Analysis of Influence Factors on Acceptance of the Access by KAI System using Technology Acceptance Model Framework

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ABSTRACT
This research aims to analyze applications transformed from KAI *Access* to *Access by* KAI from *Perceived Usefulness, Perceived Ease of Use, Attitude Toward Using*, and *Behavior Intention*. The main focus of this research is the people of Yogyakarta, aiming to analyze *perceived usefulness, perceived ease of use, attitude toward use, and behavior intention* in the analysis of the *Access by* KAI system. This quantitative research uses a questionnaire distributed to respondents in this study to obtain data. This study applies the TAM (*Technology Acceptance Model)* framework to analyze the use of *Access by* KAI. Data collection methods include literature reviews, observations, surveys, and interviews. Survey questions were based on TAM literature and distributed to *Access by* KAI users. Data validity was tested using several instruments, such as validity tests, reliability tests, and classical assumption tests, with recommendations prepared as a result. From the results of research and theories that have been developed, it was found that the independent value or VIF for *perceived usefulness* and *perceived ease of use* was 1.239, while for *attitude toward using* and *behavioral intention*, it was 1.000. These two values do not exceed 10, indicating the absence of multicollinearity problems. Thus, it can be concluded that the perceived ease of using the *Access by* KAI application updates has a positive impact. Several application users also reported the ease of purchasing train tickets *online* through the application.

Keywords
Perceived Usefulness, Perceived Ease of Use, Attitude Toward Using, and Behavior Intention

1. INTRODUCTION
Information systems consist of various interconnected components, which function as tools for collecting, processing, storing, and sharing information to support decision-making and monitoring within an organization while facilitating the analysis of complex problems and innovation [1]. One of the advances in information technology that can be felt is on *smartphones*. Apart from being a communication tool, currently, *smartphones* are also equipped with capabilities such as shopping and even ordering travel tickets online [2]. The business potential in the field of information technology-based transportation was then exploited by PT. Kereta Api Indonesia (KAI) in the form of the KAI *Access mobile application* with various collaborations with *platforms e-commerce*, which makes it easier for users to access information about travel schedules, ticket prices, and train seat availability [3]. Which can be using *the Technology Acceptance Model framework* [6]. The main objective of this model is to explain the general factors that influence the acceptance of information technology, which can be applied in various contexts and user populations while considering efficiency and a strong theoretical basis. The TAM *framework* states that perceived ease of use and perceived usefulness can predict technology acceptance [7]. The use of the TAM *framework* has been carried out to assess perceptions of use, efficiency, and effectiveness regarding the ease of ordering train *e-ticketing [8]*. Research conducted shows that perceptions, attitudes, interests, and behavior do not have a significant influence on purchasing decisions [9].

2. THEORETICAL REVIEW
2.1 Theoretical basis
2.1.1 Analysis
In a different sense, analysis is the process of paying attention to and breaking down something (be it an object, fact, or phenomenon) into smaller components, while understanding the relationship between these components in the overall context [10]. Analysis aims to produce information according to needs in the research context, apart from that, analysis is also a frame of reference that is associated with several systematic tests to determine the parts and their relationships as a whole [11].

2.1.2 Information System
This system is a unit of data that is connected and managed procedurally. Based on this explanation, it can be concluded that information is a collection of data that has been processed to produce valuable information, which can later be well received by the recipient [12]. An information system is a system that can be defined as collecting, processing, storing, analyzing, and disseminating information for certain purposes [13]. An information system includes several components (humans, computers, information technology, and work procedures), and processed data (data becomes information), and is intended to achieve a target or objective [14].

2.1.3 Information Technology
Information technology integrates computing and communications, covering various formats such as data, voice, and video, which are implemented through electronic devices [15]. Meanwhile, communication technology involves the use of tools to process and transfer data from one device to another in a system that involves processing, manipulating, managing, and transmitting data between different media. This system has different components such as hardware, software, and the roles of the people who use it [16].

2.1.4 Indonesian Railways

In March 2007, the House of Representatives (DPR) ratified the revision of Law Number 13 of 1992 to become Law Number 23 of 2007, which opened up opportunities for private investors and local governments to be involved in managing train services in Indonesia. Thus, this legal change officially ends PT's monopoly. KAI in train operations in Indonesia [17].

2.1.5 Access by KAI

The name KAI *Access* was then officially changed to *Access by* KAI after PT. Indonesian Railways launched it on July 7 2023 at Gambir Station, Central Jakarta. These features were developed to obtain good standards in the transportation sector to support implementation and success in PT management. Train Indonesia [18].

2.1.6 Technology Acceptance Model

TAM also provides a theoretical basis for understanding the factors that influence acceptance of certain technologies and explains the cause-and-effect relationship between beliefs and behavior, goals or needs, and the use of information systems [19]. TAM theory states that if a technology or innovation can improve performance without requiring significant additional effort so that it feels useful and easy to use, then society will be more likely to accept and adopt the technology comfortably [20]. TAM is believed to be able to predict user acceptance of technology based on the impact of two factors, namely perceived usefulness *and* perceived ease of *use* [21].

In the context of software development, TAM can be used to ensure that the software is well received by users and can help users in carrying out their tasks [22]. There are 6 indicators to measure perceived ease of use, including working more quickly, improving *job performance*, increasing productivity, increasing work effectiveness, *and* making work easier *and more* useful. (*useful*) [23]. There are 2 indicators to measure the intention construct, namely the use of the system to complete work (*carrying out the task*) and planned utilization in *the future* [24]. It is shown in Figure 1.

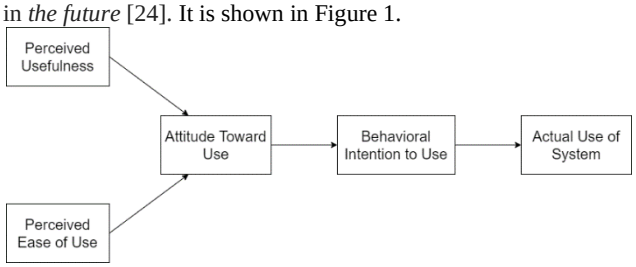

Figure: 1 Technology Acceptance Model (Davis, 1989)

3. METHODOLOGY

3.1 Research subject

The research subject to be analyzed is the *Access by* KAI application. This research will use quantitative methods. It is hoped that this research will provide recommendations for improvements based on the perceptions that have been researched and will make it easier for users so that confidence and use of the application can be applied to individuals who use *Access by* KAI.

3.2 Method of collecting data

Data collection in this research came from primary and secondary data sources. The stages carried out are as follows:

1. A literature study is a method of collecting information by looking for written sources related to cases or problems observed in a study.
2. Observation is systematic and careful observation of objects, events, or phenomena to obtain information and aims to collect information that can be used for analysis, research, understanding, or decision-making.
3. A survey is a research method that involves collecting data through the use of questionnaires to several respondents to obtain information relevant to the research topic being undertaken. The main purpose of a survey is to dig up data related to a particular topic.
4. Interviews are the form of data collection most often used in qualitative research. Aims to obtain information, opinions, and views from respondents.

3.3 Validation and Reliability

3.3.1 Validation

Validity tests are used to ensure that the instruments used have an adequate level of validity so that the data collected by researchers can accurately reflect actual events in the research object. The simple correlation formula via the *Pearson Product Moment Formula* is as follows:

$$r_{xy} = \frac{n\sum xy - \sum x \sum y}{\sqrt{(n\sum_x 2 - (\sum x)^2)(n\sum_y 2 - (\sum y)^2)}}$$

3.3.2 Reliability

To evaluate the reliability of the instrument, you can use the *Cronbach's Alpha technique*. The instrument is considered reliable if the *alpha value* is ≥ 0.6 based on the *Cronbach test. The Cronbach's Alpha* reliability formula can be described as follows:

$$r11 = \left[\frac{k}{(K-1)}\right]\left[1 - \frac{\sum \sigma i_b^2}{\sum \sigma i^2}\right]$$

3.4 Data analysis technique

1. Descriptive Analysis of Data
   Depicting the data in this study using a frequency distribution table, mean value (*Mean*), standard deviation (SD), Mode, and Median (Me).
2. Test Linearity Requirements
   In testing linearity requirements, a series of tests will be carried out including normality tests, linearity tests, and multicollinearity tests.
3. Hypothesis testing
   Regression analysis is a study of the dependent relationship between a dependent variable and one or more independent variables.

4. RESULTS AND DISCUSSION

4.1 Business Process

The business processes in an organization aim to achieve predetermined goals. This business process can be mapped to each task and function to get maximum and efficient results.

4.2 Analysis of Respondent Descriptions

In this research, the intended respondents were trained ticket buyers via the *Access by* KAI application in the Yogyakarta area. For the number of respondents needed for this research, there are 100 respondents, the researcher took 100 respondents to make it easier to carry out calculations in this research.

4.3 Statistical Description Analysis

4.3.1 Validation Test

From the results of the validity test with 30 respondents on users who purchased *e-ticketing* on the *Access by* KAI application in Table 1:

Table 1. *Perceived Usefulness, Perceived Ease of Use, Attitude Toward Using, Behavioral Intention to Use and Actual Usage*

CODE	*Pearson Correlation*	Signification	Status
PU1	0.576	0.001	VALID
PU2	0.574	0.001	VALID
PU3	0.533	0.002	VALID
PU4	0.745	0,000	VALID
PEOU1	0.767	0,000	VALID
PEOU2	0.733	0,000	VALID
PEOU3	0.752	0,000	VALID
PEOU4	0.705	0,000	VALID
ATU1	0.733	0,000	VALID
ATU2	0.723	0,000	VALID
ATU3	0.778	0,000	VALID
BI1	0.796	0,000	VALID
BI2	0.594	0.001	VALID
AU1	0.689	0,000	VALID
AU2	0.529	0.003	VALID
AU3	0.679	0,000	VALID

4.3.2 Reliability Test

The aim of the reliability test is whether the questionnaire has consistency in the measurements that have been carried out on the questionnaire carried out repeatedly as in Table 2:

Table 2. Reliability Testing Results

Variable	*Cronbach's Alpha*	Information
Perceived Ease of Use	0.886	Reliable
Perceived Usefulness	0.621	Reliable
Behavioral Intention to Use	0.660	Reliable
Attitude Toward Using	0.756	Reliable
Actual System Usage	0.702	Reliable

4.3.3 Hypothesis Testing Analysis

For the scheme produced with the *smart* PLS program after testing, it is shown in Figure 2:

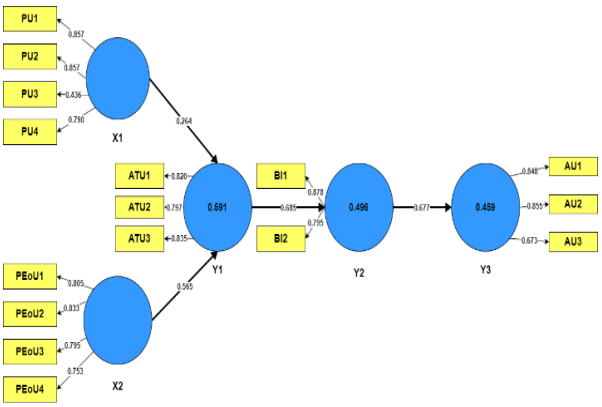

Figure: 2 Inner Model with SmartPLS 4.0

Testing the inner model or structural model after it has been carried out can show the relationship between the construct, and R-Square, and the significance value for the test-dependent construct is also significant on the parameter coefficient for the path structural. If the calculated r-value is above zero (0) or positive (+), then the correlation is considered positive or acceptable based on the results of the data analysis.

4.3.4 Normality

For the analysis used in this normality test, the Kolmogorov-Smirnov method was used by calculating the data using SPSS 4.0 *software.* as in Table 3:

Table 3. PE and PEoU Normality Test on ATU

One-Sample Kolmogorov-Smirnov Test			
Unstandardized Residual			
N			104
Normal Parameters [a, b]	Mean		0000000
	Std Deviation		
Most Differences	Extreme Absolute		.95543343
			.101
	Positive		,075
	Negative		-.101
Statistical Tests			.101
Asymp. Sig. (2-tailed) [c]			.011
Monte Carlo Sig. (2-tailed) [d]	Sig.		,010
	99% Intervals	Confidence Lower Bound	,007
		Upper Bound	.012

This data can be said to be distributed if the significance reaches or exceeds 0.05.

In the following table is the normality test carried out by researchers at ATU to BI in Table 4:

Table 4. ATU Normality Test on BI

One-Sample Kolmogorov-Smirnov Test			
Unstandardized Residual			
N			104
Normal	Mean		0000000
Parameters [a, b]			
	Std Deviation		. 8284565 4
Most Differences	Extreme Absolute		. 145
	Positive		,090
	Negative		-.145
Statistical Tests			,145
Asymp. Sig. (2-tailed) [c]			.016
Monte Carlo Sig. (2-tailed) [d]	Sig.		.011
	99% Intervals	Confidence Lower Bound	,009
		Upper Bound	.011

This data can be said to be distributed if the significance reaches or exceeds 0.05.

In the following table is the normality test for BI against AU in Table 5:

Table 5. BI Normality Test on AU

One-Sample Kolmogorov-Smirnov Test			
Unstandardized Residual			
N			104
Normal	Mean		0000000
Parameters [a, b]			
	Std Deviation		1.1780946 9
Most Differences	Extreme Absolute		,150
	Positive		,150
	Negative		-.120
Statistical Tests			,150
Asymp. Sig. (2-tailed) [c]			,051
Monte Carlo Sig. (2-tailed) [d]	Sig.		,020
	99% Intervals	Confidence Lower Bound	.011
		Upper Bound	.016

Based on the normality test table that has been calculated above, it can be seen that the Kolmogorov-Smirnov significance value calculated using SPSS 4.0 is normally distributed because the resulting value is more than 0.05.

4.3.5 Multicollinearity

The multicollinearity test is carried out to determine whether or not the classical assumptions deviate from multicollinearity if there is a relationship between linear and dependent variables in the regression model. To see the tests obtained in this regression model, you can look at the VIF (*Variance Inflation Factor*) value. The minimum value so that multicollinearity does not occur is if the VIF value is <10.

4.3.6 Linearity

In the linearity test that this researcher has carried out to find out whether or not linearity occurs in the significance of the variables. This test was carried out with a linear regression formula using SPSS 4.0 *software* with a maximum significance level of 0.05. *A variable* can be said to be linear if its significance value is smaller than 0.05.

4.3.7 Coefficient of Determination (R^2)

If the resulting R- *Square value is small, then the independent value to explain the dependent value is minimal. If the variable value is close to 1 then the independent value* provides all the information used in the *dependent value*. As in Table 6:

Table 6. PU and PEoU Coefficient Test on ATU

Model Summary [b]				
Model	R	R-Square	Adjusted R Square	Std. Error of the Estimate
1	.737 [a]	,543	,543	,962
a. Predictors: (Constant), PEoU, PU b. Dependent Variable: ATU				

In Table 6 the R- *Square value* is 0.543, which means the independent variable can explain the dependent variable.

Table 7. ATU Coefficient Test on BI

Model Summary [b]				
Model	R	R-Square	Adjusted R Square	Std. Error of the Estimate
1	,687 [a]	,472	,467	,833
a. Predictors: (Constant), PEoU, PU b. Dependent Variable: ATU				

In Table 7, the R- *Square value* is 0.472, which means the independent variable can explain the dependent variable.

Table 8. BI Coefficient Test on AU

Model Summary [b]				
Model	R	R-Square	Adjusted R Square	Std. Error of the Estimate
1	. 671 [a]	,450	,444	1,184
a. Predictors: (Constant), PEoU, PU b. Dependent Variable: ATU				

Table 8 shows that the R- *Square value* is 0.450, which means the independent variable can explain the dependent variable.

4.4 Discussion

This shows that there is a significant influence between the independent variable and the dependent variable. This is the result of analysis between variables with the proposed hypothesis:

4.4.1 The Influence of Perceived Usefulness on Attitude Toward Using

In the data contained in PE against ATU in the normality test using the Kolmogorov-Smirnov method using SPSS 4.0, the data has been distributed because the significance value reaches 0.11 or more than 0.5, namely the data means normal. Meanwhile, multicollinearity does not occur because the data produced at (*Variance Inflation Factor*) VIF gets a value of 1.239 or below <10.

In Linearity data, calculate the data using the linear regression formula with SPSS 4.0 with a Maximum level of 0.5 so that linearity occurs in the data. After carrying out the linearity test, the data obtained was 0.001 so linear data was obtained. Meanwhile, the resulting value for R- *Square* is 0.543 or more than 0.05.

4.4.2 The Influence of Perceived Ease of Use on Attitude Toward Using

In the data contained in PeoU against ATU in the normality test using the Kolmogorov-Smirnov method using SPSS 4.0 The data has been distributed because the significance value reaches 0.11 or more than 0.5, that is, the data means normal. Meanwhile, multicollinearity does not occur because the data produced at (*Variance Inflation Factor*) VIF gets a value of 1.239 or below <10.

In Linearity data, calculate the data using the linear regression formula with SPSS 4.0 with a maximum level of 0.5 so that linearity occurs on data. After carrying out the linearity test, the data obtained was 0.001 so linear data was obtained. Meanwhile, the resulting value for R- *Square* is 0.543 or more than 0.05.

4.4.3 The Influence of Attitude Toward Using on Behavior Intention

In the data contained in ATU against BI in the normality test using the Kolmogorov-Smirnov method using SPSS 4.0, the data has been distributed because the significance value reaches 0.11 or more than 0.5, namely the data means normal. Meanwhile, multicollinearity does not occur because the data produced at (*Variance Inflation Factor*) VIF gets a value of 1,000 or below <10.

In Linearity data, calculate the data using the linear regression formula with SPSS 4.0 with a maximum level of 0.5 so that linearity occurs in the data. After carrying out the linearity test, the data obtained was 0.000 so linear data was obtained. Meanwhile, the resulting value for R- *Square* is 0.472 or more than 0.05.

4.4.4 The Influence of Behavioral Intention on Actual Usage

In the data contained in BI against AU in the normality test using the Kolmogorov-Smirnov method using SPSS 4.0, the data has been distributed because the significance value reaches 0.51 or more than 0.5, namely the data means normal. Meanwhile, multicollinearity does not occur because the data produced on the VIF (*Variance Inflation Factor*) gets a value of 1,000 or below <10.

In Linearity data, calculate the data using the linear regression formula with SPSS 4.0 with a maximum level of 0.5 so that linearity occurs in The data. After carrying out the linearity test, the data obtained was 0.000 so linear data was obtained. Meanwhile, the resulting value for R- *Square* is 0.450 or more than 0.05

From the results of research and theories that have been created by researchers, it can be concluded that the perceived ease of updating the *Access by* KAI application has a positive impact.

5. CONCLUSION

This research examines the influence of various factors measured through the Technology Acceptance Model (TAM) on the level of satisfaction with Access by KAI users at Tugu Station and Lempuyangan Station, Yogyakarta. This research discusses several important aspects that influence user adoption and satisfaction with the Access by KAI system, namely Perceived Usefulness (PU), Perceived Ease of Use (PEOU), Attitude Toward Using (ATU), and Behavior Intention (BI). Overall, this research provides a foundation for continuous improvement of Access by KAI by effectively utilizing user evaluation results and implementing strategies that focus on user satisfaction and comfort.

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