

Assessing Service Quality and Passenger Satisfaction: A Quantitative Study of Sea Transportation on the Padang Mentawai

Abstract. *Sea transportation is a vital component of the transportation network, with the Ship Sabuk Nusantara 68 serving as a key sea transport vessel under the Indonesian National Shipping Limited Liability Company (PT) (PELNI). Operating between Padang City and Mentawai Island, this passenger ship plays a crucial role in connecting these destinations. However, despite its importance, complaints regarding the quality of sea transportation services, particularly on the KMP Sabuk Nusantara 68 route between Padang and Mentawai, have been voiced by passengers. In response to these concerns, this research was conducted to assess the levels of service quality and passenger satisfaction. The study aimed to identify priority factors for enhancing service performance and passenger satisfaction. Employing a quantitative method, researchers utilized questionnaires as research instruments, with data analyzed using the Likert scale and the Important and Performance Analysis (IPA) methodology. The findings revealed that overall service quality was satisfactory, with passenger satisfaction levels reaching 89.12%. However, further improvements are still needed, particularly in areas such as ship cleanliness, which emerged as a critical aspect requiring immediate enhancement. Therefore, while passengers are generally content with the services provided, there is still room for improvement to ensure a consistently high level of service performance and passenger satisfaction.*

Keywords: improving, sea, transportation, service quality

INTRODUCTION

Maritime transport is an important element of the overall transport system, playing a key role in the comprehensive transport network, connecting different regions and facilitating the movement of goods and people. In this context, Sabuk Nusantara Ship 68, owned by the Indonesian National Shipping Company (PT. PELNI), plays an important role in maritime transport by connecting Padang City and Mentawai Island. The ship serves as a means of transport at sea, allowing humans to travel between islands for various purposes. The Nusantara Sabuk 68 ship, which is one of the ships owned by the PT PELNI fleet, belongs to the category of cruisers or ocean liners or maritime line ships. Its operations are mainly in the western part of Indonesia, especially in the maritime region of the Mentawai Islands in West Sumatra, which is located in the Indian Ocean. The KMP Sabuk Nusantara route from Padang to Mentawai is equipped with international standard facilities, built using iron and designed to withstand waves as high as three metres. In addition, KMP Sabuk Nusantara 68 is equipped with various security and insurance features to ensure the welfare of passengers and the safe transport of goods. PT PELNI (Persero) plays an important role in sea transport, serving the community in the Mentawai Islands through vessels such as KM Sabuk Nusantara 68. The company ensures safe transport services. Therefore, service loyalty is considered as one of the most important elements in service marketing. By utilising the existing knowledge base and adapting it to the specific context of the Sabuk Nusantara 68 vessel serving the Padang-Mentawai route. However, KMP Sabuk Nusantara 68 still has some shortcomings. One of them is its inability to withstand waves of more than three metres, which may cause inconvenience to passengers. In addition, the duration of the Padang-Mentawai route is quite long. Research on the concept of Port Service Quality (PSQ) explores its impact on customer satisfaction [1] within the port sector. It has been found that there is a significant positive relationship between PSQ and customer satisfaction. This research also contributes to theory development by introducing and validating a model of PSQ and customer satisfaction, particularly in the context of the port sector. Given that inter-island transit services should prioritise the maximisation of passenger satisfaction, it is important for passenger vessels to meet established service standards. These standards are listed in the Minister of Transportation (PM) Regulation Number 62 of 2019. Consumer loyalty [1], according to Richard L. Oliver, [2] includes four dimensions, namely: 1) cognitive loyalty based on brand trust; 2) affective loyalty or emotional attachment to a brand based on cumulative satisfaction; 3) conative loyalty which shows a deep level of commitment to making a purchase; and 4) action fidelity,

where intentions turn into actions. Customer satisfaction is a psychological reaction offered by customers based on previous experiences with the expected and received intermediate support. In their research, they discussed five dimensions of service quality using IPA and CSI analysis methods. Based on the description above, it can be concluded that service quality includes all forms of activities carried out by service providers to fulfill consumer desires regarding the services provided. These factors provide a strong basis for researchers to explore improving service quality and passenger satisfaction, with a particular focus on KMP Sabuk Nusantara 68 operating on the Padang route



figure 1. boat sabuk nusantara 68 (survey, 2022)

However, the KMP Sabuk Nusantara 68 still has certain drawbacks. One of these is its inability to endure waves exceeding three meters, which may lead to discomfort among passengers. Moreover, the duration of the Padang - Mentawai route is considerably lengthy. The study investigates the concept of Port Service Quality (PSQ) and its influence on customer satisfaction within the port industry [3]. It has been identified that there is a significant positive correlation between PSQ and customer satisfaction. This research also contributes to theory development by introducing and validating models of PSQ and customer satisfaction, specifically in the context of the port sector [4]. Given that transit services should prioritize maximizing passenger contentment, it is imperative for passenger vessels to adhere to predetermined service benchmarks, as outlined in the Regulation of the Minister of Transportation (PM) Number 62 of 2019 [4]. The PM specifies five indicators of passenger ship service, including safety, security, comfort, affordability, and fairness. Consumer Loyalty, as indicated by Richard L. Oliver [2], encompasses four dimensions: cognitive loyalty based on brand trust, affective loyalty or emotional attachment to the brand based on cumulative satisfaction, conative loyalty indicating a profound commitment to make a purchase, and action loyalty, where intention is translated into action. Customer satisfaction is a psychological response stemming from prior experiences with anticipated and accepted intermediate support [5]. In their research, they elaborate on five dimensions of service quality using the IPA and CSI analysis techniques [6]. According to [7], the outcomes of the IPA quadrant analysis highlight that the service attributes demanding the top priority for performance enhancement are the cleanliness of the ship's bathroom/toilet, punctuality of arrival at the destination port, punctuality of travel duration, air circulation conditions on the ship, and the demonstration of safety equipment usage on the ship. Based on the aforementioned details, it can be concluded that service quality encompasses any activity undertaken by service providers to fulfill consumers' expectations regarding the services rendered

[8]. Considering these factors, they provide a robust basis for researchers to explore enhancing service quality and passenger satisfaction, specifically focusing on the KMP Sabuk Nusantara 68 operating on the Padang - Mentawai route.

METHODOLOGY

This research was carried out on board the Sabuk Nusantara 68 vessel along the Padang-Mentawai Crossing route from April to August 2022. The research stages included sample determination, data collection, data processing, and data analysis [9].

The sample size for this study was determined according to the population of passengers aboard the Sabuk Nusantara 68 vessel on the Padang-Mentawai route during June-July 2022, encompassing a total of 360 passengers on 8 trips. Approximately 25% of the population was selected through the sampling procedure, leading to a final sample size of 90 individuals. Data collection was conducted via a written questionnaire employing the Likert scale to assess attitudes [10].

The questionnaire comprised 18 inquiries concerning service attributes within the vessel. Secondary data were gathered from the population census and the sample of respondents, which was drawn from the data on the number of passengers on the Sabuk Nusantara 68 vessel. A comprehensive literature review [11] was performed by consulting academic journals, theses, dissertations, and pertinent documents related to the research subject, including online sources and previous research outcomes.

The data processing involved validity testing to guarantee the appropriateness of the research instrument. Content validity was employed to evaluate the instrument's adequacy in measuring the studied variables. The data was then analyzed under study. Subsequently, data analysis was conducted using the Importance and Performance Analysis (IPA) method to ascertain the satisfaction level and identify the factors that need enhancement [12]. The IPA analysis method served as a mechanism for juxtaposing service performance against the perceived level of importance as perceived by service users. The findings of the analysis are depicted in a Cartesian diagram that categorizes service elements into four quadrants.

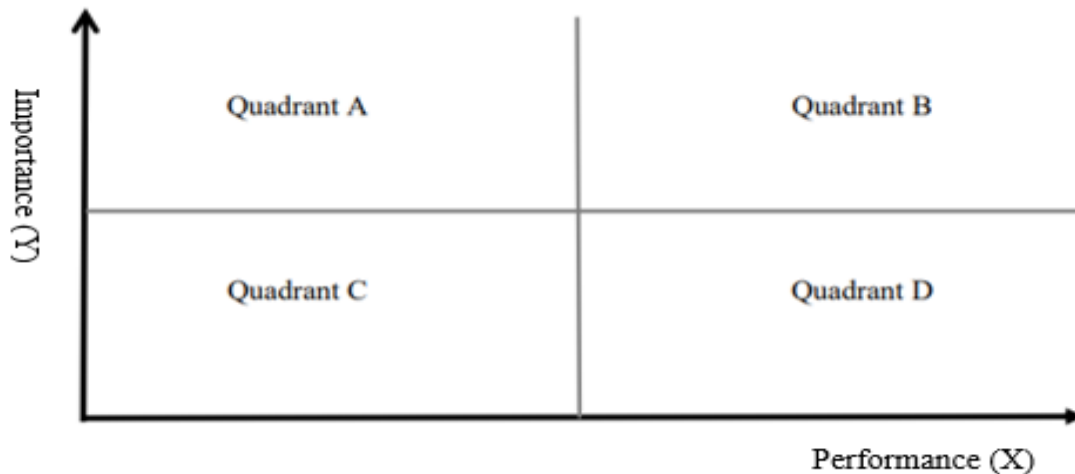


figure 2. cartesian diagrams

Quadrant A represents factors that are important but have low performance significance, while quadrant B exemplifies crucial factors with high performance. Quadrant C denotes insignificant factors with low performance, and quadrant D illustrates insignificant factors with high performance. The questionnaire instrument's design and the benchmark for passenger service standards on the Sabuk Nusantara 68 ship are informed by the minimum service standards for ferry transportation established by the Ministry of Transportation of the Republic of Indonesia in Regulation Number PM 62 of 2019 [13]. This regulation is used as a reference in designing the questionnaire instrument and as a benchmark for passenger service standards on the Sabuk Nusantara 68 ship.

The study aims to examine passenger satisfaction regarding the performance of the ferry transportation service provider on the Sabuk Nusantara 68 ship. It was carried out between April and August 2022, involving 90 passengers from 8 trips on the Padang-Mentawai route. The research methodology included sample size determination based on the population of passengers on the Sabuk Nusantara 68 ship during June-July 2022, with a total of 360 passengers across 8 trips. Approximately 25% of the population was selected, resulting in a total sample size of 90 individuals. Data collection was done through a written questionnaire utilizing the Likert scale to evaluate attitudes. The questionnaire consisted of 18 questions about service attributes within the ship. The data processing involved validity testing to ensure the suitability of the research instrument. Content validity was used to assess the appropriateness of the instrument in measuring the studied variables. Data analysis was conducted using the Importance and Performance Analysis (IPA) method to ascertain the satisfaction level and pinpoint areas for enhancement. The IPA analysis method served as a tool for comparing service performance with the desired level of importance as perceived by the service users. The results of the analysis were illustrated in a Cartesian diagram that categorized service elements into four quadrants [13].

The findings of this study are expected to provide information and recommendations to improve the quality of service on the Sabuk Nusantara 68 ship. The research methodology, including sample size determination, data collection, and analysis, conforms to established practices in social science research. The use of the Likert scale for data collection and the IPA method for data analysis are customary in studies focusing on evaluating attitudes and service quality. The literature review further signifies a comprehensive approach to accumulating pertinent information on the research topic [14].

DISCUSSION:

In the Results and Discussion section, several crucial aspects regarding the satisfaction levels with the services offered by the Sabuk Nusantara 68 ship are presented. These points shed light on the following:

A. General Description of the respondents

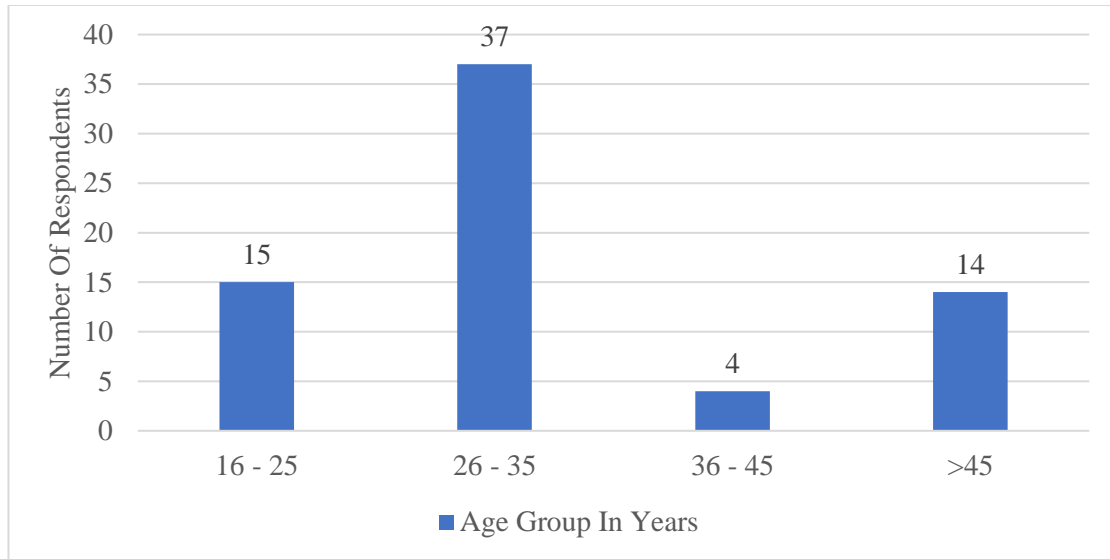


figure 3 respondents

The age of the respondents significantly impacts their attitudes and satisfaction levels concerning the provided services. Notably, a considerable proportion of passengers fall within the 26-35 age bracket, a demographic factor deemed influential in determining service quality. This underscores the importance of tailoring services to meet the specific preferences and expectations of this age group, which could ultimately enhance overall satisfaction levels among passengers.

Apart from that, gender also appears as a determining factor in satisfaction with the services provided. Even though the majority of passengers are male, the facilities available are deliberately designed to meet the needs of female passengers as well. This inclusive approach to service provision ensures that the diverse needs and preferences of all passengers, regardless of gender, can be adequately addressed. research [15] Limitations/implications of research: Other demographic variables such as age, culture, education level, and income should also be considered in future studies and when developing marketing strategy.

In summary, these findings emphasize the important role of understanding passenger demographics, including age and gender, in tailoring service offerings to increase customer satisfaction. By recognizing and accommodating the unique preferences and needs of different demographic groups, service providers can make informed decisions to improve service quality and ultimately foster greater satisfaction and loyalty among passengers.

B. Analysis of Performance Level and Importance Level:

Calculation of Service Quality, Importance Level, and Service Standardization:

The calculation was conducted utilizing assigned weights for each service attribute. These weights are categorized as follows: Very Good/Very Important, Good/Important, Fair/Poorly Important, and Not Good/Not Important.

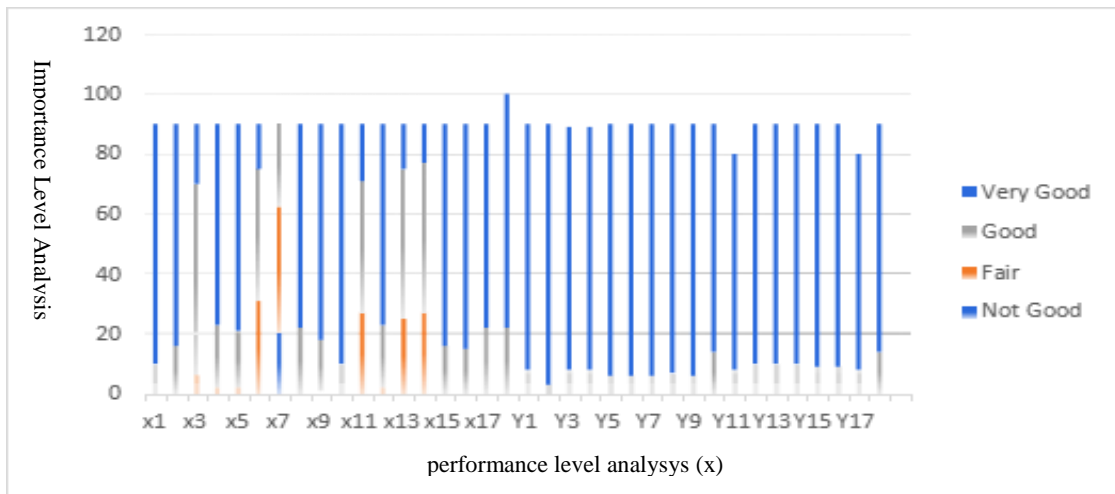


figure 4. grafik rating scale

Based on the presented analysis findings, it is found that the majority of service attributes exhibit satisfactory performance levels (X). Out of the total 18 service attributes assessed, 13 are rated as "very good" in terms of performance, indicating a high level of effectiveness in meeting user expectations. Additionally, 4 service attributes are rated as "good," contributing positively to the overall assessment of service quality. However, one service attribute is identified to have less good performance, highlighting areas that require further improvement and attention. Meanwhile, in the analysis of importance levels (Y), it is emphasized that the majority of service attributes are considered highly important. This underscores the significant role these attributes play in shaping user satisfaction and experience. It suggests that focusing on enhancing the performance of attributes deemed important by users can lead to overall improvements in service quality and user satisfaction. The weights assigned to the performance level (X) and importance level (Y) are computed based on the measurement scale assigned to each service attribute, ensuring a comprehensive evaluation of key aspects of user experience. This analytical approach facilitates a deeper understanding of service quality and user preferences, enabling informed decision-making to optimize service delivery and enhance user satisfaction. [16]

C. Analysis of Service Satisfaction:

The analysis of customer satisfaction is conducted using the Importance-Performance Analysis (IPA) method. The correlation between the performance level (x) and the importance level (y) is quantified into percentages to determine the degree of customer satisfaction.

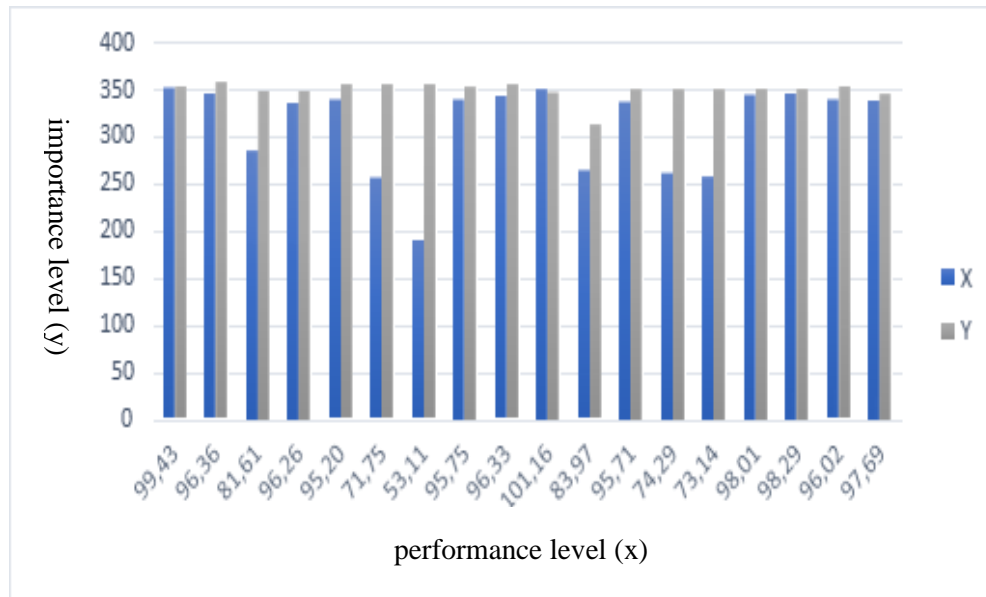


figure 5. grafik conformity rate in percent

Based on the IPA analysis, the findings reveal that the cleanliness facility service on the ship exhibits a low level of alignment (53.11%), indicating that the service is not satisfactory, suggesting an unsatisfactory experience for passengers. Conversely, other service attributes demonstrate higher levels of alignment. In aggregate, the average level of alignment for all service attributes is 89.12%. This indicates that, in general, the services rendered by the Sabuk Nusantara 68 ship are largely deemed satisfactory by passengers.

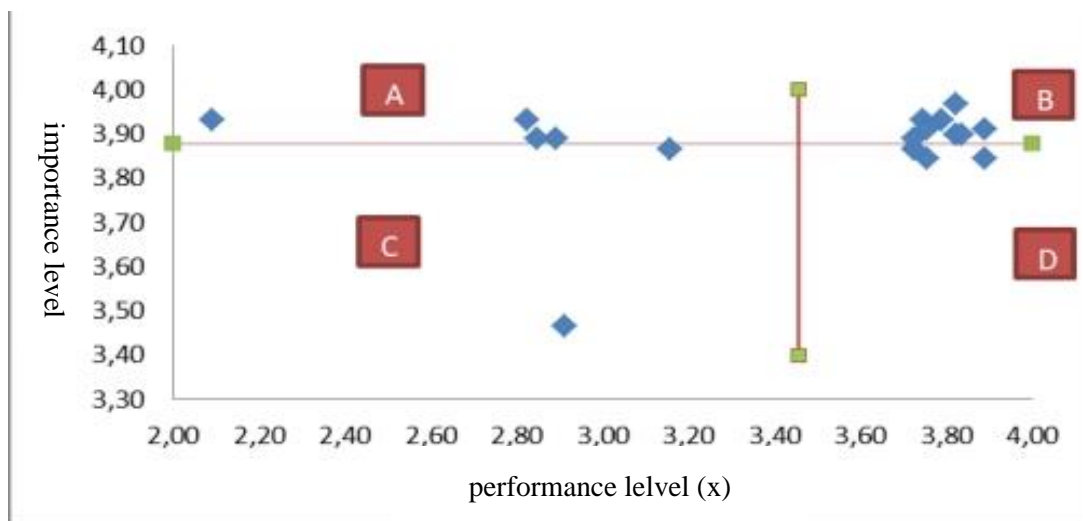


figure 6. cartesian diagram

Based on the analysis of the four quadrants representing the combination of importance level and performance level on various variables related to the service of KMP Sabuk Nusantara 68, the following conclusions can be drawn:

Quadrant A: Variables 7, 6, 13, and 14 exhibit a high importance level but a low performance level. These variables are identified as the top priority for the service provider to enhance the quality of their service. The service provider must concentrate on elevating the performance of these variables to align with the high importance level expected by passengers.

Quadrant B: Variables 1, 2, 5, 8, 9, 12, 15, 16, and 17 demonstrate both high performance and high importance levels. Services associated with these variables should sustain their current level of service quality/performance. These variables have effectively met passengers' expectations and importance, emphasizing the significance of upholding a superior service standard for these aspects.

Quadrant C: Variables 3 and 11 show low performance and low importance levels. The service provider needs to enhance the performance of these variables to improve overall passenger satisfaction, even though they are not considered highly relevant by the passengers.

Quadrant D: Variables 4, 10, and 18 present a low importance level for the passengers but a high performance/service level from the service provider. Hence, no enhancement is required for these variables as the current service level is deemed satisfactory by passengers. With the analysis results of the variables in these four quadrants, the service provider can determine priorities and necessary improvement efforts needed to enhance the quality of their service.

The search results seem to focus on the measurement and evaluation of service quality, particularly in understanding the analysis of variables in the four quadrants representing the combination of importance level and performance level across different service attributes [17]. This likely involves utilizing various methodologies and tools to assess how well a service meets customer expectations and requirements. By categorizing service attributes into quadrants based on their level of importance and performance, organizations can prioritize areas for improvement and allocate resources effectively.

Analyzing variables in these quadrants helps identify strengths and weaknesses in service delivery, guiding decision-making processes to enhance overall service quality. [18] This approach can be valuable for businesses aiming to optimize customer satisfaction and loyalty while staying competitive in the market. Additionally, the resources provide valuable insight into methodologies for quantifying and evaluating service quality [19], which can be applied to the analysis of the variables in the four quadrants representing the integration of importance level and performance level across various service attributes. [20]

CONCLUSION

The analysis of KMP Sabuk Nusantara 68's passenger demographics and service performance has yielded several noteworthy conclusions. First, a predominant age group of 26-35 years suggests that the attitudes of most passengers in this age range significantly influence the overall service quality. Additionally, despite a predominantly male passenger composition, the public facilities aboard are designed to meet the needs of both male and female passengers. Service performance attributes have largely garnered high ratings, indicating a satisfactory level of service experience provided to passengers [21]. In terms of service importance, passengers consistently rate most attributes as very important, reflecting their highly elevated expectations [22].

Through the utilization of the Importance-Performance Analysis (IPA) method, the congruence level between service performance and importance is computed at 89.12%, underscoring an overall satisfaction among passengers with room for improvement, particularly in terms of ship cleanliness. Consequently, it is recommended that the service provider of KMP Sabuk Nusantara 68 focuses attention on improving cleanliness inside the ship to enhance passenger satisfaction. Moreover, given the elevated expectations of passengers across various service aspects, continuous evaluation and improvement measures are advised to ensure a consistently satisfying service experience [23] for all passenger

References

- [1] P. R, B. B, A.S. Honny Fiva and S. Mustika and L.Lis, "The Passenger Loyalti of National Ships on the Routes Along the Java Sea, Indonesia," *ICoSIEBE*, Vols. 163,, no. 215, 2020.
- [2] Richard L. Oliver, *Satisfaction: A Behavioral Perspective on the Consumer*, 2nd Edition ed., New York, 2010, p. 544.
- [3] G.P.R. Ni Luh and R.A. Nyoman and D. Made, "The Effect of Service Quality on Domestic Tourist Satisfaction at Sanur - Nusa Lembongan Sea Transportation: A Case Study at D'Camel Fast Boat," *Journal of Language and Cultural Tourism*, vol. 1, no. 2, p. 60, November 2022.
- [4] ""Regulation of the Minister of Transportation Number PM 62 of 2019 concerning Minimum Service Standards".".
- [5] Ali Hawas Alharbi and Ibrahim Hassan Alhider, "The Impact of Customer Satisfaction and Loyalty on E-Marketing: Moderating Effect of Perceived Value," *Journal of Marketing and Consumer Research*, vol. 46, 2018.
- [6] S. Budiman , "Passenger Perception Analysis on The Quality of Sea Transportation Services at Sanana Regional Port," Tesis, North Maluku Province, 2012.
- [7] Darmadi, Z. A. Muhammad and W. A. Imma, "Assessment of Satisfaction Level of Service Users Towards the Performance of Crossing Transport Services Crossing Karingau_Penajam, Balikpapan," *Media Teknik Sipil* , vol. 14, no. 1, p. 42, 2016.
- [8] M. Johny and H. C. Iwan , "Analysis of Level of Service of Balikpapan Port Passenger Terminal," *Jurnal Penelitian Transportasi Laut.*, vol. 19, pp. 76-87, 2018.
- [9] Sugiyono, *Quantitative, qualitative and R&D research methods*, Bandung: PT. Alfabeta, 2016.
- [10] Djaali, *Likert Scale*, Jakarta: Pustaka Utama, 2008.
- [11] L. A. M. a. Brenda and T. M. Evoy, *The Literature Review:Six Steps to Succes Four Edition*, Fourth ed, 2022.
- [12] Lodhita and E. Heru , *Analysis of Effect of Service Quality on Consumer Satisfaction Using IPA (Importance-Performance analysis) Method And CSI (Customer Satisfaction Index) Case Study at Toko Oen.*, Malang: Brawijaya University, 2014.
- [13] Z. M. Jelena, K. Ines, J. Alen and B. Dalibor, "Evaluation of Service Quality in Passenger Transport with a Focus on Liner Maritime Passenger Transport-A Systematic Review," *Sustainability*, vol. 16, no. 3, 2024.
- [14] W. Kadek , S. W. Suci and P. A. Putu, "Means of Transportation As A Tourist Attraction: A Study of The Perception of Tourists Visiting The Seribu Islands Case Study: Ship KM Sabuk Nusantara 66," *Research Gate*, 2020.

- [15] N. H. I. Ahmad , N. B. Muhammad, I. M. Y. Nur and B. I. Amiruddin , "Gender And Age Do Matter: Exploring the Effect of Passengers'Gender and Age on the Perception of light Rail Transit Service Quality in Kuala Lumpur, Malaysia," *Sustainability*, vol. 3, no. 990, 2021.
- [16] N. Seungju and C. L. Hyun, "A Text Analytics-Based Importance Performance Analysis and Its Application to Airline Service," *Sustainability*, vol. 11, no. 21, 2019.
- [17] N. Seyedvahid , S. Saber and T. Madjid, "Data envelopment analysis in service quality evaluation: an Empirical Study," *Springer*, vol. 11, pp. 319-330, 2015.
- [18] Ajeng Rizki Ayuningtyas, Evaluation Models of Effectiveness and Efficiency of Pioneer Ship Service: Case Study of West Papua Region, Surabaya: repository.its.ac.id, 2019.
- [19] Mesak Rumsowek, Roland Everson Binur and R. Lazarus, "The Effect of Service Quality on Passenger Satisfaction at PT. Indonesian National Shipping (PELNI) in Jayapura City," *Journal of Humanities and Social Sciences Studies (JHSSS)*, vol. 3, no. 4, 2021.
- [20] V.V. Thai, "The impact of port service quality on customer satisfaction: The case of Singapore," *Maritime Economic & Logistics*, vol. 18, p. 458, 2016.
- [21] B. Maria and R. Isak, "Satisfaction with crowding and other attributes in public transport," *Elsevier*, vol. 79, pp. 213-222, 2019.
- [22] R. Mesak, E. B. Roland and R. Lazarus, "The Effect of Service Quality on Passenger Satisfaction at PT Indonesian National Shipping (PELNI)," *Jurnal of Humanities and Social Sciences Studies (JHSSS)*, vol. 3, no. 4, 2021.
- [23] Y. K. See , J. Ahmad and K. Zainab, "The Influence of Service Quality on Satisfaction: Does Gender Really Matter?," *Intangible Capital*, vol. 12, no. 2, pp. 444-461, 2016.