ANALYSIS OF VARIABLES THAT AFFECT PASSENGER LOYALTY ACROSS UJUNG-KAMAL

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Abstract

Indonesia is an archipelago where ferry transportation is a means of transportation that is often used by the community, which acts as a bridge between islands separated by waters. Ujung-Kamal Port is a crossing that connects Java Island with Madura Island. Since the construction of the Suramadu Bridge in 2009 and the elimination of the entrance fee, the number of passengers in the crossing has decreased. This study aims to determine the effect of 3 research variables namely comfort, safety and reliability which represent indicators of service quality on passenger loyalty for crossing transportation across Ujung-Kamal. This research uses quantitative descriptive method with the determination of respondents using simple random sampling method and for data analysis using SEM PLS application. The SEM PLS application is used to measure the relationship between variables with measuring indicators and to determine the relationship between the independent variable and the dependent variable. Based on the results of the study, it shows that the variables of comfort, safety and reliability have an influence on passenger loyalty across the Ujung-Kamal crossing.

Keywords: Convinience, Safety, Reliability, loyalty

Introduction

Indonesia is an archipelago, the port is one of the transportation facilities that are often used by the community. The mode of transportation is a service provided by the service industry that helps meet basic human needs. Crossing transportation services are one of the services offered by the transportation mode (Sapit Hidayat, 2022). A very important and strategic role is played by crossing transportation as a link to the land transportation network (railways, roads) within the framework of the national transportation order, which functions to unite the archipelago consisting of thousands of islands as a unit of archipelago insight (Wahyudi et al., n.d.).

Based on (Kementerian Perhubungan, 2021), transportation that functions as a bridge connecting road networks and / or railroad networks separated by waters to transport passengers and vehicles and their cargo is called crossing transportation. According to Formulation of Strategy and Financing Scenario for Ujung Kamal Crossing (2011), Kamal Port was one of the main entrances to Madura Island before the construction of the Suramadu Bridge. This port triggers various socioeconomic activities in four regencies on Madura Island, most of which depend on crossing activities at the port (Muhsoni et al., 2021).

Since the Madura Strait separates the area of Bangkalan Regency from Java Island, the Suramadu Bridge and Ujung-Kamal ferry port became the main transportation hub for people, products, and services to and from Java Island. The development of Bangkalan Regency was greatly helped by the operation of the Suramadu Bridge in 2009, because previously it only relied on the Ujung-Kamal ferry port to connect Madura Island (Dhani Rochmaniadji & Lucianus Sudaryono, n.d.).

According to the results of research conducted by (Nelly Azwarni Sinaga et al., 2021), it states that convenience has a positive and significant effect on passenger loyalty. By providing fair treatment to customers, building trusting relationships with them, and providing convenient services, it can affect customer loyalty. Comfort is very important in service because it will naturally increase customer loyalty when the comfort is fulfilled (Rahmani, n.d.).

Reliability refers to a company's capacity to deliver services precisely and reliably as promised. Performance must meet or exceed client expectations, which include timeliness, providing impeccable service to every customer, acting sympathetically, and having a high level of accuracy (al Amrie et al., n.d.). Research conducted (Arry Dwi Handoko & Ronny, 2020) with different research objects, using reliability as one of the dependent variables, the independent variable, namely loyalty, shows that reliability has no effect on customer loyalty.

Safety is an important aspect of transportation. According to (Kementerian Perhubungan, 2015) safety is a condition where safety requirements concerning water transportation, port and maritime have been met. According to research (Muhamad Rizki et al., 2020) with the object of online motorcycle taxi research, found that people highly value safety and security, the level of safety and security is also related to the intensity of using online motorcycle taxi services.

Amid the decreasing number of users of crossing transportation across the Ujung-Kamal crossing since the construction of the Suramadu Bridge, PT ASDP continues to operate this crossing to serve passengers

who still survive using Ujung-Kamal crossing transportation to date. Currently, the Ujung-Kamal crossing is served by 3 ships with service hours from 06.00 to 19.00 Wib.

This study aims to determine the effect of the three variables used in this study, namely comfort, security and safety on passenger loyalty across the Ujung-Kamal crossing.

Methods

This research is included in descriptive research with a quantitative approach while for data analysis using the SEM PLS 3.0 application for Evaluation of Measurement Model and Evaluation of Structural Model. The descriptive approach is used to be able to describe and characterize social realities that occur in society, descriptive techniques are applied in this study (Rizkiyah Fitriani & Khairulyadi, 2019). According to Arikunto (2013: 12) in (Jayusman et al., 2020) explains that quantitative methods rely on numbers in the whole process, starting from data collection, interpretation of the data, and the appearance of the results.

The data collection method in the study used the Simple Random Sampling method with a total of 100 respondents. Simple Random Sampling, often known as random sampling or simple random sampling, is a sampling technique in which each member of the population has an equal chance of being selected as a sample. Simple random sampling is a fundamental type of sampling that is often used in the creation of more sophisticated sampling techniques (Kanah Arieska et al., 2018).

Based on the research model framework that has been determined, there are 3 hypotheses in this study, namely:

H1 : It is suspected that convenience has a positive and significant effect on passenger loyalty
H2 : It is suspected that safety has a positive and significant effect on passenger loyalty
H3 : It is suspected that reliability has a positive and significant effect on passenger loyalty
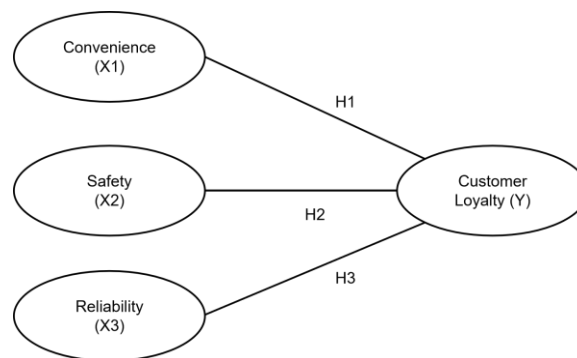
Figure 1. Research Model Framework

Result and Discusssion

The research hypothesis was tested through survey data that had been collected from respondents who were randomized and respondents were asked to fill out a questionnaire through the google form application. Table 1 summarizes the demographic data of the respondents. Respondents consisted of 57.4% male and 42.6% female. Most respondents are in the age range of 23-30 years as much as 47.5% and most have an income of Rp. 2,500,000 - Rp. 5,000,000 as much as 50%. A total of 55.7% of respondents stated that they rarely used crossing transportation across Ujung-Kamal, quite often 1-4 times a month, 26.2% stated that they often used it 5-8 times a month and 18% stated that they often used it >8 times a month.

Table 1. Respondent Demographics

Characteristic	Category	%
Gender	Man	57,4%
	Woman	42,6%
Age	17-22 Years	27,9%
	23-30 Years	47,5%
	31-40 Years	18%
	41-50 Years	4,9%
	51-60 Years	1,6%
	>60 Years	-
Income	< Rp. 2.500.000	19,7%
	Rp. 2.500.000 – Rp. 5.000.000	50,8%
	Rp. 5.000.001 – Rp. 7.500.000	21,3%
	Rp. 7.500.001 – Rp. 10.000.000	8,2%
	> Rp. 10.000.000	-

Frequency of Use	rarely (1 - 4 times / month)	55,7%
	Quite often (5 - 8 times / month)	26,2%
	Often (> 8 times / month)	18%

There are two analyses that make up the data analysis method using SEM: measurement framework, which relates variables to the items that measure them, and structural framework, which shows the cause-and-effect relationships between variables in a study where these relationships are built on the basis of theoretical support. Based on the theories stated in the theoretical framework, the constructs are placed in a structured model (Raof & Musta'amal, 2022).

Measurement Model analysis shows how accurately the selected indicators measure latent variables (Khuzainey et al., 2020). Measurement Model is used to determine the validity and reliability of the indicators used and to test the relationship between variables in the research model framework.

Table 2. Validity and Reliability Test

Item	Loading factor	CA	CR	AVE
Convinience		0.949	0.957	0.711
Comfort and cleanliness of the passenger room	0.889			
Car Deck Cleanliness	0.860			
Comfortable seating in the passenger room	0.882			
Toilet comfort and cleanliness	0.771			
Ease of buying tickets	0.807			
Convenience of waiting for the ship	0.810			
The condition of the canteen on board the ship	0.844			
Low crime rates around the port area and on ships	0.901			
Can enjoy sea view while using the Ujung - Kamal cross crossing transport	0.813			
Safety		0.833	0.881	0.598
Safety tools (*life jacket, lifebuoy* etc.) are easy to reach	0.703			
The number of safety equipment is sufficient for the number of passengers	0.810			
Dock Condition / Access to the Ship	0.770			
Officers' Expertise in Arranging Vehicles on Car *Decks*	0.756			
The shipload does not exceed the capacity of the ship	0.823			
Reliability		0.908	0.927	0.643
The location of Ujung Port or Kamal Port is close to where you live	0.831			
The location of Ujung Port or Kamal Port is close to the destination location	0.791			
The length of time to cross (Ujung - Kamal) is faster when compared to passing suramadu Bridge	0.755			
Long waiting time for the ship	0.800			
The number of ships operating is sufficient for the number of service users	0.818			
The cost of crossing is more efficient than passing the SURAMADU Bridge	0.836			
Crossing (Lintas Ujung - Kamal) is less tiring than via SURAMADU Bridge	0.780			
Loyalty		0.871	0.939	0.885
Always use the Cross-End - Kamal crossing when compared to passing suramadu Bridge	0.935			
It is more advisable to use cross-end - Kamal crossing transportation when compared to passing suramadu Bridge	0.947			

Based on table 2, the loading factor value of each indicator used is above 0.7 so that no research indicators must be eliminated and declared valid. For the composite reliability value, all variables have a value above 0.7 and the AVE value of all variables is above 0.5 so that all variables used in the study are declared valid and reliable.

**Table 3.** Discriminant Validity Test (Fornell-Larcker Criterion)

	X1_Convinience	X2_Safety	X3_Reliability	X4_Loyalty
X1_Convinience	0.843			
X2_Safety	0.783	0.774		
X3_Reliability	0.691	0.769	0.802	
Y_ Loyalty	0.768	0.761	0.708	0.941

Table 4. HTMT Test

	X1_Convinience	X2_Safety	X3_Reliability	X4_Loyalty
X1_Convinience				
X2_Safety	0.872			
X3_Reliability	0.744	0.872		
Y_ Loyalty	0.839	0.879	0.784	

For the Fornell and Larcker criteria, the square root of the AVE of a variable must have a greater correlation between that variable and other variables in other variables in the model which can be seen in table 3. Based on table 4, for HTMT it can be said to have a good Discriminant Validity value if it has a value of less than 0.9 (Joseph F. Hair Jr et al., 2022). Thus the correlation between variables in the study meets the requirements of the Discriminant Validity test.

After testing the Measurment Model, the next step is to test the structure model to determine the direct effect between the dependent variable and the independent variable.
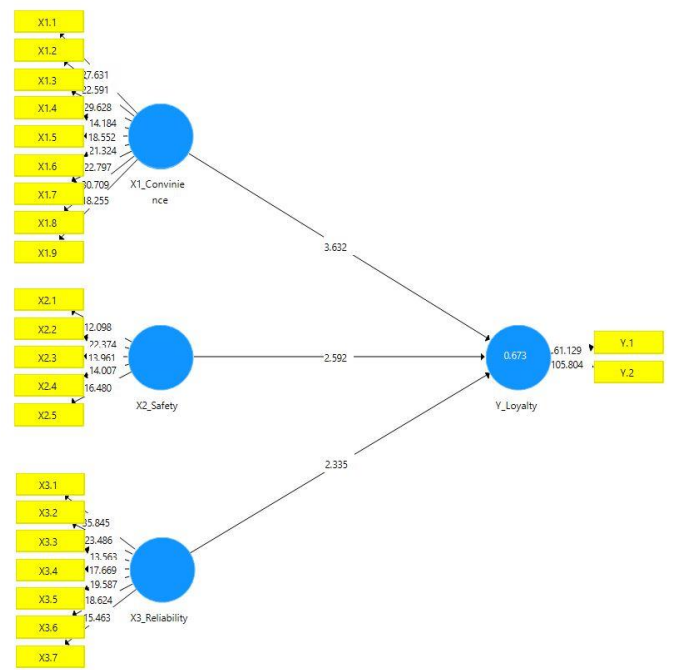
Figure 2. Bootstrapping Test

Table 5. Collinearity Statistic (VIF)

	X1_Convinience	X2_Safety	X3_Reliability	Y_Loyalty
X1_Convinience				2.725
X2_Safety				3.483
X3_Reliability				2.573
Y_Loyalty				

The variance inflation factor is the commonly used measure for evaluating indicator collinearity (VIF). The degree of collinearity is increased when VIF values are higher. Collinearity issues are indicated by VIF readings of 5 or higher. There are three classifications for the collinearity test in the general guidelines for formative measurement model assessment: If VIF $\geq$ 5, critical collinearity issues could arise; if VIF = 3-5, collinearity issues are typically not critical; and if VIF 3, collinearity is not an issue (Joseph F. Hair Jr et al., 2022).

Based on table 5, for the comfort and reliability variables there is no collinearity problem with a VIF value < 3, while for the safety variable it has a VIF value of 3.483 which means that the safety variable has a non-critical problem so that the VIF value is still acceptable.

Table 6. Hypothesis Test

	Original Sample (O)	T Value	P Values
X1_Convinience -> Y_Loyalty	0.396	3.687	0.000
X2_Safety -> Y_Loyalty	0.285	2.584	0.005
X3_Reliability -> Y_Loyalty	0.215	2.297	0.011

A T-value greater than 1.96 (two-sided test) indicates that the indicator weight is statistically significant, assuming a significance level of 5% (Joseph F. Hair Jr et al., 2022). Based on the test results on 3 variables, the three variables are stated to have a significant effect on passenger loyalty.

Table 7. R Square

	Original Sample (O)	T Value	P Values
Y_Loyalty	0.673	10.336	0.000

According to Chin (1998) in (Susanty & Tresnaningrum, 2018), the level of variance in the dependent variable caused by the independent variable is indicated by the R2 value which can range between 0.19 and 0.67. Values of 0.19 and 0.33 indicate a weak and moderate level of correlation, while a value of 0.33 indicates a strong and substantial level of correlation. Based on table 6, it can be interpreted that the dependent variable used has a strong and substantial influence on passenger loyalty with an R2 value of 0.673.

Table 8. Blindfolding Test

	SSO	SSE	Q² (=1-SSE/SSO)
X1_Convinience	900.000	900.000	
X2_Safety	500.000	500.000	
X3_Reliability	700.000	700.000	
X4_Loyalty	200.000	85.139	0.574

The Q square value is used in the predictive relevance test to determine how accurate the observation values generated through the blindfolding process are. If the Q square value is greater than 0, the observed values are considered good; however, if the Q square value is less than 0, the observed values are considered poor. The predictive relevance of Q-Square for structural models assesses how effective the model and its parameter estimates are at generating observed values. If the Q-square value is greater than 0, the model is predictively relevant, otherwise it is irrelevant (Dr. Meiryani, 2021). The Q Square value in this study is 0.574, which indicates that the observation value of this study is declared good.

Table 9. F Square

	Original Sample (O)	T Value	P Values
X1_Convinience -> Y_Loyalty	0.176	1.569	0.058
X2_Safety -> Y_Loyalty	0.072	1.068	0.143
X3_Reliability -> Y_Loyalty	0.055	1.090	0.138

R square value changes can be used to determine whether the external latent variable's impact on the endogenous latent variable is substantive. The impact size f2 can quantify this.F Square is used to determine how much influence the independent variable has on the dependent variable (Purwanto & Sudargini, n.d.). According to (Hair et al., 2020), There are three categories for the impact size, known as a F Square, small, medium, and large. Small effects are those with values above 0.02 and up to 0.15, medium effects are those with values between 0.15 and 0.35; and big effects are those with values over 0.35. Based on table 8, the three independent variables namely comfort, safety and reliability have small effects on passenger loyalty with an F square value of more than 0.02 but less than 0.15.

The results showed that comfort in using crossing transportation affects passenger loyalty. Passengers like the condition of the ship with clean facilities, comfortable seating, low crime rates and ease of buying tickets.

Fulfillment of safety aspects is something that cannot be compromised in shipping transportation. The number of safety equipment that is sufficient for the number of passengers, safety equipment that is easily accessible, the expertise of officers in regulating vehicle loads and the number of loads that do not exceed capacity (overdraft) can provide a feeling of security to passengers which has an impact on passenger loyalty.

In addition, reliable transportation such as the location of the port which is close to the place of residence and destination, the waiting time for the ship is not too long, the number of fleets that meet demand and using crossing transportation which is relatively not tiring when compared to having to pass through the Suramadu Bridge is one of the factors that cause passengers to be loyal to use Ujung-Kamal crossing transportation. For people who are around Kamal Harbor where quite a lot of people on Madura Island who work in Surabaya City and its surroundings, will prefer to use the Ujung-Kamal crossing considering the distance is quite far from the Suramadu Bridge.

Amidst the declining number of passengers on this crossing, this crossing is still needed by the community around Kamal Port and Ujung Port so that the existence of the crossing is still needed for its loyal customers.

Conclusion

Based on the results of the analysis of the three variables used in this study, namely comfort, safety and reliability, it has a significant influence on passenger loyalty. Service improvement on the indicators in these three variables will increase passenger loyalty. Suggestions that can be given include Service improvement from human resources is the most likely to be done. By treating passengers as well as possible, friendly and humane will certainly increase passenger loyalty. Research conducted states that it is necessary to adjust the ship's operating pattern for the efficiency of ship operating time amid the decreasing number of passengers. In future studies, researchers can use other service variables or add variables to expand knowledge about service quality at the Ujung-Kamal crossing.

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