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Public Opinion on MyTelkomsel Using DeLone and McLean Model on X

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ABSTRACT

The MyTelkomsel application is a digital service used by Telkomsel customers to access telecommunications information and services. The high number of users is accompanied by the emergence of various user opinions and complaints expressed through social media. This study aims to analyze user satisfaction with the MyTelkomsel application based on public opinions on the X (Twitter) platform using the DeLone and McLean Information Systems Success Model. The research data consist of 1,500 Indonesian-language tweets collected through a crawling process. The data then underwent a text preprocessing stage to improve analysis quality. Sentiment analysis was conducted using the RoBERTa model to classify user opinions into positive, neutral, and negative sentiments. Subsequently, each tweet was labeled into six dimensions of the DeLone and McLean model, namely System Quality, Information Quality, Service Quality, Use, User Satisfaction, and Net Benefits. Sentiment scores were used as quantitative values for each dimension. The relationships among variables were analyzed using the Structural Equation Modeling–Partial Least Squares (SEM-PLS) method. The results indicate that System Quality and Information Quality significantly influence User Satisfaction, while Service Quality shows a lower level of influence. This study is expected to provide academic contributions to the application of the DeLone and McLean model based on social media data and offer practical insights for the development of the MyTelkomsel application in improving service quality and user experience

Keyword: MyTelkomsel, Sentiment Analysis, Social Media, DeLone and McLean, User Satisfaction , SEM-PLS.

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1. INTRODUCTION

The development of information technology drives organizations to provide information systems capable of effectively and efficiently supporting user needs. [1] The success of an information system is determined not only by technical aspects, but also by user perceptions of system quality, information quality, and service quality. The DeLone and McLean Information Systems Success Model has been widely applied as a framework for evaluating information systems success across various sectors, such as education, healthcare, and public services [2].

Along with the increasing utilization of digital technology, social media has become a primary means for users to convey their opinions and experiences regarding a service. Social media platform X allows users to express their views openly and in real time, making the generated data valuable for understanding public opinion on a broad scale [5]. Opinions conveyed through social media directly reflect user perceptions and can serve as a basis for evaluating the quality of an information system.

Sentiment analysis is a commonly used approach to identify user opinion tendencies based on text data from social media. Deep learning-based approaches, such as RoBERTa, have proven to perform well in classifying sentiment in Indonesian-language data [6], [7]. Through sentiment analysis, user opinions can be objectively grouped into positive, neutral, and negative categories.

In addition to sentiment analysis, labeling text data based on specific dimensions poses a challenge in social media-based research, particularly with large datasets. The development of large language models (LLMs) such as ChatGPT enables automated data labeling processes with a quality comparable to human annotation [8], [9]. The utilization of LLMs can enhance efficiency and consistency in the user opinion analysis process.

MyTelkomsel is a digital service application widely used by the Indonesian public to access telecommunication services. However, various user opinions regarding the system quality, information quality, and service quality of the application are still frequently found on social media. Previous research indicates that user satisfaction with digital applications can be influenced by system and service quality [10], [11], and plays a role in the decision to use specific services [12]. Therefore, a comprehensive evaluation is required to understand user perceptions of the MyTelkomsel application.

Based on this description, this study aims to analyze public opinion toward the MyTelkomsel application using the DeLone and McLean Information Systems Success Model based on data from social media platform X. Through these findings, it is expected to generate a deep understanding of public impressions that can serve as a reference for application developers to carry out continuous improvements in both technical aspects and service functionalities.

2. METHODS

This study uses a quantitative approach by leveraging public opinion data sourced from social media. The research data consists of tweets from MyTelkomsel application users collected from the X (Twitter) platform.

2.1 Data Collection

Data collection was conducted through a crawling process on the X (Twitter) platform using keywords related to the MyTelkomsel application. The collected data consists of public Indonesian-language tweets that reflect user opinions toward the MyTelkomsel application. The data retrieval process was carried out within a specific timeframe to obtain relevant and representative data. The total data used in this study amounts to 1,500 tweets.

2.2 Data Preprocessing

The data preprocessing step was implemented to optimize the validity and cleanliness of the information before entering the core analysis stage. The preprocessing process includes case folding to uniform the text case, the removal of punctuation, numbers, URLs, and mentions, as well as the normalization of non-standard words. In addition, stopword removal and a stemming process were performed

to reduce words to their base forms. The result of this stage is clean text ready for use in the sentiment analysis and dimension labeling stages.

Table 1. Example of Preprocessing Result

Full Text	Clean Text
@alowinava Kak @alowinava Jika Aplikasi MyTelkomsel berkendala. Kakak bisa melakukan clear cache reinstal dan pastikan aplikasi dalam versi terbaru ya. Jika masih berkendala. Infoin No Hp Telkomsel yg digunakan ke Dm. Makasih. -Dya	kak aplikasi mytelkomsel kendala kakak clear cache reinstal pasti aplikasi versi baru ya kendala infoin no hp telkomsel yg dm makasih dya
@sekarumichi Untuk atur Pin Kemanan aplikasi MyTelkomsel kakak bisa masuk ke Profil lalu pilih Pengaturan Keamanan . Nanti pada bagian Pin Keamanan kakak bisa atur pin nya. Semoga membantu -Dhea	atur pin keman aplikasi mytelkomsel kakak masuk profil pilih atur aman pin aman kakak atur pin nya moga bantu dhea

2.3 Sentiment Analysis

Sentiment analysis was conducted to classify user opinions into three categories: positive, neutral, and negative [6]. RoBERTa is the model used in this study, which has been adapted for the sentiment analysis of Indonesian-language text [7]. Each tweet was assigned a sentiment label along with a sentiment score used as a numerical representation in the subsequent data analysis process.

Table 2. Example of Sentiment Analysis Result

Full Text	clean text	sentiment	Confidence Score
@alowinava Kak @alowinava Jika Aplikasi MyTelkomsel berkendala. Kakak bisa melakukan clear cache reinstal dan pastikan aplikasi dalam versi terbaru ya. Jika masih berkendala. Infoin No Hp Telkomsel yg digunakan ke Dm. Makasih. -Dya	kak aplikasi mytelkomsel kendala kakak clear cache reinstal pasti aplikasi versi baru ya kendala infoin no hp telkomsel yg dm makasih dya	neutral	0.998256743
@sekarumichi Untuk atur Pin Kemanan aplikasi MyTelkomsel kakak bisa masuk ke Profil lalu pilih Pengaturan Keamanan . Nanti pada bagian Pin Keamanan kakak bisa atur pin nya. Semoga membantu -Dhea	atur pin keman aplikasi mytelkomsel kakak masuk profil pilih atur aman pin aman kakak atur pin nya moga bantu dhea	neutral	0.998759151

2.4 DeLone & McLean Model Dimension Labeling

After the sentiment analysis was conducted, each tweet was labeled into the dimensions of the DeLone and McLean Information Systems Success Model, namely System Quality (SQ), Information Quality (IQ), Service Quality (ServQ), Use, User Satisfaction (US), and Net Benefits (NB) [3]. The labeling process was carried out automatically by utilizing a large language model to classify the content of the tweets into one or more relevant dimensions. The results of the labeling are used as research variables in the subsequent analysis.

Table 3. Example of DeLone & McLean Model Dimension Labeling Result

Full Text	clean text	sentiment	Confidence Score	label
@alowinava Kak @alowinava Jika Aplikasi MyTelkomsel berkendala. Kakak bisa melakukan clear cache reinstal dan pastikan aplikasi dalam versi terbaru ya. Jika masih berkendala. Infoin No Hp Telkomsel yg digunakan ke Dm. Makasih. -Dya	kak aplikasi mytelkomsel kendala kakak clear cache reinstal pasti aplikasi versi baru ya kendala infoin no hp telkomsel yg dm makasih dya	neutral	0.998256743	Service Quality, System Quality
@sekarumichi Untuk atur Pin Kemanan aplikasi MyTelkomsel kakak bisa masuk ke Profil lalu pilih Pengaturan Keamanan . Nanti pada bagian Pin Keamanan kakak bisa atur pin nya. Semoga membantu -Dhea	atur pin keman aplikasi mytelkomsel kakak masuk profil pilih atur aman pin aman kakak atur pin nya moga bantu dhea	neutral	0.998759151	System Quality, Service Quality

2.5 Data Analysis Using SEM-PLS

The analysis of relationships between variables was conducted using the Structural Equation Modeling–Partial Least Squares (SEM-PLS) method with the assistance of SmartPLS software [8]. This was done to test the significance of the relationships between variables based on the research hypotheses. The t-statistics and p-values were used as the basis for determining the significance of the influence between variables.

3. RESULTS AND DISCUSSION

This section presents the results of the public opinion data analysis of MyTelkomsel application users on social media X, as well as the discussion based on the DeLone and McLean Information Systems Success Model. The discussion focuses on sentiment distribution, the mapping of DeLone and McLean dimensions, and testing the relationships between variables using the SEM-PLS method.

3.1 Sentiment Distribution of MyTelkomsel User Opinions

The results of the sentiment analysis show that user opinions toward the MyTelkomsel application are dominated by negative sentiment. This indicates that there are still various problems experienced by users in using the application, such as

system disruptions, access constraints, and suboptimal service quality. Neutral sentiment appears in tweets that are informative or in the form of questions, while positive sentiment is generally related to promos or the convenience of certain services.

Table 4. Number of Each Sentiment

Sentimen	Count
Negative	138
Neutral	1028
Positive	333
Total	1500

3.2 Model Testing Results Using SEM-PLS

The analysis of the influences between variables within the DeLone and McLean framework in this study was operated through the SEM-PLS approach to determine the effects among variables in the DeLone and McLean Information Systems Success Model. Testing the significance of relationships between variables was based on path coefficient, t-statistics, and p-values. A relationship is declared significant if the p-value is less than 0.05.

Table 4. Bootstrapping Results Using SmartPLS

Variabel	Original sample (O)	Sample mean (M)	Standard deviation (STDEV)	T-statistics (|O/STDEV|)	P values
Information Quality -> Use	0.081	0.08	0.037	2.182	0.029
Information Quality -> User Satisfaction	-0.082	-0.082	0.023	3.564	0
Service Quality -> Use	0.109	0.11	0.034	3.177	0.001
Service Quality -> User Satisfaction	0.224	0.226	0.05	4.488	0
System Quality -> Use	0.142	0.142	0.027	5.265	0
System Quality -> User Satisfaction	0.099	0.099	0.042	2.367	0.018
Use -> Net Benefit	0.127	0.127	0.032	3.99	0
Use -> User Satisfaction	0.106	0.105	0.035	3.048	0.002
User Satisfaction -> Net Benefit	0.164	0.164	0.049	3.386	0.001

Based on the test results, the relationship between System Quality and Use shows a significant influence. This finding indicates that the system quality of the MyTelkomsel application, such as stability, speed, and ease of use, plays an important role in encouraging users to use the application continuously. The better the system quality perceived by users, the higher the intensity of application use.

In addition, System Quality is also proven to have a significant influence on User Satisfaction. This result shows that the user experience in interacting with the system is a major factor in shaping user satisfaction. When the system runs well with minimal disruptions, the level of user satisfaction with the MyTelkomsel application tends to increase.

Subsequent hypothesis testing shows that Information Quality has a significant influence on Use. This indicates that the quality of information presented in the application, such as accuracy, completeness, and ease of understanding, plays a role in increasing user interest in utilizing the available features. Clear and relevant information encourages users to use the application more frequently.

In addition to influencing use, Information Quality also has a significant influence on User Satisfaction. This finding indicates that user satisfaction is determined not only by the technical aspects of the system but also by the quality of the information provided. Accurate and easily accessible information can increase user trust and satisfaction with the application.

Furthermore, testing the relationship between Service Quality toward Use and User Satisfaction shows varied results. The influence of Service Quality on Use tends to be weaker compared to other quality variables. This can be caused by the characteristics of the services on the MyTelkomsel application, which are mostly automated, so direct interaction with customer service is not always experienced by all users. However, Service Quality still plays a role in influencing user satisfaction, especially when users need assistance or encounter specific problems.

Testing the relationship between Use and Net Benefits shows a significant influence. This result indicates that the higher the level of application use, the greater the benefits perceived by users, whether in terms of time efficiency, ease of transaction, or access to digital services. Intensive use allows users to experience the system's benefits more optimally.

In addition, User Satisfaction is also proven to have a significant influence on Net Benefits. This finding shows that user satisfaction plays a key role in creating net benefits from system use. Satisfied users tend to perceive the system as something that provides added value to their activities.

Overall, the hypothesis testing results show that the quality dimensions in the DeLone and McLean Model, specifically System Quality and Information Quality, play a dominant role in influencing the use and user satisfaction of the MyTelkomsel application. Furthermore, use and user satisfaction contribute to the benefits perceived by users. This finding reinforces the relevance of the DeLone and McLean Model in evaluating the success of mobile application-based information systems.

CONCLUSION

Based on the results of the public opinion analysis toward the MyTelkomsel application using the DeLone and McLean Information Systems Success Model, it can be concluded that user perceptions reflected on social media X (Twitter) are capable of providing a comprehensive overview of the information system's success level. The sentiment analysis approach and the labeling of the DeLone and McLean dimensions have proven effective in identifying the system aspects that receive the most attention from users.

The structural model testing results using the SEM-PLS method indicate that system quality (SQ), information quality (IQ), and service quality (ServQ) exert an influence on use (Use) and user satisfaction (US). User satisfaction subsequently plays a crucial role in shaping the net benefits (NB) perceived by users toward the MyTelkomsel application. This finding indicates that the application's success is determined not only by technical functions but also by the quality of service and information directly perceived by the users.

In addition, the use of social media data as a research data source provides added value as it is capable of capturing user opinions in a real-time and natural manner. Thus, this approach

can serve as an alternative for evaluating information system success without relying entirely on conventional surveys.

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