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Analysis of User Satisfaction with the KAI Access Application Using the Technology Acceptance Model (TAM)

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ABSTRACT

The aim of this research is to examine the variables that influence user satisfaction with the KAI Access application at PT Kereta Api Indonesia. The data collection method used an online questionnaire distributed to individuals using the KAI Access application in Binjai City. Data analysis was conducted using the Technology Acceptance Model (TAM). The research findings indicate that user satisfaction with the application increases because it is easy to use, which in turn boosts users' intention to continue using it in the future. Additionally, PT KAI (PERSERO) has the capability to conduct ongoing user research to address any issues users encounter while using the KAI Access application. The purpose of this research is to identify the challenges users face when using digital applications in the transportation industry and to provide guidelines for improving user satisfaction.

ABSTRAK

Tujuan dari penelitian ini adalah untuk menganalisis variabel-variabel yang mempengaruhi kepuasan pengguna terhadap aplikasi KAI Access di PT Kereta Api Indonesia. Metode pengumpulan data dilakukan melalui kuesioner online yang dibagikan kepada pengguna aplikasi KAI Access di Kota Binjai. Analisis data menggunakan Technology Acceptance Model (TAM). Hasil penelitian menunjukkan bahwa kepuasan pengguna terhadap aplikasi meningkat karena kemudahan penggunaan, yang pada gilirannya meningkatkan niat mereka untuk terus menggunakan aplikasi di masa depan. Selain itu, PT KAI (PERSERO) memiliki kemampuan untuk melakukan penelitian pengguna secara berkelanjutan guna membantu menyelesaikan masalah yang dihadapi pengguna saat ini dalam menggunakan aplikasi KAI Access. Penelitian ini bertujuan untuk mengidentifikasi masalah yang dihadapi pengguna saat menggunakan aplikasi digital di industri transportasi serta memberikan panduan untuk meningkatkan kepuasan pengguna.

INTRODUCTION

The evolution and advancement of technology that fosters innovation, creativity, and the development of new knowledge is known as technological development. The goal of technological development is to enhance human potential in various aspects of life, including productivity, efficiency, and quality of life (Suhairi et al., 2023). As technology advances, it has become easier to access information and manage various aspects of our lives (Nurbaiti et al., 2023).

The internet is a significant technological advancement that is widely used by the general public today (Harahap & Rahmatsyah, 2024). With internet technology, tasks such as sending emails, searching for information, purchasing goods, and even booking

transportation—such as flights or train tickets—can be done remotely (Ritonga et al., 2023). As businesses evolve alongside the advancement of information technology, they face many challenges, especially in the service sector. According to Aisyah (2019), the application of information technology in business is believed to yield significant benefits (Irwan, 2024).

Transportation is a key business of PT. Kereta Api Indonesia (KAI), which is managed by the government. Trains are KAI's primary mode of transportation. Not only does KAI offer different types of services, such as bulk and exclusive transportation, but it also meets various customer needs, including the transportation of people and goods. KAI operates numerous types of trains across Indonesia, with many routes to choose from. Trains have several advantages as a mode of transportation, including faster travel times, safety, comfort, and affordable pricing (Biomantara & Herdiansyah, 2019).

PT. Kereta Api Indonesia (KAI) is responsible for creating, developing, and implementing the KAI Access application, which has been in use since 2014. The app offers a variety of features, including itinerary management, ticket transactions, reservations, travel history, location tracking, and business information. Additionally, KAI Access allows users to digitize their train tickets and purchase food onboard. The app supports various digital payment options, such as BRI (BRIVA), BCA, BNI Debit Online, Visa, Mandiri E-Cash, DOKU Wallet, and BCA Virtual Account. According to KAI President Director Didiek Hartyanto, the KAI Access application is designed to be a modern solution that simplifies train travel with innovative features. The app aims to make digital services more accessible to users, catering to their needs (Joni, 2023).

Figure 1 shows the KAI Access screen:

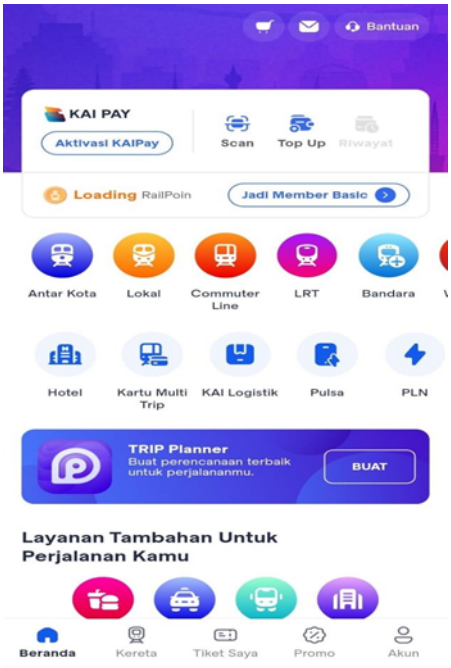

Figure 1 *KAI Access Screen Display*

Therefore, this study aims to investigate the use of the KAI Access application in Binjai, as PT. Kereta Api Indonesia (KAI) is used by many passengers for their trips. This service is typically utilized by various groups of people, including employees, students, and individuals traveling for different purposes.

On September 4, six users from different professions were interviewed to understand why some people who used the KAI Access application at the Binjai City station on July 11, 2024, were unaware of how to use it. This lack of knowledge was attributed to users' unfamiliarity with online technology, which often leads to technical and operational issues. In addition, for those who are not comfortable with online transactions, the reliance on digital payment methods and the absence of cash payment options increases the perceived risk. KAI transportation is also relied upon by these users to meet their daily needs as employees, students, or individuals needing to travel quickly.

Martinus (2024) states that one of the most common issues with the KAI Access application is that it is not always used effectively under certain conditions, which causes discomfort among users. As a result, information systems must be tested to determine how effectively they are being utilized.

The Technology Acceptance Model (TAM) is a theoretical framework used to explain how technology is adopted and used by individuals. Based on the Theory of Reasoned Action (TRA) proposed by Fred Davis in 1989, it suggests that two main factors influence technology adoption: perceived usefulness and perceived ease of use. Data on the use of the KAI Access application in Binjai City can be found in Table 1, as shown below.

Table 1 *Binjai City KAI Access User Data*

Date	Number of passengers per day
August 1	5.600
August 2	5.300
August 3	5.800
August 4	5.500
August 5	5.700
August 6	5.400
August 7	5.800
August 8	5.600
August 9	5.500
August 10	5.700
August 11	5.800

August 12	5.400
August 13	5.500
August 14	5.700
August 15	5.900
August 16	5.600
August 17	5.800
August 18	5.700
August 19	5.400
August 20	5.600
August 21	5.500
August 22	5.800
August 23	5.600
August 24	5.900
August 25	5.700
August 26	5.800
August 27	5.600
August 28	5.500
August 29	5.700
August 30	5.800
August 31	5.919
Total	167.919

The table above shows that, in August 2024, the KAI Access application was used for train ticket transactions. The average number of users per day indicates how the application has made it easier for users to access train services.

An analysis of user data and unfiltered feedback allows for the evaluation of the KAI Access application's usage. The TAM model is used to identify factors that influence technology usage by users and can help determine areas of the KAI Access application that need improvement to enhance user loyalty and satisfaction. According to Nuarita and

Minto (2023), both of these factors influence user behavior toward technology, which, in turn, impacts the actual use of technology.

TAM has been applied to study how elements such as user interface design, payment processing, and customer experience can influence online purchasing behavior and customer loyalty (Marangunić and Granić, 2015). The aim of this study is to assess the level of customer satisfaction and their loyalty to the KAI Access system used by PT. KAI.

In light of the observations above, the main research question guiding this study is: *How does the use of the KAI Access application influence customer satisfaction and loyalty among users of PT. KAI in Binjai City?* Specifically, the study aims to explore which factors, such as ease of use, perceived usefulness, and digital payment options, most significantly affect user experiences and their overall satisfaction with the KAI Access platform. By identifying these factors, the research intends to provide insights into how the KAI Access system can be improved to foster greater user loyalty and enhance the overall customer experience.

RESEARCH METHOD

Population and Sample of the Study

The focus of this study is on the use of the KAI Access application at the Binjai City station. Sampling is a data collection method that allows researchers to select a small sample from the population in order to study the relevant features and characteristics. A minimum of 100 respondents were selected for this study, with the sampling method applied to users of the KAI Access application at the Binjai City station.

Data Collection Techniques

Data was collected by distributing an online questionnaire to KAI Access users at the Binjai City station. The data gathered was then analyzed using SPSS.

In the study entitled "*Analysis of Satisfaction with the Use of the KAI Access Application Using the Technology Acceptance Model (TAM) Method,*" the appropriate variable indicators were identified, including improvements in effectiveness, productivity, performance, and overall usage. Indicators of ease of use included clarity, understanding, and flexibility. The attitude toward use was measured by factors such as positivity, comfort, satisfaction, and enjoyment. Behavioral intentions were also assessed, including regular use, prioritization, and recommendations. Table 2 presents the indicators of the constructed variables.

Table 2 *Variable construction indicators*

Construction	Variable indicators
Preceived Ease of Use	X1 : Ease of use X2 : Access stability X3 : User friendly
Perceived Usefulness	Y1 : Improved performance Y2 : Completeness of facilities Y3 : Value transparency Y4 : Helpful

Attitude Towards Using	Y5 : Perception Y6 : Liking Y7 : Increased enjoyment
Behavariol Intention	Y8 : Use anytime Y9 : Use under any condition Y10 : Continue to use

The hypothesis tests conducted in this study are as follows:

- **Chi-Square Test**: The Chi-Square test was performed to compare the observed results with theoretical predictions (10). The reliability of the model is determined based on the Chi-Square value. Lower Chi-Square values indicate better model quality.
- **Goodness of Fit Index**: This index reduces the accuracy threshold of a particular model when applied to view a covariance matrix. It uses a general variable ratio reduction technique, which relates to the total number of common variables. A model is considered good if its value lies between 0 and 1.
- **CMIN/DF**: The minimum sample discrepancy function (CMIN) is divided by the degrees of freedom to produce the CMIN/DF indicator (11). This indicator is used to measure the model's fit and the expected number of estimates required to achieve the desired level of agreement. The recommended CMIN/DF ratio is 3.0.
- **Root Mean Square Error of Approximation (RMSEA)**: RMSEA is a statistical measure used to evaluate models with large sample sizes, often referred to as a Chi-Square test (12). A model is considered appropriate if the RMSEA value is less than 0.05.

Figure 2 shows the model used in this study:

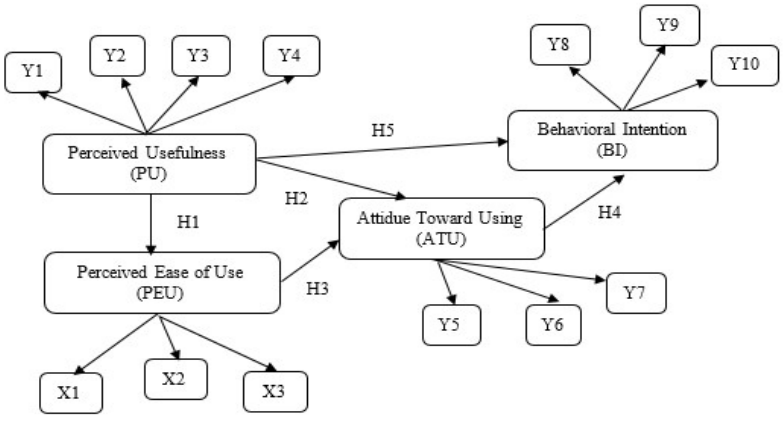

Figure 2 *Research Framework*

The hypotheses to be tested in this study are as follows:

1. **H1**: Perceived ease of use (also known as perceived usability) has a positive impact on the use of the KAI Access application.
2. **H2**: Perceived usability has a positive impact on attitude toward behavior when using the KAI Access application.
3. **H3**: Perceived ease of use has an impact on attitudes toward the use of the KAI Access application.
4. **H4**: The use of the KAI Access application is positively influenced by attitude toward using and behavioral intention.
5. **H5**: Perceived usability has a positive impact on behavioral intention when using the KAI Access application.

RESULTS and DISCUSSION

The survey, which involved a total of 100 respondents, was conducted from July 11 to July 15, 2024. The criteria for respondents were users of the KAI Access application located at the Binjai City Station.

Respondent Results

The following is the data obtained from the respondents during the questionnaire survey, categorized by gender, age, and occupation, as shown in Table 3 below:

Table 3 *Respondent Data's*

Gender	Man		Woman		Sum
	26		74		100
Age	21-30	31-40	41-50	51-60	Sum
	70	25	4	1	100

Validity Test

Table 4 *Validity Test Results*

Construction	Variable Indicators	r count	r table	Information
Preceived ease of use	X1 : ease of use	0,638**	0,197	Valid
	X2 : access stability	0,636**	0,197	Valid
	X3 : user friendly	0,405**	0,197	Valid
Preceived usefully	Y1 : improved performance	0,290**	0,197	Valid
	Y2 : completeness of facilities	0,626**	0,197	Valid
	Y3 : value transparency	0,400**	0,197	Valid
	Y4 : helpful	0,683**	0,197	Valid
Attitude Towards Using	Y5 : perception	0,577**	0,197	Valid
	Y6 : liking	0,648**	0,197	Valid
	Y7 : Increased enjoyment	0,625**	0,197	Valid
Behavariol Intention	Y8 : use anytime	0,521**	0,197	Valid
	Y9 : use under any condition	0,522**	0,197	Valid
	Y10 : continue to use	0,650**	0,197	Valid

The validity of each indicator will be examined in this study, and the results will be compared to Table R for a significance level of 0.05 (5%) and a sample size of N=100, corresponding to a critical value of 0.197. The results for each construction indicate that the r score exceeds 0.197. According to Ghozali, reliability is a measure used to assess the consistency of a construct or variable. Individual performance can be evaluated or trusted if it remains consistent or stable over time. A construct or variable is considered reliable if its Cronbach's Alpha value exceeds 0.70.

Goodness of fit test

The Goodness of Fit test was conducted to compare the observed results with the theoretically expected results. In this study, the rectangular model is considered appropriate because it provides reliable metrics and is considered better when the rectangular value is lower. The entire model is deemed appropriate and precise, as shown in Table 4. The theoretical model used in this study is based on the findings from the literature. This suggests that the covariance data for both the population and sample levels are comparable. Below is Table 5:

Table 5 *Goodness of fit test results*

Criterion	Model Results	Critical value	Model evaluation
Chi square	71,986	Small	Good
Probability	0,074	< 0,05	Good
CMIN/df	1,286	<= 2.00	Good

Hypothesis Test

Table 6 *Regression weight*

	Ultimate	Standart Error	Critical Ratio	Information
Perceived Ease of Use ▶ Perceived Usefullness	0,235	0,96	2,443	Accepted
Perceived Usefullness ▶ Attitude Towards Using	0,005	0,122	8,068	Accepted
Perceived Ease of Use ▶ Attitude Towards Using	0,11	0,121	8,533	Accepted
Attitude Towards Using ▶ Behavioral Intention	0,51	0,131	7,344	Accepted
Perceived Usefullness ▶ Behavioral Intention	0,217	0,159	7,704	Accepted

The results of the hypothesis test were obtained by examining the critical ratio (CR) and probability (P) values, which were 1.96 for CR and 0.05 for P, respectively. The proposed research hypothesis is considered acceptable if the data analysis results meet these conditions. Below is an explanation of each hypothesis based on the hypothesis test:

a. H1 – Perceived Ease of Use is positively related to Perceived Use (perception of use). There is a significant difference between Perceived Convenience and Perceived Benefits, as indicated by a CR of 1.96 and a P value of 0.05. The contribution of Perceived Convenience has a moderate effect, accounting for approximately 0.235 per unit.

b. H2 – Perceived Usefulness has a positive impact on Attitude Toward Use. This is supported by the CR being greater than 1.96 and P being less than 0.05. The contribution of Perceived Benefits to Attitude Toward Use shows a small decrease of around 0.005 units.

c. H3 – Perceived Ease of Use does not significantly affect Attitudes Toward Use. This hypothesis is supported by the results, where Perceived Convenience has a substantial dampening effect on Perceived Use. The contribution of Perceived Convenience results in a modest increase in Attitude Toward Use by 0.11 units.

d. H4 – Attitude Toward Use has an impact on Behavioral Intention. The contribution from the Attitude Toward Use increases Behavioral Intention by 0.51 units. This indicates that the user's attitude has a positive influence on their behavioral intention, as the CR exceeds 1.96 and P is below 0.05.

e. H5 – Perceived Usefulness does not impact Behavioral Intention. This hypothesis was rejected, as it did not hold up in the data. Perceived Benefits do, in fact, affect Behavioral Intention, contributing to a slight increase of about 0.216 units.

Table 6 above, presents the various results of the hypothesis testing.

Discussion

According to the first hypothesis (H1), there is a difference between the perception of ease of use and the perception of usefulness. This is because the general public finds the benefits of the application system very easy to use.

The second hypothesis (H2) suggests that Perceived Usefulness has a negative impact on attitudes toward behavior. The findings of the study show that, when using the KAI Access application, users find it useful in increasing the effectiveness and efficiency of the booking process—such as securing tickets quickly and being able to select a suitable seat. As a result, they are more likely to respond positively to the use of the app. This is because the perceived usefulness of the application influences users' trust in the information system. Many users in the city of Binjai are quite satisfied with the features offered by the app.

Finally, the third hypothesis (H3) states that Perceived Ease of Use impacts the level of user activity. The study findings indicate that while some users may experience difficulty using the app, other factors also influence how the app is used.

The results of the fourth hypothesis (H4) show that the user's attitude toward using the application system—whether positive or negative—affects their future behavioral intentions. The fifth hypothesis (H5) suggests that if users feel comfortable and satisfied with the information system, they will continue to use it, particularly the KAI Access application at the Binjai City station. In other words, when the perception of usability improves, it positively influences performance, as using the app makes task completion easier and more efficient, without the need to visit the store in person.

CONCLUSIONS

A study titled "*Analysis of the Usage of the KAI Access Application Using the Technology Acceptance Model (TAM)*" found that Perception of Usability has a positive relationship with Perception of Ease of Use when using the KAI Access application. The t-value of 2.443 is greater than the critical t-value of 1.984, indicating that improving the utility of an app makes it easier to use.

When using the KAI Access application, Perception of Usability shows a positive correlation with Attitude Toward Behavior (Attitude Toward Use). This suggests that the benefits users obtain from the application have a positive impact on their perception of the app itself. Perception of Ease of Use (also known as Perception of Use) positively affects Behavior-Related Attitudes, as the t-value of 8.068 exceeds the critical t-value of 1.984.

The results of using the KAI Access application also indicate that Attitude Toward Use has a positive impact on Behavioral Intention, with a t-value of 7.344, which is higher than the critical t-value of 1.984. This demonstrates that a positive impression of the application influences users' intention to continue using it. In summary, the use of the KAI Access application shows that the application positively affects Behavioral Intention, with a t-value of 7.704, which is greater than the critical t-value of 1.984. However, this effect is not as strong as that of other variables.

It is recommended that PT. KAI continue improving the functionality of the KAI Access app, provide training for users who are not comfortable with digital technologies, conduct thorough evaluations, and invest in new and innovative technologies. Enhancing user support through in-app assistance is also crucial for resolving user issues promptly. With these improvements, it is hoped that PT. KAI will continue to enhance customer service and satisfaction.

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