

User Satisfaction Analysis of Access Kai Application Using Delone and Mclean Method Approach

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KEYWORDS

Mobile Application; User Satisfaction; Delone and Mclean; SEM PL

ABSTRACT

Access KAI application is a mobile application like e-commerce that sell various kinds of service related to train travel in Indonesia officially developed by PT. Indonesian Railways. PT. KAI has collaborated with other e-commercial application as a partner like Traveloka and Tiket.com to sell their intercity train tickets. The main purpose of this study is to analyze factors that influence user satisfaction and give the insight for the company. This research was conducted using the Delone and Mclean model that aims to identify and evaluate factors the influence of Information Quality, System Quality, Service Quality, and Intention to Use, against the User Satisfaction. This study involves analyzing data with the SEM-PLS analysis tools (Structural Equation Modelling) using SmartPLS 4 by testing data that has been collected through online questionnaire from Google Forms to 400 respondents. The study was conducted with 26 questions derived from 5 variables. These 5 variables are analyzed the validity and reliability levels. Then if all are said to be valid and reliable, the model will be tested using the PLS and Bootstrapping methods. The results of the validity and reliability test were declared valid and reliable. The result of test of proposed research model showed that system quality and intention to use have a positive and significant correlation ($p\text{-value} < 0.01$) on user satisfaction. While information quality and service quality have no significant correlation ($p\text{-value} > 0.01$) on user satisfaction. Thus, the result of this study states that only system quality and intention to use is stated to have a significant effect in influencing user satisfaction.

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Introduction

Application Mobile is a software application that runs on a device Mobile which was developed to help us to access the internet to certain services. PT. Indonesian Railways (PT. KAI) launched an application that can be accessed through Buyens (2000) Mobile named Access by KAI with the aim of making it easier for customers to get services and information quickly and increase brand visibility from PT. KAI. Starting at the end of 2015, Tiket.com partnered with PT. KAI and in 2026 Traveloka will also join as partners of PT. KAI. This strategic partnership allows PT. KAI to expand its business and handle customer requests and meet customer preferences in accessing information and services from PT. KAI. Over time, PT. KAI evaluates how the influence of the current partnership is. As seen in Table 1, the percentage of the number of intercity train ticket purchases on the Access by KAI application over the last 3 years has continued to increase in percentage despite the fact that Access services can be used on partner applications (B2B). This can be interpreted that the development of the application is still acceptable to users, trusted by users, and for PT. KAI with the use of

technology such as applications Mobile It can help facilitate the company's operational activities, help provide prompt service and information, and increase sales.

Table 1. Intercity Ticket Sales Percentage on Access app from 2021-2022

Source	2020	2021	2022
Access KAI	30,12%	44,36%	52,16%
B2B	46,32%	42,04%	35,27%

However, even though the percentage of ticket purchases continues to increase from year to year, PT. KAI received numerous negative reviews and rating scales (Rating) low through Google Play Store. The following is a summary of the number Rating given by users based on the categories of reviews available:

Table 2. App Rating Summary on the Google Play Store from October – November 2022

Category	Rating Scale					Overall Total
	1	2	3	4	5	
Good and good apps	0	0	3	8	100	111
Requests for feature additions	4	2	0	0	5	11
Application error	83	38	33	12	0	166
Difficult to use or understandable	90	38	36	12	10	186
Problematic network or legacy application response	87	34	24	4	0	149
Incomplete or inaccurate information	20	8	9	4	0	41
Overall total	284	120	105	40	115	664

From several reviews given by users, there are many reviews with low ratings from users with problem categories such as applications there are many errors, frequent network connection interruptions, application response is long, incomplete or incorrect information, changes in the ticket booking process or ticket cancellations, features that are difficult to understand or even cannot be used. By understanding the category of reasons from user reviews, PT. KAI strives to fix existing problems and improve the capabilities of the application in the hope of reducing negative reviews or rating with the lowest score and also being able to maintain the number of users and the number of ticket purchase transactions through the Access KAI application.

In June 2023, Access by KAI again launched a new version of the Access application by fixing all common problems reported by users and providing adoption of new technologies with the concept Super App such as uniting all services at PT. KAI into one application such as buying intercity train tickets, intra-city trains, airport trains, intercity high-speed trains (Whoosh), and other non-rail ticketing services such as life insurance, hotel bookings, transit accommodation, mobile data, electricity bill payment, entertainment subscriptions, ticket promotions, KAI points, E-wallet (KAI Pay), several payment methods, and travel planners so that it can make it easier for users to access other services apart from buying intercity train tickets. After the update to the Access application, PT. KAI again reviews and reviews reviews and awards Rating from users through Google Play Store at the end of 2023. From reviews and giveaways Rating of the users can be seen in Table 3, revealing that the number of ratings given by users based on the same review category as before does not show much change in fact, the number of Rating the most still on Rating 1.

Table 3. App Assessment Summary on Google Play Store from October – November 2023

Category	Rating Scale					Overall Total
	1	2	3	4	5	
Good and good apps	0	0	6	28	255	289
Requests for feature additions	1	2	15	20	10	48
Application error	235	64	30	20	10	359
Difficult to use or understandable	435	158	84	48	50	775
Problematic network or legacy application response	91	30	21	0	10	152
Incomplete or inaccurate information	102	34	36	16	0	188
Changes to how the app is used to book tickets	44	18	12	0	5	79
Overall total	908	306	204	132	340	1890

With low ratings and negative reviews of the Access application, this raises questions for application development at PT. KAI, whether the application does not run according to user expectations, whether the existing application makes it difficult for users to use it, whether it is true that the application often has problems when used, or whether there are other factors that are not yet known by PT. KAI so that the repairs made by PT. KAI has not been completed properly which causes users to be dissatisfied with updates from the application.

Previous studies have provided significant insights into user satisfaction and technological advancements in mobile applications. For instance, Zhang et al. (2021) studied the factors influencing user satisfaction with mobile applications and found that ease of use and feature richness were key determinants of user experience. Similarly, Mulyadi et al. (2022) explored the role of mobile application performance in user satisfaction, revealing that technical issues like app crashes and slow response times significantly impacted customer perception. These studies highlight the importance of user-centered design in application development. However, both studies focused more on general mobile applications and did not specifically address the complexities of integrated service applications like Access by KAI, which serves a variety of functions. The novelty of this study lies in its focus on PT. KAI's Access application, specifically examining how integrated services, technological innovations, and user experiences contribute to user satisfaction. This study bridges the gap by applying the Delone & McLean Information System Success model to evaluate how the app's performance in a unique multi-service environment impacts customer satisfaction.

Based on this background, this study was conducted to assess the factors that affect user satisfaction in using the application. One of the research methods that can be used to evaluate the factors that affect user satisfaction with application development is the Delone & Mclean Information System Success method. Thus, this study was conducted to understand the factors that contribute to user satisfaction of the Access by KAI application using the model from Delone & Mclean by analyzing the factors used in the research model by collecting quantitative data to find out the opinions and views of the respondents on the application and then, conducting analysis and testing the relationship between factors based on the model The proposed research uses the SEM-PLS application.

The objective of this study is to assess the factors influencing user satisfaction with the Access by KAI mobile application and identify areas for improvement. By utilizing the Delone & McLean Information System Success model and SEM-PLS analysis, this research aims to

provide PT. KAI with insights into how the app's features, usability, performance, and user interface impact satisfaction. The findings will contribute to improving app development strategies and enhancing customer engagement, ultimately leading to a better user experience and increased satisfaction.

Research Methods

Based on the background that has been described, this study was conducted to identify factors that affect the level of user satisfaction. By reviewing previous research, the right model to identify the factors that affect user satisfaction is the model of Delone & Mclean.

The Delone and Mclean Method

Based on the rating categories given by customers on the Google Play Store, the main factors that have a big influence on user satisfaction are such as good system performance, response time, reliable system, information provided clear, accurate information, system provides the right response according to the process carried out, completeness of service, very helpful, attractive, easy to understand, easy to use, External conditions are very supportive of users when using the system, the system can be used without internal or external constraints, the system can be used with many mobile phone devices so that it can be accessed from anywhere and anytime.

Several factors that can measure user satisfaction are according to the model Delone & Mclean because it includes factors such as system quality (System Quality), quality of information (System Quality), quality of service (Service Quality), interest in use (intention to us), and user satisfaction (user satisfaction) . Of all the variables in the Delone & Mclean, the researcher will not consider the net profit variable (Net Benefit) because this research was conducted only to find out the factors that affect user satisfaction in order to improve and optimize the services provided by PT. KAI in the improvement and development of the next application (DeLone & McLean, 2003; Delone & McLean, 2014; Floropoulos et al., 2010; Ghobakhloo & Tang, 2015; Wanniarachchige, 2014).

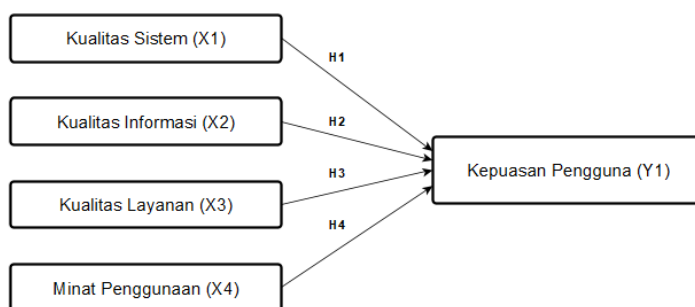


Figure 1. Research Model

Based on Figure 1, the hypothesis in this study is as follows:

1. H1: System Quality has a positive effect on User Satisfaction
2. H2: Information Quality has a positive effect on User Satisfaction
3. H3: Service Quality has a positive effect on User Satisfaction
4. H4: Usage Interest has a Positive Effect on User Satisfaction

In collecting quantitative data, a questionnaire will be distributed to see the views, opinions, and attitudes of users towards the system towards active users of the Access application as many as possible Sample to be used. Retrieval method Sample used is the method of Simple random sampling Namely by calculating using a formula based on the total

number of active application users (15,394,066). From the results of the calculation carried out, the total sample needed in this study is as many as 400 respondents.

Questionnaire questions are indicators of the model variables that have been selected from the proposed research method. Respondents' answers were assessed using a scale Likert, i.e. 1 to strongly disagree, 2 to disagree, 3 to neutral, 4 to agree, and 5 to strongly agree (Sugiyono, 2017).

Meanwhile, the data analysis collected will be tested using partial least squares-structural equality modelling PLS-SEM using SmartPLS 4 by testing the outer model and inner model. Outer model testing was carried out by looking at outer loading, average variance extracted, fornell-larcker criteria, cross-loading, cronbach's-alpha, and composite reliability. Then, the inner model test was carried out by evaluating the r-square value, path coefficient, t-statistics, and p-value. This modeling helps to find out the relationships between each variable.

Results and Discussion

Demographics of Respondents

The research questionnaire made using Google Form was distributed to respondents through the WhatsApp and Instagram applications. The target respondents are active users of the Access application who have purchased intercity train tickets for the past year. From the distribution of the questionnaire carried out, 544 respondents were obtained, but only 402 respondent data met the requirements and the filling was complete so that the data could be accepted and analyzed. The characteristics of the respondents in this study were in several categories, namely: gender, age, occupation, domicile, and frequency of ticket purchases through the Access application. The demographic information from the survey is presented in Table 4.

Table 4. Respondent Demographic Information

Information	Category	Frequency (n)	Percentage (%)
Gender	Man	118	47
	Woman	214	53
Age	18-24	56	13,9
	25-34	180	44,8
	35-44	84	20,9
	45-54	40	10
	> 55	42	10,4
Work	Work	340	84,6
	Not working/ Retiring	45	11,2
	Students/ Students	17	4,2
Domicile	Jakarta	194	48
	Bogor	14	3
	Depok	48	12
	Tangerang	35	9
	Bekasi	111	28
Frequency of purchases over the past 1 year	1 time	140	35
	2-5 times	215	53
	6-10 times	35	9
	> 10 times	12	3

Source: processed data

Based on the summary of respondent demographics in Table 4, the majority of respondents were female as many as 214 (53%) and aged 25-34 years as many as 180 (45%). Most of the respondents who have the status of active workers are 340 (85%) and domiciled in the Jakarta area 194 (48%). The majority of respondents have used the Access application to transact 2-5 times 215 (53%) in the past year.

Outer Model Measurement Analysis

External model testing was carried out to test the level of validity and reliability of the relationship between latent variables and their indicators to test whether the data were suitable for use in the study. There are two main types of validity assessed in PLS-SEM which consist of convergent validity and discriminant validity. Convergent validity testing by looking at the outer loading and average variance extracted values and discriminant validity testing by looking at the Fornell Larcker criterion and cross loading values. Reliability testing can be seen from Cronbach alpha and composite reliability values.

The following are the results of the convergent validity measurements:

Table 5. Outer Loading Testing

Variable	Indicators	Outer Loading	Description
System Quality (X1)	X1.1	0,902	Valid
	X1.2	0,919	Valid
	X1.3	0,915	Valid
	X1.4	0,909	Valid
	X1.5	0,913	Valid
Quality of Information (X2)	X2.1	0,978	Valid
	X2.2	0,972	Valid
	X2.3	0,961	Valid
	X2.4	0,967	Valid
	X2.5	0,963	Valid
Quality of Service (X3)	X3.1	0,914	Valid
	X3.2	0,926	Valid
	X3.3	0,907	Valid
	X3.4	0,929	Valid
	X3.5	0,897	Valid
Usage Interest (x4)	X4.1	0,859	Valid
	X4.2	0,831	Valid
	X4.3	0,926	Valid
	X4.4	0,917	Valid
	X4.5	0,908	Valid
User Satisfaction (Y1)	Y1.1	0,888	Valid
	Y1.2	0,918	Valid
	Y1.3	0,932	Valid
	Y1.4	0,925	Valid
	Y1.5	0,931	Valid
	Y1.6	0,952	Valid

Source: processed data

Based on the outer loading test in Table 5, it is said that all indicators are valid. And further testing can be continued by testing the AVE value as the square average of the outer loading indicator and latent variables. The AVE values are presented in Table 6. And the results show that all indicators have an AVE value above 0.5.

Table 6. AVE Testing

Variable	Average Variance Extracted (AVE)
System Quality (X1)	0,831
Quality of Information (X2)	0,937
Quality of Service (X3)	0,836
Usage Interest (x4)	0,790
User Satisfaction (Y1)	0,855

Source: processed data

In Table 6, it shows that the results of the fornell-lacker criterion test show that each latent variable has a greater value than the correlation between the variable and other latent variables. That is, each latent variable has attributes that are unique to other constructs.

The following are the results of the discriminant validity measurement:

Table 7. Fornell-Larcker Criterion Testing

Variable	X1	X2	X3	X4	Y1
System Quality (X1)	0,91				
Quality of Information (X2)	0,84	0,97			
Quality of Service (X3)	0,90	0,91	0,91		
Usage Interest (x4)	0,76	0,74	0,78	0,89	
User Satisfaction (Y1)	0,87	0,81	0,86	0,85	0,92

Source: processed data

Apart from the fornell-larcker criterion test, the validity test of the delivery was carried out again by looking at the value of cross loading on all constructs to conduct an exploratory factor analysis, by evaluating whether the loading factor in the construct has a higher value than other constructs. The results of the cross loading test are presented in Table 8.

Table 8. Cross Loading Testing

Variable	X1	X2	X3	X4	Y1
X1.1	0,90	0,80	0,80	0,70	0,80
X1.2	0,92	0,77	0,83	0,70	0,78
X1.3	0,92	0,76	0,88	0,71	0,80
X1.4	0,91	0,70	0,76	0,65	0,77
X1.5	0,91	0,81	0,82	0,69	0,80
X2.1	0,82	0,98	0,89	0,70	0,79
X2.2	0,81	0,97	0,89	0,69	0,79
X2.3	0,83	0,96	0,88	0,73	0,80
X2.4	0,81	0,97	0,87	0,73	0,78
X2.5	0,81	0,96	0,87	0,71	0,78
X3.1	0,82	0,79	0,91	0,67	0,78
X3.2	0,80	0,79	0,93	0,71	0,76
X3.3	0,82	0,88	0,91	0,70	0,78
X3.4	0,85	0,88	0,93	0,76	0,82
X3.5	0,82	0,82	0,90	0,73	0,79
X4.1	0,70	0,62	0,71	0,86	0,69
X4.2	0,75	0,80	0,80	0,83	0,72
X4.3	0,62	0,61	0,63	0,93	0,78
X4.4	0,63	0,59	0,64	0,92	0,77
X4.5	0,68	0,67	0,72	0,91	0,81
Y1.1	0,80	0,73	0,79	0,74	0,89
Y1.2	0,81	0,71	0,81	0,76	0,92
Y1.3	0,80	0,77	0,77	0,77	0,93

Y1.4	0,77	0,75	0,72	0,78	0,93
Y1.5	0,82	0,76	0,82	0,82	0,93
Y1.6	0,82	0,79	0,84	0,86	0,95

Source: processed data

After conducting validity testing, then reliability testing is carried out. Reliability tests can be assessed based on the values of Cronbach's-alpha and composite reliability. As seen in Table 9, Cronbach's-alpha and composite reliability values of each construct exceed the threshold of 0.7. This means that all constructs can be said to be reliable.

Table 9. Cronbach's-Alpha and Composite Reliability Testing

Variable	Cronbach's Alpha	Composite Reliability	Information
System Quality (X1)	0,95	0,96	Reliable
Quality of Information (X2)	0,98	0,99	Reliable
Quality of Service (X3)	0,95	0,96	Reliable
Usage Interest (x4)	0,93	0,95	Reliable
User Satisfaction (Y1)	0,97	0,97	Reliable

Source: processed data

Analysis of Inner Model Measurements

Internal model testing was carried out to test the significance and strength of the relationship between latent variables in the structural model. Testing was also carried out to test the hypothesis in this study. This test was performed to evaluate the R-Square value, path coefficient, and t-statistics. The following are the results of the testing of the inner model that has been carried out:

The results of the R-Square test in Table 9 show an R-Square value of 0.85 which shows that the model prediction is match and fit which means that the variables of system quality, information quality, service quality, and interest in using have a strong effect on user satisfaction by 85%. While the remaining 15% is explained by other variables that were not used in this study.

Table 10. R-Square Testing

Variable	R-Square
User Satisfaction (Y1)	0,851

Source: processed data

The next thing is to test the model using the bootstrapping method. The number of subsamples used in bootstrapping testing is 5,000 subsamples. The results of the tests from bootstrapping are shown in Table 11. The test of the path coefficient, t-statistics, and p-value can be seen in Table 10 and the graphical output of the model that has been carried out can be seen in Figure 3.

Table 11. Testing Path Coefficient, T-statistics, and P-value

Variable	Path Coefficient (β)	T-Value	P-Value	Information
X1 \rightarrow Y1	0,38	5,74	0,00	Significant
X2 \rightarrow Y1	0,07	1,34	0,18	Insignificant
X3 \rightarrow Y1	0,13	1,46	0,15	Insignificant
X4 \rightarrow Y1	0,41	6,09	0,00	Significant

Source: processed data

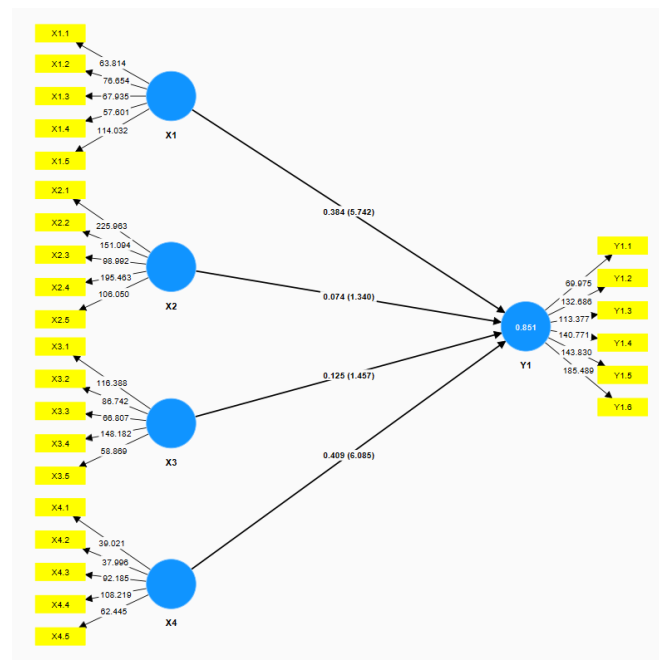


Figure 3. Graphical Output Model

The following is an analysis of the hypothesis testing in this study:

Hypothesis 1: System Quality has a positive effect on User Satisfaction

Based on the test results in Table 10, the path coefficient test results of X1 are 0.384 and the results are positive, showing that the higher the system quality value, the higher the user satisfaction value, which is 38.4%. Then, the t-statistic test results of X1 were 5.742, showing that the system quality had an influence and the p-value test results of X1 were 0.000, showing that the system quality had a significant positive influence on user satisfaction. From the results of the analysis, hypothesis 1 is acceptable.

Hypothesis 2: Information Quality has a positive effect on User Satisfaction

Based on the test results in Table 10, the path coefficient test results of X2 are 0.074 and the results are positive, showing that the higher the information quality value, the higher the user satisfaction value, which is 7.4%. Then, the results of the t-statistic test of X2 of 1.340, showing that the quality of information had no effect and the results of the p-value test of X2 of 0.180, also showed that the quality of information did not have a significant influence on user satisfaction. From the results of the analysis, hypothesis 2 is unacceptable.

Hypothesis 3: Service Quality has a positive effect on User Satisfaction

Based on the test results in Table 10, the path coefficient test results of X3 are 0.125 and the results are positive, showing that the higher the service quality value, the higher the user satisfaction value, which is 12.5%. Then, the t-statistic test results of X3 were 1.457, showing that the quality of service had no effect and the p-value test results of X3 were 0.145, also showing that the quality of service did not have a significant influence on user satisfaction. From the results of the analysis, hypothesis 3 is unacceptable.

Hypothesis 4: Usage Interest has a Positive Effect on User Satisfaction

Based on the test results in Table 10, the path coefficient test results of X4 are 0.409 and the results are positive, showing that the higher the value of interest in use, the higher the user satisfaction value, which is 40.9%. Then, the results of the t-statistic test of X4 were 6.085, showing that the interest in use had an influence and the p-value test results of the X4 were 0.000, showing that the interest in use had a significant positive influence on user satisfaction. From the results of the analysis, hypothesis 4 is acceptable.

Based on the results of the analysis of the four hypotheses carried out, only H1 (system quality) and H4 (usage interest) had a significant positive effect on Y1 (user satisfaction). This explains that the quality of the system and the interest in using an application are important factors in the assessment of a system so that it can meet user needs and can be well accepted. In this case, PT. XYZ has tried to continue to improve the quality of the system by improving every shortcomings of the system and developing the system so that it can continue to keep up with technological developments so that it can increase users' interest in using the Access application. This research is also in line with that conducted by Rismayanti, Dewi, and Anshori in previous research stated that system quality and usage interest have a significant effect on user satisfaction with a high percentage. In another study conducted by Yongama and Baldreck, the same results showed that system quality, information quality, service quality, and system use have a significant positive influence on user satisfaction. Based on the answers from respondents regarding the quality of the system and interest in use, the majority gave answers of agree (S) and strongly agree (SS) with an average of 95.5% and 94.7%. That way, the system quality of the Access application can be described as that the system quality of the application can be used well in various Mobile Device, easy to use, easy to understand, can provide a quick response, and can run well without any problems (Bashiri et al., 2023; Çelik & Ayaz, 2022; Purwati et al., 2021; Putra et al., 2022; Sorongan & Hidayati, 2020). And with the fulfillment of user needs and a positive user experience from the Access application, users have the intention to continue using the application. For this reason, these two variables must be maintained to be able to increase user satisfaction of Access applications.

Based on the results of the analysis of the four hypotheses carried out, H2 (information quality) and H3 (service quality) did not have a significant positive effect on Y1 (user satisfaction). This is contrary to the results of previous research researched by Nicholas, Vasquez, Banner, and Flowers which said that information quality and service quality have a positive effect on user satisfaction because the majority of users use the system on a daily basis to help them in performing tasks and lightening their work and the results also provide a high percentage. With the results of the above test, it can be said that users do not see that information quality and service quality are the main things that affect user satisfaction compared to the quality of the system and interest in use. This is in accordance with the research researched by Paramaeswari and Sarno, user satisfaction is positively influenced by performance expectation factors so that the quality of the system becomes more important which affects user satisfaction. For example, if the information provided is complete and the services provided vary but the system has many errors or provides a long response, this can provide a bad experience for the user and make the user feel dissatisfied (Abu-Taieh et al., 2022; Raza et al., 2019; Samsudeen et al., 2022; Septiani et al., 2022). Thus, it can be concluded that based on the results of the analysis of 4 hypotheses from the research model using SmartPLS, it is found that only 2 hypotheses are acceptable, namely factors or variables of system quality and user interest have a significant and positive relationship effect on user satisfaction while factors or variables of information quality and service quality do not have a significant relationship effect on user satisfaction. The recapitulation of the test results that have been carried out can be seen in Table 11 (Anjani & Mukhlis, 2022; Nawaz et al., 2020; Paramaeswari & Sarno, 2022).

Table 12. Hypothesis Testing Results

Hypothesis	Relationship	Result
H1	System Quality has a Positive Effect on User Satisfaction	Accepted
H2	Information Quality has a positive effect on User Satisfaction	Rejected
H3	Service Quality has a positive effect on User Satisfaction	Rejected
H4	Usage Interest has a Positive Effect on User Satisfaction	Accepted

Conclusion

This research aimed to identify the factors that affect the level of user satisfaction with the Access application. Based on the analysis, it was concluded that system quality and usage interest significantly and positively influence user satisfaction, while information quality and service quality do not. The model's performance evaluation yielded a high R-Square value of 0.851, indicating that system quality and usage interest accounted for 85.1% of user satisfaction, while other variables not included in the study explained the remaining 14.9%. The positive response to system quality indicates that users found the app functional, responsive, and error-free after its development. Additionally, the positive outlook on usage interest suggests that users remain satisfied with the app and are motivated to continue using it. Therefore, it is recommended that PT. KAI focus on maintaining and enhancing system quality and user engagement to ensure long-term user satisfaction. Further research could explore additional factors such as service quality and information quality, which could potentially affect user satisfaction if optimized.

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