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Analysis of Business Actors' Satisfaction with Facilities at Batulicin Coastal Fishing Port

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ABSTRACT

Fishing port facilities are essential to the continuity, safety, and efficiency of fisheries-related business activities. This study aimed to assess facility conditions and analyze business actors' satisfaction with the facilities at Batulicin Coastal Fishing Port, South Kalimantan. The study was conducted from March to September 2026 using a descriptive quantitative approach supported by field observations and interviews. Data were collected through observation, documentation, interviews, and questionnaires administered to 75 business actors recruited through accidental sampling: 45 fishers or transport-vessel operators, 10 agents, seven fish buyers (pembajai), and 13 retailers. Facility conditions were classified as good, slightly damaged, or underutilized. Satisfaction was assessed on a five-point Likert scale and analyzed using the Customer Satisfaction Index (CSI) and Importance–Performance Analysis (IPA). All basic and supporting facilities were in good condition. Most functional facilities were also in good condition, although the fuel supply facility was underutilized and sections of the perimeter fence had minor damage. CSI values were 82.38% for basic facilities (very satisfied), 80.31% for functional facilities (satisfied), and 85.61% for supporting facilities (very satisfied). IPA identified no basic or supporting facility in Quadrant I; the fish auction facility (TPI) was the only functional attribute in Quadrant I, reflecting high importance but comparatively lower performance. Overall satisfaction was high, yet specific operational deficiencies remained. Management should therefore prioritize the layout and service flow of the TPI, improve the consistency of fuel provision, and maintain facilities regularly.

Keywords: Customer Satisfaction Index; Importance–Performance Analysis; fishing port; port facilities; business actors.

INTRODUCTION

Fishing ports are important nodes in capture fisheries systems, bringing together fish landing, loading and unloading, provisioning, distribution, marketing, administrative services, and other supporting activities. The performance of port facilities determines not only the efficiency of vessel operations and the movement of catches but also the comfort and operational efficiency of business actors. Lubis (2012) describes fishing ports as centers of fisheries economic activity, while the Regulation of the Minister of Marine Affairs and Fisheries of the Republic of Indonesia No. PER.08/MEN/2012 classifies fishing port facilities into basic, functional, and supporting facilities.

Batulicin Fishing Port was designated a Coastal Fishing Port under the Decree of the Minister of Marine Affairs and Fisheries of the Republic of Indonesia No. 40/KEPMEN-KP/2019. The port supports fishing-vessel operations, catch landing and distribution, and fisheries trade in Tanah Bumbu Regency and surrounding areas. Frequent facility use requires adequate physical conditions, reliable functionality, and services suited to users' needs. Government Regulation of the Republic of Indonesia No. 27 of 2021 likewise emphasizes the role of fishing ports as centers of governmental activities and fisheries business systems.

Evaluating port facilities requires more than simply recording the presence of structures and equipment. Facilities may be physically available while their service performance remains below users' expectations relative to their perceived importance. Studies at several fishing ports suggest that combining the Customer Satisfaction Index (CSI) with Importance–Performance Analysis (IPA) provides a more operationally useful assessment. Putera et al. (2022), for example, found that high facility availability at Sadeng Coastal Fishing Port did not necessarily correspond to equally high user satisfaction, leaving several service attributes in need of improvement. Similar findings were reported by Astarini et al. (2022) and Utri et al. (2026): overall satisfaction may be high even when specific attributes require immediate attention.

At Batulicin Fishing Port, improvements have been made to the fish distribution area and development of the port entrance. However, preliminary observations indicated that some facilities were slightly damaged or not being used optimally. Such conditions need to be examined from the perspective of business actors, who use the facilities directly for fishing, loading and unloading, distribution, marketing, and operational provisioning. Marsela et al. (2023) emphasize that users' assessments of facilities and services can help reveal gaps between perceived importance and actual performance.

This study aimed to identify the conditions of facilities available at Batulicin Fishing Port and analyze business actors' satisfaction with those facilities. It combined a description of physical conditions with CSI to assess aggregate satisfaction and IPA to identify attributes that should be prioritized for improvement, maintained, or managed proportionately.

MATERIALS AND METHODS

Study design, location, and respondents

The research was conducted over seven months, from March to September 2026, at Batulicin Fishing Port, Tanah Bumbu Regency, South Kalimantan, Indonesia. The study site was selected purposively because it accommodates fish landing, loading and unloading, and marketing activities. A descriptive quantitative approach was applied, supported by qualitative information to explain facility conditions and their use.

A total of 75 respondents were recruited using nonprobability accidental (convenience) sampling. Eligible respondents were active business actors encountered at the port who agreed to provide information. They included fishers or transport-vessel operators, agents, fish buyers (pembajai), and retailers. These categories covered the main groups using the port facilities; however, the sampling approach did not constitute probability-based representation.

Data types and collection

Primary data were obtained through direct observations of facility conditions, interviews with users and port managers, field documentation, and questionnaires. Quantitative data consisted of five-point Likert ratings of each facility attribute's importance and performance. Qualitative data described facility functions, conditions, patterns of use, and operational constraints. Secondary sources provided information about the port's status, applicable

regulations, and facility characteristics. These complementary sources were used to strengthen the interpretation of users' perceptions.

Facility condition assessment

Facilities were classified into basic, functional, and supporting groups according to the regulatory framework for fishing ports. Their conditions were assessed descriptively through field observation and assigned to three categories: good, meaning usable and functioning as intended; slightly damaged, meaning still usable but requiring repairs to certain components; and underutilized, meaning available but not optimally used to support port operations.

Customer Satisfaction Index analysis

Satisfaction was analyzed using the Customer Satisfaction Index (CSI). Respondents rated the importance and performance of each facility attribute on a scale from 1 to 5. The calculation involved the Mean Importance Score (MIS), Mean Satisfaction Score (MSS), Weight Factor (WF), and Weighted Score (WS). The CSI was then calculated as the total weighted score relative to the maximum scale. Following Supranto (2011), values of 0.66–0.80 were categorized as satisfied and 0.81–1.00 as very satisfied. CSI was used to describe aggregate satisfaction within each facility group.

Importance–Performance Analysis

Importance–Performance Analysis (IPA) was used to map the relationship between each attribute's importance and performance ratings. The conformity level was calculated as the ratio of performance to importance. Mean importance and performance scores defined the intersection of a Cartesian plot, dividing attributes into four quadrants: Quadrant I (concentrate here), Quadrant II (keep up the good work), Quadrant III (low priority), and Quadrant IV (possible overperformance). The approach followed Martilla and James (1977) and was used to formulate targeted management priorities.

RESULTS AND DISCUSSION

Respondent characteristics

Most respondents were fishers or transport-vessel operators (45 people; 60.0%). The remaining respondents comprised 10 agents (13.3%), seven fish buyers (9.3%), eight motorcycle retailers (10.7%), and five car-based retailers (6.7%). The predominance of fishers reflects their central role as users of basic facilities, whereas agents, fish buyers, and retailers are more closely involved with functional facilities for fish distribution and marketing. All respondents interviewed were male. A total of 53.3% had completed primary school, and 46.7% had 11–20 years of business experience, indicating that many evaluations came from users with substantial experience at the port.

Table 1. Respondents by business activity

Business activity	n	%
Fishers/transport-vessel operators	45	60.0
Agents	10	13.3
Fish buyers (pembajai)	7	9.3
Motorcycle retailers	8	10.7
Car-based retailers	5	6.7
Total	75	100.0

Source: Primary data, processed in 2026

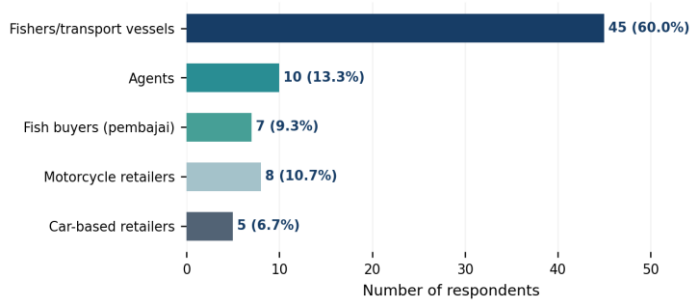


Figure 1. Distribution of respondents by business activity
Source: Primary data, processed in 2026.

Condition of facilities at Batulicin Fishing Port

The basic facilities assessed consisted of port land, wharves, internal roads, drainage, jetties, and the harbour basin. All were in good condition and supported essential activities, including vessel berthing, landing and handling catches, movement within the port, and vessel manoeuvring. These findings indicate that the basic infrastructure was generally adequate to support operations during the study period.

Among functional facilities, the administrative office, fish auction facility (Tempat Pelelangan Ikan, TPI), clean water supply, electrical installation, service post, transport equipment, and waste collection facility were in good condition. The fuel supply facility was also physically sound; however, it was not operating during observation and was therefore categorized as underutilized. The perimeter fence continued to serve as a boundary and security feature, but cracks in several sections led to its classification as slightly damaged. These findings highlight the need to distinguish physical adequacy from actual utilization.

Supporting facilities—including the security post, toilets and washing facilities (MCK), meeting hall, prayer facility, and shops—were generally in good condition. Water supply to the sanitary facilities was reliable, the meeting hall could support coordination activities, and shops provided daily necessities for users. Overall, physical condition issues were concentrated in a small number of functional facilities, whereas basic and supporting facilities were relatively well maintained.

Table 2. Conditions of facilities at Batulicin Fishing Port

Group	Facilities assessed	Condition summary
Basic	Port land, wharves, internal roads, drainage, jetty, harbour basin	All in good condition.
Functional	Office, TPI, water, electricity, fuel, service post, transport equipment, waste collection, fence	Mostly good; fuel facility underutilized and perimeter fence slightly damaged in certain sections.
Supporting	Security post, toilets/washing facilities, meeting hall, prayer facility, shops	All in good condition.

Note: Conditions were assessed by field observation as good, slightly damaged, or underutilized.

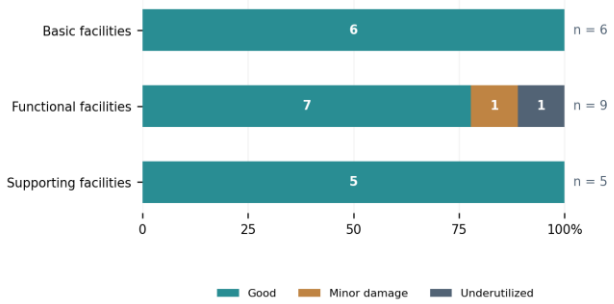


Figure 2. Distribution of facility conditions by group
Source: Field observations of basic, functional, and supporting facilities, 2026.

Satisfaction based on the Customer Satisfaction Index

The CSI results indicated that business actors were satisfied to very satisfied with port facilities. Basic facilities had a CSI of 82.38%, placing them in the very satisfied category. Functional facilities scored 80.31% (satisfied), whereas supporting facilities achieved the highest CSI at 85.61% (very satisfied). These results suggest that most facilities met users' expectations, although functional facilities had relatively greater scope for improvement.

Table 3. Customer Satisfaction Index by facility group

Facility group	MIS / MSS	CSI (%)	Satisfaction
Basic	4.33 / 4.12	82.38	Very satisfied
Functional	4.09 / 4.01	80.31	Satisfied
Supporting	4.32 / 4.28	85.61	Very satisfied

Note: CSI was calculated from importance and performance scores on a five-point Likert scale. Means are rounded to two decimal places.

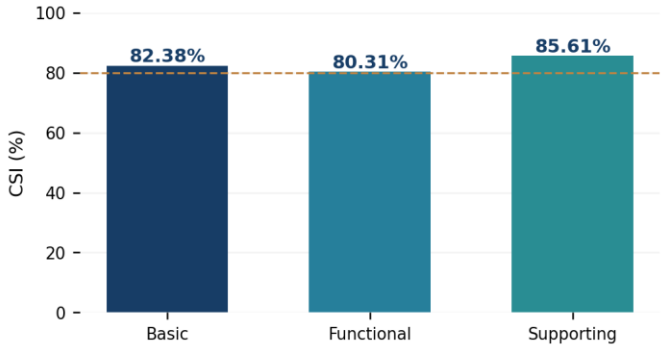


Figure 3. Comparison of Customer Satisfaction Index values
Source: Primary data, processed in 2026. Dashed line indicates the 80% threshold.

The CSI results from Batulicin can be contextualized by findings from other fishing ports. Astarini et al. (2022) reported a CSI of 81.78% for catch loading and unloading services at Nizam Zachman Ocean Fishing Port, Jakarta. Utri et al. (2026) reported 87.14% satisfaction with berthing services at Belawan Ocean Fishing Port. At Sadeng Coastal Fishing Port, Putera et al. (2022) reported user satisfaction of 65.20% despite facility availability of 86.84%. These comparisons reinforce the finding that satisfaction depends not only on the existence of facilities but also on their readiness, organization, service speed, cleanliness, and ability to meet users' needs.

Within Batulicin's functional facilities, the administrative office received the greatest importance weighting, while the waste collection facility received a high performance rating. Administrative functions and cleanliness thus represent important aspects of the port user experience. The fuel supply facility and TPI warrant particular attention because they directly affect operational requirements and the marketing of fish. Anggelina et al. (2025) similarly found that satisfaction with fishing supplies was strongly influenced by their availability and the consistency of services, rather than by the presence of facilities alone.

Improvement priorities based on Importance–Performance Analysis

IPA provided more attribute-specific information than the aggregate CSI. No basic facility was located in Quadrant I. The wharf and harbour basin were in Quadrant II and should maintain their performance. Port land, internal roads, and drainage were classified in Quadrant III, while the jetty was in Quadrant IV. This distribution indicates that basic facilities were generally functioning without urgent perceived improvement needs.

For functional facilities, the TPI was the only attribute in Quadrant I. Its mean importance score was 4.13 and its mean performance score was 3.90, yielding approximately 94% conformity, below the facility-group average. This finding is important because the TPI was physically in good condition during observation. The central concern was therefore not simply structural damage, but how space utilization, activity flows, cleanliness, and comfort supported transactions and fish marketing. In IPA, highly important attributes with relatively low performance require priority attention even if the

associated building is not physically damaged.

The administrative office, service post, waste collection facility, and perimeter fence were in Quadrant II and should be maintained. The fuel supply facility and transport equipment were in Quadrant III, while clean water and electricity were in Quadrant IV. The fuel facility's low IPA priority does not negate the observation that it was underutilized; management should still ensure more consistent fuel operations because fuel availability is essential for fishing activities.

No supporting facility was in Quadrant I. The prayer facility and shops were in Quadrant II; the security post and meeting hall were in Quadrant III; and the toilets and washing facilities were in Quadrant IV. The high supporting-facility CSI (85.61%) was consistent with the absence of attributes in the highest priority quadrant. Routine maintenance therefore appears more relevant than excessive expansion of supporting facilities.

Table 4. Facility attributes by IPA quadrant

Group	Quadrant	Facilities
Basic	I: Priority	None
Basic	II: Maintain	Wharf; harbour basin
Basic	III: Low	Port land; internal roads; drainage
Basic	IV: High	Jetty
Functional	I: Priority	TPI
Functional	II: Maintain	Office; service post; waste collection; fence
Functional	III: Low	Fuel; transport equipment
Functional	IV: High	Clean water; electricity
Supporting	I: Priority	None
Supporting	II: Maintain	Prayer facility; shops
Supporting	III: Low	Security post; meeting hall
Supporting	IV: High	Toilets/washing facilities

Note: Quadrants are based on the mean importance and performance ratings within each facility group.

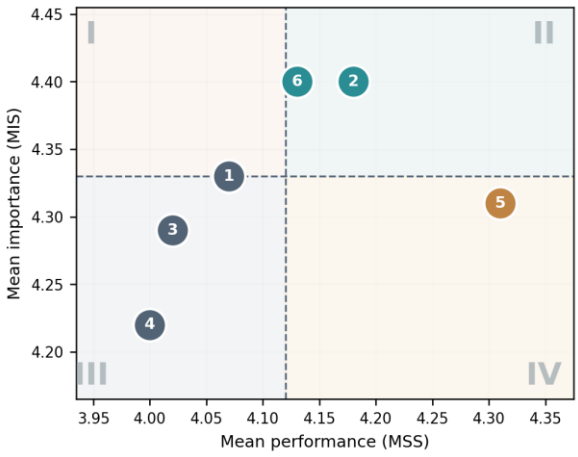


Figure 4. IPA matrix for basic facilities

Crosshairs: mean performance = 4.12; mean importance = 4.33. Attributes on boundaries retain the source classification.

Attributes: 1 Port land; 2 Wharf; 3 Internal roads; 4 Drainage; 5 Jetty; 6 Harbour basin.

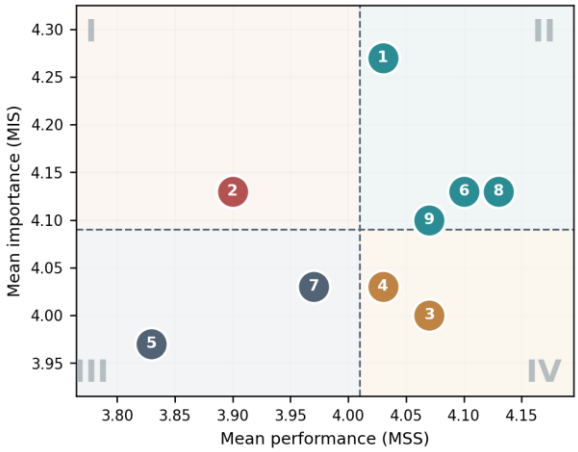


Figure 5. IPA matrix for functional facilities
Crosshairs: mean performance = 4.01; mean importance = 4.09. Quadrant I: TPI. Attributes: 1 Office; 2 TPI; 3 Water; 4 Electricity; 5 Fuel; 6 Service post; 7 Transport; 8 Waste collection; 9 Fence.

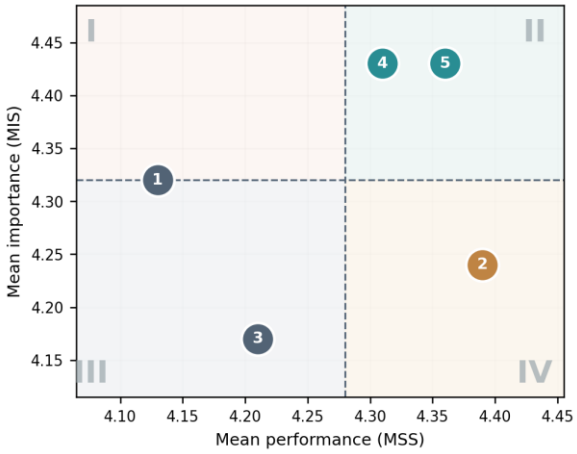


Figure 6. IPA matrix for supporting facilities
Crosshairs: mean performance = 4.28; mean importance = 4.32. Attributes on boundaries retain the source classification.
Attributes: 1 Security post; 2 Toilets/washing; 3 Meeting Hall; 4 Prayer facility; 5 Shops.

Facility management implications

The combined observations, CSI results, and IPA findings suggest that facility improvement should not focus exclusively on constructing new infrastructure. Basoeki et al. (2026) showed that high infrastructure availability at fishing ports can coexist with operational and service-quality constraints. At Batulicin, the most concrete priority is to optimize the TPI by reorganizing its layout and partitions, providing sufficient space for sales activities, regulating user entry and exit, and maintaining cleanliness. Such measures could improve TPI functions without requiring a complete redesign of the facility.

Other necessary improvements are preventive and operational. Cracked sections of the perimeter fence should be repaired to preserve security functions. Fuel services should operate consistently so that the facility provides tangible benefits to vessels and business actors. High-performing facilities, including wharves, the harbour basin, prayer facilities, shops, sanitation facilities, clean water, and electricity, should receive routine maintenance to prevent deterioration. This approach aligns with Sari and Kadri (2021), who emphasize allocating attention according to IPA quadrant priorities rather

than treating all facility attributes as equally urgent.

This study used accidental sampling and captured user perceptions at one port during a defined research period. The findings are therefore most appropriately used for internal evaluation and the prioritization of management actions at Batulicin Fishing Port. Future studies could repeat measurements over time, compare user groups in greater detail, and incorporate indicators of service duration and facility utilization to evaluate longitudinal changes in performance.

CONCLUSION

Facilities at Batulicin Fishing Port comprise basic, functional, and supporting groups. All observed basic and supporting facilities were in good condition, while underutilization of the fuel facility and minor damage to the perimeter fence were identified among functional facilities. Business actors were satisfied to very satisfied overall, with CSI scores of 82.38% for basic facilities, 80.31% for functional facilities, and 85.61% for supporting facilities. IPA placed no basic or supporting attributes in Quadrant I, while the TPI was the only functional attribute requiring highest priority attention. Port management should improve the arrangement and movement of activities within the TPI, increase the reliability of fuel service, repair minor fence damage, and preserve well-performing facilities through routine maintenance.

Declaration by Authors

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