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Analysis of User Acceptance Factors in KAI Access Mobile Application Using the Unified Technology of Acceptance and Use of Technology (UTAUT) Method

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ABSTRACT

KAI Access is a mobile-based application released by PT. Kereta Api Indonesia. The various features that can be accessed from this application include ticket reservations, view train departure schedules and the availability of train tickets. The KAI Access application was main goal is to making it easier for the public to purchase train tickets online. Based on the assessment on the Google Playstore, the application has received a fairly good rating value, but the rating value cannot indicate any shortcomings that are still experienced in the implementation of the application. Therefore, to find out what shortcomings are still experienced in the implementation of the KAI Access application, this study was conducted which aims to analyze the factors that affect the acceptance of the KAI Access Application users based on the variables contained in the Unified Theory of Acceptance and Use of Technology model (UTAUT). It is hoped that by knowing what factors can affect user acceptance, PT. KAI can make several improvements to maximize the use of various features in the Application. If improvements are not made, there is a possibility that user interest in using the application will decrease so that the initial purpose of using the application is not achieved properly. This study involved a number of 349 respondents as a sample of the population of users of the KAI Access application. The data obtained were then analyzed using SMARTPLS. The results of this study are expected to be an evaluation for parties for future application development in order to increase application use rate.

Keywords: *UTAUT, User Acceptance, KAI Access*

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1. INTRODUCTION

The increasing development of Information and Communication Technology (ICT) enables a growing role of technology in supporting daily activities. ICT has influenced various sectors, including the transportation sector. One application of technology in transportation is the use of e-tickets, which simplifies the ticket booking process. E-ticket, or electronic ticketing, is a method to document the sales process of customer travel activities without the need for physical documents or paper tickets (Orientani & Jumhur, 2017).

PT. Kereta Api Indonesia, as the sole provider of railway transportation services, has released an online service application called KAI Access. The KAI Access application is

designed to facilitate the public in purchasing train tickets online. While the application has received favorable ratings during its implementation, these ratings alone cannot pinpoint the shortcomings in the application's implementation. Therefore, this research aims to analyze the factors influencing user acceptance of the KAI Access application based on variables found in the Unified Theory of Acceptance and Use of Technology (UTAUT) model.

It is hoped that by analyzing the factors affecting user acceptance, any areas that need improvement can be identified by PT. KAI. The success of implementing information technology in an organization depends on users' willingness to adopt and utilize it (Widodo et al., 2015). For technology to truly enhance organizational productivity, users must accept and use the technology (Venkatesh, Morris, Davis, and Davis, 2003).

This research utilizes the UTAUT model to analyze user acceptance factors in the KAI Access application. Venkatesh et al. (2003) applied the UTAUT model to test technology involving participants with varying levels of experience, from initial introduction to more extended periods of use. UTAUT identifies four factors influencing an individual's intention to use an information system: performance expectancy, effort expectancy, social influence, and facilitating conditions. The results of this study are expected to provide insights for further development of the application KAI Access and enhance its usage in the future.

2. LITERATURE REVIEW

The KAI Access Mobile Application

KAI Access is an Android-based application owned by PT. Kereta Api Indonesia, designed to assist the public in booking train tickets. This application was released on July 15, 2014, and stands as the sole official application issued by PT. Kereta Api Indonesia. KAI Access provides features tailored to consumer needs. Some of the features it offers include purchasing local train tickets, booking inter-city train tickets, and viewing travel history.

Unified Theory of Acceptance and Use of Technology (UTAUT)

UTAUT is a theoretical framework widely adopted for researching user acceptance of information technology. Developed by Venkatesh et al., UTAUT consists of four main variables: Performance Expectancy, Effort Expectancy, Social Influence, and Facilitating Conditions. There are additional supporting variables: Gender, Age, Experience, and Voluntariness of Use. The variables within the UTAUT model framework can be observed in Figure 1.

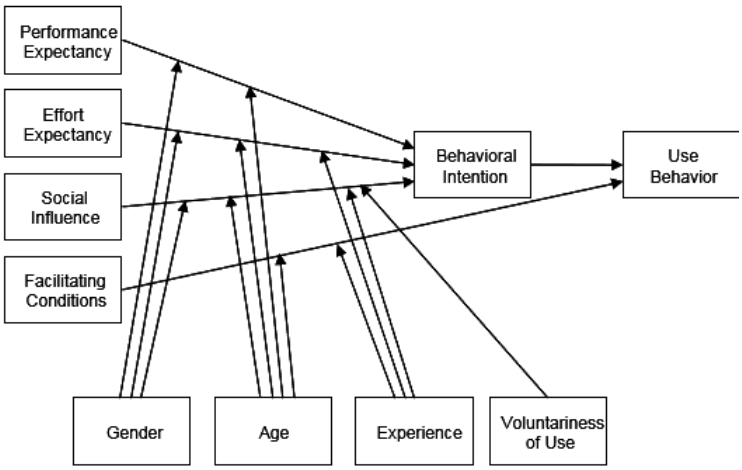

Figure 1 Model UTAUT
Source: author/researcher

Structural Equation Modeling (SEM)

SEM (Structural Equation Modeling) is a statistical technique capable of analyzing the patterns of relationships between latent constructs and their indicators, among latent constructs, and the measurement errors directly. The SEM technique is not used to design a theory but is primarily aimed at examining and validating a model. Therefore, the main requirement for using SEM is to construct a hypothesis model consisting of both a structural model and a measurement model in the form of a path diagram based on theoretical justification.

3. METHODS

The research model to be tested and employed is the UTAUT model by Venkatesh in 2003, with the exclusion of the Gender moderator. The removal of the Gender moderator is conducted as it is deemed to have an insignificant influence on the usage of the KAI Access application, given that both males and females have equal access to using the application. The research model utilized in this study is depicted in Figure 2.

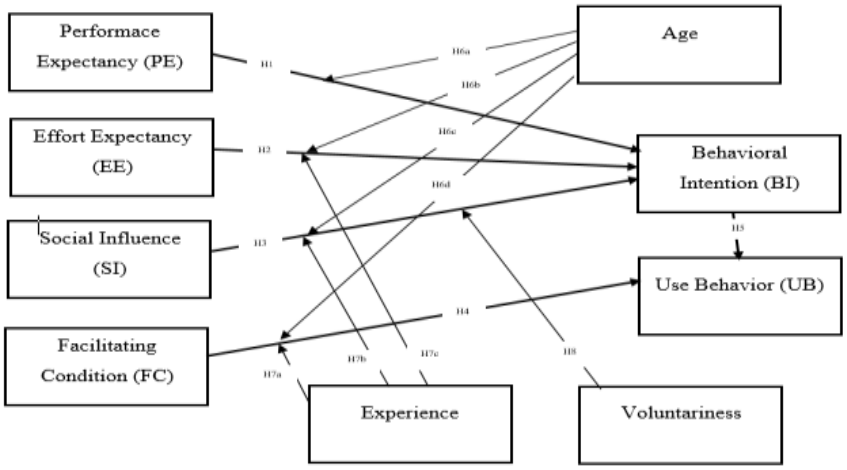

Figure 2 Research Model
Source: author/researcher

Based on the proposed research model as depicted in Figure 3, the formulated hypotheses are as follows:

- H1: Performance Expectancy has a positive and significant effect on Behavioral Intention.
- H2: Effort Expectancy has a positive and significant effect on Behavioral Intention.
- H3: Social Influence has a positive and significant effect on Behavioral Intention.
- H4: Facilitating Condition has a positive and significant effect on Use Behavior.
- H5: Behavioral Intention has a positive and significant effect on Use Behavior.
- H6a: There is a positive and significant influence of the Performance Expectancy variable on the Behavioral Intention variable, and this is not moderated by Age.
- H6b: There is a positive and significant influence of the Effort Expectancy variable on the Behavioral Intention variable, and this is not moderated by Age.
- H6c: There is a positive and significant influence of the Social Influence variable on the Behavioral Intention variable, and this is not moderated by Age.

- H6d: There is a positive and significant influence of the Facilitating Condition variable on the Use Behavior variable, and this is not moderated by Age.
- H7a: There is a positive and significant influence of the Effort Expectancy variable on the Behavioral Intention variable, and this is not moderated by Experience.
- H7b: There is a positive and significant influence of the Social Influence variable on the Behavioral Intention variable, and this is not moderated by Experience.
- H7c: There is a positive and significant influence of the Facilitating Condition variable on the Use Behavior variable, and this is not moderated by Experience.
- H8: There is a positive and significant influence of the Social Influence variable on the Behavioral Intention variable, and this is not moderated by Voluntariness.

The sampling technique used is purposive sampling. Purposive Sampling (Sugiyono, 2015) is a sampling technique based on specific considerations or characteristics. The sample characteristics refer to individuals from the general public who have used the KAI Access application, are familiar with it, and meet certain criteria. The determination of the sample size in this research uses the Isaac and Michael table, as shown in Table 4.

N	S		
	1%	5%	10%
10	10	10	10
15	15	14	14
20	19	19	19
25	24	23	23
30	29	28	27
…	…	…	…
50000	663	348	270
55000	663	348	270
60000	**663**	**348**	**270**
…	…	…	…
1000000	663	348	271
∞	663	349	272

Figure 3 Isaac and Michael Table
Source: author/researcher

4. RESULTS AND DISCUSSION

Validity Test

Validity testing is conducted on all indicators of the research variables used. A variable is considered valid if it has a loading factor value > 0.7, and convergent validity is considered good if the AVE (Average Variance Extracted) value is > 0.5. The results of the first validity test indicate that some indicators (PE4, PE5, EE3, EE4, SI4, and FC5) are declared NOT VALID because they have loading factor values below 0.7, and elimination of these indicators is necessary. After eliminating the invalid indicators, the second validity test is performed. The results of the second validity test are shown in Table and Figure 5 and Table 1.

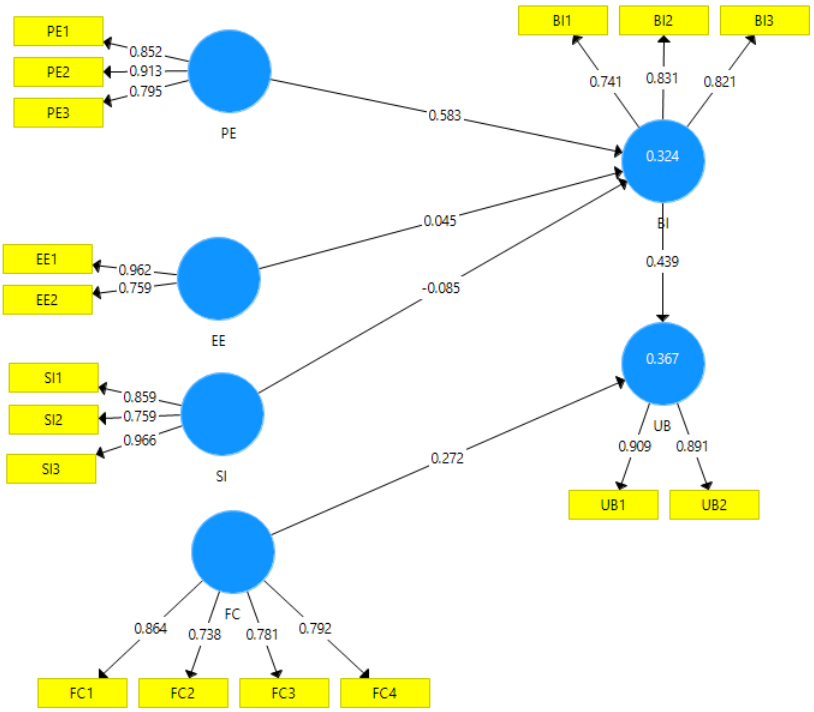

Figure 4 Results of the Second Validity Test
Source: author/researcher

Table 1 AVE Value

AVE Variabel	AVE
Behavioral Intention (BI)	0.638
Effort Expectancy (EE)	0.751
Facilitating Condition (FC)	0.631
Performance Expectancy (PE)	0.731
Social Influence (SI)	0.749

Source: author/researcher

Based on the results in Figure 3 and Table 1, all instruments are declared VALID.

Reliability Test

Reliability testing is conducted on all variables used to assess the consistency of research instruments. If the Composite Reliability value is >0.7 and the Cronbach's Alpha value is >0.6, then the research instrument is considered reliable. Based on the results of the reliability test in Table 2, the Composite Reliability values for each variable are >0.7, and the Cronbach's Alpha values are > 0.6. Therefore, it can be concluded that the instrument is RELIABLE.

Table 2 Values of Composite Reliability and Cronbach's Alpha.

Variabel	Composite Reliability	Cronbach Alpha	Description
Behavioral Intention (BI)	0.840	0.715	RELIABEL
Effort Expectancy (EE)	0.856	0.711	RELIABEL
Facilitating Condition (FC)	0.872	0.809	RELIABEL
Performance Expectancy (PE)	0.890	0.814	RELIABEL
Social Influence (SI)	0.899	0.854	RELIABEL

Use Behavior (UB)	0.895	0.765	RELIABEL

Source: author/researcher

Data Analysis

Description of Respondents

Based on the frequency of respondents' ages, it is known that the number of respondents aged 15-25 years is 327, and the number of respondents aged 26-55 years is 53. Regarding the duration of usage, respondents using the application for 1-4 months are 132, those using the application for less than 1 month are 72, those using the application for 1-2 months are 113, those using the application for more than 2 months are 97, and those using the application for 1 year or more are 67.

Model Fit Test

This test is conducted to assess how well the model explains the fit with the sample data (Hooper et al., 2008). SmartPLS v.3.2.7 in 2018 measures model fit using the Standardized Root Mean Square Residual (SRMR). SRMR is the average standardized residual index between the observed correlation matrix and the hypothetical matrix, and a model is considered fit if it has a value lower than 0.05 (Cangur & Ercan, 2015). The calculation results show that the SRMR value generated in this study is 0.043, indicating that the research model is in line with the study data.

Hypothesis Testing

Hypothesis testing produces conclusions about which hypotheses are accepted and rejected. This test is conducted by examining p-values and the original sample to determine the significance of the relationships between variables. The results of the hypothesis test can be seen in Table 3.

Table 3 Results of Hypothesis Testing

No	Variabel	Conclusion
1	H1: Performance Expectancy has a positive and significant effect on Behavioral Intention in using the KAI Access Application.	Accept
2	H2: Effort Expectancy has a positive and significant effect on Behavioral Intention in using the KAI Access Application.	Accept
3	H3: Social Influence has a positive and significant effect on Behavioral Intention in using the KAI Access Application.	Reject
4	H4: Facilitating Condition has a positive and significant effect on Use Behavior in using the KAI Access Application.	Accept
5	H5: Behavioral Intention has a positive and significant effect on Use Behavior in using the KAI Access Application.	Accept

Source: author/researcher

Hypothesis Testing for Moderator Variables

a. Moderator Age Variable

The age moderator variable is represented as the age of the application users. Users are divided into two age groups: 15-25 years old (adolescents) and 26-55 years old (adults). The results of the age moderator variable test can be seen in Table 4 and Table 5.

Table 4 Results of Hypothesis Testing

No	Variabel	Conclusion
H6a	There is a positive and significant influence between the Performance Expectancy variable and Behavioral Intention, and this is not moderated by Age.	Accept
H6b	There is a positive and significant influence between the Effort Expectancy variable and Behavioral Intention, and this is not moderated by Age.	Accept
H6c	There is a positive and significant influence between the Social Influence variable and Behavioral Intention, and this is not rejected by Age moderation.	Reject
H6d	There is a positive and significant influence between the Facilitating Condition variable and Use Behavior, and this is not moderated by Age.	Accept

Source: author/researcher

Table 5 Results of the Moderator Variable Test: Age (26-55 years)

No	Variabel	Conclusion
H6a	There is a positive and significant influence between the Performance Expectancy variable and Behavioral Intention, and this is not moderated by Age.	Accept
H6b	There is a positive and significant influence between the Effort Expectancy variable and Behavioral Intention, and this is not moderated by Age.	Reject
H6c	There is a positive and significant influence between the Social Influence variable and Behavioral Intention, and this is not rejected by Age moderation.	Reject
H6d	There is a positive and significant influence between the Facilitating Condition variable and Use Behavior, and this is not moderated by Age.	Accept

Source: author/researcher

b. Moderator Variable: Experience

The experience moderator variable in this study is interpreted as the duration of using the KAI Access application. The duration of using the application is divided into four groups: less than 1 month, 1-2 months, more than 2 months, and 1 year or more. The results of the experience moderator variable test can be seen in Table 6, Table 7, Table 8, and Table 9.

Table 6 Results of the Experience Variable Test (less than 1 month)

No	Variabel	Conclusion
H7a	There is a positive and significant influence between the Performance Expectancy variable and Behavioral Intention, and this is not moderated by Age.	Accept
H7b	There is a positive and significant influence between the Effort Expectancy variable and Behavioral Intention, and this is not moderated by Age.	Reject
H7c	There is a positive and significant influence between the Social Influence variable and Behavioral Intention, and this is not rejected by Age moderation.	Reject

Source: author/researcher

Table 7 Results of the Experience Variable Test (1-2 month)

No	Variabel	Conclusion
H7a	There is a positive and significant influence between the Performance Expectancy variable and Behavioral Intention, and this is not moderated by Age.	Reject
H7b	There is a positive and significant influence between the Effort Expectancy variable and Behavioral Intention, and this is not moderated by Age.	Reject
H7c	There is a positive and significant influence between the Social Influence variable and Behavioral Intention, and this is not rejected by Age moderation.	Accept

Source: author/researcher

Table 8 Results of the Experience Variable Test (more than 2 months)

No	Variabel	Conclusion
H7a	There is a positive and significant influence between the Performance Expectancy variable and Behavioral	Reject

	Intention, and this is not moderated by Age.	
H7b	There is a positive and significant influence between the Effort Expectancy variable and Behavioral Intention, and this is not moderated by Age.	Reject
H7c	There is a positive and significant influence between the Social Influence variable and Behavioral Intention, and this is not rejected by Age moderation.	Accept

Source: author/researcher

Table 9 Results of the Experience Variable Test (1 year or more)

No	Variabel	Conclusion
H7a	There is a positive and significant influence between the Performance Expectancy variable and Behavioral Intention, and this is not moderated by Age.	Reject
H7b	There is a positive and significant influence between the Effort Expectancy variable and Behavioral Intention, and this is not moderated by Age.	Reject
H7c	There is a positive and significant influence between the Social Influence variable and Behavioral Intention, and this is not rejected by Age moderation.	Reject

Source: author/researcher

c. Moderator Variable: Voluntariness

The Voluntariness variable in this study is interpreted in terms of users' willingness to use the application. Users are divided into two groups: those who use the application voluntarily and those who use the application based on recommendations from friends, family, or others in their environment. Here are the results of the voluntariness of use moderator variable test.

Table 10 Results of the Voluntariness Variable Test (users recommended)

No	Variabel	Conclusion
H8	There is a positive and significant influence between the Social Influence variable and Behavioral Intention, and this is not moderated by Voluntariness.	Reject

Source: author/researcher

Table 11 Results of the Voluntariness Variable Test (voluntary users)

No	Variabel	Conclusion

H8	There is a positive and significant influence between the Social Influence variable and Behavioral Intention, and this is not moderated by Voluntariness.	Accept

Source: author/researcher

5. CONCLUSION

Discussion, Based on the results of hypothesis testing without moderator variables, the following results are obtained:

1. H1: Performance Expectancy has a positive and significant effect on Behavioral Intention in using the KAI Access Application. Based on Table 3, Performance Expectancy on Behavioral Intention has p-values <0.05 and positive original sample values. Based on these results, it can be concluded that H1 is accepted.
2. H2: Effort Expectancy has a positive and significant effect on Behavioral Intention in using the KAI Access Application. Based on Table 3, Effort Expectancy on Behavioral Intention has p-values <0.05 and positive original sample values. Based on these results, it can be concluded that H2 is accepted.
3. H3: Social Influence has a positive and significant effect on Behavioral Intention in using the KAI Access Application. Based on Table 3, Social Influence on Behavioral Intention has p-values >0.05 and negative original sample values. Based on these results, it can be concluded that H3 is rejected.
4. H4: Facilitating Condition has a positive and significant effect on Use Behavior in using the KAI Access Application. Based on Table 3, Facilitating Condition on Use Behavior has p-values <0.05 and positive original sample values. Based on these results, it can be concluded that H4 is accepted.
5. H5: Behavioral Intention has a positive and significant effect on Use Behavior in using the KAI Access Application. Based on Table 3, Behavioral Intention on Use Behavior has p-values <0.05 and positive original sample values. Based on these results, it can be concluded that H5 is accepted.

Based on the results of hypothesis testing with moderator variables, the following results are obtained:

a. Performance Expectancy on Behavioral Intention is not influenced by age. The relationship between the two variables is positive and significant for all age groups.
b. Effort Expectancy on Behavioral Intention is not influenced by age and experience. The relationship between the two variables is positive and significant for the age group of 15-25 years, users with less than 1 month of usage, and users with more than 2 months of usage.

c. Social Influence on Behavioral Intention is not influenced by age, experience, and voluntariness. The relationship between the two variables is positive and significant for voluntary users.
d. Facilitating Condition on Use Behavior is not influenced by age and experience. The relationship between the two variables is positive and significant for all age groups and for users with 1-2 months of usage.

Conclusion, Some factors that influence the acceptance of the KAI Access application by users are the Performance Expectancy, Effort Expectancy, and Facilitating Condition variables. All three variables have a positive and significant impact, while the Social Influence variable has a negative but not significant impact on the intention to use the application and its usage.

Moderator variables such as age and experience are known not to affect the relationship between the factors influencing the acceptance of the KAI Access application. However, the voluntariness moderator variable does affect the relationship between the Social Influence variable and the Behavioral Intention variable.

Recommendations: Based on the discussion and conclusion, the following recommendations can be suggested to PT. KAI to improve the usage of the KAI Access application based on factors influencing user acceptance:

a. For the Effort Expectancy variable, indicator EE1 shows that 2% of users find it difficult to use the system. The recommendation is to provide a more user-friendly application design to make it easy for users. A better-functioning and user-friendly application can enhance the service and make it easier for users to purchase train tickets online, leading to increased usage of the KAI Access application.
b. For the Effort Expectancy variable, indicator EE2 shows that 0.5% of users feel that the system cannot meet their desires. The recommendation is to ensure that the features of the application are problem-free and can be used effectively according to the intended purpose.
c. For the Facilitating Condition variable, indicator FC1 shows that 2% of respondents feel that they still experience disruptions when using the application. The recommendation is to optimize the available resources to run the application and improve the application to be used with a wider range of mobile resources.
d. For the Facilitating Condition variable, indicator FC3 shows that 31% of users feel that the application lacks instructions on how to use it, while indicator FC4 shows that 4% of users feel they lack the knowledge to operate the application. The recommendation is to provide special instructions as an additional feature to assist new users in using the application and help in case of problems during usage.

Recommendations, Based on the results of this study, it is evident that moderator variables influence some relationships between variables and produce different outcomes in each age group, experience level, and voluntariness category. The suggestion provided as a reference

for further research is to conduct more in-depth studies, focusing on the impact of moderator variables on the relationships between dependent and independent variables, using different datasets, larger samples, and better data variety. This approach would allow for a more specific understanding of their effects on each moderator variable group.

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