



# Analysis of The Performance of Sea Transportation Services on Passengers and Vehicles on The Quality of Service at PT. Dharma of The Main Ocean

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## Abstract

The purpose of this study is to analyze and prove the performance of sea transportation services in passenger, the performance of sea transportation services in vehicles, and the quality of service in PT. Dharma Lautan Utama. The sample determination used a quantitative research method with a population of 2,614 people, so that the number of passengers obtained was 245 people from passengers at PT. Dharma Lautan Utama. Data collection techniques are carried out by observation, questionnaire, and literature study. The results of this study show that: (1) the performance of sea transportation services has a positive and significant effect on the quality of service at PT. Dharma Lautan Utama (Y). This is evidenced by the results of statistical hypothesis testing on the performance variables of sea transportation services, which show a t-value of  $9.709 > 1.970$  and a significance level of  $0.000 < 0.05$ , indicating that  $H_0$  is rejected and  $H_a$  is accepted. (2) Passenger has a positive and significant effect on the Quality of Service at PT. Dharma Lautan Utama (Y). This is evidenced by the results of statistical hypothesis testing on the variable of the process of debralation/embarking ship passengers, showing a calculated t-value of  $4.465 > 1.970$  and a significance level of  $0.000 < 0.05$ , meaning that  $H_0$  is rejected and  $H_a$  is accepted. (3) The performance of sea transportation services and passengers has a joint effect on the quality of service at PT. Dharma Lautan Utama is supported by the test results, which yield a calculated F value of 65.936 with a significance level of 0.000, as the significance value is less than 0.05.

**Keywords :**  
*Transportation Service, Performance Passanger, Service Quality*

## INTRODUCTION

Indonesia, an archipelagic nation comprising over 17,000 islands, faces unique geographical challenges that necessitate a robust and efficient transportation infrastructure. Straits and vast oceans separate more than 1,800 inhabited islands, making maritime transport not just a logistical necessity but a lifeline for national unity and economic integration. Ships serve as the backbone of Indonesia's inter-island connectivity, enabling the movement of people and goods across regions that are otherwise inaccessible by land or air. This reliance on maritime mobility has historically earned Indonesia the title of a "seafaring nation," reflecting its deep-rooted maritime culture and the critical role of ships in sustaining its socio-economic framework. To realize the vision of the Nusantara—a unified and interconnected Indonesia—the development of a national maritime transportation system is imperative. Such infrastructure must not only bridge physical distances but also drive national development by fostering trade, tourism, and regional equity.

From an economic perspective, sea transportation offers unparalleled advantages over other modes of transport, particularly in an archipelagic context. Ships are cost-effective, high-capacity carriers, capable of transporting large volumes of goods and passengers simultaneously, which is crucial for a geographically dispersed nation like Indonesia. This efficiency facilitates inter-island trade, supports supply chain logistics, and stimulates local economies by enabling the seamless distribution of commodities. Moreover, maritime routes open up underdeveloped regions to economic opportunities, allowing remote islands to participate in national and global markets. However, the role of sea transportation extends beyond mere logistics—it is a catalyst for regional development. By connecting isolated communities to urban centers, maritime networks promote investment, tourism, and infrastructure growth, thereby reducing economic disparities between Java-centric development and outer islands. Given the increasing demand for inter-island mobility, the expansion and modernization of Indonesia's maritime transport sector remain a national priority that cannot be substituted by land or air alternatives.

The Indonesian government has formalized the strategic importance of sea transportation through Law No. 17 of 2008 concerning Shipping, which mandates that maritime operators must provide reliable passenger and cargo services, including postal transport. Article 38 of this law explicitly requires shipping companies to issue tickets and cargo documentation as legally binding proof of transport agreements. PT. Dharma Lautan Utama (PT. DLU), as a key player in Indonesia's maritime sector, is bound by these regulations and must ensure that its services align with national standards. The company's commitment to customer satisfaction and service excellence is not merely a business strategy but a regulatory obligation aimed at maintaining passenger trust and operational integrity. By prioritizing quality, safety, and reliability, PT. DLU differentiates itself from

competitors and fosters long-term customer loyalty, which is essential in an industry where service consistency directly impacts public reliance on sea travel.

Table 1 List of Ship Specifications and Routes

Ship	Travel Routes	Spesifikasi Kapal	
		GT/Length	Passenger capacity
KM. Dharma Ferry VII	Balikpapan – Surabaya-PP	27.621/186 m	870 orang
KM. Dharma Ferry V	Balikpapan – Surabaya-PP	26.400/170 m	638 orang
KM. Dharma Kencana V	Balikpapan – Surabaya-PP	28.205/170 m	1.441 orang
KM. Dharma Kartika IX	Balikpapan - Pare2-PP	9.865/150 m	598 orang

Source from PT. Dharma Lautan Utama Balikpapan Branch

As a privately owned maritime service provider, PT. Dharma Lautan Utama Balikpapan Branch plays a pivotal role in facilitating inter-island passenger and vehicle crossings. Currently, the company operates four vessels—KM. Dharma Ferry VII, KM. Dharma Ferry V, KM. Dharma Kencana V, and KM. Dharma Kartika IX—which dock at Semayang Port, a strategic hub in East Kalimantan. Three of these ships serve the Balikpapan-Surabaya round-trip route, a critical corridor connecting Kalimantan and Java, while one vessel operates on the Balikpapan-Parepare route, linking Kalimantan with South Sulawesi. Collectively, these ships have a passenger capacity of 3,547 individuals per trip, underscoring PT. DLU's capacity to support large-scale mobility demands. This operational framework highlights the company's contribution to regional connectivity and its alignment with Indonesia's broader maritime development goals.

The sustainability of Indonesia's archipelagic unity and economic growth hinges on the strength of its maritime transportation network. Companies like PT. Dharma Lautan Utama exemplify how private-sector efficiency, coupled with regulatory compliance, can enhance service quality and passenger trust. Moving forward, continued investment in modern fleets, port infrastructure, and digitalized logistics will be essential to meet rising demand and solidify Indonesia's position as a global maritime leader. By prioritizing these advancements, Indonesia can ensure that its sea routes remain not just a means of transport, but a driving force for national prosperity and integration.

## LITERATURE REVIEW

### Quality of Service

Service quality, as defined by Lewis & Booms (cited in Tjiptono, 2020, p. 142), refers to the extent to which a service meets or exceeds customer expectations. It encompasses multiple dimensions, including the technical quality of the service output—such as cost efficiency, timeliness, speed of delivery, and aesthetic appeal—as well as the functional quality, which focuses on the process of service delivery. Functional quality involves aspects like employee attitude, customer interaction, convenience, internal organizational relationships, physical appearance, accessibility, and the overall service mindset. Additionally, a company's reputation and brand image play a crucial role in shaping customer perceptions of service quality. A strong reputation enhances trust and loyalty, while poor service delivery can significantly damage a company's standing in the market. In the context of maritime transport, service quality is vital for ensuring passenger satisfaction, operational efficiency, and long-term business sustainability.

## **Sea Transportation**

Sea transportation, as described by Pujiastuti & Samekto (2019), is the movement of passengers or cargo via ships powered by engines, facilitating travel and trade across waterways. It remains one of the oldest yet most critical modes of transportation, particularly for international trade, where over 80% of global goods are transported via maritime routes. Ships carry a diverse range of commodities, including consumer products, industrial raw materials, vehicles, machinery, chemicals, and crude oil. Beyond cargo transport, sea transportation also serves passenger mobility, encompassing ferries, cruise ships, public maritime transit, and recreational voyages. The efficiency of sea transportation depends on factors such as vessel maintenance, route optimization, regulatory compliance, and environmental sustainability. Given its economic and logistical importance, advancements in maritime technology, safety protocols, and service standards are essential for maintaining competitiveness in the industry.

## **Passengers in Maritime Transport**

Passengers in maritime transport are individuals who utilize shipping services for travel, requiring careful consideration due to safety, security, and service quality concerns (Andika, 2022). They can be categorized into three main types:

1. General Passengers – Those who travel independently without requiring special assistance.
2. Special Passengers – Individuals with unique needs, such as elderly travelers, persons with disabilities, or high-profile passengers (e.g., VIPs or government officials).
3. Passengers with Legal Issues – Travelers facing documentation problems, such as invalid or fraudulent travel permits.

Understanding passenger behavior, rights, and obligations is crucial for enhancing service delivery, ensuring compliance, and mitigating disputes in maritime operations. By addressing these factors, shipping companies can improve customer satisfaction while maintaining legal and operational efficiency.

## **RESEARCH METHOD**

### **Research Design**

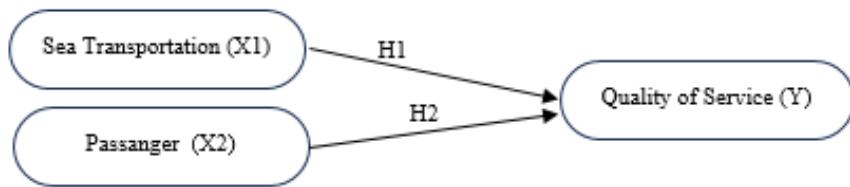
A quantitative approach was employed, with data collected via structured questionnaires from 245 passengers across PT. DLU's four ferry routes (Balikpapan-Surabaya/Pare-Pare). The sample was determined using the Isaac and Michael formula (95% confidence level, 5% margin of error), with respondents selected via stratified random sampling to ensure representation across demographics and trip purposes.

The population in this study was passengers on 4 days of ship visits and produced 2,614 passengers disembarking from the KM ship. Dharma Kencana V. The determination of the number of samples was taken based on the number of population at the time of the KM ship's visit. Dharma Kencana V 4 Semayang/Balikpapan Port is a total of 245 passenger samples. The sample technique in this study uses the Issac and Michael formula. The researcher selectively determined the case group respondents by considering inclusion and exclusion criteria. The instrument used was a questionnaire.

A hypothesis is a conjecture or provisional statement that is put forward to answer the problem being researched. This statement is based solely on relevant theories or concepts, and has not been empirically proven through data collection. Therefore, the hypothesis is considered provisional and needs to be further tested to see its truthfulness. In this study, based on a literature review and previous research, the hypothesis proposed is the influence of sea transportation on the

quality of servants and the influence of passengers on the quality of service. Research by Narti (2020) explains that there is a positive influence on Service Quality on Passenger Satisfaction.

The data processing techniques used by the researcher are editing, coding, data entry, validity test, reliability test, and tabulation. Data analysis used Multiple Linear Regression analysis. In this study, the author uses a frame of thought that can be seen in the following image:



Picture. Frame of Mind

## RESULT AND DISCUSSION

The research conducted at PT. Dharma Lautan Utama's Balikpapan branch in May 2024 aimed to analyze the influence of sea transportation and passengers on service quality. The study involved a population of 2,641 ship passengers, with a sample size of 245 respondents. The data collection instrument, a questionnaire, was tested for validity and reliability before being distributed, ensuring the accuracy and consistency of the measurements.

This research was carried out in May 2024 at PT. Dharma Lautan Utama Balikpapan branch by taking a passenger population of 2,641 people from the KM ship. Then a sample of 245 people was obtained which was used for data processing. The questionnaire given to the sample had previously been tested for validity and reliability. The research method uses descriptive research.

Table 2. Validity Test Results

Variable	rcalculate	rtable	Information
Sea Transportation (X1)			
X1.1	0,865	0,125	Valid
X1.2	0,794	0,125	Valid
X1.3	0,822	0,125	Valid
X1.4	0,835	0,125	Valid
X1.5	0,741	0,125	Valid
Passenger (X2)			
X2.1	0,900	0,125	Valid
X2.2	0,894	0,125	Valid
Quality of Service (Y)			
Y.1	0,723	0,125	Valid
Y.2	0,783	0,125	Valid
Y.3	0,791	0,125	Valid
Y.4	0,773	0,125	Valid
Y.5	0,716	0,125	Valid

Source : Research Data 2024

Table 2 above explains that all indicators used to measure the variables in this study have a correlation value of  $> r_{\text{table}} = 0.125$

Table 3. Reliability Test Results

Variable	Cronbach Alpha	Cut of value	Information
Sea Transportation (X1)	0,868	0,6	Reliable
Passenger (X2)	0,758	0,6	Reliable
Quality of Service (Y)	0,811	0,6	Reliable

Source : Research Data 2024

From the test results of table 3 above, it is known that all variables have a cronbach alpha  $> 0.6$ . So it can be concluded that the whole of the variables in this study is reliable.

The validity test results (Table 2) confirmed that all indicators used to measure the variables had a correlation value greater than the  $r$ -table (0.125), indicating that each item in the questionnaire accurately reflected the intended construct. Furthermore, the reliability test (Table 3) demonstrated strong internal consistency, with all variables achieving a Cronbach's alpha value above 0.6, the generally accepted threshold for reliability. This means that the measurement tools were consistent and dependable for assessing the research variables.

Table 4 Normality Test Results

One-Sample Kolmogorov-Smirnov Test		Unstandardized Residual
N		245
Normal Parameters <sup>a,b</sup>	Mean	,0000000
	Std. Deviation	2,35791240
Most Extreme Differences	Absolute	,043
	Positive	,043
	Negative	-,043
Test Statistic		,043
Asymp. Sig. (2-tailed)		,200 <sup>c,d</sup>
a. Test distribution is Normal.		
b. Calculated from data.		
c. Lilliefors Significance Correction.		
d. This is a lower bound of the true significance.		

Source : Research Data 2024

Based on the results of the Kolmogorov-Smirnov non-parametric statistical test seen in table 4, the significance value obtained is 0.200. This indicates that the residual is normally distributed, so this model can be considered feasible for use in research. The Kolmogorov-Smirnov normality test (Table 4) yielded a significance value of 0.200, which is greater than 0.05, indicating that the residuals were normally distributed. This result confirms that the regression model used in the study was appropriate, as normality is a key assumption in parametric statistical analyses.

Table 5 Hypothesis Test					
Type	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1	(Constant)	9,094	1,024		,000
	Sea Transportation	,382	,039	,509	9,709 ,000
	Passanger	,438	,098	,234	4,465 ,000

Dependent Variable: Quality of Service

Source : Research Data 2024

The results of the hypothesis test obtained the results: The t-count value for the marine transportation variable was 9.709 with a significance level of 0.000. Since 9.709 is greater than 1.970 and 0.000 is smaller than 0.05, then  $H_0$  is rejected and  $H_a$  is accepted.  $H_1$ : Sea transportation has a positive influence on service quality. The t-count value for the Passenger variable is 4.465 with a significance level of 0.000. Since 4.465 is greater than 1.970 and 0.000 is less than 0.05, then  $H_0$  is rejected and  $H_a$  is accepted.  $H_2$ : Passengers have a positive influence on the quality of service.

The hypothesis testing provided significant insights into the relationship between sea transportation, passengers, and service quality:

1. Sea Transportation's Influence on Service Quality ( $H_1$ )
  - The t-value of 9.709 (greater than the critical value of 1.970) and a significance level of 0.000 (less than 0.05) led to the rejection of the null hypothesis ( $H_0$ ).
  - This finding supports  $H_1$ , confirming that sea transportation has a positive and statistically significant influence on service quality. This suggests that improvements in maritime transport services—such as vessel condition, scheduling, and safety—directly enhance passengers' perceived service quality.
2. Passengers' Influence on Service Quality ( $H_2$ )
  - The t-value of 4.465 (exceeding 1.970) and a significance level of 0.000 (below 0.05) also led to the rejection of  $H_0$ .
  - Thus,  $H_2$  is accepted, indicating that passengers have a positive and significant impact on service quality. This implies that passenger behavior, expectations, and feedback play a crucial role in shaping service delivery, prompting service providers to adapt and improve based on customer needs.

The study successfully demonstrated that both sea transportation and passenger factors significantly contribute to service quality in maritime operations. The validity and reliability tests ensured the robustness of the data, while the normality test confirmed the suitability of the statistical model.

These findings highlight the importance of optimizing maritime transport services and understanding passenger dynamics to enhance service quality. Future research could explore additional variables, such as crew performance or digitalization in shipping services, to provide deeper insights into improving customer satisfaction in the maritime industry.

## CONCLUSION AND SUGGESTIONS

From the description of the results of the research and discussion on the influence of sea and passenger transportation on the quality of services at PT. The

Dharma of the Primary Ocean can be summed up as follows: By providing maximum performance in marine transpotation services, it will help in improving the quality of service at PT. Darma Lautan Utama. Passengers can affect the quality of service by providing feedback that will be received in the form of positive things from passengers, the quality of service provided will also increase.

Based on the above conclusions, we convey some suggestions that can be submitted to develop this research as follows: For marine transportation service companies, the results in this study can be used as a reference for the future in improving the quality of service to sea transportation service users. For service users, in marine transpotation, the results of this research can be used as a consideration in selecting marine transpotations to be used that have good service quality. And, for readers or writers, it can be used as a reference for consideration to make the next research and is expected to pay attention to other variables that can affect the quality.

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