

ANALYSIS OF FISHERMEN'S SATISFACTION LEVELS WITH SERVICE FACILITIES AT THE MANGGAR BARU FISH LANDING BASIN (PPI) IN BALIKPAPAN CITY

Analisis Tingkat Kepuasan Nelayan Terhadap Fasilitas Pelayanan di Pangkalan
Pendaratan Ikan (PPI) Manggar Baru Kota Balikpapan

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ABSTRACT

The Fish Landing Base (PPI) plays a crucial role as a logistics hub and primary service provider for small-scale fishermen in Indonesia. Amid the demands of economic development and the strategic role of Balikpapan City as the gateway to the National Capital (IKN), the performance of PPI Manggar Baru must be effectively assessed to ensure optimal support for the local fisheries sector. This study aims to measure the satisfaction level of fishermen using PPI Manggar Baru and identify priorities for facility improvements. The method used is descriptive quantitative through surveys involving fishermen who use the PPI Manggar Baru services. The data were analyzed using two main techniques: the Customer Satisfaction Index (CSI) to determine the overall satisfaction index by mapping the gap between expectations (importance) and performance (reality). The analysis results show that the CSI for PPI Manggar Baru is 69.70%, indicating that the satisfaction level of fishermen falls into the "Satisfied" category. However, 30.30% still indicates dissatisfaction, caused by differences in fishermen's perceptions of the importance of facilities and the performance provided. A key factor influencing satisfaction is that facilities considered highly important by fishermen have not met their expectations. This study recommends that the management of PPI Manggar Baru improve and enhance the facilities that are deemed important by fishermen to achieve a more optimal satisfaction level.

Keywords: Customer Satisfaction Index (CSI), Service Facilities, Fishermen's Satisfaction, PPI Manggar Baru

ABSTRAK

Pangkalan Pendaratan Ikan (PPI) memiliki peran krusial sebagai simpul logistik dan pelayanan utama bagi Nelayan skala kecil di Indonesia. Di tengah tuntutan pembangunan ekonomi dan peran strategis Kota Balikpapan Dimana sebagai gerbang Ibu Kota Negara (IKN),

kinerja PPI Manggar Baru harus diukur secara efektif untuk menjamin dukungan optimal terhadap sektor perikanan lokal. Penelitian ini bertujuan untuk mengukur tingkat kepuasan Nelayan pengguna PPI Manggar Baru dan mengidentifikasi prioritas perbaikan fasilitas. Metode yang digunakan adalah kuantitatif deskriptif melalui survei dengan melibatkan Nelayan pengguna jasa PPI Manggar Baru. Data dianalisis menggunakan dua teknik utama: *Customer Satisfaction Index* (CSI) untuk menentukan indeks kepuasan umum dengan memetakan kesenjangan antara harapan (kepentingan) dan kinerja (kenyataan). Hasil analisis menunjukkan bahwa CSI PPI Manggar Baru sebesar 69,70%, yang mengindikasikan bahwa tingkat kepuasan Nelayan berada pada kategori “Puas”. Namun, masih terdapat 30,30% yang menunjukkan ketidakpuasan, yang disebabkan oleh perbedaan persepsi Nelayan terhadap pentingnya fasilitas dan kinerja yang diberikan. Atribut yang dianggap sangat penting oleh Nelayan, namun belum memenuhi harapan mereka, menjadi faktor utama yang mempengaruhi tingkat kepuasan. Penelitian ini memberikan rekomendasi agar pengelola PPI Manggar Baru melakukan perbaikan dan peningkatan pada fasilitas yang dianggap penting oleh Nelayan, guna mencapai tingkat kepuasan yang lebih optimal.

Kata Kunci: Customer Satisfaction Index (CSI), Fasilitas Pelayanan, Kepuasan Nelayan, PPI Manggar Baru.

INTRODUCTION

Global economic development, which is increasingly dependent on the maritime sector, demonstrates the importance of capture fisheries, which serve as food providers and economic drivers in coastal areas. Countries like Indonesia, with significant marine resources, are strategically positioned to utilize fisheries resources effectively and sustainably, provided they are managed properly (Lai et al., 2007; Moazzam, 2023). The quality of fish landing infrastructure, consisting of ports and fish landing bases (PPI), is very crucial, because this infrastructure functions as a link between fishing activities at sea and the supply chain and markets on land (Damayanti et al., 2022; Parasuraman et al., 1985). Research shows that the performance of this infrastructure affects logistical efficiency, the hygienic quality of the catch, and directly contributes to the welfare of fishermen (Dabholkar et al., 1995).

In Indonesia, PPIs are among the smallest landing facilities and serve as a livelihood for small-scale fishermen. Therefore, the operational effectiveness of PPIs is measured not only by the volume of fish landed, but also by the extent to which the services provided meet user expectations (Moazzam, 2023). Fishermen's satisfaction levels are an important indicator in assessing the success of service management at PPI. In this context, the SERVQUAL model evaluates service quality based on five key dimensions: reliability, responsiveness, assurance, empathy, and tangibles, illustrating the comparison between fishermen's expectations and perceptions of the service they receive (Buttle, 1996; Silva et al., 2019). Accurate measurement relative to satisfaction becomes an important tool for identifying needed improvements (Karimi et al., 2015).

The Manggar Baru Fishing Port (PPI) in Balikpapan, East Kalimantan, serves as the main gateway for fish landings and supports stable fish supplies and incomes for numerous fishermen. As a growing city and designated gateway to the Indonesian capital (IKN), demands for quality public services, including fishing port services, are increasing. In this dynamic environment and rising expectations for public service quality, research into potential service implementation at this PPI remains minimal (Awasthi & Verma, 2020). Failure to meet

expectations can result in high operational costs for fishermen, decreased fish quality, and the potential for social conflict (Atufa et al., 2023). Optimal and sustainable utilization of fishery resources is a key component of fishery port development (Anggi et al., 2023). An in-depth analysis is needed to determine which service attributes are satisfactory and which require improvement, ensuring that the development of the Manggar Baru PPI is on target and addresses the actual needs of fishermen (Bahri & Herawan, 2020).

Thus, this study aims to analyze service performance at the Manggar Baru Fishermen's Fishing Port (PPI) using quantitative methods to measure satisfaction levels and convert these into prioritized action recommendations. PPI Manggar Baru managers require accurate data on which service attributes are satisfactory and which require urgent improvement. Without structured satisfaction measurement, PPI Manggar Baru development efforts have the potential to be off-target and ineffective in addressing the real needs of fishermen. These recommendations are expected to support the sustainable development of PPI Manggar Baru and improve fishermen's welfare and overall operational efficiency (Odende et al., 2022). This is in line with research Iqbal et al. (2024), that PPI is a strategic position contributing to improving community welfare.

METHODS

The analysis was conducted through a survey method with a random sampling technique from the population of fishermen using the Manggar Baru PPI in 2025. Primary data will be collected using a structured questionnaire that measures two variables: the level of importance (expectation) and the level of performance (reality) of service attributes. The CSI calculation will provide an overview of the level of satisfaction, while the IPA analysis will visualize the results on a Cartesian diagram that divides the attributes into four action quadrants (Maintain Achievement, High Priority, Low Priority, and Excessive). This method is in line with various previous studies that use questionnaires to collect data on customer satisfaction in other service contexts (Ariansyah & Wahyuningsih, 2016; Slamet & Nurhidayah, 2023). In customer satisfaction analysis, the Customer Satisfaction Index (CSI) can be used to measure the overall level of satisfaction, this approach has been proven effective in various studies to determine areas that require further attention and improvement in service (Jajuli & Sulistiyowati, 2018; Slamet & Nurhidayah, 2023). Previous research also shows how CSI can identify gaps between levels of importance and performance in various services (Budihartanti et al., 2019; Putri & Tileng, 2021). Therefore, incorporating this methodology into the PPI Manggar Baru Fishermen's satisfaction study can provide valuable information for improving service quality in the future.

The Customer Satisfaction Index (CSI) is calculated by averaging attribute importance scores to determine the level of attribute performance that will influence overall consumer satisfaction (Damanik, 2014). The CSI measurement method consists of the following steps:

Determine the average score of satisfaction level and performance level.

$$\bar{X} = \frac{\sum_{i=1}^n X_i}{n} \qquad \bar{Y} = \frac{\sum_{i=1}^n Y_i}{n}$$

Information:

$\bar{X}$ = Average value of performance level

$\bar{Y}$ = Average value of level of importance

n = Number of respondents

- a. Creating a Weight Factor (WF) is a function of the average value of the satisfaction level per attribute compared to the average score of the satisfaction level for all attributes to be tested, so that a total WF of 100% is obtained.

$$WF = \frac{\text{The average value of interest to } - i}{\text{Total average importance score}} \times 100$$

- b. *Weighted Score* (WS) adalah hasil perkalian antara nilai rata-rata kinerja setiap atribut dengan faktor bobot yang diberikan untuk masing-masing atribut. b. *Weighted Score* (WS) is the result of multiplying the average performance value of each attribute by the weighting factor given to each attribute.

$$WS = \frac{WFi \times \text{Average performance value to } - i}{100}$$

- c. Total Weight (WT) is the total sum of the Weighted Score (WS) for each attribute, starting from attribute 1 to attribute n.

$$WT = WS1 + WS2 + \dots + WSn$$

- d. The Customer Satisfaction Index (CSI) is calculated by dividing the Total Weight (WT) by the Highest Scale (HS), then converting it to a percentage. The maximum scale is obtained from the Likert scale used in assessing satisfaction and performance levels. In this study, the scale used was five, which was then multiplied by 100 percent.

$$CSI = \frac{WT}{HS} \times 100\%$$

- e. The overall level of satisfaction can be evaluated based on consumer satisfaction criteria. The index number for the Customer Satisfaction Index (CSI) criteria is determined using a numerical scale with the following formula:

$$RS = \frac{(m - n)}{b}$$

Information:

RS = Scale range

m = Highest score

n = Lowest score

b = Number of classes (maximum scale) 5

- f. The satisfaction range is between 0% and 100%, with the highest Customer Satisfaction Index (CSI) value reaching 100%. The scale range is calculated as follows:

$$Rs = \frac{(100\% - 0\%)}{5} = 20\%$$

Based on the calculations, a range of satisfaction scales was obtained. The interpretation of the Customer Satisfaction Index (CSI) can be seen in Table 1 below.

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

Index Number	Interpretation
$0\% < CSI \leq 20\%$	Very Dissatisfied
$20\% < CSI \leq 40\%$	Not satisfied
$40\% < CSI \leq 60\%$	Quite Satisfied
$60\% < CSI \leq 80\%$	Satisfied
$80\% < CSI \leq 100\%$	Very satisfied

Sources: Manurung, 2011

RESULT

Fishermen's satisfaction with the service facilities at the Manggar Baru PPI was measured using the Customer Satisfaction Index (CSI) analysis, which measures the

importance and performance of various facility attributes. By calculating the average importance and performance of each attribute, this analysis provides a clearer picture of how these factors influence the overall level of fisherman satisfaction. This approach allows for identification of areas for improvement so that services at the Manggar Baru PPI can better meet the expectations and needs of fishermen. The results of the CSI calculation for the Manggar Baru PPI are shown in Table 2.

Table 2. Assessment of Satisfaction Indicators at the Manggar Baru PPI

No	Indicator	Level of Importance (Yi)	Performance Level (Xi)	Weight Factor (WF)	Weight Score (WS)
Basic Facilities					
1	Pier	3.97	3.40	5.55	0.19
2	Port Pool	4.33	3.03	6.06	0.18
3	Shipping Channel	4.30	2.73	6.01	0.16
4	Complex Roads, Parking Floors, and Drainage	4.67	2.37	6.52	0.15
Functional Facilities					
5	Fish Marketing Facility (TPI)	4.57	2.53	6.38	0.16
6	Clean Water	4.27	3.93	5.96	0.23
7	Ice Factory	4.23	3.67	5.92	0.22
8	Electrical Installation	4.47	3.53	6.24	0.22
9	Cold Storage	4.50	3.73	6.29	0.23
10	Port Administration Office	4.07	3.60	5.68	0.20
11	Integrated Service Post	3.90	3.73	5.45	0.20
12	Area Fence	3.43	3.90	4.80	0.19
Supporting Facilities					
13	Fishermen's meeting hall	4.27	3.90	5.96	0.23
14	Musholla	4.33	3.87	6.06	0.23
15	WC facilities	4.50	4.03	6.29	0.25
16	Canteen	3.70	3.77	5.17	0.19
17	Guard post	4.03	3.80	5.64	0.21
Total Scor		71.53	25.20		3.48
Average		4.35	3.15		
Customer Satisfaction Index (CSI)					69.70

Source: Processed Primary Data, 2025

Based on Table 2, the Customer Satisfaction Index (CSI) calculation of 69.70% indicates that the overall Fishermen's satisfaction index is in the range of $60\% < \text{CSI} \leq 80\%$. This indicates that the level of Fishermen's satisfaction with the service attributes at the Manggar Baru PPI facility falls into the "Satisfied" category. Meanwhile, the remaining 30.30% indicates that Fishermen's expectations have not been met regarding attribute performance, because each Fisherman's assessment of the level of importance and attribute performance varies. The satisfaction value has not reached 100% because the attributes are considered important by Fishermen, but the performance in the attributes has not met their expectations.

DISCUSSION

PPI Manggar Baru is located on Jl. Recreation RT 13, Manggar Baru Village, East Balikpapan District, Balikpapan City, East Kalimantan Province, with geographical coordinates 1°21'47.65"S and 116°97'35.56"E. This location has boundaries that include residential areas on the North, East, and West sides, while on the South side it borders the Manggar River. PPI Manggar Baru is a fishing port located in Manggar Baru Village, Balikpapan City, East Kalimantan Province. PPI Manggar Baru was established based on Ministerial Decree Number Kep. 32/MEN/2010. This port is the main center of fishing activities in the eastern region of Balikpapan City, where fishing vessels that catch fish usually land their catch for loading and unloading processes here. PPI Manggar Baru records production data every day, including ships landed, types of fishing gear, and types of fish, processed by the Enumerator which is then reported to the PIPP validator officer to be entered into the Data Portal Application as primary data. This Fish Landing Base (PPI) was built in 1976 by the East Kalimantan Provincial Maritime Affairs and Fisheries Service on a 2,025 m² (45 x 45 meter) plot of land, and is equipped with a Fish Marketing Facility, clean water, public toilets, electricity, a building for storing fish and shrimp, and a vehicle parking area. However, the Manggar Baru PPI still requires additional supporting facilities to ensure the smooth running of all fisheries activities (PPI Manggar Baru Profile, 2024).

The management of the Manggar Baru Balikpapan Fish Landing Base (PPI) is the responsibility of the East Kalimantan Provincial Government based on the Republic of Indonesia Law No. 23 of 2014. Since December 2018. In this case, the Balikpapan City Government through the Balikpapan City Agriculture, Livestock and Fisheries Service has fully handed over the management of the PPI to the East Kalimantan Provincial Government. Based on these regulations, the Manggar Baru Fisheries Port is classified as a Fish Landing Base with technical and operational criteria as a type D port. These technical criteria include several aspects, including: the ability to serve fishing vessels operating in Indonesian waters, having mooring facilities for fishing vessels with a size of more than 5 GT, as well as a pier that has a length of more than 50 meters and a depth of more than 1 meter. In addition, this port is able to accommodate more than 15 fishing vessels or has a total capacity of more than 75 GT, and manages a land area of at least 1 hectare (PPI Manggar Baru Profile, 2024).

An evaluation of existing facilities shows that while many facilities are considered important by PPI fishermen, many still fall short of their expectations. The pier, as one of the main facilities, although much needed, still performs less than optimally according to fishermen. This indicates the need for structural repairs or maintenance so that the pier can better support mooring/anchoring/loading and unloading activities safely and efficiently. Similarly, the mooring basin, whose poor condition also affects fishermen's satisfaction, indicates that these facilities require renovation or improvement to better meet user needs. The mooring basin plays a significant role in supporting the overall function of the port. Poor mooring basin conditions can directly impact user satisfaction (Soumokil, 2020). Therefore, improving infrastructure such as the pier and port basin is crucial to improving services and safety for fishing activities.

Shipping channel facilities, which are of high importance, also show performance that falls short of expectations. This indicates that channel repairs and routine maintenance are essential for the shipping channel to function optimally and safely for passing vessels. Similarly, complex roads, parking decks, and drainage, while quite important, still show signs of needing improvement in terms of comfort and functionality. Research at Tanjung Perak Port reveals that maintenance of navigation aids, including shipping channels, is crucial for improving service quality and shipping safety (Laju et al., 2024). Other studies also emphasize that improving navigation infrastructure can reduce the risk of accidents in shipping lanes (Hapsari & Cahyono, 2021). Road and drainage conditions still require attention so that they can function properly to support port operations (Telaumbanua et al., 2022). In addition,

facilities supporting shipping safety must also be improved, including accessibility and road conditions to the port (Siswoyo & Kurniawan, 2020). In addition, in-depth improvements need to be made to improve the quality of complex road facilities, parking, and drainage so that they can provide maximum benefits.

Furthermore, functional facilities such as fish marketing facilities and ice factories also show a gap between expectations and reality. Although fish marketing facilities are quite important, their inadequate conditions reduce satisfaction levels. Similarly, the ice factory, although positively assessed, still has room for improvement in terms of efficiency and product quality. Other research indicates that the utilization rate of ice factory facilities is adequate, while cold storage facilities are not yet fully optimized. This indicates that although these facilities are also important, their capacity and performance are not yet fully meeting the needs of fishermen. Furthermore, inadequate fish landing ports and ice factory facilities can impact the efficiency and effectiveness of fishermen's operations (Hehanussa, 2021).

The critical importance of clean water quality is also highlighted. This facility has received a fairly good performance rating, indicating adequate distribution and provision of clean water at the Manggar Baru PPI. Poor clean water quality can cause health problems and impact overall PPI activities, necessitating improvements to the distribution system. Although clean water is available at the Lampulo Ocean Fishing Port in Banda Aceh, its quality still needs improvement (Hairunisa et al., 2025). Furthermore, the electrical installations and cold storage facilities are quite important, but they can still be improved to be more efficient and support smooth operations. The electrical installations at the PPI are also vital facilities that support various operational activities. Although currently functional, these facilities can still be further optimized to ensure efficiency and smooth operations. Research conducted at Belawan Port shows that upgrading the electrical power system can increase productivity and reduce losses due to power outages (Muldiana & Santoso, 2021).

Supporting facilities such as meeting halls, prayer rooms, and public toilets (MCK) demonstrated a high level of importance and performed reasonably well, but there is still room for improvement in terms of comfort and cleanliness. The canteen and guard post, while performing adequately, still require improvement in terms of service variety and user comfort. Supporting facilities at the port, such as meeting halls, prayer rooms, and public toilets (MCK), demonstrated a high level of importance and needed improvement in performance. Other research indicates that while supporting facilities are adequate, focus should be directed towards improving the quality of these facilities to meet user expectations. (Salim et al., 2021). On the other hand, the canteen and guard post also performed quite well, but attention needs to be paid to service variety and user convenience. Other studies have shown that facilities at PPI can significantly impact the fishermen's experience, and improvements in service variety can improve overall passenger satisfaction (Dirang & Iriani, 2021). This research highlights the importance of adapting services to meet changing user needs.

Overall, while a number of the Manggar Baru PPI facilities meet expectations, many aspects need improvement to enhance the overall customer experience. Based on the Customer Satisfaction Index (CSI) of 69.70, there is still significant potential to improve the quality of existing facilities to better meet user expectations and needs. Several studies have shown that fishermen's satisfaction with services at the Fish Landing Port significantly influences their decision to land their catch. For example, a study at the Api-Api Fish Landing Port (PPI) found that the availability of facilities and service quality were important factors determining fishermen's satisfaction levels. If service declines and fishermen feel dissatisfied, they are likely to switch to other ports, which can ultimately reduce production levels at that port (Sari, 2021).

At the Lampulo Ocean Fishing Port, research shows that fishermen are less satisfied with the quality of services, particularly regarding the provision of fuel, ice, and water needed for

fishing activities. This decline in satisfaction suggests that the port needs to improve these services to increase fishermen's satisfaction and ensure smoother fishing operations (Rahmah et al., 2018). At the Lampulo Ocean Fishing Port, research shows that fishermen are less satisfied with the quality of services, particularly regarding the provision of fuel, ice, and water needed for fishing activities. This decline in satisfaction suggests that the port needs to improve these services to increase fishermen's satisfaction and ensure smoother fishing operations (Diniah et al., 2020). Similar findings were also found at the Kejawanan Port in Cirebon, where fishermen's satisfaction levels varied between ports. This suggests the importance of improving service efficiency at each port and points to the need for consistent service standards across all PPIs (Bayyinah et al., 2016).

From the above analysis, it can be concluded that fishermen's satisfaction with services at fish landing ports not only affects their personal experiences but also impacts the entire fishing industry, including productivity and the sustainability of port operations. Fish marketing at the PPI, as an expansion of the fish market and distribution network (Hadi S et al., 2023), requires quality service. If not improved, the port could lose fishermen who use its services, which will directly affect the amount of fish caught (Bayyinah et al., 2016; Diniah et al., 2020; Rahmah et al., 2018; Sari, 2021).

CONCLUSION

Based on the Customer Satisfaction Index (CSI) calculation of 69.70%, it can be concluded that the level of Fishermen's satisfaction with the service facilities at PPI Manggar Baru is in the "Satisfied" category, with a value indicating that most Fishermen feel quite satisfied with the existing service attributes. However, there are 30.30% of Fishermen's expectations that have not been met, which indicates that there is still dissatisfaction with the performance of several attributes considered important. This dissatisfaction is caused by differences in Fishermen's assessment of the level of importance and performance of existing facilities. Attributes that are considered very important by Fishermen but have not yet met their expectations are the main factors that hinder the achievement of higher satisfaction values. Therefore, there is a need for improvements and enhancements to facilities that are considered important to better meet Fishermen's expectations.

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