



# Evaluation of Pedestrian Passenger Perceptions of the 16 Ilir River Port Services in Palembang City

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**Abstract.** The high intensity of the community in using river transportation services can be seen from the amount of productivity. The 16 Ilir River Port which serves passengers and goods has an average productivity level of transporting passengers for 5 years from 2019 to 2023 of 479,701 people with an average number of ships docked of 91,012 ships and a total of 108,663 tons of goods. The purpose of this study is to determine the performance of the port in terms of service aspects from the development factors of the number of passengers and the pedestrian customer satisfaction index. Data collection using questionnaires and interviews with indicators based on the Decree of the Directorate General of Land Transportation Number KP-DRJD 539 of 2022 concerning Guidelines for Planning, Development and Performance Evaluation of River, Lake and Ferry Ports. This research is a quantitative research because it uses statistical tests with the Importance Performance Analysis (IPA) method in determining the scale of improvement. The results of the study were obtained development number of passengers at the 16 Ilir River Port in Palembang City after the quickwins program experienced fluctuations with a development value of 25 included in the performance value interval of  $60 < 75.6 < 80$  with the category "Suitable", while the performance of the pedestrian customer satisfaction index obtained a performance value of  $60 < 75.6 < 80$  with the category "Suitable". The need for improvements in accordance with the priority order based on community needs, so that it can increase the development of the number of passengers using river transportation at the 16 Ilir River Port in Palembang City

**Keywords:** Service, Passengers, Pedestrians, River Port, IPA

## 1 Introduction

### 1.1 Background

The Musi River is a means of transportation needed to reach isolated areas through an acceleration program (quick wins) to improve the service of facilities and infrastructure and the quality of human resources at the 16 Ilir River

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Port as a nodal point for the integration of community activities supported by integration between modes. The implementation of the acceleration program (quick wins) aims to improve the service of river facilities and infrastructure and the quality of human resources, because the location is a nodal point for the integration of community activities supported by integration between modes such as the South Sumatra LRT, Trans Musi BRT, river transportation, markets and water tourism[1]. The high intensity of the community in using river transportation services can be seen from the amount of productivity. The 16 Ilir River Port which serves passengers and goods has an average productivity level of transporting passengers for 5 years from 2019 to 2023 of 479,701 people with an average number of ships docked of 91,012 ships and a total of 108,663 tons of goods. According to[2]maximum performance of the port can only be achieved if the port is supported by adequate facilities, professional human resources and a good management system. Based on the Decree of the Directorate General of Land Transportation KP-DRJD 539 of 2022 concerning Guidelines for Planning, Development and Evaluation of the Performance of River, Lake and Ferry Ports. The stages carried out are port planning, port construction and port development, the need to evaluate the performance of river, lake and ferry ports, one aspect of which is measuring the performance of port services with the number of customers and the customer satisfaction index. Consumer satisfaction is the ratio of consumer perception due to comparing what is obtained and what is expected. According to[3]Customer satisfaction is usually defined as the difference between reality and what consumers expect from the service they receive. Basically, good service quality can be seen from passenger expectations of the port's perception.[4]. Before construction[5]conducting an evaluation of the quality of service for service users at Pier 16 Ilir, Palembang City, the average overall dimension reached 265 so that it was declared satisfied, therefore after the quickwins program, an evaluation based on regulations on passenger development indicators at the port and also the perception of service users or river transportation passengers on aspects of the performance of pedestrian passenger port services at the 16 Ilir River Port, Palembang City, which is the most dominant service user at the port. Increasing the quality of service in public transportation is expected to attract public interest in switching to using public transportation[6], so it is necessary to know the development of the number of passengers and evaluate passenger perceptions of pedestrian passenger satisfaction at the 16 Ilir River Port, Palembang City after the QuickWins program.

## **1.2 River Port Performance Evaluation**

Evaluation of the performance of river, lake and ferry ports as stated in the Decree of the Director General of Land Transportation Number KP-DRJD 539 of 2022 concerning Guidelines for Planning, Development and Performance

Evaluation of River, Lake and Ferry Ports Consisting of Port Service Performance Aspects, port operational performance aspects and port support performance aspects. These three aspects are port performance indicators specifically for river and lake ports that serve ferry transportation and ferry ports. Port performance indicators are differentiated for each port class category, where the port class category consists of class I ports, class II ports and class III ports.(Ministry of Transportation, 2022). Port performance indicators, in full, can be seen in table 1.

**Table 1 Port Performance Indicators Service Aspect**

ASPECT		FACTOR	INDICATORS	
Service Performance Aspects	1	Number of Customers	a	Development of the number of vehicles
			b	Development of the number of passengers
			c	Development of the number of ships
	2	Customer satisfaction index	a	Customer satisfaction of vehicle carriers
			b	Pedestrian customer customer satisfaction
			c	Ship operator customer satisfaction

*Source: Directorate General of Land Transportation KP-DRJD 539, 2022*

## 2 Research Methods

This research was conducted at the 16 Ilir River Port, Palembang City, using a quantitative method approach.[8].. The population in this study were service users at the 16 Ilir River Port who were pedestrians who arrived and departed. The population based on the average passenger productivity over the past 5 years was 479,701 people using the Slovin formula, the number of samples was 99.78 rounded up to 100 samples. The instrument in this study was used in accordance with the Decree of the Directorate General of Land Transportation Number 539 of 2022 with indicators for assessing the performance of service aspects, namely performance on the number of customers factor and assessment of performance indicators on the pedestrian customer satisfaction index factor. The pedestrian customer satisfaction index questionnaire used a Likert scale with a very positive to very negative gradation with answers that can be scored from 5 to 1[9]. The stages of the research carried out were the preparation of designing a questionnaire, a preliminary survey to conduct validation and reliability tests using the help of Microsoft Excel 2010 and SPSS Version 26

applications. The questionnaires were given in 2 (two) types, namely perception and expectation questionnaires, then the average of the perceptions and expectations was calculated. The next activity was the Literature study stage to collect information and references, both theories and studies that had been carried out to support the analysis techniques that would be used in the study. Furthermore, data collection was carried out using a questionnaire to obtain primary data, secondary data was obtained from various government agencies that manage the 16 Ilir River Port of Palembang, namely BPTD Class II of South Sumatra Province, the Provincial and City Transportation Offices of Palembang to obtain secondary data on passenger, ship and goods productivity over the past 5 years. After the questionnaire data was collected, scoring was carried out to determine passenger perceptions of the performance of pedestrian customer service at the Port and data analysis was carried out as well as discussions and discussions to conclude and provide suggestions and input to related agencies. The analysis method used for analyzing the performance of the customer number factor is to assess the passenger growth figures for the last 5 years and the average growth in the number of passengers in the last 5 years using the formula :

$$PPt = \frac{X_{pt} - X_{pt-1}}{X_{pt-1}} \times 100\%$$

$$PPt - 1 = \frac{X_{pt-1} - X_{pt-2}}{X_{pt-2}} \times 100\%$$

$$PPt - 2 = \frac{X_{pt-2} - X_{pt-3}}{X_{pt-3}} \times 100\%$$

$$PPt - 3 = \frac{X_{pt-3} - X_{pt-4}}{X_{pt-4}} \times 100\%$$

$$PPt - 4 = \frac{X_{pt-4} - X_{pt-5}}{X_{pt-5}} \times 100\%$$

$$\overline{PP} = \frac{PPt + PPt-1 + PPt-2 + PPt-3 + PPt-4}{5}$$

$$Y_{pp} = \frac{Y_{ppt} + Y_{ppr}}{2} \quad (1)$$

Information :

$Y_{pp}$  = value of the indicator for the development of the number of passengers

$Y_{ppt}$  = value for the sub-indicator of passenger growth figures each year during the last 5 (five) years.

$Y_{ppr}$  = value for the sub-indicator of average passenger growth in the last 5 (five) years.

**Table 2 Indicators of Development in The Number of Passengers**

No	Kriteria Penilaian	Nilai
1	The value for the sub-indicator of passenger growth figures each year for the last 5 (five) years (Yppt) follows the following provisions.	
	The passenger growth rate every year for 5 (five) years is always positive (ppt, ppt-1; ppt-2; ppt-3; ppt-4, all have positive values)	100
	The passenger growth rate each year for the last 5 (five) years has fluctuated (positive and negative) (ppt, ppt-1; ppt-2; ppt-3; ppt-4, there are positive and negative values)	50
	The annual passenger growth rate for the last 5 (five) years has always been negative (ppt, ppt-1; ppt-2; ppt-3; ppt-4, all have negative values)	0
2	The value for the sub-indicator of average passenger growth in the last 5 (five) years follows the following provisions:	
	The average growth in the number of passengers in the last 5 (five) years is positive (pp has a positive value)	100
	The average growth in the number of passengers in the last 5 (five) years was negative (pp had a negative value)	0

Source: Directorate General of Land Transportation KP-DRJD 539, 2022

Analysis of the performance of the pedestrian customer satisfaction index to assess the pedestrian customer satisfaction index indicator is formulated as follows.

$$Y_{ikpp} = \frac{\sum_{i=1}^{35} Y_i}{35} \quad (2)$$

Information :

Y<sub>ikpp</sub> = Pedestrian customer satisfaction index value

Y<sub>i</sub> = Value for the i-th criterion

The port performance assessment categories are as follows:

**Table 3 Port Performance Value Category**

No	Performance Value Interval	Category
1	0<Performance Value <20	Very less
2	20<Performance Value <40	Not enough
3	40<Performance Value <60	Currently
4	60<Performance Score <80	Good
5	80<Performance Score <100	Very good

Source: Directorate General of Land Transportation KP-DRJD 539, 2022

<i>Importance (Y)</i>	<i>Quadrant III Concentrate Management Here</i>	<i>Quadrant II Keep up the good work</i>
	<i>Quadrant IV Low Priority</i>	<i>Quadrat I Possible Overkill</i>
	<i>Low Performance (X)</i>	<i>High</i>

**Figure 1 IPA Mapping**

Information :

Quadrant I, is considered less important by customers;

Quadrant II (continue to perform well) important ratings and performance meet or exceed service quality;

Quadrant III (concentration management here) important rating and performance does not meet the service quality standards;

Quadrant IV (low priority) performance scores do not meet service quality standards, but respondents do not place a high level of importance on the service.

### 3 Results and Discussion

The quickwins river transportation service acceleration program has 7 (seven) piers used for docking, there are 4 (four) piers, namely Berth Type 1, 2A, 2B and 2C. There are 3 (three) piers used for boarding and disembarking passengers, namely the Arrival Pier, Departure Pier and Tourism (Charter). The routes and rates for river transportation in the Province of Sumatra have been regulated in the Decree of the Governor of South Sumatra Number 738 / KPTS / DISHUBKOMINFO / 2014 concerning the Determination of Basic Tariffs, Upper Limit Tariffs, and Lower Limit Tariffs for Inland River and Lake Passenger Transportation Across Regencies / Cities in the Province of South Sumatra. The determination of the upper limit tariff is by adding 20% of the basic tariff and the lower limit tariff is reduced by 20% of the basic tariff. There are 36 river transportation routes in the Province of South Sumatra with the furthest distance to Muara Rupit with a distance of 388 km.

#### a. Performance on the number of customers factor

Based on the development indicators for the number of passengers, namely the passenger growth rate each year for the last 5 (five) years and the average growth in the number of passengers in the last 5 (five) years as seen from the passenger productivity data as follows:

**Table 4 Growth Figures in Number and Average Passengers**

YEAR	PASSENGER	DEVELOPMENT
2018 (t-5)	382.833	-
2019 (t-4)	534.175	39,53%
2020 (t-3)	531.620	-0,48%
2021 (t-2)	478.595	-9,97%
2022 (t-1)	481.192	0,54%
2023 (t)	372.919	-22,50%
AMOUNT $Y_{ppt}$	<b>2.781.334</b>	<b>7,12%</b>
AVERAGE $Y_{ppr}$	<b>463.556</b>	<b>1,42%</b>

The assessment of performance on the number of customers factor is obtained using equations 1. The assessment of the development indicator of the number of passengers in Table 2 is as follows:

$$Y_{pp} = \frac{Y_{ppt} + Y_{ppr}}{2} = \frac{50 + 100}{2} = 75$$

The value for the sub-indicator of passenger growth figures each year for 5 years obtained the passenger growth figures each year for the last 5 years fluctuating (positive and negative) (ppt, ppt-1; ppt-2; ppt-3; ppt-4, there are positive and negative values) obtained a value of 50 while the value for the sub-indicator of the average growth in the number of passengers in the last 5 (five) years with an average growth in the number of passengers in the last 5 years positive (pp has a positive value) obtained a value of 100, then the performance on the number of customers factor based on equation 3.2 was obtained at 75, entering the performance value interval of  $60 < 75.6 < 80$  with the category of "Suitable".

**b. Pedestrian customer satisfaction index performance**

The results of the performance assessment questionnaire and pedestrian customer expectations with a score of 5 for very positive, positive 4, neutral 3, negative 2 and very not positive 1 can be seen in the total score for performance and expectations in Table 5.

**Table 5 Pedestrian Customer Performance Assessment**

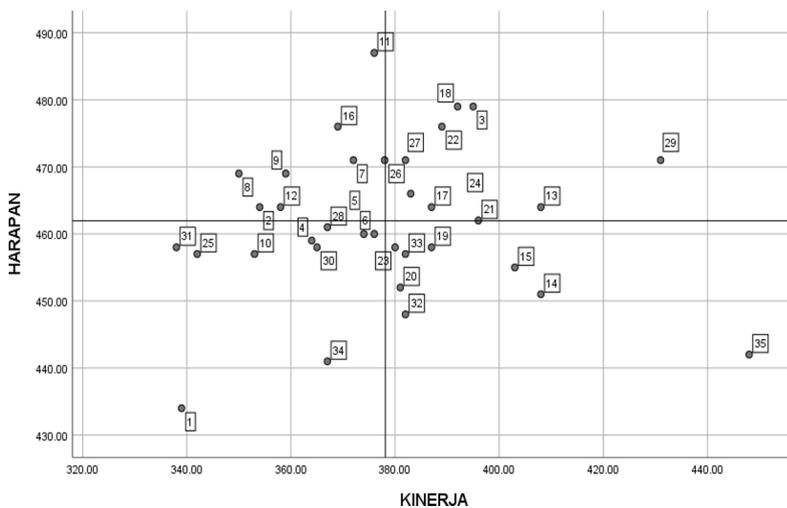
No	Factor	No	Criteria	Performance	Hope	GAP
1	Reliability	1	Ticket availability	3.39	4.34	0.95
		2	Departure schedule	3.54	4.64	1.1
		3	Departure time	3.95	4.79	0.84
2	Responsiveness	4	Ticket queue time	3.64	4.59	0.95
		5	Process speed	3.74	4.60	0.86

No	Factor	No	Criteria	Performance	Hope	GAP
		6	Number of counters	3.76	4.60	0.84
3	Competence	7	Counter officer knowledge	3.72	4.71	0.99
		8	Information officer skills	3.50	4.69	1.19
		9	Ticket checker skills	3.59	4.69	1.1
		10	Convenience of ticket information	3.53	4.57	1.04
4	Access	11	Convenience to the Port	3.76	4.87	1.11
		12	Clarity of information in the ticket	3.58	4.64	1.06
5	Courtesy	13	How the officer speaks	4.08	4.64	0.56
		14	Officer grammar	4.08	4.51	0.43
		15	Willingness to help	4.03	4.55	0.52
		16	Information and directions	3.69	4.76	1.07
6	Communication	17	Listening to complaints	3.87	4.64	0.77
		18	Complaint handling	3.92	4.79	0.87
		19	Trust in counter staff	3.87	4.58	0.71
7	Credibility	20	Trust in security officers	3.81	4.52	0.71
		21	Trust in officers increases	3.96	4.62	0.66
		22	Security reaching the counter	3.89	4.76	0.87
8	Security	23	Security of goods	3.80	4.58	0.78
		24	How to get from the counter to the waiting room	3.83	4.66	0.83
		25	Suggestion Box	3.42	4.57	1.15
9	Understanding	26	Service improvement	3.78	4.71	0.93
		27	Comfort of waiting room	3.82	4.71	0.89
		28	Cleanliness of the counter	3.67	4.61	0.94
10	Tangible	29	Officer's appearance	4.31	4.71	0.4
		30	Cleanliness of the waiting room	3.65	4.58	0.93
		31	Toilet cleanliness	3.38	4.58	1.2
		32	Cleanliness of the break room	3.82	4.48	0.66
		33	Lighting	3.82	4.57	0.75
		34	Cleanliness of the dining room/canteen	3.67	4.41	0.74
		35	Cleanliness of parking lot	4.48	4.42	-0.06
		<b>TOTAL</b>				<b>132.35</b>
<b>AVERAGE</b>				<b>3.78</b>	<b>4.62</b>	<b>-0.84</b>

The results of the calculation of the pedestrian customer satisfaction index in Table 5 using equation 2 are as follows:

$$Y_{ikpp} = \frac{\sum_{i=y}^{35} Y_i}{35} \times 20 = 3,78 \times 20 = 75,6$$

The customer satisfaction index of pedestrians at the 16 Ilir River Port, Palembang City was 75.6, falling within the interval of  $60 < 75.6 < 80$  with the category of "**Suitable**". The results of the validation and reliability test of the questionnaire with 35 questions were declared valid and reliable, with a Cronbach's Alpha of 0.922 for Performance and 0.885 for Expectations. The mapping of the Importance Performance Analysis (IPA) provided by respondents produced data that had been averaged based on the variables used. The total average for performance compared to the average expectation was greater (3.78 for performance  $<$  4.62 for expectations), meaning that there is still a gap of -0.84, which can be interpreted as still far from the expectations of service users and still needs improvement to achieve the expectations desired by pedestrian customers at the 16 Ilir River Port, Palembang City. The customer satisfaction factor for pedestrians obtained a performance value of 75.6, falling within the value of  $60 < 75.6 < 80$  with the category of "**Suitable**". The results of the IPA analysis using SPSS Ver. 26. The results of the perceptions and expectations of pedestrian passengers were obtained to determine the priority of improving service performance using a ranking system with weighting as seen in Figure 2 below:



**Figure 2 IPA Mapping**

From Figure 1, we get the IPA mapping to determine the priority scale of service improvement for pedestrian customer satisfaction. In the first quadrant, which is considered less important by passengers, namely grammar, willingness to help, trust in ticket counter officers, trust in security officers, security of goods, cleanliness of rest rooms, lighting. In

the second quadrant, namely (keep working well) the important ranking and performance meet or exceed the quality of service, namely departure time, way of speaking, listening to complaints, handling complaints, trust in boarding officers, safety in reaching the counter, security of the waiting room, and appearance of officers. In the third quadrant (concentration management here) the important ranking and performance do not meet the service quality standards, namely departure schedule, speed of process, knowledge of ticket counter officers, expertise of information officers, ease of reaching the port, clarity of information on tickets, and information and directions. Quadrant IV (low priority) performance does not meet the service quality standards, but respondents do not place a high level of importance on the service, namely ticket availability, length of ticket queue, number of counters, ease of ticket information, suggestion box, service improvement, cleanliness of counters, cleanliness of waiting rooms, cleanliness of toilets, cleanliness of dining room/canteen and cleanliness of parking lots. According to (Priyono, Broto; Insani Ilham, Chairul; Fathoni, 2021) generally, river and lake transportation is still conventional and traditional where the service is unscheduled and uncertain. For urban river transportation, service users want transportation services with a constant and consistent departure time span (headway). For this reason, the departure schedule at the 16 Ilir River Port, which is an urban river transportation, must be considered, especially the regularity and punctuality, so that the speed of the service process at the port can be increased. In addition, the ease of getting to the port which is currently still mixed with market activities so that it is necessary to provide special pedestrian infrastructure equipped with directions, this can also increase the number of users of river transportation services such as the integration of modes which can also increase the number of service users according to (Amanda, 2020)The performance of the mode integration at the 16 Ilir River Port has met the standards, but it is necessary to add special pedestrian access that is short, shady and safe so that the benefits are felt by service users, this is in line with [11] which states the need for improvements in physical integration between modes in the form of elevated facilities (sky bridges) that are at the same level, closed, safe, comfortable, fast and can accommodate people with disabilities.

#### **4 Conclusion**

The development of the number of passengers at the 16 Ilir River Port in Palembang City after the quickwins program experienced fluctuations with a development value of 75 entering the performance value interval of

60<75.6<80 with the category of "Suitable". The performance of the pedestrian customer satisfaction index obtained a performance value of 75.6 entering the interval of 60<75.6<80 with the category of "Suitable" with the most respondents being female, aged 35-49 years, private employees, income of 3-5 million with the purpose of traveling to work using river transportation less than 3 times a week, an important rating was obtained and performance did not meet the standard quality service so that there is a need for management to concentrate on departure schedules, speed of service processes, knowledge of officers, expertise of officers, ease of reaching the port, clarity of information on tickets and directions, it is hoped that both central and regional governments will make improvements according to priority based on community needs as the results of the development of the number of passengers.

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