



**THE ECONOMIC EVALUATION TO CIPARAGE COASTAL FISHING PORT SERVICES, KARAWANG REGENCY: CONSUMERS SIDES APPROACH**  
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**Annisa Nurfadilah<sup>1</sup>, Dian A. N. N. Dewi<sup>2</sup>✉, Bambang Argo Wibowo<sup>3</sup>**

<sup>1,2,3</sup>Universitas Diponegoro, Semarang, Indonesia

✉ dianayunita\_ddd@live.undip.ac.id

**Abstract**

Karawang Regency has a fishing port with the status of a Coastal Fishing Port. Fishing Ports provide services to fishermen as users of the facilities available at the port. One kind of service is administrative service at the Fishing Port, this service is related to fishing operational activities. The purposes of this study were to analyze the fishermen satisfaction level to fishing port services and to find out what services are considered important by fishermen. This study analyzed by the Customer Satisfaction Index (CSI) and Importance Performance Analysis (IPA) methods to measure fishermen's satisfaction. Based on the results of the study indicate that the assessment of satisfaction with services at the Ciparage Coastal Fishing Port is classified in the satisfied category. This shown by the value of the Fisher Satisfaction Index, which is 76.565%. The service that has the highest value is the attributes of the facilities at the Fish Auction Place (TPI) and the attitude of the administration officers at the port. The conclusion of this condition should be maintained by the port. Then suggestion from this research is an expansion of the pier facilities at the port is urgent to accommodate numbers of vessels to lean.

**Keywords:** *Ciparage, Customer Satisfaction Index and Importance Performance Analysis*

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## **INTRODUCTION**

Karawang Regency is one of the regencies in West Java with high potential for fishery resources. Ciparage Coastal Fishing Port (PPP) located at the Citarum River, Ciparage Jaya Village, Tempuran District. Fishing Port is a place for fishing vessels to levy that will landed their catches or other activities to loading and unloading fishing supplies for operational (Ihsan S, 2005). Fishing port services that have an important role in fishermen activities are administrative services and facilities that have been provided by the port. The provision of services has an important influence on the level of fishermen's satisfaction, fishermen's satisfaction is important in supporting the performance and development of a fishing port. Ciparage Coastal Fishing Port is one of the places of capture fisheries landing activities in Karawang Regency. One of the problems that revealed in the Ciparage Fishing Port is that there are still un-optimal facilities at the Port, such as the lack of a pier area and the fishing port pier damage. The effect is the fishing vessel must be waiting in line to enter the fishing port. Thus, the fishermen who will carry out loading and unloading or levy will take more longer time than usual.

The provision of services will affect the performance and satisfaction level of fishermen at the Port. Fishermen's satisfaction is important in supporting the

performance and development of a port (Bayinnah et al., 2016). The form of service at the port in question is such as services and facilities. Service services include, handling vessel ownership certificates or small passes and auction services at the Fish Auction Place (TPI). The facilities provided at Ciparage Fishing Port such as the dock mooring service, which is for vessels that lean or carry out loading and unloading the fishing capture production. The services provided by the port are generally related to fishing operations, the provision of services will affect the level of fishermen's satisfaction.

Several researchers also conducted similar research, inter alia Guswanto et al. (2012) conducted research at Nizam Zachman Fishing Port to provide the customer's satisfaction index about the fishing port services; Bayinah et al. (2016) revealed performance and customer's satisfaction to Kejawanan Fishing Port services; Kholil and Dewi (2019) also captured consumer's satisfaction index of Morodemak Fishing Auction Place services using Customer Satisfaction Index (CSI) and IPA (Important Performance Analysis). Sihotang and Oktarina (2022) also applied the similar method of CSI and IPA on Container Terminal online services (E-Service) at IPC Company Palembang and find out the consumer's satisfaction is high for the online services.

## **THEORITICAL BACKGROUND**

### **Fishing Port**

Ports are the most important means of connecting between islands as well as between countries. Ports have a vital role in encouraging growth and supporting the economy. A country needs a supporting port, so that the port can be developed its facilities and infrastructure to maximize the function of a port itself. Thus, the development of ports that develop with the times is very important, in order to continue to develop and support the progress of a country. Ports that are managed properly and appropriately can support trade progress and can even encourage economic progress, with good management of several cities in archipelagic countries such as Indonesia, ports can grow these cities and the economy of the surrounding community can be helped. The existence of fishing ports plays an important role in the level of utilization of fish resources in each water. The better the conditions that exist in a fishing port, the greater the role and function of the port will be on the development of the capture fishery sector in an area (Salim, 2018).

### **Definition and Classification of Fishing Ports**

A fishing port is a place consisting of land and surrounding waters with certain boundaries as a place for government activities and fishery business system activities that are used as a place for fishing vessels to lean, dock,

and/or unload fish equipped with shipping safety facilities and fisheries supporting activities (Minister of Maritime Affairs and Fisheries Decree Number: PER.08 / MEN / 2012).

The classification of Fishing Ports is divided into 4, namely class A Fishing Ports called Oceanic Fishing Ports (PPS), class B Fishing Ports called Archipelagic Fishing Ports (PPN), class C Fishing Ports or Coastal Fishing Ports (PPP), and class D ports hereinafter referred to as Fish Landing Bases (PPI) Minister of Maritime Affairs and Fisheries Decree Number: PER.08 / MEN / 2012).

The technical criteria of the Coastal Fishing Port consist of:

1. Able to serve fishing vessels that carry out fishery activities in Indonesian waters;
2. Has mooring facilities for fishing vessels measuring at least 10 GT;
3. The length of the pier is at least 100 m with a depth of 100 m, with a pool of at least minus 2 m;
4. Able to surround fishing vessels of at least 30 units or the total number of vessels of at least 300 GT; and
5. Utilize and manage at least 5 ha of land. (Central Bureau of Statistics, 2016).

Operational Criteria for Coastal Fishing Ports include:

1. There are fish loading and unloading activities and marketing of fishery products on average 5 tons/day; and

2. There are fish processing industry activities and other supporting industries. (Central Bureau of Statistics, 2016).

### **Consumer Satisfaction**

Consumer satisfaction is a level where the needs, desires and expectations of a consumer be met. Consumer satisfaction is an expression of feelings of pleasure or disappointment that arises after consumers compare the performance of the results felt compared to their expectations, where if a performance fails to meet consumer expectations, consumers will feel dissatisfied and vice versa, if the performance meets consumer expectations, consumers will satisfied with the performance (Kotler, 1997). Improving quality and service is expected that customer satisfaction can be maximized and the expectations or expectations of consumers in accordance with what is received after using services or facilities at the port. Consumer satisfaction (fishermen) is measured by how much conformity between consumer expectations and the reality of service and facilities. There are two ways to measure consumer satisfaction, namely the existence of a complaint system and suggestions from consumers so that the port can improve its performance system, and the existence of a customer satisfaction survey, from which survey can be seen for which level of performance needs to be improved again.

### **Principles of Customer Satisfaction**

Customer satisfaction is highly dependent on the expectations of consumers who use services or facilities. There are several factors that influence the perception and expectations of consumers. According to Gaspersz (2003), Some factors that influence consumer expectations:

1. Needs and desires related to things that consumers feel when trying to use port services or facilities. If there is a great need and desire, the expectations or expectations of consumers will be high, and vice versa;
2. The experience of consumers when using a service from the Port can affect the level of expectations of consumers; and
3. The experience of relatives, stories about the quality of services or port facilities that will be obtained by fishermen as consumers.

### **Consumer Satisfaction Indicators**

According to Tjiptono (2004), the indicators of customer satisfaction are as follows:

1. Fulfilling customer expectations

This is the level of conformity between service performance and the use of facilities expected by fishermen with what is felt, including services and supporting facilities used by fishermen in accordance with or exceeding as expected. The level of conformity in question is like the price of fish in The Fish Auction

Place (TPI) at the port is stable, it is expected that with the stabilization of prices, which is stable in a high sense, it is expected that fishermen's income will increase and income for retribution at TPI will also increase.

2. Ease of access to services or facilities

The ease of accessing a service or facility at the port is an indicator of consumer satisfaction (fishermen). Fishermen will feel satisfied if a service or facility at the port can be accessed easily, for example, such as handling ship papers so as to make it easier for fishermen to carry out their fishing activities, the use of facilities at the Port with an auction system at the Fish Auction Place (TPI) so that fishermen are not difficult to sell catches and get stable prices; and

3. Quality of service provided

An important indicator of consumer satisfaction (fishermen), fishermen will feel satisfied if a service provided by the Port can meet the expectations of consumers (fishermen). Factors that affect service quality indicators include the speed, accuracy, and friendliness of officers in serving consumers (fishermen). The quality of service in question is such as Port officers providing good, friendly service, officers without distinguishing consumers (fishermen), and the punctuality of officers in serving consumers (fishermen), the better the quality of service from Port officers provided, the higher the level of fishermen's satisfaction.

## **RESEARCH METHOD**

### **Type of Research**

The research method used in this study is a descriptive method with data analysis using validity tests and reliability tests. After the questionnaire is declared valid and reliable, measurements will be taken with customer satisfaction measuring instruments, namely the Customer Satisfaction Index (CSI) and Importance Performance Analysis (IPA). The sampling method in this study used the purposive sampling method with the size of the sample determined by the slovin formula. In this study, 37 respondents from 236 fishermen who owned boats at the Ciparage Coastal Fishing Port (PPP) Karawang Regency.

### **Data, Instrument, and Technique of Data Collection**

The data collection method used in this study was the interview and questionnaire method (closed questionnaire), with a total of 37 fishermen who owned boats at Ciparage Port. The data retrieved includes secondary data and primary data. Data collection was carried out using interview and questionnaire techniques with answers that were already available.

- a. Interviews are a data collection technique that is carried out through face-to-face between researchers and respondents, with the aim of researchers obtaining information from respondents. The

interview method was conducted to obtain data directly to officers at the Port, TPI officers, and fishermen.

- b. Questionnaire is a data collection technique that is carried out by providing written questions that have been completed with answer choices, or can be called a closed questionnaire. A closed questionnaire means that a researcher or questionnaire compiler limits the choice of answers that the respondent will give.
- c. A sample of respondents taken from the total number of fishermen who own boats in Ciparage Port, namely 37 out of 236 fishermen.
- d. Secondary data taken in the form of geographical conditions, the number of fishing gear at Ciparage Port, the number of ships at Ciparage Port, the number of production and production value at Ciparage Port, and the amount of diesel expenditure at Argomina Vessel Fuel Station (SPDN), while the primary data taken is in the form of interview results from questionnaires distributed to respondents. Then the data processed to determining the fishermen's satisfaction to officer's services at Ciparage Fishing Port.

## Data Analysis Methods

### 1. Validity Test

Validity is a measure that shows the level of validity or validity of an instrument. Validity is carried out to test the correctness of the

instrument as a measuring tool for a variable (Arikunto, 2002). A valid instrument will have high validity, on the contrary, an invalid instrument means a low validity. Test validity in the study using the product correlation formula using the formula:

$$r_{xy} = \frac{N\sum xy - (\sum x)(\sum y)}{\sqrt{\{N\sum x^2 - (\sum x)^2\}\{N\sum y^2 - (\sum y)^2\}}}$$

Whereas:

$r_{xy}$  = Index of the closeness of the relationship between the level of fishermen's satisfaction with fishing port services

N = Number of samples

X = Satisfaction variable

Y = Performance variable

Validity testing is declared valid if the correlation value between the question or questionnaire and the overall number of attributes is greater than the more determined table r value with a signification level of  $\alpha = 5\%$

An instrument can be said to be valid if the calculated r value obtained is greater than the table r value, in this study for 12 attributes it is obtained that all attributes have a calculated r value  $>$  r table and the attributes are feasible to proceed to the next stage of data processing.

### 2. Reliability Test

After the questionnaire is declared valid, the next step is to test the reliability. Reliability tests are used to measure the extent to which

instruments show consistency using the same object, as well as the extent to which a measurement result can be trusted (Sugiyono, 2017). Reliability tests are carried out on the overall attributes of the question, reliability tests are used to measure the extent of the consistency of the research instrument. Reliability will show how much accuracy a variable has and how much it can be relied on in the measurement process. The formula used is to use the alpha formula to analyze the questionnaire reliability test whose scale is not 0 and 1. According to Simamora (2004) explained that the alpha formula can be formulated:

$$r_i = \left( \frac{k}{k-1} \right) \left( 1 - \frac{\sum \sigma_b^2}{\sigma_t^2} \right)$$

Whereas:

- r = Reliability of the instrument
- K = Multiplicity of questions
- $\sum \alpha^2$  = Number of Grain Variants
- $\alpha$  = Total variance

Testing is carried out by calculating the Cronbach Alpha coefficient of each instrument in a variable, an instrument can be said to be reliable if the value of alpha > 0.6. According to Ghozali (2011:48) A variable can be said to be reliable when it has a cronbach alpha coefficient value > 0.60. After the test is carried out, the results for testing the reliability of the alpha value on all indicators > 0.60, the instrument can be said to be reliable.

### 3. Customer Satisfaction Index (CSI)

The Customer Satisfaction Index (CSI) is used to determine a level of consumer satisfaction with an approach that considers the importance of the measured variables. According to Supranto (2006), measurement of the Customer Satisfaction Index (CSI) is needed because the results of the measurement can be used as a reference to determine targets in the coming year. The method of measuring the satisfaction index of the consumer satisfaction index includes the following stages:

1. Calculating the Weighting Factor (WF), which is to change the average value of importance to a percentage number of the total average importance of all attributes tested, so that a total weighting factor of 100% is obtained
2. Calculating Weighting Scored (WS), i.e. converting the average value of importance into a percentage number of each attribute with the WF of each attribute.
3. Calculating the Total Weighted (WT), that is, summing the WS of all attributes of the quality of service (service)
4. Calculating the Satisfaction Index (SI), namely WT divided (L) the maximum scale used (in this study the maximum scale used is 5) then multiplied by 100%.

According to Guswanto et al., (2012), the overall level of customer satisfaction (fishermen) can be seen from the criteria for



the level of fishermen's satisfaction, with the following criteria:

- 0.00-0.34 : Not satisfied (service does not meet user needs)
- 0.35-0.50 : Not satisfied (service does not meet the needs of users)
- 0.51-0.65 : Quite satisfied (service is enough to meet the needs of the user)
- 0.66-0.80 : Satisfied (service has met customer needs)
- 0.81-1.00 : Very satisfied (service meets the needs of users).

#### 4. Importance Performance Analysis (IPA)

The use of the Importance Performance Analysis (IPA) analysis method is in measuring the level of service satisfaction and is carried out through measuring the level of conformity which is the performance score of the port in order to produce a high-quality service. According to Ong and Jati (2014), the Importance Performance Analysis (IPA) technique, it is requested to assess the level of importance and performance of the port, where the average value of the level of importance and performance is analyzed with Importance Performance Analysis (IPA), where the X axis represents perception while the Y axis represents expectations. It can be seen for the Importance Performance Analysis (IPA) quadrant in fig 1.

<b>Interest (Y)</b>	I (Top Priority)	II (Maintain Priority)
	III (Low Priority)	IV (Excessive)
<b>Performance (X)</b>		

The interpretation of the quadrant is:

1. The Top priority, this quadrant there are factors that are considered important or expected by consumers, but the performance of the port is considered unsatisfactory so that the company (fishing port) needs to concentrate on allocating resources to improve the performance that is included in this quadrant.
2. Maintain Achievement, this quadrant there are factors that are considered important and are expected as supporting factors for consumer satisfaction so that the port is obliged to maintain these performance achievements.
3. Low Priority, this quadrant there are factors that are considered to have a low level of perception or actual performance and are not very important or not too expected by consumers so that companies do not need to prioritize or pay more attention to these factors.
4. Excessive, this quadrant there are factors that are considered less important and not too expected by customers so that the company is better off allocating related resources to other factors that have a higher priority level.

**Fig. 1** I P A Quadrant

## **RESULT AND DISCUSSIONS**

The research questionnaire had been cross checked by Reliability and Validity test before analyzed with Customer Satisfaction Index (CSI) and Importance Performance Analysis (IPA). This is the result of Validity and Reliability test:

### **1. Validity Test**

Validity tests were carried out on each dimension of service quality (service) used, namely the dimensions of Tangible (physical evidence), Reliability, Responsiveness, Assurance and Empathy. Based on the validity test using SPSS, it was found that the calculated R value exceeded the table R value, it can be said that the instrument is valid. So that all these attributes are worthy of being used as measuring instruments in this study. The validity test was carried out by Pearson's bivariate correlation method using SPSS, the questionnaire test was carried out with a critical value of 5% with a critical r value > the table r. It means the questions were valid and allowed to be use as a parameter.

### **2. Reliability Test**

Reliability Test is carried out after the questionnaire is declared valid, the reliability test is a test used to measure the consistency of a series of measurements. The test is carried out by calculating the cronbach alpha coefficient of each instrument, an instrument can be said to be valid if the alpha value > 0.6. According to Ghozali (2011), A variable can be

said to be reliable when it has a cronbach alpha coefficient > 0.60. The results of the calculation of reliability by SPSS can be seen in Table 2.

### **3. Customer Satisfaction Index (CSI)**

The Customer Satisfaction Index (CSI) test is used to determine the level of fishermen's satisfaction using a percentage scale. The measurement of fishermen's satisfaction level can be seen in Table 3.

The calculation results of the fishermen's satisfaction index obtained a value of 76.56%, where the value was included in the range value of 0.66-0.80 in the Satisfied criteria. The fishermen's satisfaction index is still said to be satisfied because there is still one more level to get the Very Satisfied criteria, thus the services or facilities at the Ciparage Coastal Fishing Port (PPP) need to be improved again. Although the results show that the fishermen's satisfaction index shows the results of Puas, there are some attributes that need to be improved such as the need for repairs and expansions on the docks for ships that lean and carry out loading and unloading. The pier is one of the important facilities in the port, because the pier has an important influence on the activities at the fishing port.

### **4. Importance and Performance Analysis (IPA)**

The Importance and Performance Analysis (IPA) data analysis method is used to determine the level of suitability in achieving

performance quality in the services provided by the Ciparage Coastal Fishing Port (PPP) based on questionnaires that have been distributed by researchers. The results of the Importance and Performance Analysis (IPA) calculation describes in Table 4.

Based on the results obtained for the calculation of the level of conformity between the level of performance and importance, there is the largest level of conformity value, namely a value of 96.05% with the attributes of facilities at the Fish Auction Place (TPI), a value of 95.54% with the attributes of attitudes and behavior of administrative service officers and a value of 94.22% with the attributes of officers providing equitable service to fishermen. Some values have a considerable value, because this is because fishermen feel that there are services or facilities that are as expected. . The level of conformity that has the lowest value is at a value of 28.76% with the attributes of the adequacy of the dock at the time of loading and unloading vessels, a value of 46.85% with the attributes of facility conditions at the Port and a value of 49.02% with the attributes of ship comfort when leaning, there is a low value in facilities at the Port due to the not yet maximum facilities at the Ciparage Coastal Fishing Port (PPP), so that fishermen feel a sense of dissatisfaction in the use of facilities at the Port. According to Sukardi and Cholidis (2006), if the value of the level of conformity

is 100% and is above the average, it can be said that the level of conformity is good.

### **Cartesian Diagram of IPA**

Based on the cartesian diagram (Fig. 2), each quadrant it is gaping, there are different quantities. The quadrant is divided into four parts, namely:

1. Quadrant 1 is the Top Priority quadrant, where in this quadrant it must receive more attention or must be improved for services or facilities, but in reality there is no attribute in this one quadrant.
2. Quadrant 2 is the Maintain Achievement quadrant, which in this quadrant shows the performance of service services and the use of facilities at the Port. There are six attributes included in quadrant 2, namely, communication of officers and fishermen, officers providing even services, facilities at TPI, punctuality of officers in administrative services, administrative services and officers on duty during the auction process.

3. Quadrant 3 is the Low Priority quadrant, where in this quadrant it shows some of the attributes included in quadrant 3 are less important in their influence for the service or benefit felt to be very small. There are three attributes in quadrant 3, namely, Port facilities, ship comfort when loading and unloading and the adequacy of vessels to pier.
4. Quadrant 4, namely the Excessive quadrant, where in this quadrant shows the attributes that affect fishermen are less important, but in the services or facilities that are felt to be very satisfactory in their implementation There are three attributes in quadrant 4, namely, the responsibility of officers, the attitude of the behavior of officers and cleaners in the Fish Auction Place.

**Table 1.** Validity Test

Dimension	Variable	R performance	R Interest	R table	Conclusion
Tangible	1	0,920	0,869	0,334	Valid
	2	0,456	0,788	0,334	Valid
	3	0,367	0,701	0,334	Valid
Reability	1	0,917	0,739	0,334	Valid
	2	0,618	0,445	0,334	Valid
Responsives	1	0,578	0,917	0,334	Valid
	2	0,902	0,922	0,334	Valid
	3	0,663	0,711	0,334	Valid
Assurance	1	0,649	0,938	0,334	Valid
	2	0,923	0,960	0,334	Valid
Emphaty	1	0,758	0,678	0,334	Valid
	2	0,887	0,921	0,334	Valid

Source: Research data, 2022.

**Table 2.** Reliability Test

Dimension	Cronbach's Alpha Coefficient Performance	Cronbach's Alpha Coefficient Interest	Result	N of items	Conclusion
Tangible	0,646	0,646	>0,60	3	Reliable
Reability	0,616	0,831	>0,60	2	Reliable
Responsives	0,759	0,759	>0,60	3	Reliable
Assurance	0,880	0,880	>0,60	2	Reliable
Emphaty	1,000	0,638	>0,60	2	Reliable

Source: Primary research data, 2022.

**Table 3.** CSI Calculation Results

No	Service Attributes	WF	WS
1	Administration services	8,418	40,763
2	Timelines administrative services of the officers	8,520	34,979
3	Officers' attitude and behavior	8,010	32,462
4	Vessels' leaning, loading and unloading convenience	7,857	15,921
5	Fishing Port pier adequacy	7,857	9,305
6	Fish Auction Place cleanliness	7,959	37,282
7	Fish Auction Place facilities	8,980	43,953
8	Officers' services during fish auction	8,418	35,224
9	Fishing port facilities condition	7,245	14,871
10	Responsibilities of officers in fulfilling administrative services	8,265	33,931
11	Communication between officers and fishermen	9,439	44,213
12	Service officers are evenly distributed without discriminating	9,031	39,925
WT			382,82
CSI			76,56%

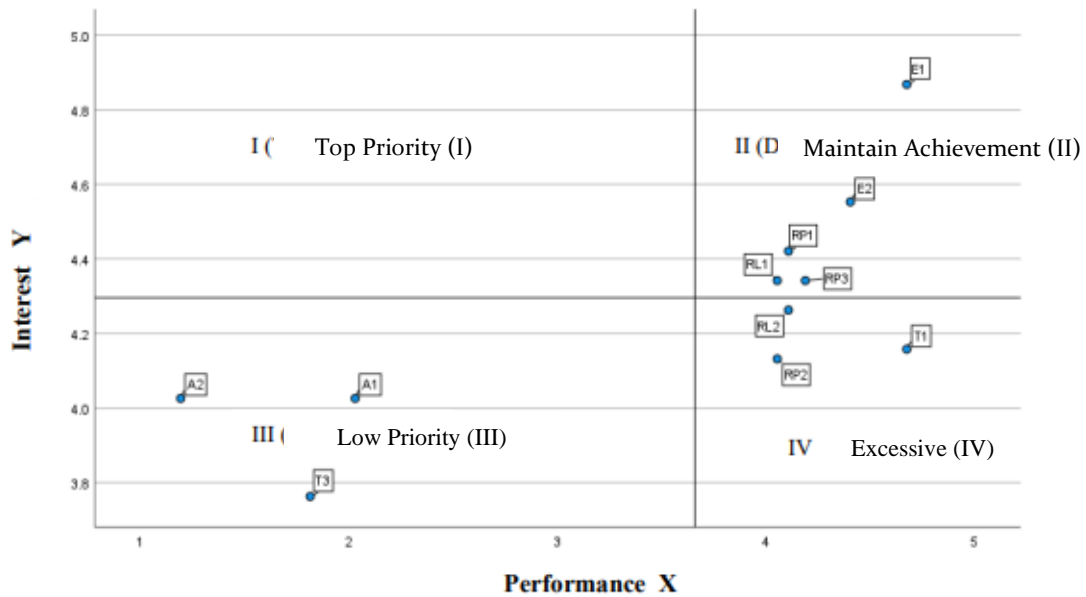
Source: Primary research data, 2022.

**Table 4.** IPA Calculation Results

No	Attribute	Performance Score (Xi)	Expectation Score (Yi)	Congeniality (Tki) %
1	T1	173	185	93,51
2	T2	170	177	96,05
3	T3	67	143	46,85
4	RL1	150	165	90,91
5	RL2	152	162	93,83
6	RP1	152	168	90,48
7	RP2	150	157	95,54
8	RP3	155	165	93,94
9	A1	75	153	49,02
10	A2	44	153	28,76
11	E1	173	185	93,51
12	E2	163	173	94,22
Total		1624	1986	
Average		135,33	165,50	80,55

Source: Primary research data, 2022.

**Fig 2.** IPA Cartesian Diagram



## CONCLUSION

### Conclusion

Conclusion from this study is that the research on the level of fishermen's satisfaction at the Ciparage port obtained from CSI calculation of 76.5% where the value was classified on the satisfied scale. This illustrates that the service in the port has met the needs of fishermen and fishermen are satisfied with the services provided. However, the port must continue to strive to improve and maintain performance so that fishermen still feel satisfied for the future. There are 6 service attributes that are considered important and satisfying for Ciparage fishermen, namely the attributes of administrative services at the port, the timeliness of officers in service, facilities at the Fish Auction Place (TPI), the attitude and behavior of officers at the port, the communication relationship between fishermen and officers, and the service of

officers on duty during the auction process and there are 2 service attributes that are priorities to be improved, namely the attributes of piers adequacy for unloading ships load or lean and condition of facilities at the port.

### Suggestion

Suggestion resume in this study is the port facilities improvement, especially piers needed to be expanded and repaired for damage. Because these facilities affect fishermen activities who will carry out loading and unloading or for refueling, thus services at the port can be realized and should be measured the level of fishermen's satisfaction should be carried out periodically and continuously, thus it is hoped that the port can improve and improve the performance of the Ciparage Coastal Fishing Port (PPP) in providing services.

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