

# Analysis of the User Experience of the KAI Access Application with the UEQ Method

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**Abstract.** *Technological advances are currently making the transportation sector experience rapid development. One of the areas of transportation that is experiencing development is rail transportation, where currently, ticket ordering services are carried out using the KAI Access application. This is done as a form of excellent service by PT KAI to maintain the satisfaction of train passengers. However, the KAI Access application has the impression that some train passengers are less practical. Therefore, it is necessary to analyze the user experience of the KAI Access application. The purpose of this study was to evaluate the user experience of the KAI Access application by train passengers. The method used in this research is the User Experience Questionnaire (UEQ). The sample in this study was obtained randomly from users of the KAI Access application with a sample size of 105 respondents. There are six aspects assessed in the UEQ, namely attractiveness, clarity, efficiency, accuracy, stimulation, and novelty. The six aspects have a very good value category in the aspect of efficiency, for the aspects of attractiveness, clarity, accuracy, and stimulation are in a good category. Then, for the novelty aspect, it is included in the above-average rating category.*

**Keywords —** Train, PT KAI, KAI Access, User Experience Evaluation, User Experience Questionnaire.

## 1. Introduction

The era of digitalization is one of the impacts of globalization which has given a new influence, namely the advancement of information technology. The development of information technology that is happening at this time can be seen because there is a change in the role of humans in carrying out a task and processes where technology automates to replace humans [2]. Products produced by information technology encourage various fields to innovate to improve the quality of service systems, especially in the field of transportation. One of the developments in the transportation mode service system that is currently being realized is the Railway. Trains are the most popular mode of transportation in Indonesia because they are efficient and affordable. One of the steps to improve the quality of rail services is to release the KAI Access application.

KAI Access is an online train ticket booking application that can be done anytime and anywhere [8]. KAI Access is also very easy to use because it is supported by a simple interface. Another advantage of KAI Access is that there are first-mile and last-mile services, schedule changes and ticket cancellations, reservations and information from KAI Group services, and others. The various advantages of KAI Access are able to attract more people to install the KAI Access application. Apart from the advantages, the KAI Access application also has drawbacks. Based on satisfaction research conducted by PT KAI in 2021, as many as 210 respondents, 26.19 percent, installed the KAI Access application but never used it and around 14.84 percent of respondents preferred to buy at the station directly. From these data, the reason most respondents gave was that the KAI Access application still seemed impractical [3]. Therefore, this is a challenge that must be faced by PT KAI because a service that can bridge the conditions of society and the

current digital era is one of the excellent service implementations. Providing excellent and maximum service will increase the satisfaction of railroad passengers.

## 2. Literature Review

Reviews about KAI Access and user experience will be discussed in this section.

### 2.1 KAI Access Application

The KAI Access application was officially launched by PT Kereta Api Indonesia (Persero) in 2014. The KAI Access application has the main function as a medium for ordering train tickets online so that customers can order train tickets anytime and anywhere [8].

The KAI Access service provides benefits to passengers with no additional costs for purchasing tickets. Various payment methods are also provided, namely LinkAja, direct debit, QRIS, and the latest is KAIPay. Another advantage of using KAI Access is the e-boarding pass feature. Through this feature, passengers no longer need to print boarding passes. Simply print the e-boarding pass on the application, and scan the QR Code that appears on the scanner available at the boarding officer's desk.

Improving the quality of KAI Access services can also be done by becoming a Premium Member. By registering as a Premium Member, every transaction for ordering commercial long-distance train tickets (excluding KA Public Service Obligation & Local) will receive a Railpoint. These rail points can be exchanged for commercial train tickets (excluding Priority, Luxury, and reduction trains) by fulfilling the terms and conditions that apply [3]. Premium Member registration is also very easy. Customers are required to renew the Basic Member using the original Identity Card (KTP) and passport photo and complete the required data.

**2.2 User Experience**

User experiences the overall interaction from the aspect of the user with the company, its services, and its products. The first requirement of a good user experience is meeting customer needs properly. Then it has simplicity and luxury that can make these products fun to use and own [6]. User experience is not about how the components of a product or service work but how the product or service works from an outside perspective when the user is interacting [1].

The important role of User Experience (UX) is to determine the success or failure of a product. User experience focuses on the aspects of experience, perception, and value meaning from human and product interactions. User experience includes the ease of the system to learn, efficiency in use, fun, and so on. The essence of UX is to ensure that users find value in something that is given to them [7].

**3. Methodology**

The source of data used in this study is primary data obtained by conducting a survey of train passengers at Surabaya Pasar Turi Station. The survey was conducted by distributing questionnaires and face-to-face interviews. The data collection technique in this study used purposive sampling by selecting respondents based on certain objectives and considerations. Because the population is unknown, the sample calculation uses the formula (Lemeshow, 1997) [5] as follows.

$$n = \frac{z^2 \cdot \frac{\alpha}{1-\alpha} P(1-P)}{d^2} \tag{1}$$

Is known:

n: Minimum number of samples.

Z: Normal distribution quartile value with significant level  $\alpha=5\%$ .

P: Optimal estimation (P=0.5%).

d: Sampling precision/error rate.

So that:

$$n = \frac{(1,96)^2 \cdot 0,5(1 - 0,5)}{0,1^2} = 96,04$$

From the results of the calculation above, it is obtained that the minimum number of samples to be taken is 96 respondents.

**3.1 Experiment Tools**

Questionnaire (UEQ) is a questionnaire to quickly measure product user experience [4]. The UEQ has 26 items which are divided into six aspects of assessment:

a. *Attractiveness*(attractiveness)

*Attractiveness*describes the overall impression of a product whether users like it or not.

b. *Perspiciuity*(clarity)

*Perspiciuity*is about the ease of use of the product and how easy it is to recognize the product.

c. *efficiency*(efficiency)

*efficiency*is about how efficiently and quickly the product reacts to user input. For example: sooner or later, practical or impractical.

d. *dependability*(accuracy)

*dependability*is the user can control the interaction when using the product. For example: predictable or unpredictable, helpful or hindering.

e. *stimulation*(stimulation)

*stimulation*is the user's pleasure when interacting with the product. For example: useful or less useful, interesting or not interesting.

f. *novelty*(novelty)

*novelty*is how innovative and creative a product is so that it can attract the attention of users.

Of the six aspects of the UEQ assessment, they are further translated into 26 statement items. Each statement item is in accordance with the predetermined assessment criteria from UEQ.

In filling out the UEQ questionnaire, respondents must focus on filling in because positive answers are not always on the right and as a reinforcement for the consistency of answers [9]. In addition, the question categories were randomized to minimize misinterpretation of question items in the same category [4], based on the UEQ measurement aspects which can be explained as follows:

a. Numbers 1, 12, 14, 16, 24, and 25 are included in the Attractiveness assessment aspect.

b. Numbers 2, 4, 13, and 21 are included in the Perspicuity assessment aspect.

c. Numbers 9, 20, 22, and 23 are included in the Efficiency assessment aspect.

d. Numbers 8, 11, 17, and 19 are included in the Dependability assessment aspect.

e. Numbers 5, 6, 7, and 18 are included in the Stimulation assessment aspect.

f. Numbers 3, 10, 15, and 26 are included in the Novelty assessment aspect.

**4. Result**

The results of the analysis of the characteristics of the respondents and the user experience of the KAI access application by train passengers are written in this section.

**4.1 Consistency Scale Anlysis**

Analysis on the scale consistency is known to assess the correlation between each question item on each aspect of the assessment. UEQ defines a Cronbachs alpha Standard Deviation value of more than 0.7, so the data is quite consistent.

**Table 1.** UEQ Consistency Scale

UEQ Scales	Cronbachs Alpha Consistency
Attractiveness	0.76
Perspiciuity	0.79
efficiency	0.74

dependability	0.71
stimulation	0.71
novelty	0.73

The Cronbachs alpha standard deviation values for the six aspects of the UEQ assessment for the KAI Access application are all more than 0.7, which means that the data is quite consistent.

#### 4.2 User Assessment KAI Access

The results of the KAI Access application user experience assessment with 26 UEQ items which have 6 assessment aspects. The following are the results of the UEQ item construction shown in table 2.

**Table 2.** UEQ Scale Structure

Items	Means	Var	std . Dev.	No.	left	Right	Scales
1	1.8	1.5	1.2	105	troublesome	pleasant	Attractiveness
2	2.1	0.9	0.9	105	incomprehensible	understandable	Clarity
3	0.9	2.9	1.7	105	creative	monotone	Novelty
4	2.0	1.2	1.1	105	easy to learn	hard to learn	Clarity
5	1.9	1.5	1.2	105	beneficial	less useful	Stimulation
6	1.3	2.1	1.4	105	boring	exciting	Stimulation
7	1.4	1.2	1.1	105	not attractive	interesting	Stimulation
8	1.5	1.3	1.2	105	unpredictable	predictable	Accuracy
9	1.7	1.7	1.3	105	fast	slow	Efficiency
10	0.9	2.6	1.6	105	inventive	conventional	Novelty
11	1.8	1.5	1.2	105	obstruct	support	Accuracy
12	2.1	0.9	0.9	105	good	bad	Attractiveness
13	1.9	1.4	1.2	105	complicated	simple	Clarity
14	1.4	1.1	1.1	105	dislike	exhilarating	Attractiveness

Items	Means	Var	std . Dev.	No.	left	Right	Scales
15	1.3	1.7	1.3	105	common	front	Novelty
16	2.1	0.7	0.8	105	uncomfortable	cozy	Attractiveness
17	1.8	1.4	1.2	105	safe	not safe	Accuracy
18	1.1	1.5	1.2	105	motivating	not motivating	Stimulation
19	1.3	1.5	1.2	105	meet expectations	did not live up to expectations	Accuracy
20	2.1	1.0	1.0	105	not efficient	efficient	Efficiency
21	1.8	1.2	1.1	105	clear	confusing	Clarity
22	2.2	1.0	1.0	105	impractical	practical	Efficiency
23	1.9	1.3	1.1	105	organized	untidy	Efficiency
24	1.5	1.0	1.0	105	attractive	not attractive	Attractiveness
25	1.6	1.1	1.1	105	user friendly	not user friendly	Attractiveness
26	1.2	2.4	1.5	105	conservative	innovative	Novelty

The 26 UEQ items obtained a positive average with a value greater than 0 which means there is no problem in measuring the UEQ question items.

#### 4.3 UEQ Benchmark Analysis

In the Benchmark analysis, the average UEQ is calculated to determine the results of the UEQ category assessment into the benchmark. As an example, the first person is taken, and then the average value of the questions on the attractiveness aspect is calculated, namely questions number 1, 12, 14, 16, 24, and 25. Then the average value of the questions is also calculated on the aspects of clarity, efficiency, accuracy, stimulation, and novelty according to the question number of each category. The same method was also carried out for other respondents. Next, we look for the overall

category average for all respondents, and the variance values obtained as follows.

**Table 3.** UEQ Average

UEQ Scales	Means	Variances
Attractiveness	1,760	0.47
Perspicuity	1,960	0.72
efficiency	1,995	0.69
dependability	1,588	0.77
stimulation	1,438	0.85
novelty	1,079	1.31

In Table 3, the highest average UEQ is the efficiency aspect of 1.995, while the lowest average is the novelty aspect of 1.079, so it can be concluded from the six aspects of the UEQ assessment that the KAI Access application has advantages in efficiency and aspects that can be improved to improve quality the KAI Access application is an aspect of novelty (Efficiency).

Analysis on the Benchmark sheet is the final result of the UEQ, which is depicted in the benchmark chart by showing the quality of the product into five categories, namely: excellent, good, above average, below average, and bad. To see the assessment categories of the six aspects of UEQ can be seen as follows.

**Table 4.** UEQ Benchmark Value Intervals

	Attractiveness	Perspicuity	efficiency	dependability	stimulation	novelty
<i>Excellent</i>	>1.84	>2	>1.88	>1.7	>1.7	>1,6
<i>good</i>	≤1.84 >1.58	≤2 >1.73	≤1.88 >1.5	≤1.7 >1.48	≤1.7 >1.35	≤1.6 >1,1 2
<i>Above Average</i>	≤1.58 >1.18	≤1.73 >1,2	≤1.5 >1.05	≤1.48 >1.14	≤1.35 >1	≤1.1 2 >0.7
<i>Below Average</i>	≤1.18 >0.69	≤1,2 >0.72	≤1.05 >0.6	≤1.14 >0.78	≤1 >0.5	≤0.7 >0.1 6
<i>Bad</i>	≤0.69	≤0.72	≤0.6	≤0.78	≤0.5	≤0.1 6

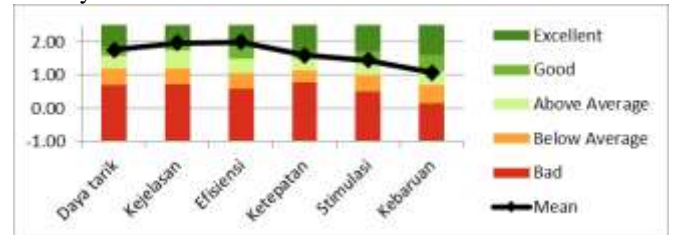
The results of the UEQ average assessment of the six categories are explained as follows.

**Table 5.** Benchmark Data Set Results

Scales	Means	Results
Attractiveness	1.76	<i>good</i>
Perspicuity	1.96	<i>good</i>
efficiency	2.00	<i>Excellent</i>
dependability	1.59	<i>good</i>
stimulation	1.44	<i>good</i>
novelty	1.08	<i>Above Average</i>

Based on Table 5, it can be concluded that the KAI Access Application has no deficiencies in each assessment

group because the KAI Access Application from the assessment results is in the above-average category with a minimum score of 1.08, which is found in the novelty aspect. Then, the results of the average values of the six aspects of attractiveness, clarity, efficiency, accuracy, stimulation, and novelty in the benchmark chart are as follows.



**Figure 1.** KAI Access Benchmark Graphic Results

In Figure 1, it can be seen that the average value of all question items according to the group, namely the average value of attractiveness, clarity, accuracy, and stimulation, gets a good impression. Furthermore, on the aspect of efficiency, the impression is very good, and for the aspect of novelty, the impression is above average. The KAI Access application tends to have positive impressions on each scale, so it can be concluded that users are satisfied with the application system that is already running.

### 5. Conclusion

Based on the UEQ analysis, it can be concluded that the KAI Access application from the six aspects of the assessment each has an average value of 1.76 for the attractiveness aspect, a value of 1.96 for the aspect of clarity, a value of 2.00 for the aspect of Efficiency, a value of 1.59 for the aspect of accuracy, the value is 1.44 for the aspect of stimulation, and a value of 1.08 for the aspect of novelty. The KAI Access application as a whole has a rating above 0.8, so the results of the application assessment are positive, quality, and useful for users.

Recommendations for improvements to the KAI Access application, the researcher only provides recommendations for improvements in the novelty aspect both in terms of feature innovation and appearance so that it is not monotonous and the KAI Access application provides more uses for train passengers. This recommendation for improvement is given because of the six aspects of the UEQ assessment, and the novelty aspect has the lowest score, namely Above Average.

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