

Model Development Effect of Emotional Design and Human Performance on The Use of The Teman Bus Apps

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Abstract. Teman Bus was established by the Ministry of Transportation to improve the safety, security, and convenience of mobilization. Teman Bus services can be accessed through the Teman Bus application (Teman Bus Apps), which makes it easier for consumers to search for bus information. However, the design of the application is not good, this can impact on reducing consumer interest in continuing to use the application. The concept of emotional design and human performance has a significant relationship with consumer intention to use technology. The research purposes are to determine the effect of emotional design on consumer intention to use the Teman Bus Apps and the effect of human performance on consumer trust in using the Teman Bus Apps. The study method was based on an online survey questionnaire and completing tasks for students in Surabaya who have used the Teman Bus Apps. The present research results reveal that usability and information quality variables as a representation of the emotional design aspect had a significant effect on students' intention to use the Teman Bus Apps, while the human performance aspect did not have a significant effect.

1 Introduction

Economical Easy Reliable and Comfortable Transport, usually called Teman Bus is a bus transportation service established by the Ministry of Transportation of the Republic of Indonesia to improve safety, security, and comfort of mobilization. Teman Bus was established on June 2, 2020 [1][2]. Teman Bus already operates in several regions in Indonesia, one of which is Surabaya and is known as Trans Semanggi Suroboyo. Teman Bus in Surabaya was inaugurated on 29 December 2021. Based on a performance survey from the Ministry of Transportation, the Trans Semanggi Suroboyo bus service carried almost 890,000 passengers from 1 February to 31 December 2022. This makes Teman Bus operations in Surabaya have the best performance in between Teman Bus operations in other cities [3]. The Teman Bus service can be accessed through the Teman Bus application (Teman Bus Apps), which can be downloaded for free on the Google Play Store to make it easy for consumers to search for bus information. The Teman Bus App provides information

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on travel routes, bus stops, integration maps, bus departure and arrival schedules, and bus positions.

The number of downloads of the Teman Bus Apps on the Google Play Store has reached more than 500,000 since the application release date on May 20, 2020, to May 2023 [4]. Whether an application is good or not can be seen based on the rating given by application users on the Google Play Store with a maximum rating of 5.0. The Teman Bus Apps had a fairly low rating of 2.6 in February 2023. The rating on the application shows a measure of user satisfaction when using the application services [5]. This means that consumers of the Teman Bus Apps are less satisfied with using the application.

The Teman Bus Downloader Statistics Report Playstore data provided by the Teman Bus Apps developer, starting from January 1, 2021, to November 17, 2021, shows that there has been an unstable change in the number of installs and uninstalls of the Teman Bus Apps [6]. Fig. 1 shows that the number of installs of the Teman Bus Apps decreased at the end of the year and does not appear to be constant, while the number of uninstalls of the Teman Bus Apps appears to be constant the number of application installs from March to October 2021 was below the number of uninstalls. This shows that many users tend to uninstall applications due to poor application design, which makes users feel difficult and dissatisfied with the Teman Bus Apps.

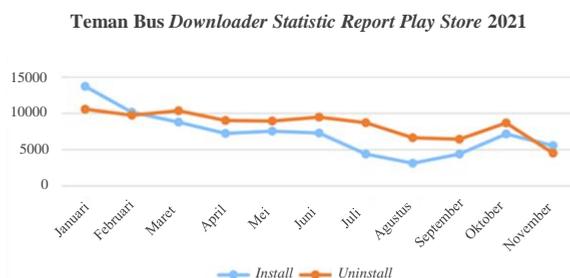


Fig. 1. Teman Bus Downloader Statistics Report Play Store [6].

The results of reviews of the Teman Bus Apps on the Play Store show that users are less satisfied with using the application [4]. Users experience several difficulties when using the application, including difficult bus route searches, difficulty memorizing the names of bus stops, the map display showing bus routes and positions is confusing for users, and bus stop information is not clear. Users think that the user interface on the application is not good, resulting in a bad user experience.

The interview results with students in Surabaya that researchers conducted from February 23 to March 2, 2023, show that interest in using the Teman Bus Apps is quite high. Of the 30 students who underwent the interview process, 21 students had used the Teman Bus Apps. The average frequency of students using the Teman Bus Apps is one time with 10 students still using the application and 11 other students no longer using the Teman Bus Apps. This shows that the use of the Teman Bus Apps is low and many students uninstall the application on their smartphones. Based on the interview results, the reason why students do not use the Teman Bus Apps is that they feel that using the Teman Bus Apps is still not optimal in helping students find information regarding the Trans Semanggi Suroboyo bus.

During the interview process, several students mentioned the advantages of the Teman Bus Apps, including that the application can be obtained for free and is informative for finding bus routes and the latest information on the Trans Semanggi Suroboyo bus. Apart from that, the students also explained the shortcomings of the Teman Bus Apps, including the lack of information on the nearest and most efficient bus stop from the student's position, confusion in determining the destination bus stop due to unclear bus stop names, the user's

location while using the Teman Bus service was not detected in the application. Also, it is difficult to understand the name of the bus stop. It is difficult to understand and check the position of the bus on the map display. It is difficult to understand the bus arrival time, the position of the bus stop on each corridor is not well highlighted so it confuses students.

Failures that are often experienced when using the Teman Bus Apps are based on the opinions of 21 students who have used the application, including incorrectly determining a more efficient destination stop, reading the bus route, incorrectly determining the bus stop, and incorrectly reading the bus arrival time. The shortcomings of the Teman Bus Apps do not result in a decrease in students' interest in continuing to use the Teman Bus Apps. Of the 21 students, 18 students still want to use the Teman Bus Apps. Therefore, it is very important to create a good mobile application design so that it can improve the user experience, and the user's relationship with the application [7][8][9][10].

The concept of emotional design is very important to apply in designing a mobile application, where designers must design an application that can later generate positive emotions to encourage users to actively use the application and share it with family or friends [8][9]. A person's emotional factors, such as mood, feelings, and personality influence every aspect of human interaction in their life. This also influences interactions with brands, products, websites, and applications. So someone can evaluate a product more than just function, but also because of emotional attraction to a product [7][9]. This model proposes that human emotions and behavior when interacting with objects result from three different levels of information processing, including visceral design, behavioral design, and reflective design [7][8].

Human performance is defined as a person's ability to complete work (tasks) [11]. Based on complaints felt by users of the Teman Bus Apps, shows that the Teman Bus Apps is difficult to use and difficult to obtain the desired information. The faster users complete tasks using the application, the more user satisfaction will also increase [12]. Users who are satisfied with the performance of a technology will have a high interest in using that technology [13]. Users prefer to use technology that is easy to use, where when the user interacts with the technology, the number of errors experienced by the user is low [14].

Trust is believed to be a key contributor to building and maintaining long-term relationships with users, so it can increase brand love and loyalty. Lack of trust can hinder consumers' decisions in using a technology [15][16]. Research on mobile banking applications conducted by [17], found a relationship between trust and interest in using applications.

PLS-SEM analysis can be used to find relationships between variables [18]. PLS-SEM is a powerful analysis method, because it is not based on many assumptions and the data does not have to be normally distributed [19]. SEM can also analyze objective measurements from eye movement measurements and subjective measurements with questionnaires simultaneously [20]. Based on this, the use of PLS-SEM analysis will be suitable for use in this research, where this research also carries out subjective and objective measurements. This research uses questionnaires and task experiments to test the research hypothesis.

In several previous studies, variables in the TAM model were usually used as an emotional design concept to determine their effect on consumers' intention to use technology [8][21]. This research adopts emotional design variables carried out by [22], including visual appeal, usability, and information quality variables to determine their effect on consumers' intention to use a mobile application, namely the Teman Bus Apps. Apart from that, no previous research has discussed the effect of human performance on consumer trust in using mobile applications, so this research will examine this. This research will also provide recommendations for improvements based on factors that influence consumers' intention to use the Teman Bus Apps obtained from the results of hypothesis testing.

2 Materials and methods

2.1 Model of Research

Determination of the basic model of the research was obtained through the process of literature study of previous research. By using the research model conducted by [22][17], this present study was proposed to determine the effect of emotional design on user evaluation of the Teman Bus Apps, which is represented by the variables of visual appeal, usability, and information quality on the intention to use the Teman Bus Apps (intention to use). Completion time and error rate, which are instruments of one of the dimensions of human performance, namely task performance [11], will be studied in this research. This research will review the influence of completion time and error rate on consumer trust in the Teman Bus Apps. Fig. 2 shows an illustration of the research model that will be carried out in this research.

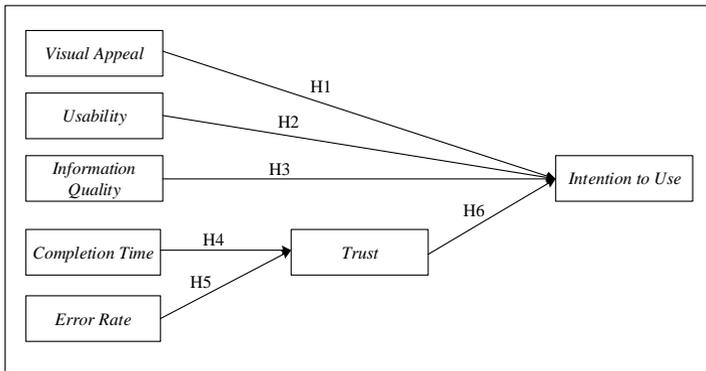


Fig. 2. Model of Research.

2.2 Hypothesis of Research

2.2.1 The Effect of Visual Appeal on Intention to Use

The basic concepts for creating "good design" on desktop interfaces, websites and smartphone applications include simplicity, consistency, feedback and forgiveness [23]. The higher the visual appeal of a shopping application on a smartphone, the higher the user's emotional reaction and interest in the product [24]. Based on previous research, no one has yet studied the effect of visual appeal in bus transportation applications on consumer intention. Hence, we as the researchers proposed the first hypothesis (H1) as follows:

H1: Visual appeal has a significant effect on consumer intention to use the Teman Bus Apps (intention to use).

2.2.2 The Effect of Usability on Intention to Use

A good level of usability can help users achieve their goals easily, understand the information provided in the application, and be interested in continuing to use the application [25][26]. The usability of m-commerce applications has a positive impact on user satisfaction and intention to continue using m-commerce applications in online shopping (continuance intention) [25]. Based on previous research, no one has yet studied the effect of usability on consumer intention to use the Teman Bus Apps using the PACMAD usability model as a

measurement indicator. PACMAD Model (People At the Center of Mobile Application Development) is a usability model developed specifically to measure mobile application performance based on seven usability attributes, including effectiveness, efficiency, satisfaction, learnability, memorability, errors, and cognitive load [27]. Therefore, the second hypothesis (H2) is proposed as follows:

H2: Usability has a significant effect on consumer intention to use the Teman Bus Apps (intention to use).

2.2.3 The Effect of Information Quality on Intention to Use

Information quality is the user's perception of the quality of information about products or services provided by an application. When consumers receive good information, it will influence a person's decision to use technology [28]. The information presented in a product must be accurate, up-to-date, easy to get, and complete to create good quality information [28][29]. Information quality and tourists' intention to use Web 3.0 in Malaysia have a significant relationship [30]. Based on previous research, no one has yet studied the effect of information quality in bus transportation applications on consumer intention. Hence, we as the researchers proposed the third hypothesis (H3) as follows:

H3: Information quality has a significant effect on consumer intention to use the Teman Bus Apps (intention to use).

2.2.4 The Effect of Completion Time on Trust

Consumer trust in using a technology depends on the user's perception of the technology's ability to help users achieve certain goals (ease of use, usability, user experience). Research conducted by [12] on the use of business applications states that the level of task completion influences user satisfaction. The faster users complete tasks using the application, the more user satisfaction will also increase. Based on previous research, no one has yet studied the effect of completion time in bus transportation applications on consumer trust in the application. Therefore, the fourth hypothesis (H4) is proposed as follows:

H4: Completion time has a significant effect on trust in the Teman Bus Apps.

2.2.5 The Effect of Error Rate on Trust

This is an example of a subsection. The level of consumer trust in using a technology is based on their perception of the technology's performance [31]. Users prefer to use technology that is easy to use, where when the user interacts with the technology, the number of errors experienced by the user is low [14]. Based on previous research, no one has yet studied the effect of error rate in bus transportation applications on consumer trust in the application. Therefore, the fifth hypothesis (H5) is proposed as follows:

H5: Error rate has a significant effect on consumer trust in the Teman Bus Apps.

2.2.6 The Effect of Trust on Intention to Use

One important factor that ensures the use of new technology is the level of trust in the technology [26]. Trust is defined as confidence in the function, reliability, and security of using a technology. Trust is a key factor for a satisfying relationship between users and products [32]. Research on mobile banking applications conducted by [17], found a relationship between trust and interest in using mobile banking applications (mobile banking adoption intention). Therefore, the sixth hypothesis (H6) is proposed as follows:

H6: Trust has a significant effect on consumer intention to use the Teman Bus Apps (intention to use).

2.3 Object of Research

In this research, one of the bus transportation applications from the Ministry of Transportation of the Republic of Indonesia was chosen, namely the Teman Bus Apps. Teman Bus Apps provides information on travel destination routes, stops, integrated maps, and bus departure or arrival schedules. Teman Bus Apps can be accessed on smartphones via the Google Play Store.

2.4 Respondent of Research

A purposive sampling technique was used to determine the respondents of this research, with the criteria for respondents being students who currently reside in the Surabaya area and have used the Teman Bus Apps to find out information about the Trans Semanggi Suroboyo bus. Respondents in the research will fill out a questionnaire via Google Form and several respondents will also carry out several tasks related to using the Teman Bus Apps.

Surabaya city was chosen as the city for research because [3] stated that the occupancy of Trans Semanggi Suroboyo buses throughout 2022 reached 70.6 percent and was the city with the highest achievement compared to Teman Bus operations in 10 other cities. The respondents in this research were students because based on data from [33], it was stated that the highest smartphone users in Indonesia were in the 20 - 29 year age range at 75.95%. Apart from that, based on research conducted by [34], states that Teman Bus service users are dominated by students with a percentage of 53.6%.

The survey was conducted on 135 students who were asked to fill out a questionnaire via Google Form, but there were only 122 valid data used in this research. The sample size is considered sufficient because it is based on [35], which states that the number of representative samples depends on the number of indicators used multiplied by 5 to 10. The number of indicators in this study is 23. Thus, the minimum sample size for this study is 115 samples. Apart from that, 40 of the 135 students were asked to carry out tasks related to using the Teman Bus Apps [12][36].

2.5 Research and Experiment Design

To test the research hypothesis, data collection was based on an online and offline questionnaire survey via Google Forms. All research items (indicators) and variables were adapted from previous research to ensure content validity. Four question items on visual appeal variable [37], seven question items on usability variable [38], four question items on information quality variable [28][29], three question items on trust variable [39], and five question items on intention to use variable [39][40]. All items were measured using a six-point Likert scale with assessment criteria ranging from "Strongly Disagree (STS)" to "Strongly Agree (SS)". All data obtained will be tested for validity and reliability first, and then PLS-SEM analysis will be carried out with SmartPLS software.

Apart from that, the data collection process is also carried out by carrying out tasks to determine human performance and ease of use of the Teman Bus Apps based on the user interface. Table 1 show details of the tasks that respondents carried out. There is also a visualization of task 1, task 2, and task 3 which can be seen in Fig. 3, Fig. 4, and Fig. 5. There were 5 items of equipment used in the research, including a smartphone, the Teman Bus Apps, a stopwatch, a screen recording feature on a smartphone, and an experimental questionnaire. The number of each item of equipment needed is 1 item.

Table 1. Task of Research

Task 1	Task 2	Task 3
Determine the destination stop, departure stop, and estimated time of arrival at the destination stop.	Determine the position of the nearest bus (bus location, destination stop, and the estimated time of arrival at the destination stop).	Determine the closest stop to the destination location.



Fig. 3. Task 1 of Research.

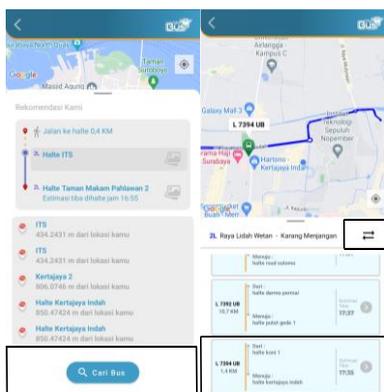


Fig. 4. Task 2 of Research.

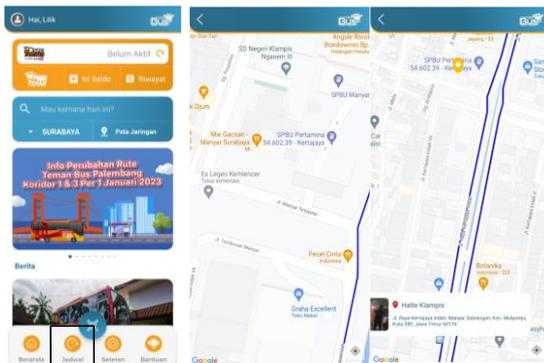


Fig. 5. Task 3 of Research.

Completion time and error rate variable data will be obtained during task work. All data obtained will be tested for validity and reliability first, and then PLS-SEM analysis will be carried out with SmartPLS software. Completion time and error rate values will be categorized based on the ISO 9241-9 difficulty index value which ranges from 1 to 6. The higher the completion time and error rate values, the higher the difficulty index value, which means that the task being carried out is difficult to carry out [20][41]. The following is the formula used to categorize completion time and error rate data based on the ISO 9241-9 difficulty index value [42].

$$C_i = \frac{R}{K} \quad (1)$$

Where:

C_i : Data interval

R : Difference between the highest data and the lowest data value (Range)

K : Difficulty index

3 Results and discussion

3.1 Validity and Reliability Test Result

As previously mentioned, 122 questionnaire data and 40 experimental data were tested for validity and reliability. The validity test shows that the value of each r -count is higher than the r -table, this means that each question (research indicator) is valid [19]. The results of the validity test on subjective measurements show that the r -count for each research indicator (question item) ranges from 0.368 to 0.959. The calculated r -count is greater than the r -table, namely 0.178, indicating that each question item is valid. Meanwhile, the results of the validity test on objective measurements show that the calculated r -count ranges from 0.589 to 0.948, with an r -table value of 0.312. An r -count value greater than the r -table means the research indicators are valid.

The results of the reliability test on each variable show that all questions are reliable because Cronbach's Alpha value is greater than 0.60 (>0.60) [43]. The smallest Cronbach's Alpha value on subjective measurements is found in the Visual Appeal variable of 0.6003, and Completion Time variable on objective measurements of 0.6710.

3.2 Criteria for Assessment of Objective Measurement Variables

As previously explained, the variables in objective measurements include the Completion Time (CT) and Error Rate (ER) variables. The data obtained from these variables include Completion Time and Error Rate data on Task 1 (T1), Task 2 (T2), and Task 3 (T3). To be able to carry out analysis using PLS-SEM, the data obtained from the data collection process on these variables is categorized based on the ISO-9241-9 difficulty index value. Table 2 shows the criteria for assessing the Completion Time and Error Rate variables using formula (1). Based on this table, it can be seen that the Completion Time value in task 1, which ranges from 50 s to 55 s, has a difficulty index value of 1. In addition, the Error Rate value in task 1, which ranges from 0% to 8%, has a difficulty index value of 1. This shows that respondents can do this task easily, requiring a fast completion time with a low error rate.

Table 2. Criteria for Assessing the Completion Time and Error Rate Variables.

Completion Time (s)			Error Rate (%)			ISO 9241-9 Difficulty Index
(CT)			(ER)			
CTT1	CTT2	CTT3	ERT1	ERT2	ERT3	
50-55	40-44	53-70	0-8	0-8	0-16	1
56-61	45-49	71-88	9-17	9-17	17-33	2
62-67	50-54	89-106	18-26	18-26	34-50	3
68-73	55-59	107-124	27-35	27-35	51-67	4
74-79	60-64	125-142	36-44	36-44	68-84	5
80-85	65-69	143-160	45-53	45-53	85-100	6

3.3 Measurement Model Test (Outer Model Test)

Evaluation of the measurement model (outer model) was carried out to analyze the ability of indicators to reflect variables [18]. There are several evaluations of the outer model, including internal consistency reliability, convergent validity, and discriminant validity. In subjective measurements, items VA3, VA4, IQ1, and IQ2 have factor-loading values that do not meet the lower limit. In objective measurements, items ERT1 and ERT2 have factor-loading values that do not meet the lower limit. This causes the item to be removed and reanalyzed. After eliminating these items, all data is valid and acceptable.

3.3.1 Internal Consistency Reliability

Internal consistency reliability measures the indicator's ability to measure latent variables. Internal consistency reliability can be seen from the composite reliability value. Composite reliability is used to measure the reliability of latent variables. Table 3 shows that all data is reliable because the value of composite reliability is ≥ 0.60 [44].

Table 3. Composite Reliability Result.

Model	Variable	Composite Reliability	Decision
Emotional Design Model (Subjective Measurement)	Visual Appeal (VA)	0.919	Reliable
	Usability (US)	0.923	Reliable
	Information Quality (IQ)	0.949	Reliable
	Intention to Use (ITU)	0.978	Reliable
Human Performance Model (Objective Measurement)	Completion Time (CT)	0.820	Reliable
	Error Rate (ER)	1.000	Reliable
	Trust (TRU)	0.892	Reliable
	Intention to Use (ITU)	0.970	Reliable

3.3.2 Convergent Validity

Convergent validity is used to measure the magnitude of the correlation between indicators and their latent variables. Convergent validity can be evaluated by the factor loading and AVE (Average Variance Extracted) values. Factor loading values above 0.7 (≥ 0.708) can be said to be ideal, which means that the indicator is valid as an indicator that measures latent variables [44]. AVE value of at least 0.5 (≥ 0.5) indicates a good measure of convergent validity [44]. Table 4 shows all data is valid because the factor loading value is ≥ 0.708 and the AVE value is ≥ 0.5 . It can be concluded that there is no convergent validity problem in this research.

Table 4. Factor Loading and AVE Result.

Model	Variable	Item	Factor Loading	AVE
Emotional Design Model (Subjective Measurement)	Visual Appeal (VA)	VA1	0.914	0.850
		VA2	0.929	
	Usability (US)	US1	0.754	0.632
		US2	0.763	
		US3	0.853	
		US4	0.829	

Model	Variable	Item	<i>Factor Loading</i>	AVE
Emotional Design Model (Subjective Measurement)	Usability (US)	US5	0.803	0.632
		US6	0.760	
		US7	0.796	
	Information Quality (IQ)	IQ3	0.957	0.903
		IQ4	0.944	
	Intention to Use (ITU)	ITU1	0.955	0.901
		ITU2	0.930	
		ITU3	0.951	
		ITU4	0.953	
		ITU5	0.957	
Human Performance Model (Objective Measurement)	Completion Time (CT)	CTT1	0.835	0.604
		CTT2	0.746	
		CTT3	0.746	
	Error Rate (ER)	ERT3	1.000	1.000
	Trust (TRU)	TRU1	0.801	0.733
		TRU2	0.873	
		TRU3	0.892	
	Intention to Use (ITU)	ITU1	0.929	0.865
		ITU2	0.899	
		ITU3	0.953	
ITU4		0.938		
ITU5		0.929		

3.3.3 Discriminant Validity

Discriminant validity is used to measure the extent to which a construct is different from other constructs. Discriminant validity can be evaluated by the cross-loading value, Fornell-Larcker Criterion, and Heterotrait-Monotriat Ratio of Correlations (HTMT). The cross-loading value for each construct is evaluated to ensure that the correlation between the construct (variable) and the measurement item (indicator) must be higher than other constructs [18]. Table 5 shows that the discriminant validity results for each variable are good because each indicator item has a higher correlation value on the same variable compared with other variables.

Table 5. Cross Loading Result

Emotional Design Model (Subjective Measurement)					Human Performance Model (Objective Measurement)				
Item	Variable				Item	Variable			
	VA	US	IQ	ITU		CT	ER	TRU	ITU
VA1	0.914	0.711	0.488	0.566	CTT1	0.835	-0.055	-0.052	-0.002
VA2	0.929	0.670	0.628	0.622	CTT2	0.746	-0.011	-0.069	-0.195
US1	0.514	0.754	0.518	0.643	CTT3	0.746	0.019	-0.063	-0.104
US2	0.620	0.763	0.586	0.652	ERT3	-0.017	1.000	-0.167	-0.244
US3	0.709	0.853	0.608	0.660	TRU1	-0.022	-0.050	0.801	0.657
US4	0.640	0.829	0.609	0.639	TRU2	-0.174	-0.115	0.873	0.669
US5	0.584	0.803	0.596	0.689	TRU3	-0.013	-0.251	0.892	0.703
US6	0.546	0.760	0.673	0.676	ITU1	-0.069	-0.147	0.690	0.929
US7	0.544	0.796	0.445	0.646	ITU2	-0.015	-0.219	0.798	0.899
IQ3	0.594	0.750	0.957	0.727	ITU3	-0.238	-0.269	0.712	0.953
IQ4	0.561	0.625	0.944	0.636	ITU4	-0.150	-0.225	0.774	0.938
ITU1	0.637	0.811	0.734	0.955	ITU5	-0.201	-0.275	0.682	0.929
ITU2	0.587	0.734	0.666	0.930					
ITU3	0.616	0.809	0.660	0.951					
ITU4	0.601	0.758	0.669	0.953					
ITU5	0.620	0.817	0.683	0.957					

The Fornell-Larcker Criterion is carried out by comparing the square root value of the AVE of each construct with the correlation between other constructs in the model. The square root value of each construct's AVE must be greater than the constitution with other constructs. If these criteria are met, the model has good discriminant validity values [18]. Table 6 and Table 7 show that this study has an appropriate discriminant validity. This is because the square root value of each construct's AVE is greater than the summary for other constructs.

Table 6. Fornell-Larcker Criterion and Heterotrait-Monotrait Ratio of Correlations (HTMT) Results on Emotional Design Model (Subjective Measurement).

Variable	Fornell-Larcker Criterion				Heterotrait-Monotrait Ratio of Correlations (HTMT)			
	VA	US	IQ	ITU	VA	US	IQ	ITU
Visual Appeal (VA)	0.922							
Usability (US)	0.748	0.795			0.869			
Information Quality (IQ)	0.609	0.727	0.951		0.704	0.804		
Intention to Use (ITU)	0.646	0.829	0.720	0.949	0.719	0.883	0.768	

Table 7. Fornell-Larcker Criterion and Heterotrait-Monotrait Ratio of Correlations (HTMT) Results on Human Performance Model (Objective Measurement).

Variable	Fornell-Larcker Criterion				Heterotrait-Monotrait Ratio of Correlations (HTMT)			
	CT	ER	TRU	ITU	CT	ER	TRU	ITU
Completion Time (CT)	0.777							
Error Rate (ER)	-0.017	1.000			0.044			
Trust (TRU)	-0.081	-0.167	0.856		0.124	0.179		
Intention to Use (ITU)	-0.142	-0.244	0.790	0.930	0.204	0.249	0.888	

HTMT is used to test the extent to which a construct is different from other constructs. A variable is said to have good discriminant validity if the HTMT value is less than 0.90 (<0.90) [18]. Table 6 and Tabel 7 shows that all HTMT values are <0.90, which means that all variables are valid and have good discriminant validity.

3.4 Structural Model Test (Inner Model Test)

3.4.1 Collinearity Assessment

Collinearity assessment was carried out using the Variance Inflation Factor (VIF) value. The VIF value must be less than 5 because more than 5 indicates collinearity between constructs [18]. Table 8 shows that all variables have a VIF value of less than 5, which means there is no collinearity between constructs.

Table 8. Collinearity Assessment Result.

Variable	Variance Inflation Factor (VIF)
Visual Appeal (VA)	2.315
Usability (US)	3.096
Information Quality (IQ)	2.167
Completion Time (CT)	1.000
Error Rate (ER)	1.000
Trust (TRU)	1.000

3.4.2 Path Coefficient

The path coefficient describes the strength of the relationship between latent variables. The path coefficient value ranges from -1 to +1. If the path coefficient value is closer to +1, it shows a strong positive relationship. If the p-value is less than 0.05, then accept the research hypothesis [18]. Table 9 shows that the second hypothesis (H2), third hypothesis (H3), and sixth hypothesis (H6) are accepted because the p-value is < 0.05. This indicates that there is a significant effect between usability, information quality, and trust variables in consumer intention to use the Teman Bus Apps.

Table 9. Path Coefficient Result.

Model	Hypothesis of Research		Path Coefficients	Decision	P value	Decision
Emotional Design Model (Subjective Measurement)	H1	Visual Appeal (VA) -> Intention to Use (ITU)	0.022	Positive	0.758	H ₁ Not Accepted
	H2	Usability (US) -> Intention to Use (ITU)	0.634	Positive	0.000	H ₂ Accepted
	H3	Information Quality (IQ) -> Intention to Use (ITU)	0.245	Positive	0.007	H ₃ Accepted

Human Performance Model (Objective Measurement)	H4	Completion Time (CT) -> Trust (TRU)	-0.083	Negative	0.724	H ₄ Not Accepted
	H5	Error Rate (ER) -> Trust (TRU)	-0.168	Negative	0.306	H ₅ Not Accepted
	H6	Trust (TRU) -> Intention to Use (ITU)	0.790	Positive	0.000	H ₆ Accepted

3.4.3 Coefficient of Determination (R^2) and Predictive Relevance (Q^2)

The coefficient of determination (R^2) shows that the variability of endogenous variables can be explained by exogenous variables. The R^2 value ranges from 0 to 1, a higher R^2 value indicates a higher level of prediction accuracy [18]. Table 10 shows the result of the coefficient of determination. The R^2 value of intention to use is 0.716, which indicates a moderate category. This shows that the variability in intention to use can be explained by visual appeal, usability, and information quality by 71.6%. The R^2 value of trust is 0.035, which indicates a weak category. This shows that the variability in trust can be explained by completion time and error rate by 3.5%. The R^2 value of intention to use is 0.624, which indicates a moderate category. This shows that the variability in intention to use can be explained by trust variable by 62.4%.

Table 10. Coefficient of Determination (R^2) and Predictive Relevance (Q^2) Results.

Model	Endogen Variable	R^2	Decision	Q^2	Decision
Emotional Design Model (Subjective Measurement)	Intention to Use (ITU)	0.716	Moderate	0.639	Relevant
Human Performance Model (Objective Measurement)	Trust (TRU)	0.035	Weak	-0,016	Not Relevant
	Intention to Use (ITU)	0.624	Moderate	0,528	Relevant

Predictive Relevance (Q^2) is used to validate the model's predictive ability in explaining the information contained in research data [18]. Table 10 shows the result of the predictive relevance. The Q^2 value for the intention to use variable on subjective measurement is more than zero ($Q^2 > 0$), which is 0.639. It shows that the structural model has relevant predictions. The Q^2 value for the trust variable is less than zero ($Q^2 < 0$), namely -0.016. This shows that the model does not have relevant predictions. The Q^2 value for the intention to use variable on objective measurement is more than zero ($Q^2 > 0$), namely 0.528. This shows that the model has relevant predictions.

3.4.4 Effect Size (f^2) and Relative Impact (q^2)

An effect size (f^2) test is carried out to predict the magnitude of the effect between variables [18]. Table 11 shows the result of the effect size. Visual appeal does not affect the intention to use with a f^2 value of 0.001. Usability has a large effect on intention to use with a f^2 value of 0.459. Information quality has a small effect on intention to use with a f^2 value of 0.098.

Completion time does not affect the trust with a f^2 value of 0.007. Error rate has a small effect on trust with a f^2 value of 0.029. Trust has a large effect on intention to use with a f^2 value of 1.660.

Table 11. Effect Size (f^2) and Relative Impact (q^2) Results.

Model	Variable	Effect Size (f^2)		Relative Impact (q^2)	
		Trust (TRU)	Intention to Use (ITU)	Trust (TRU)	Intention to Use (ITU)
Emotional Design Model (Subjective Measurement)	Visual Appeal (VA)		0.001		0.000
	Usability (US)		0.459		0.324
	Information Quality (IQ)		0.098		0.066
Human Performance Model (Objective Measurement)	Completion Time (CT)	0,007		-0,018	
	Error Rate (ER)	0,029		0,002	
	Trust (TRU)		1,660		0,990

Relative impact (q^2) is used to measure the relative predictive relationship between certain variables and other variables. The following is the q^2 calculation formula [18].

$$q^2 = \frac{Q_{included}^2 - Q_{excluded}^2}{1 - Q_{included}^2} \tag{2}$$

Where:

$Q_{included}^2$ = Q^2 value obtained when the exogenous construct is included in the model.

$Q_{excluded}^2$ = Q^2 value obtained when the exogenous construct is removed from the model.

Table 11 shows the result of the relative impact. Visual appeal and information quality have a small effect on the intention to use with a q^2 value of 0.000 and 0.066. The q^2 value of usability is 0.324, which indicates a moderate effect on consumer intention to use. Completion time and error rate variables do not affect the trust with a q^2 value of -0.018 and 0.002. The q^2 value of trust is 0.990, which indicates a moderate effect on consumer intention to use.

3.5 Discussion

The development of a model regarding the influence of emotional design and human performance has been tested to evaluate consumer intention to use the Teman Bus Apps. The present research results show that there are three hypotheses accepted from the six existing hypotheses. H2, H3, and H6 are accepted while H1, H4, and H5 are not accepted.

This present study hypothesizes show that there is a significant effect between the usability of the Teman Bus Apps and consumer intention to use the application. Usability can be measured through seven attributes that reflect the usability of mobile applications based on the PACMAD model, such as effectiveness, efficiency, satisfaction, learnability, memorability, errors, and cognitive load [45][46][27]. In previous research, no one has

studied the influence of usability using PACMAD attributes on intention to use. This research shows that there is a significant positive effect between usability and consumer intention to use the Teman Bus Apps because the p-value is less than 0.05, which is 0.000. Hence, H2 is accepted. Therefore, these results can be a representation for the managers and developers of the Teman Bus Apps to improve the design of the Teman Bus Apps so that it is easy for users to use. This can be done by making it easier to search for bus stop positions, using area name data input, because users have difficulty remembering the names of bus stops, resulting in users having to use the Google Maps application first.

Apart from that, this present research also proposes that there is a significant effect of the information quality of the Teman Bus Apps and consumer trust in the application on consumer intention to use the Teman Bus Apps. The information quality can be measured through the information contained in the Teman Bus Apps (accurate, up-to-date, easy to get, and complete). The trust concept means that users trust the reliability of the Teman Bus Apps in completing tasks properly and the security of the user's personal information. The present research results show that there is a significant positive effect between information quality and consumer trust variable in consumer intention to use the Teman Bus Apps. This is because the p-value is less than 0.05, which is 0.007 for information quality and 0.000 for consumer trust. Therefore, H3 and H6 are accepted. This hypothesis was confirmed and supported by previous research by [30] [13][15][28][17][47]. Therefore, these results can be representative for managers and developers Teman Bus Apps to improve the information quality of the Teman Bus Apps. This can be done by providing up-to-date information regarding the user's position while using the application and estimated time of arrival at their destination. Apart from that, the indicator that has the most influence on consumer trust is data protection consumers, so consumers should be asked to verify their data first every time they want to log in to the Teman Bus Apps. The data verification process can use certain information or codes that are private and confidential.

4 Conclusion

Conclusions have been drawn regarding four main objectives. First, this research shows that the emotional design aspect influences consumer intention to use the Teman Bus Apps, namely the behavioural design aspect, which is represented by the usability variable, and the reflective design aspect, which is represented by the information quality variable with path coefficient values of 0.634 and 0.245. Second, this research shows that the indicator that has the most influence on the usability variable is satisfaction (US3), while the information quality variable is information that is easy to get (IQ3). Third, this research shows that there is no significant effect between the human performance aspect measured using completion time and error rate with consumer trust in using the Teman Bus Apps because the p-value is more than 0.05, which is 0.724 and 0.306. Fourth, recommendations for improvements to the Teman Bus Apps developer, including making it easy to find the bus stop positions using area name data input, providing up-to-date information regarding the user's position while using the application, and estimated time of arrival at the destination, encouraging consumers to carry out the data verification process every time will log in to the application.

In future research, if you want to process experimental data using the PLS-SEM application, it might be best to use more respondent data so that the resulting data is more varied.

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