments often highlight accessibility, crowding, or cleanliness issues (Wang et al., 2021; Kpiebaareh et al., 2022). This aligns with Lal and Kamath's (2022) findings that sentiment analysis can uncover patterns in customer evaluations across service industries. Within the tourism context, the integration of sentiment analysis with service quality frameworks enables more nuanced assessments of visitor satisfaction compared to conventional survey-based methods (Mansouri et al., 2022; Junaid et al., 2022).

Integrating these theoretical perspectives, this study situates the Merangin Geopark within the broader framework of sustainable tourism development, service quality theories, and sentiment analysis. UGGp principles provide the sustainability foundation, while SERVQUAL and EDT theories explain the relationship between service delivery and visitor satisfaction. Sentiment analysis extends these frameworks by enabling the measurement of affective visitor responses at scale. Together, these perspectives establish a comprehensive theoretical basis for evaluating service quality and visitor satisfaction at the Merangin Geopark, offering insights into how sustainable management can be improved to support both conservation and community well-being (Xu & Wu, 2022; Budhi Pamungkas Gautama et al., 2020).

3. METHOD (طريقة \ منهج البحث)

The method for evaluating Geopark visitor satisfaction using sentiment analysis involves several steps to gauge the sentiments expressed by visitors in their comments and reviews. This process aims to understand how visitors perceive the quality of the Geopark experience. Here's a detailed description of the method:

1. Data Collection:
   - Identify Relevant Platforms: Choose platforms where visitors frequently leave comments and reviews about their experiences, such as Google Maps, TripAdvisor, or other pertinent travel review websites. The initial step involves identifying the Geopark's location on Google Maps. This can be accomplished by entering the Geopark's name in the search bar on Google Maps. Subsequently, the Geopark's location, along with information and reviews from visitors who have visited, will be presented.

- Gather Visitor Comments: Extract comments or reviews from these platforms related to the Geopark. These comments may include feedback on various aspects of the Geopark, such as attractions, facilities, services, and overall experience.

2. Data Preprocessing:
   - Text Cleaning: Clean the extracted text by removing irrelevant information, special characters, and formatting inconsistencies.
   - Tokenization: Break down the text into individual words or tokens.
   - Lowercasing: Convert all text to lowercase to ensure consistent analysis.
   - Removing Stop Words: Eliminate common stop words to focus on meaningful content.
3. Sentiment Lexicon Preparation:
   - Compile Lexicon: Create a sentiment lexicon or word list with categorized words as positive, negative, or neutral. This lexicon is based on human-generated sentiment labels.
   - Categorize Words: Assign sentiment scores to each word in the lexicon based on its sentiment category.
4. Sentiment Analysis:
   - Matching Words: Compare the tokens in the extracted comments with the sentiment lexicon to identify positive, negative, and neutral words.
   - Sentiment Score Calculation: Calculate the sentiment score for each comment by summing up the sentiment scores of its constituent words. This provides an overall sentiment score for the comment.
5. Interpretation and Analysis:
   - Threshold Setting: Determine sentiment score thresholds to categorize comments as positive, negative, or neutral. For instance, comments with scores above a certain threshold might be considered positive.
   - Sentiment Categorization: Assign each comment to a sentiment category based on the calculated sentiment score and the chosen thresholds.
   - Quantitative Analysis: Analyze the distribution of sentiments among the collected comments. This analysis can help identify trends and patterns in visitor perceptions.
6. Insight Generation:
   - Positive Aspects: Identify recurring positive sentiments to highlight what aspects of the Geopark visitors appreciate the most.
   - Negative Aspects: Similarly, identify recurring negative sentiments to pinpoint areas that need improvement.
   - Recommendations: Based on the sentiments expressed, generate recommendations for enhancing visitor experience, addressing issues, and improving overall Geopark quality.
7. Evaluation and Iteration:
   - Feedback Loop: Continuously monitor and collect new comments to ensure ongoing analysis of visitor sentiments.
   - Iterative Improvement: Use the insights gained from sentiment analysis to make informed decisions and refine Geopark offerings and services.

By implementing this sentiment analysis method, Geoparks can gain valuable insights into visitor sentiments, identify areas for improvement, and enhance the overall quality of the visitor experience.

Sentiment analysis of Geopark service satisfaction can be conducted using the Lexicon-Based Sentiment Analysis method (Somantri, 2019). In this approach, data collection entails extracting comments or reviews from visitors on Google Maps that contain relevant words associated with Geopark services, such as "beautiful," "enjoyable," "friendly," and “honest”. Subsequently, the collected short texts will be subjected to analysis using a pre-compiled word dictionary or lexicon to classify sentiment within the text. We employ a word dictionary or lexicon that has been manually curated and categorized into positive, negative, or neutral terms. This approach involves scanning the text for the presence of specific words and comparing them to the lexicon to classify the sentiment expressed in the text. It's worth noting that this method's limitation lies in its inability to identify sentiment for words absent from the lexicon.

The lexicon employed in this method comprises a list of words categorized as positive, negative, or neutral. Lexicon categories are generally based on human judgment and can vary based on the analysis's objective. The lexicon used can either be compiled manually or leverage existing word dictionaries. To perform sentiment analysis using this technique, the first step is to identify the words present in the text to be analyzed. Following this, a comparison is made between these words and the pre-compiled lexicon. If the words align with the positive category, the text is considered to convey positive sentiment. Conversely, if the words align with the negative category, the text reflects negative sentiment. If the words don't fit into either the positive or negative category, the text is deemed to have neutral sentiment. In addition to category-based sentiment analysis, word levels can also be categorized using k-level and agreement level (Rahab et al., 2021), as illustrated in Table 1.

Tabel 1. Interpretasi Parameter k

k	**Agreement level**
< 0	Poor
0.01-0.20	Slight
0.21-0.40	Fair
0.41-0.60	Moderate
0.61-0.80	Substansial
0.81-1.00	Perfect

4. FINDINGS & DISCUSSION (بحث ومناقشة)

Based on data obtained from Google Maps reviews using the keyword "Geopark Merangin Jambi," as shown in Figure 2, there are 67 reviews with an average score of 4.0 on Google Maps. This score indicates that the majority of visitors are satisfied with their experience when visiting Geopark Merangin. However, even though the average score is high, it is important to pay attention to the reviews provided by visitors. This is because each visitor has different preferences and experiences.

Searching using the keywords "Geopark Merangin Jambi" and "Merangin Geopark" or "Geopark Merangin" did not yield any information related to Geopark Merangin. Even after searching the keyword "Merangin," only two pieces of information were found, both of which were hotels located in Merangin. Figure 3 illustrates the results of this search. This is unfortunate because TripAdvisor does indeed have data about the origin of visitors who provide reviews or seek information on the platform. As a result, the preliminary conclusion is that there are no foreign visitors who are interested in or have searched for the Geopark keyword on the site.

However, not all reviews or information published on TripAdvisor originate from foreign visitors. There are also local visitors who provide reviews or seek information about domestic tourist destinations. Nevertheless, because TripAdvisor is a highly popular platform worldwide, many foreign visitors also provide reviews or seek information about tourist destinations abroad. Therefore, there may be reviews or information about tourist destinations written in foreign languages, indicating the presence of foreign visitors on the platform. However, it cannot be guaranteed that every review or piece of information originates from foreign visitors.

The data cleaning process in sentiment analysis is crucial before conducting sentiment analysis. This is done to ensure that the data used in the analysis is of high quality and does not contain irrelevant or duplicate information.

The data cleaning process in sentiment analysis includes several stages, including:

1. Removing punctuation and special characters
   Punctuation and special characters such as periods, commas, and question marks can interfere with sentiment analysis and need to be removed from the data.
2. Changing capital letters to lowercase
   Changing capital letters to lowercase makes the analysis process easier and minimizes unnecessary data duplication.
3. Removing irrelevant words
   Irrelevant words such as pronouns like "I," "you," and "they" can be removed as they do not affect sentiment analysis.
4. Removing stop words
   Stop words are common words like "and," "or," "that," and "from" that have no meaning in sentiment analysis and need to be removed.
5. Performing stemming or lemmatization
   Stemming and lemmatization involve reducing words to their base form to facilitate sentiment analysis. For example, the words "satisfying" and "satisfies" can be changed to their base word "satisfy."

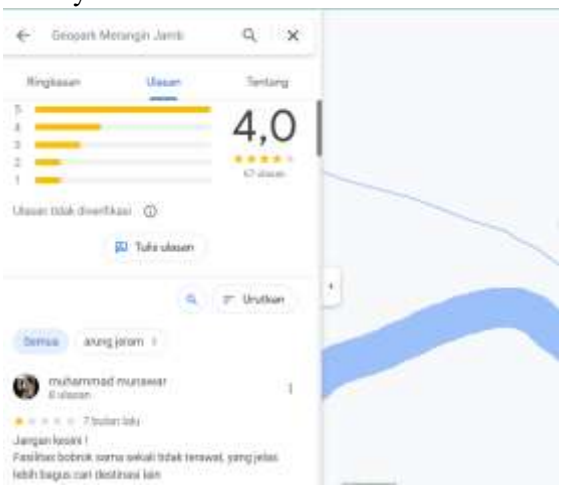

Figure 2. Google Maps Review Desktop Display

By performing this data cleaning process, the data used in sentiment analysis will become cleaner and more structured, making analysis easier and improving the quality of the results. Additionally, it's important to remember that the data cleaning process is only an initial stage of sentiment analysis. This process does not guarantee the overall accuracy and quality of sentiment analysis results. Therefore, after the data cleaning process, further sentiment analysis steps need to be taken using appropriate methods.

The appropriate method for sentiment analysis must be selected based on the context of the data used. Some commonly used sentiment analysis methods include lexicon-based methods, machine learning-based methods, and hybrid methods. Each method has its own strengths and limitations, so the method chosen should be tailored to the characteristics of the data used.

When conducting sentiment analysis, it's important to remember that the results can be influenced by various factors, such as the context of sentences or reviews, the language used, and the culture or background of the users. Therefore, a more in-depth sentiment analysis needs to be conducted, considering these factors to produce more accurate and reliable sentiment analysis results.

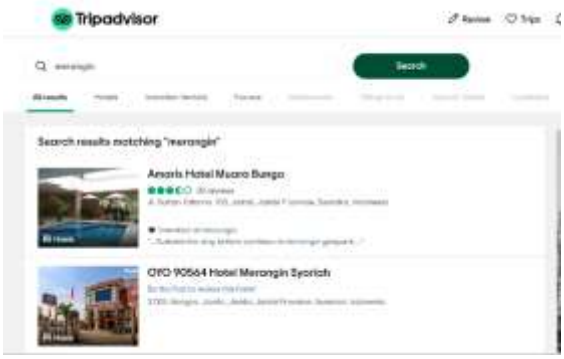

Figure 3. TripAdvisor Search Results

Overall, the data cleaning process is crucial in sentiment analysis to ensure that the data used is of good quality and relevant. However, the data cleaning process is only an initial stage of sentiment analysis, and further sentiment analysis steps need to be taken using appropriate methods and considering factors that affect sentiment analysis results.

It is important to note that the data cleaning process should be carried out carefully and adjusted to the context of the data used. Sometimes, removing certain words or characters can change the meaning of sentences or eliminate important information. Therefore, testing and validating the data are necessary after the data cleaning process.

We can use the comment data collected from Google Maps to conduct sentiment analysis on Geopark services. We assume that there are 67 comments from visitors collected using the data collection method by extracting comments on Google Maps.

To obtain these sentiment analysis results, the author utilized the R software by installing the necessary packages for sentiment analysis in R. Some commonly used packages include 'tidytext', 'dplyr', and 'ggplot2'. This was followed by creating a corpus to facilitate the analysis process, with all texts being transformed into English to ensure compatibility with the sentiment analysis package in R.

From the table 1 below, it can be observed that among several visitor comments, there are both positive and negative sentiment remarks. The bar chart in Figure 4 provides a clearer insight, indicating that the majority of Geopark visitor comments hold a moderately positive sentiment. Moreover, we can conduct further analysis by identifying key words that frequently appear in comments with either positive or negative sentiment. Through this analysis, we can discern aspects that are favored or disliked by Geopark visitors. The comments used in this table are originally in Indonesian language and have been translated into English.

Tabel 1. Comment for Google Maps and the sentiment in Original text

No	Comment	Sentiment
1	Jangan kesini ! Fasilitas bobrok sama sekali tidak terawat, yang jelas lebih bagus cari destinasi lain	Negatif
2	setahun lalu Untuk tempatnya sendiri sudah ok, banyak spot foto menarik serta gazebo untuk bersantai. Pemandangan malampun juga cantik karena lampu berwarna yang dipasang. Hanya saja	Positif

	kurang perawatan seperti dedaunan yang tidak disapu serta fasilitas	
3	Masuk 10k/orang. G worth it sama sekali. Untuk arung jeram bayar 150k/orang. Taman sangat g terurus, cafe dan mini museum kosong, bahkan orang jualan g ada sama sekali. Cuman muter2 di taman yg kecil	Negatif
4	Kurangnya perawatan sungguh di sayang	Negatif

Consequently, it can be concluded that the majority of Geopark visitors provide comments with a positive sentiment. This demonstrates that Geopark services receive a favorable (moderate) response from visitors. Furthermore, it's evident that some comments express dissatisfaction with the service, such as slow and unhelpful assistance. This feedback can be valuable for Geopark management to enhance services that might still be unsatisfactory for visitors.

To visualize the sentiment analysis results, we can create a bar chart as follows:

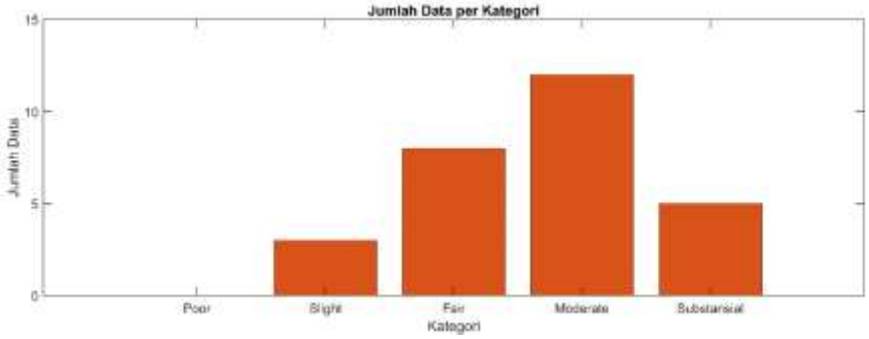

Figure 4. Sentiment Categories based on k count

From this analysis of key words, it's apparent that Geopark visitors tend to leave positive comments regarding the scenic beauty, staff friendliness, numerous facilities, and family-friendly environment. Conversely, negative comments often relate to slow service, unhelpfulness, dissatisfaction, and a lack of guidance. To facilitate better understanding, Figure 5 provides a more detailed explanation of the frequently used words in these comments.

Hence, Geopark authorities can leverage this information to enhance the quality of provided services. This might involve improving services that still fall short of expectations and enhancing the speed and friendliness of the staff. Additionally, Geopark management can promote the positive aspects that are frequently appreciated by visitors to attract new interest.

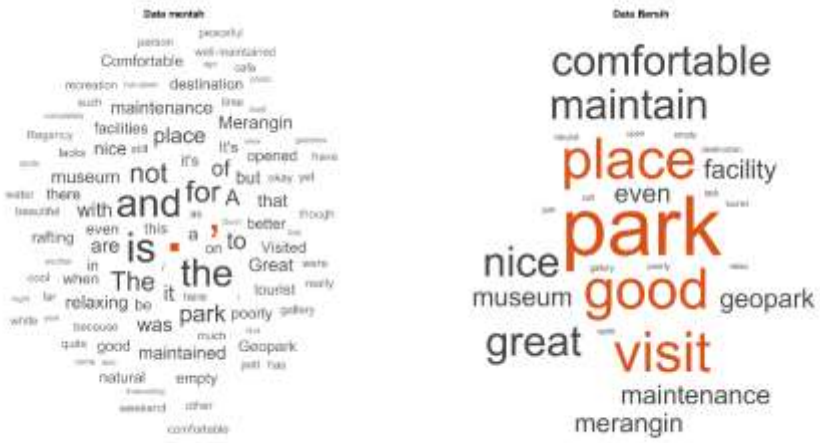

Figure 5. Bag of Words from Comments

6. CONCLUSIONS (خلاصة \ خاتمة)

6. CONCLUSION

Based on the results of sentiment analysis on the comments, conclusions can be drawn regarding visitors' sentiments towards Geopark services. If the analysis indicates that the majority of comments have a positive sentiment, it can be inferred that visitors have had enjoyable and satisfactory experiences with the services provided at the Geopark. Conversely, if the majority of comments exhibit a negative sentiment, it can be concluded that visitors are dissatisfied with the services offered at the Geopark.

However, it's important to note that sentiment analysis provides insights only into the sentiments of visitors at the time they submitted their comments. Sentiment analysis cannot represent all visitors who have been to the Geopark, as only a small portion of visitors leave comments or reviews on platforms like Google Maps.

Therefore, the results of sentiment analysis should be interpreted cautiously and should not be generalized across the board. The findings from sentiment analysis can serve as guidance for improving service quality at the Geopark and enhancing visitor satisfaction in the future. This can be achieved by addressing areas with less satisfactory service or by further enhancing services that have received positive feedback from visitors.

Furthermore, the outcomes of sentiment analysis can also be utilized for promotional or marketing purposes for the Geopark. If the majority of comments express a positive sentiment, the sentiment analysis results can be used as testimonials or references to attract new visitors to the Geopark.

Overall, the findings from sentiment analysis of the comments provide insights into visitors' sentiments towards Geopark services and offer valuable information for enhancing service quality in the future. However, it's essential to remember that sentiment analysis results are just one aspect of measuring visitor satisfaction and should be interpreted with care.

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