Original Article

Assessing the Passenger Satisfaction of Fast Ship Services at Ulee Lheue Port - Balohan Route in Aceh Province: A Customer Satisfaction Index (CSI) Analysis

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Abstract: The increasing number of passengers travelling from Ulee Lheue Port in Banda Aceh to Balohan Port in Sabang needs to be accompanied by an increase in the performance of the quality of ship services so that passengers feel satisfied. This study evaluated passenger satisfaction levels with fast ship services on the Ulee Lheue Port – Balohan Port route in Aceh Province. This study uses a quantitative approach, and data was collected through questionnaires and analysed using descriptive techniques and the Customer Satisfaction Index (CSI) method. Findings revealed a satisfactory CSI value of 72.85, indicating positive feedback from passengers. Areas for improvement were identified, including facilities for disabled individuals, onboard safety measures, and amenities for breastfeeding mothers. Recommendations were provided to enhance service quality in these areas, ultimately elevating overall passenger satisfaction. The study highlights the importance of addressing these key areas to enhance the passenger experience further and ensure a high level of service quality. By focusing on these aspects, ship managers can work towards improving customer satisfaction and loyalty, ultimately leading to a more prosperous and competitive fast ship service on the Ulee Lheue Port – Balohan Port route in Aceh Province.

Keywords: Passenger Satisfaction; Fast Ship Services; Customer Satisfaction Index; Ulee Lheue Port.

1. Introduction

Sea transportation is one of the alternatives for connecting passengers and goods from Banda Aceh City to Sabang City in Aceh Province. There are currently two types of ships serving individuals and goods between Ulee Lheue Port in Banda Aceh and Balohan Port in Sabang: motor express ships (fast ships) and roro ferry ships (slow ships). Fast ships travel in about an hour, whereas slow ships take two hours. Fast ships are smaller and more comfortable for passengers. Slow boats are bigger and can carry not only humans

but also goods and motorised vehicles such as motorcycles, cars, buses, trucks, etc. This study focuses only on fast ships, while slow ships will be examined in the subsequent study. There are still very few references to passenger satisfaction with the facilities and management of fast ships operating on the Banda Aceh and Sabang maritime routes.

Field observations from June until August 2023 show that various factors appear to be disrupting passengers, resulting in less ideal operational activities and services from fast ships. Passengers do not have planned departure and arrival times, and infrastructure is not well maintained. Several facilities on the ship are not working properly, including rooms for caring for sick people and rooms for breastfeeding mothers; air conditioning in the prayer room appeared to be damaged; and the departure and arrival lanes were narrow, as evidenced by the large number of passengers gathered in the area. This condition needs to be improved so the ship's services can function with the regulations outlined in the performance criteria service standards. In order to improve fast ship services, the current state of fast ship facilities and infrastructure must be assessed from the perspective of ship passengers using the Customer Satisfaction Index (CSI) method. Researchers commonly use this method to measure customer satisfaction in many areas. Sabaruddin et al. (2024) conducted similar research with the title CSI (Customer Satisfaction Index) and IPA (Importance Performance Analysis) of Speed Rum Harbort in Tidore Island City. This study shows that the satisfaction value felt by the passengers is 55.51%, which is included in the quite satisfied category. The attributes that must be improved are ticket sales service, comfort, the waiting room, and toilets.

Ilham et al. (2021) conducted a similar study 2021 to assess customer satisfaction at Gilimanuk Crossing Port during the COVID-19 pandemic. According to the observations, there were several issues with the existing conditions at Gilimanuk Crossing Port, including malfunctioning waiting rooms and gangways, pedestrians who enter/disembark the ship through the trestle, a lack of facilities for passengers with special needs, and a lack of attention from officers to maintain passenger health protocols at the port. The results of the analysis obtained a passenger satisfaction index of 61.5%, and 5 (five) service attributes must be improved; namely, officers must be firm in controlling passengers to do social distancing, wash their hands, and use masks; providing pedestrian paths for the comfort of passengers and vehicles; providing the facilities for washing hands/hand sanitiser, and also providing boarding and disembarking facilities for passengers with special needs. Thus, this study used the same method: the Customer Satisfaction Index (CSI), so the results obtained can be seen in the results and discussion chapter.

2. Literature Review

2.1. Level of Satisfaction

According to Meithiana (2019), consumer satisfaction is the level of consumer feelings after comparing what he received and his expectations. If a customer is satisfied with the value provided by a product or service, they will likely remain a customer for a long time. According to Kotler (2009), consumer satisfaction is a person's happiness or disappointment that arises after comparing the performance (results) of the product they are considering with what they expected. Consumer satisfaction depends on the consumers' perceptions and expectations. Consumers who are satisfied with products and services tend to buy these products again in the future. This means that satisfaction is a key factor for consumers in making repeat purchases.

2.2. Service Quality

Service is the action or deed of a person or an organisation to satisfy customers, fellow employees, and leaders (Sofi et al., 2020). According to Siswanto et al. (2023), service quality is the company's ability to provide the best service compared to its competitors. Service quality will encourage the realisation of customer satisfaction, which is one of the determining factors of loyalty. Company growth will be guaranteed if customer satisfaction is achieved (Alma, 2013). According to Zeithaml et al. (2018), there are five (5) dimensions of service quality, namely as follows:

   a. Tangible is the appearance or provision of facilities and infrastructure. Tangible can also be interpreted as the availability of physical equipment and communication facilities.
   b. Reliability is the ability to provide services as promised promptly, accurately, and satisfactorily. Services provided must be timely and in the same manner as promised without making any mistakes.
   c. Responsiveness is providing fast and accurate service to customers by conveying clear information.
   d. Assurance is knowledge, politeness, and the ability to grow customers' trust in service.

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    e. Empathy is sincere and individualised attention given to customers by trying to understand customer desires including ease of establishing relationships, good communication, and understanding of customer's individual needs or difficulties.

On the basis of the Minister of Transportation Regulation Number PM 62 (Panjaitan et al., 2023), concerning Minimum Service Standards for Ferry Transport, the facilities that must be on a passenger ferry include the following aspects.

    a. Safety; includes passenger safety and health information, safety facilities, health facilities, information and advice for vehicles, and vehicle loading safety facilities.

    b. Security; includes passenger and vehicle security facilities, security officers, security disturbance information, lighting, deck floors, and security facilities in the engine room.

    c. Comfort; includes regular economy passenger room, regular non-economy passenger room, express ferry passenger room, regular toilet, express ferry toilet, prayer room, regular breastfeeding room, express breastfeeding room, lighting, and kitchen/canteen/cafeteria.

    d. Convenience/affordability; includes information on passenger services, regular passenger service facilities, express ferry passenger service facilities, passenger baggage facilities, gangways/roads, stairs, loading and unloading facilities for vehicles, and ship deck space.

    e. Equality; includes facilities for passengers with special needs.

    f. Regularity; includes operational schedules and ship service speeds.

2.3. Customer Satisfaction Index (CSI)

The Customer Satisfaction Index (CSI) is a method used to determine the overall level of satisfaction of service users by looking at the level of performance and level of importance or expectations of service attributes (Umam & Hariastuti, 2018). According to Khurniyah et al., (2016), the Customer Satisfaction Index (CSI) method is used to determine the overall level of service user satisfaction by considering the level of importance of the variables being measured. Interpretation of CSI values can be seen in the following table.

Table 1. Interpretation of Customer Satisfaction Index (CSI) value

Interval Index	Number CSI Value	Interpretation
0.00 – 0.34	0% - 34.99%	Very Dissatisfied
0.35 – 0.50	35% - 50.99%	Not satisfied
0.51 – 0.65	51% - 65.99%	Quite satisfied
0.66 – 0.80	66% - 80.99%	Satisfied
0.81 – 1.00	81% - 100%	Very satisfied

Source: Sabilla & Herman (2022) and Syathabi et al. (2024)

According to Umam & Hariastuti (2018), the value of the Customer Satisfaction Index (CSI) can be determined by carrying out the following steps:

a. Determining the Mean Importance Score (MIS) and Mean Satisfaction Score (MSS)

Mean Importance Score (MIS) is the average value of the importance score of an attribute. Meanwhile, the Mean Satisfaction Score (MSS) is the average score for the level of satisfaction that comes from the service performance felt by service users. The Mean Importance Score (MIS) and the Mean Satisfaction Score (MSS) can be calculated using the following equation.

$$\text{MIS} = \frac{\sum_{i=1}^{n} Y_i}{n}, \tag{1}$$

$$\text{MIS} = \frac{\sum_{i=1}^{n} Y_i}{n}, \tag{2}$$

Where:
X_i = Satisfaction value of attribute X
Y_i = Importance value of the Attribute Y

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n = number of respondents
Calculating the Weight Factor (WF)

b. This value is the percentage of the Mean Importance Score (MIS) value per indicator to the total Mean Importance Score (MIS) value for all indicators. The Weight Factor (WF) value can be calculated using the following equation.

$$\text{MF} = \frac{MISi}{\sum_{i=1}^{p} MISi} \times 100\%, \tag{3}$$

Where:
MI Si $\qquad$ = Average value of importance
$\sum_{i=1}^{p} MISi$ = Total average of importance
Calculating the Weight Score (WS)

c. This value is the multiplication of the WF value and the average satisfaction level value. The Weight Factor (WF) clue can be calculated using the following formula.

$$\text{W Si} = \text{W Fi} \times \text{MSS}, \tag{4}$$

Where:
WS = Weighted Score
MSS = Average level of satisfaction

d. Determining the Customer Satisfaction Index (CSI)

$$\text{CSI} = \frac{\sum_{i=1}^{p} MIS}{HS} \times 100\%, \tag{5}$$

Where:
$\sum_{i=1}^{p} MIS$ = Total average of importance
HS = HS (highest score) is the maximum scale used

3. Materials and Methods
3.1. Population and Sample

Population is an object or subject that has certain qualities and characteristics. Meanwhile, the sample is a portion of the population that has properties and characteristics that are representative and describe the population. In this research, the population is all Motor Express Ship (fast ship) service users who travel from Ulee Lheue Port. At the same time, the samples are respondents who travel from the Ulee Lheue Port in Banda Aceh to Balohan Port in Sabang. The population in this study is fast ship passengers in June – August 2023. Based on data from the Department of Transportation in 2023, the number of fast ship passengers is 125.482 people. Next, sampling was carried out using the Slovin formula to obtain the following results.

N $\qquad = \frac{N}{1+N\,(e)^2}$

$= \frac{125.482}{1+125.482\,(0,05)^2}$

= 398,729 samples ≈ 400 samples

3.2. Data Collection Technique

This research uses a quantitative method approach through questionnaires. Questionnaire data is used to evaluate the performance of fast ship service quality based on the level of performance and passenger interest. Questionnaire data was collected by distributing questionnaires in a Google Form containing statements regarding indicators/attributes related to services from fast shipping on the Ulee Lheue Port – Balohan Port route. The criteria for respondents were passengers who had previously travelled using a fast ship on the Ulee Lheue Port – Balohan Port route.

3.3. Data Analysis

Data analysis in this research uses descriptive analysis and the CSI method. Descriptive analysis describes respondents' characteristics and perceptions of the research variables. The research variables reviewed are tangible, reliability, responsiveness, assurance, and empathy. The indicators included in these variables can be seen in Table 2 below.

Table 2. Summary of Variables and Measurement Instruments

Variable(s)	Item(s)	Indicator(s)
Tangible	T1	Overall cleanliness of the ship, for example, seating
	T2	The number of seats provided and their quality
	T3	Cleanliness of toilets on board
	T4	Availability of canteen/cafeteria on board
	T5	Availability of a place of worship (prayer room) on board the ship
	T6	Availability of treatment rooms for sick people
	T7	Availability of open space for relaxing (public area)
	T8	Availability of CCTV
	T9	Comfortable gangway/walkway space inside the ship
Reliability	R1	Accurate departure time from Ulee Lheue Port
	R2	On time arrival at Balohan Port
	R3	Matching ticket rates
	R4	Clarity of information provided by officers
Responsiveness	RV1	Ground operator capabilities and ship officers in providing services quickly and precisely
	RV2	The ability of officers to provide assistance to passengers who need it
	RV3	Officer's ability to respond to passenger requests
	RV4	The officers wish you a happy sailing and hope you reach your destination safely
	RV5	Orderly boarding and disembarking of passengers
	RV6	Comfort on board
	RV7	Vehicle loading and unloading services
Assurance	A1	Completeness of safety equipment on board the ship
	A2	There is a display of safety equipment on board the ship.
	A3	Security on board
	A4	Security of luggage
	A5	Vehicle safety on board
	A6	Officers are honest and trustworthy
Empathy	E1	The friendliness of the officers on board the ship
	E2	Pay special attention to officers if there are complaints from passengers
	E3	Availability of facilities for the disabled
	E4	Availability of room facilities for breastfeeding mothers
	E5	Openness in accepting criticism and suggestions

The Customer Satisfaction Index (CSI) is used to determine the level of passenger satisfaction regarding the performance of the service quality of fast ship on the route of Ulee Lheue Port – Balohan Port.

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The data processing stage using the Customer Satisfaction Index (CSI) method can be carried out in the following stages.

- Check the data to see the completeness of the answers on the questionnaire form;
- Enter the Mean Important Score (MIS) value or the mean value of each aspect of the assessment for the level of importance obtained from the questionnaire;
- Enter the Mean Satisfaction Score (MSS) or the mean value of each aspect for the level of satisfaction obtained from the questionnaire;
- Calculate the Importance Weighting Factors (WF) or weighted importance factors, namely changing the average value of the importance level into a percentage of the total average value of the level of importance of all the attributes tested, so that you get a total importance weighting factors of 100% by means of the mean value of each aspect. for the level of importance, divide it by the total mean value of each aspect and then multiply it by 100;
- Calculate the Weighted Score, namely the value of multiplying the mean value of the level of performance/satisfaction of each aspect with the WF value of each aspect;
- Calculate the Weighted Total, namely adding up the WF values from all aspects of the assessment;
- Calculate the Satisfaction Index (satisfaction index), namely the Weighted Total value divided by the maximum scale used (maximum scale 4), then multiplied by 100%;
- Calculate the GAP value to see the quality of service by subtracting the average value of passengers' perception of the level of performance from their interests/expectations;
- Create survey data in a spider chart to assess satisfaction based on each variable and indicator.

4. Results and Discussion

4.1. Validity and Reliability

The validity test calculation in this research used the Spearman Correlation method. The r table value is 0.0981, obtained from the degree of freedom (df), namely, df = n - 2; df = 400 - 2 = 398 with a significant correlation value of 5%. The validity test results on 30 indicators combined into 5 (five) variables are valid because the R stat > R table (0.0981). A recapitulation of the validity test calculation results can be seen in Table 3.

Table 3. Result of Construct Validity

Item	Performance	Importance	Conclusion
Tangible			
T1	0.593	0.770	Valid
T2	0.612	0.793	Valid
T3	0.720	0.812	Valid
T4	0.641	0.716	Valid
T5	0.742	0.774	Valid
T6	0.742	0.838	Valid
T7	0.585	0.774	Valid
T8	0.774	0.812	Valid
T9	0.663	0.801	Valid
Reliability			
R1	0.870	0.882	Valid
R2	0.829	0.884	Valid
R3	0.779	0.868	Valid
R4	0.818	0.855	Valid
Responsiveness			
RV1	0.761	0.847	Valid
RV2	0.730	0.853	Valid
RV3	0.711	0.865	Valid
RV4	0.712	0.853	Valid
RV5	0.640	0.858	Valid
RV6	0.717	0.838	Valid

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RV7	0.643	0.831	Valid
Assurance			
A1	0.755	0.884	Valid
A2	0.787	0.890	Valid
A3	0.744	0.907	Valid
A4	0.773	0.872	Valid
A5	0.710	0.887	Valid
Empathy			
E1	0.700	0.896	Valid
E2	0.741	0.895	Valid
E3	0.843	0.890	Valid
E4	0.858	0.894	Valid
E5	0.821	0.892	Valid

Reliability tests were calculated in this research using the Cronbach Alpha method. Suppose the Cronbach Alpha value is > 0.6. In that case, the data instrument can be reliable, meaning that the indicators for the level of satisfaction and interest in each variable can reflect the variable itself. The reliability test results stated that the data instrument was reliable for use as a research measuring tool because the Cronbach Alpha value for all research variables showed a value greater than 0.6. It means that all indicators of satisfaction and level of importance are the variables under review. The results of reliability testing are as in Table 4.

Table 4. Result of Construct Reliability

Reliability Statistic	Cronbach Alpha	Indicator	Conclusion
Performance (X)	0.960	30	Reliable
Importance (Y)	0.979	30	Reliable

4.2. Customer Satisfaction Index (CSI)

The CSI value is used to determine the overall passenger satisfaction index value by considering the level of importance. The level of user satisfaction is assessed by comparing passenger's perceived performance with their expectations of service quality. The results of passenger CSI calculations are shown in Table 3 below.

Table 5. Result of overall Passenger Satisfaction Index using CSI Approach

Item	Indicators	MIS	MSSi	WF	WS	GAP
		(1)	(2)	(3)=(1)/103,7x100	(4)=(2)x(3)	
Tangible						
T1	Overall cleanliness of the ship, for example, seating	3.49	3.11	3.37	10.47	-0.38
T2	The number of seats provided and their quality	3.49	3.15	3.37	10.60	-0.34
T3	Cleanliness of toilets on board	3.51	2.81	3.38	9.51	-0.70
T4	Availability of canteen/cafeteria on board	3.21	2.71	3.10	8.39	-0.50
T5	Availability of a place of worship (prayer room) on board the ship	3.31	2.73	3.19	8.71	-0.58
T6	Availability of treatment rooms for sick people	3.44	2.61	3.32	8.66	-0.83
T7	Availability of open space for relaxing (public area)	3.36	3.10	3.24	10.04	-0.26

T8	Availability of CCTV	3.46	2.82	3.34	9.41	-0.64
T9	Comfortable gang-way/walkway space inside the ship	3.42	2.90	3.30	9.56	-0.52
Reliability						
R1	Accurate departure time from Ulee Lheue Port	3.59	3.24	3.46	11.22	-0.35
R2	On time arrival at Balohan Port	3.57	3.26	3.44	11.22	-0.31
R3	Matching ticket rates	3.45	3.17	3.33	10.55	-0.28
R4	Clarity of information provided by officers	3.57	3.10	3.44	10.67	-0.47
Responsiveness						
RV1	Ground operator capabilities and ship officers in providing services quickly and precisely	3.50	3.05	3.38	10.29	-0.45
RV2	The ability of officers to assist passengers who need it	3.51	2.97	3.38	10.05	-0.54
RV3	Officer's ability to respond to passenger requests	3.48	2.97	3.36	9.97	-0.51
RV4	The officers wish you a happy sailing and hope you reach your destination safely	3.47	2.74	3.35	9.17	-0.73
RV5	Orderly boarding and disembarking of passengers	3.55	3.09	3.42	10.58	-0.46
RV6	Comfort on board	3.36	2.94	3.24	9.53	-0.42
RV7	Vehicle loading and unloading services	3.33	2.99	3.21	9.60	-0.34
Assurance						
A1	Completeness of safety equipment on board the ship	3.54	3.05	3.41	10.41	-0.49
A2	There is a display of safety equipment on board the ship	3.39	2.44	3.27	7.98	-0.95
A3	Security on board	3.52	2.99	3.39	10.15	-0.53
A4	Security of luggage	3.54	2.98	3.41	10.17	-0.56
A5	Vehicle safety on board	3.48	2.94	3.36	9.87	-0.54
Empathy						
E1	The friendliness of the officers on board the ship	3.44	2.95	3.32	9.79	-0.49
E2	Pay special attention to officers if there are complaints from passengers	3.45	2.86	3.33	9.51	-0.59
E3	Availability of facilities for the disabled	3.41	2.45	3.29	8.06	-0.96
E4	Availability of room facilities for breastfeeding mothers	3.39	2.45	3.27	8.01	-0.94
E5	Openness in accepting criticism and suggestions	3.47	276	3.35	9.24	-0.71

Total	291.38
Customer Satisfaction Index (CSI)	72.85

Table 5 shows the overall Customer Satisfaction Index (CSI) value for fast-ship passengers at 72.85. Based on Table 1, this value is included in the satisfied category. The indicator or attribute with the largest minus value is E3, which is in the empathy variable, namely the indicator for the availability of facilities for people with disabilities with a gap value of -0.96. Furthermore, indicators with large minus values are A2 and E4, where each indicator has a gap value of -0.95 and -0.94. The A2 indicator indicates the demonstration of safety equipment on board, and the E4 indicator suggests the availability of space facilities for breastfeeding mothers. These three indicators have a performance level value lower than the importance level value. They are considered indicators that cannot satisfy passenger expectations, so the performance of these indicators must be improved.

On the basis of observation of the fast ship, facilities for disabled people are not good yet, such as no special lane for wheelchairs at the ship's entrance, even though this special lane is crucial to make it easier for wheelchairs to enter. Another example that can be seen is that the room for breastfeeding mothers seems like sharing with the room for sick people, so there is no privacy for the mothers when they are breastfeeding their babies, and also the is filled with items such as passenger bags. For the comfort of all passengers, it is recommended that the ship management add some additional luggage storage space like lockers or anything so that passengers' luggage is not placed in inappropriate places. Also, there is no demonstration of how to use the safety equipment on board, even though the safety equipment is available. It can be recommended that the ship management keep demonstrating the use of safety equipment on board even though the distance between Banda Aceh and Sabang is not too far so that passengers know one.

5. Conclusions

This study concludes that the performance of the fast ship on the Ulee Lheue Port - Balohan Port route, the Customer Satisfaction Index (CSI) or satisfaction value felt by passengers is 72.85, where this value is included in the satisfied category, meaning that the performance level of the ship management is rated as Good by passengers. However, to increase the value of passenger satisfaction, it is recommended that ship managers improve the performance of assessment indicators from all aspects/dimensions so that it is hoped that the Customer Satisfaction Index (CSI) value can increase to 100. The indicators that have a value the worst is the indicator of availability of facilities for disabled people (E3) with a value of -0.96, safety on board the ship (A3) with a value of -0.95, and availability of facilities for breastfeeding mothers (E4) with a value of -0.94, so that These indicators are a priority in improving quality.

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