

## Integration Of The Servqual, IPA, And CSI Methods To Analysis Customers Satisfaction

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### ABSTRACT

*One of the supporting components in running a company is the quality of service delivered to customers. &T Express Benjeng was among the first freight forwarding firms to establish itself in Gresik Regency's Benjeng sub-district. Several trip merchants were identified in Benjeng Gresik District throughout time. As a consequence, the number of people using J&T Express Benjeng services is falling. J&T Express Benjeng had never studied customer satisfaction before doing this research; therefore, evaluating the quality of customer service was critical to remain in an increasingly competitive business environment. The Service Quality techniques, Importance Performance Analysis, and the Customer Satisfaction Index were used in this research. The biggest disparity, according to the results of this study, is in the reliability dimension, the assurance dimension, the responsiveness dimension, the empathy dimension, and the tangibles dimension. According to the Importance Performance research, nine question indicators in quadrant I must be emphasized if performance is to increase. The Expedition must increase the value of the Customer Satisfaction Index by prioritizing repairs in quadrant I of the IPA Kartesius diagram. The Customer Satisfaction Index result indicating that the customer is pleased.*

**Keywords :** *Service Quality, Importance Performance Analysis, Customer Satisfaction Index, Customer Satisfaction, Customer Interests*

### Introduction

The paradigm for conducting enterprise business operations has evolved. In this era of globalization, the relevance of philosophy emphasizes every organization to be smarter and put consumers first. According to this idea, customers are more important to the business because they are the key to the company's success [1]. Competing to be the best in service is very important for business actors in the service world [1]. In the business world, competition occurs not only in the manufacturing industry, but also in the service sector. If the manufacturing industry sector competes on the quality of its goods, then the service industry competes on the quality of its services [2].

Service Quality is the gap between reality and customer expectations based on company services [3]. Customers will be happy if the results or feelings meet or exceed their expectations [4]–[6]. Customers who are satisfied with a product or service can lead to loyalty and form a company image through word of mouth [4], [7], [8]. Companies must understand the quality of their services so that they can satisfy customers. Customer happiness is influenced by various elements, including service quality [9].

J&T is a company in the field of expedition services, J&T is obliged to provide the best service to each of its customers. If the quality of service offered by the freight forwarding company meets customer expectations, consumers choose to use the services of the freight forwarding company. J&T Express Benjeng is one of the first shipping companies to open in Benjeng District, Gresik Regency. Competitors from various expedition vendors can always be found in Benjeng Gresik Regency. As a result, the number of J&T Express Benjeng service users is decreasing day by day.

On the other hand, J&T Express Benjeng has never monitored the level of customer satisfaction, so service quality improvement and complaint handling have not been carried out properly. As is the case with complaints about expedition couriers taking a long time in the delivery process, company management being impolite, even in the company's staff. If complaints are not handled properly, service quality can decrease.

Customer wants are analyzed to find out the level of quality of service satisfaction offered by the company to customers, ensuring the viability of the commercial company. Some of them are assessed using Service Quality (Servqual) and Importance Performance Analysis (IPA) approaches. Service quality analysis compares two key areas of service quality: customer service expectations and performance (perceptions). When a consumer gets what he expects from a service, he declares himself satisfied [10]. Furthermore, the Importance

Performance Analysis (IPA) approach can be used to prioritize corrective actions based on service quality elements. As in research [11], which prioritizes aspects of service essentially by using the Importance Performance Analysis (IPA) approach. Servqual and Importance Performance Analysis (IPA) are well-known tools for evaluating service quality and prioritizing changes across different service providers. Customer satisfaction can be measured using Servqual and IPA [1], [11]–[14].

This research begins with the Servqual method to measure service quality in order to find the gap between customer satisfaction and expectations. To increase customer satisfaction, the company uses the Importance Performance Analysis (IPA) method which is useful for determining which facilities are considered important and have an impact on customer satisfaction based on the quadrant of the priority scale, so that when carrying out the repair process, the company can focus more on the improvements that will be prioritized to take corrective action. To update previous research, a Customer Satisfaction Index (CSI) was developed in this study, which is an indicator that assesses the results of service quality using Importance Performance Analysis (IPA) measurement data [15]. Overall customer happiness can be measured using the Customer Satisfaction Index (CSI) [16]. Several previous studies have shown the use of the Customer Satisfaction Index (CSI) in assessing customer satisfaction [17]–[20]. Therefore, this research was conducted with the hope that the management of J&T Express Benjeng will be able to survive in the face of business competition and improve the quality of its services to determine customer satisfaction results, to achieve customer satisfaction.

### Research Methods

This research methodology begins with conducting a literature study, as well as field studies, followed by identifying the formulation of the problem to determine research objectives, creating a Service Quality questionnaire, followed by the data collection stage by distributing questionnaires to customers who use J&T Express Benjeng services, then taking sample the number of respondents, and proceed with data processing using the stages of the Servqual method, IPA, and calculation of the Customer Satisfaction Index (CSI).

Respondents in this study were random customers who used J&T Express Benjeng's expedition services from January 2023 to April 2023 as many as 80 people. Determining the number of respondents in the questionnaire uses Bernoulli calculations to determine the minimum sample size. The formula obtained from Bernoulli's calculations is as follows [21] :

$$N \geq \frac{z^2 \left(1 - \frac{\alpha}{2}\right) p \cdot q}{e^2} \tag{1}$$

Based on the Bernoulli data sufficiency test results, a minimum of 73 respondents were needed to acquire data, hence 80 respondents were used in this research. Each responder was requested to complete a form comprising a questionnaire rating their degree of satisfaction and importance for service data purposes. Respondents were asked to submit a scale score on service features based on their emotions in order to complete the questionnaire. Table 1 shows the scale levels for completing out the questionnaire on a scale of 1 to 5[22].

**Table 1** Likert Scale

Answer Choise	Score
Very Important/Satisfied (SP)	5
Important/Satisfied (F)	4
Enough (C)	3
Not Important/Satisfied (TP)	2
Very Not Important/Satisfied (STP)	1

After distributing the questionnaires, data collection was carried out for data processing followed by validity and reliability checks. This test is needed to find out whether the quality of the data obtained is in accordance with the standards [23]. The validity test measures the degree of similarity between the resulting data and the actual data in the data source. If the data collection instrument is correct, the data collected is correct, and data processing can continue [24]. This validity test is done by comparing the score of the answers for each item with the aggregate score of all items. The validity test used the Pearson Product Moment Correlation approach using SPSS software to test the validity with a 95% confidence level and 5% accuracy.

Following the validity test, the reliability test was performed. The purpose of the dependability test is to evaluate the consistency and stability of the data collected during data collecting [25]. Test reliability or reliability is often used to test the instrument's dependability and consistency. Cronbach's Alpha is the method employed in this study's reliability test. Cronbach's alpha may be used to quantify the degree of data reliance in the form of a Likert scale range or scale. If the Cronbach Alpha value is more than 0.60, the variable is considered to be

dependent; the higher the Cronbach Alpha value, the more reliant the data [24]. In this inquiry, the SPSS program is employed to help with reliability testing.

The Servqual method is used to manage service quality based on the needs and goals of the client. This service assesses five characteristics: tangible, responsiveness, assurance, empathy, and assurance, using question indicators that vary based on the breadth of these dimensions [26]. The Tangibles dimension is the tangible evidence the client perceives, such as the available facilities and the company's circumstances. The reliability dimension is the company's dependability in terms of performance; the responsiveness dimension is the readiness to assist clients and provide enough attention; and the assurance dimension is the capacity to generate a feeling of security and comfort. The capacity to care about and react to consumer indifference is referred to as the empathy dimension. This study aims to assess J&T Express Benjeng customer satisfaction using five service quality characteristics. Table 2 displays the research questionnaire.

**Table 2** Research Questionnaire

No.	Dimensi	Kode	Kuesioner	Sumber
1	Tangibles	A1	Clean waiting room facilities	[27]
2		A2	Neat waiting room facilities	[28]
3		A3	Strategic location	[28]
4		A4	Adequate parking space	[28]
5		A5	Neat staff appearance	[27]
6		A6	Friendly staff appearance	[29]
7		A7	Comfortable environment	[28]
8		A8	Adequate Seating	[30]
9	Reliability	B1	Promised punctuality	[30]
10		B2	Ability to manage in providing adequate service	[13]
11		B3	Willing to help when customers have trouble	[13]
12		B4	Knowledgeable staff	[29]
13		B5	Have accurate records	[31]
14	Responsiveness	C1	Staff has a fast response	[30]
15		C2	Staff can meet special requests from consumers	[32]
16		C3	Staff provide clear information	[29]
17		C4	Consumers do not wait too long for service	[29]
18	Empathy	D1	Staff understanding of consumer needs	[31]
19		D2	Staff concern for customer satisfaction	[31]
20		D3	Sensitivity in paying attention to suggestions and criticism	[32]
21		D4	Prioritizing the interests of consumers at work	[32]
22		D5	Always end by thanking the customer	[31]
23	Assurance	E1	Friendliness of staff towards consumers	[29]
24		E2	Politeness of staff towards consumers	[29]
25		E3	Honesty of staff to consumers	[31]
26		E4	Staff have high moral values	[31]
27		E5	Able to solve consumer complaints problems	[32]

The Servqual method is used to determine the gap between the satisfaction received and the expectations desired by the customer [33]. The following is the average formula for calculating Servqual values ([34]).

$$\bar{Y}_i = \frac{(5*\sum SP)+(4*\sum P)+(3*\sum C)+(2*\sum TP)+(2*\sum STP)}{n} \quad (2)$$

Where :

- $\bar{Y}_i$  = the average response variable to-i
- $\sum ST$  = Number of respondents who response Very Satisfied/Important

- $\sum P$  = Number of respondents who response Satisfied/Important
- $\sum C$  = The number of respondents who response Enough
- $\sum TP$  = Number of respondents who response Not Important/Satisfied
- $\sum STP$  = Number of respondents who response Very Not Important/Satisfied

After knowing the average value of each variable, the Servqual gap is then calculated [33].

$$Gap\ Servqual = \bar{Y}_{kenyataan}(X1.1) - \bar{Y}_{harapan}(X1.1) \tag{3}$$

If the distance is positive (satisfaction > desire), it is called "surprise" or "satisfying". If the interest or gap is zero (satisfaction - desire), the service is acceptable; if the interest or gap is negative (satisfaction - desire), the service is unsatisfactory and of poor quality [33].

Next, priority for improvement is given using a Cartesian diagram in the IPA approach to identify important variables from the five dimensions or indicators of service quality that need attention. The process of Importance Performance Analysis includes determining the level of suitability between the level of importance and the performance of each dimension that is evaluated by comparing the level of satisfaction with the level of expectation. Analysis of the degree of conformity is used to determine the optimal priority sequence for improving service quality to increase customer satisfaction [35].

$$TK = \frac{X_i}{Y_i} \times 100\% \tag{4}$$

Explanation :

- TK = Conformity Level
- $X_i$  = Satisfaction rating score
- $Y_i$  = Interest rating score

Then the average calculation for each performance and interest assessment is carried out using this formula :

$$\bar{X}_1 = \frac{\sum X_i}{n} \tag{5}$$

$$\bar{Y}_1 = \frac{\sum Y_i}{n} \tag{6}$$

Explanation :

- n = Number of respondents
- $\bar{X}_1$  = The average score of the level of satisfaction
- $\bar{Y}_1$  = The average importance score

The Cartesian diagram is an analytical tool used as a marker for service improvement plans by examining the relationship between company performance or the degree of service implementation and desired customer satisfaction [36]. Cartesian diagram criteria are shown in Figure 1. [37]

**Table 3** Cartesian Diagram Criteria

Quadrant I (Main Priority)	Quadrant III (Maintain Priority)
Quadrant III (Low Priority)	Quadrant IV (Excessive)

Where,

1. Quadrant I is a prioritized attribute because performance is not appropriate and must be improved
2. Quadrant II is performance suitability with expectations that must be maintained.
3. Quadrant III, namely attributes that are not too important and the performance is still not appropriate.
4. Quadrant IV is an attribute that is not too important, but its performance is appropriate.

After processing the data using the Importance Performance Analysis Cartesian diagram, then customer satisfaction is categorised. Table 4 is the criteria for customer satisfaction based on the Customer Satisfaction Index. [37]

**Table 4** Criteria for Customer Satisfaction Index

Skor	Keteranan
0.00 – 0.34	Very Dissatisfied
0.35 – 0.50	Not satisfied
0.51 – 0.65	Quite satisfied
0.66 – 0.80	Satisfied
0.81 – 1.00	Very satisfied

## Results and Discussion

Respondents to this survey have used J&T Express Benjeng Expedition. Prospective respondents who visited the expedition office were randomly selected and asked to complete a service quality evaluation questionnaire. If the prospective respondent agrees to be selected as a respondent, a questionnaire with 54 items will be sent which must be responded to with 27 details regarding the level of significance and 27 regarding the level of satisfaction.

### Servqual Data Processing

The total number of willing respondents is 80, with a significant threshold of 0.05 and an R-table of 0.2072. Before the questionnaire was handled, its validity was first checked to see whether a questionnaire containing signs from a dimension could be declared reliable. This is achieved by determining whether the responses to statements (indicators) are consistent. Following are the results of the validity test using IBM SPSS 24 software.

**Table 5** Satisfaction Level and Expectation Level of Questionnaire Validity Test Results

No.	Rcount		R <sub>tabel</sub>	Note	No.	Rcount		R <sub>tabel</sub>	Note
	Satisfaction Level	Interest Level				Satisfaction Level	Interest Level		
1	0.4224	0.4435	0.2072	(Valid)	14	0.5067	0.2778	0.2072	(Valid)
2	0.3858	0.2568	0.2072	(Valid)	15	0.5503	0.4453	0.2072	(Valid)
3	0.3872	0.2344	0.2072	(Valid)	16	0.4954	0.6069	0.2072	(Valid)
4	0.2830	0.2198	0.2072	(Valid)	17	0.3958	0.4847	0.2072	(Valid)
5	0.3724	0.2198	0.2072	(Valid)	18	0.5801	0.4582	0.2072	(Valid)
6	0.3162	0.5026	0.2072	(Valid)	19	0.2299	0.5614	0.2072	(Valid)
7	0.3678	0.4896	0.2072	(Valid)	20	0.5036	0.5583	0.2072	(Valid)
8	0.3466	0.2721	0.2072	(Valid)	21	0.5258	0.2309	0.2072	(Valid)
9	0.4586	0.2734	0.2072	(Valid)	22	0.4642	0.3977	0.2072	(Valid)
10	0.6207	0.3242	0.2072	(Valid)	23	0.2536	0.4579	0.2072	(Valid)
11	0.4623	0.5432	0.2072	(Valid)	24	0.5751	0.2758	0.2072	(Valid)
12	0.5124	0.2421	0.2072	(Valid)	25	0.4592	0.3473	0.2072	(Valid)
13	0.4856	0.2648	0.2072	(Valid)	26	0.3375	0.4334	0.2072	(Valid)
					27	0.5287	0.4804	0.2072	(Valid)

After testing the validity, reliability calculations were then carried out with Cronbach Alpha which was carried out with the help of SPSS IBM 24 software. Table 6 is the result of reliability calculations.

**Table 6** Hasil Uji Reliabilitas

Cronbach alpha Servqual Questionnaire		Note.
Satisfaction Level	Interest Level	
0.838	0.772	Reliabel

Servqual calculations are performed when the data is declared valid and reliable, Table 7 is the result of Service Quality calculations.

**Table 7** Service Quality calculation results

No.	Kode	Nilai Mean		Gap	No.	Kode	Nilai Mean		Gap
		Satisfaction Level	Interest Level				Satisfaction Level	Interest Level	
1	A1	3.53	3.81	-0.29	14	C1	3.59	4.03	-0.44
2	A2	3.55	3.88	-0.33	15	C2	3.61	3.94	-0.33

3	A3	3.65	4.00	-0.35	16	C3	3.56	3.95	-0.39
4	A4	3.73	3.91	-0.19	17	C4	3.50	3.99	-0.49
5	A5	3.60	3.91	-0.31	18	D1	3.35	3.91	-0.56
6	A6	3.51	3.98	-0.46	19	D2	3.56	4.18	-0.61
7	A7	3.55	4.04	-0.49	20	D3	3.51	4.08	-0.56
8	A8	3.53	4.09	-0.56	21	D4	3.59	4.00	-0.41
9	B1	3.50	4.00	-0.50	22	D5	3.68	3.89	-0.21
10	B2	3.46	4.06	-0.60	23	E1	3.65	3.99	-0.34
11	B3	3.50	4.03	-0.53	24	E2	3.53	4.23	-0.70
12	B4	3.58	4.05	-0.48	25	E3	3.65	3.96	-0.31
13	B5	3.53	4.01	-0.49	26	E4	3.79	4.09	-0.30
					27	E5	3.61	3.95	-0.34
Tangibles dimension gap average									-0.37
Reliability dimension gap average									-0.52
Reesponsiveness dimension gap average									-0.41
Assurance dimension gap average									-0.47
Emphaty dimension gap average									-0.40

### Importance Performance Analysis (IPA) Data Processing

In addition, Cartesian diagrams are used to determine service quality improvement strategies based on priority classification or quadrants. This is done by analyzing the relationship between the company's performance or level of service delivery and the anticipated customer satisfaction level. The following is a Cartesian diagram for each station :

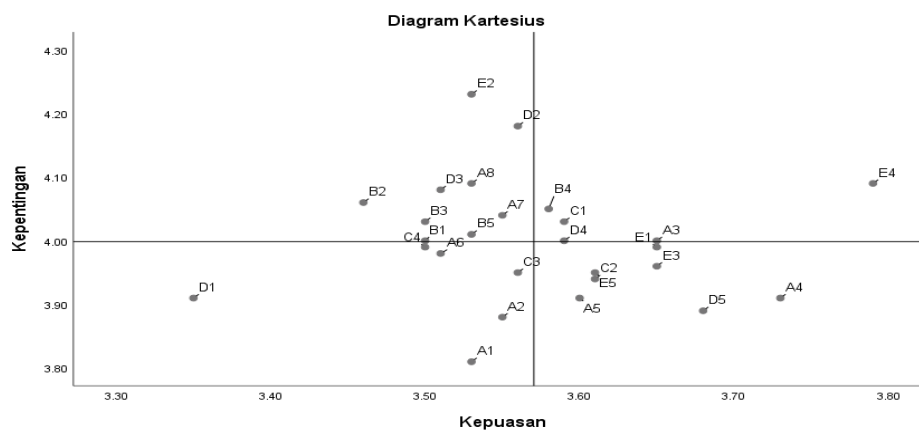


Figure 1 Diagram Kartesius Dimensi *Servqual*

Based on Figure 1, close that the environmental variables, adequate seating, promise timeliness, the ability to manage in providing adequate services, is willing to help when customers have problems, have accurate records, staff care for customer satisfaction, sensitivity in paying attention to suggestions and criticisms, the politeness of staff towards consumers is included in quadrant I. Quadrant I is an attribute that is prioritized because the performance is not appropriate and must be improved.

### Customers Satisfaction Index (CSI) Data Processing

CSI calculations are performed to determine the level of customer satisfaction. Table 8 is the score for calculating the IPA data.

Table 8 CSI Score

No. Attribute	Avg Satisfaction (X)	Avg Interests (Y)	Score (X x Y)	No. Attribute	Avg Satisfaction (X)	Avg Interests (Y)	Score (X x Y)
1	3.53	3.81	13.45	14	3.59	4.03	14.47
2	3.55	3.88	13.77	15	3.61	3.94	14.22
3	3.65	4.00	14.60	16	3.56	3.95	14.06

4	3.73	3.91	14.58	17	3.50	3.99	13.97
5	3.60	3.91	14.08	18	3.35	3.91	13.10
6	3.51	3.98	13.97	19	3.56	4.18	14.88
7	3.55	4.04	14.34	20	3.51	4.08	14.32
8	3.53	4.09	14.44	21	3.59	4.00	14.36
9	3.50	4.00	14.00	22	3.68	3.89	14.32
10	3.46	4.06	14.05	23	3.65	3.99	14.56
11	3.50	4.03	14.11	24	3.53	4.23	14.93
12	3.58	4.05	14.50	25	3.65	3.96	14.45
13	3.53	4.01	14.16	26	3.79	4.09	15.50
				27	3.61	3.95	14.26
Average Total Satisfaction							96.40
Average Total Expectations							107.96
Total							385.45

Based on table 8, the value of the customer satisfaction index can be calculated as follows :

$$\begin{aligned}
 \text{CSI} &= T / (5TY) && (6) \\
 &= 385.45 / (5 \times 107.96) \\
 &= 385.45 / 539.80 \\
 &= 0.7140 \text{ atau } 71.40\%
 \end{aligned}$$

### Service Quality Data Processing

In table 5 it is known that all r-count values are greater than r-table so that it can be concluded that all questionnaire data are valid and can be used for further data processing. After the validity test is carried out, the reliability test is carried out which functions to find out that the results of the questionnaire have reliable and trustworthy data, on the results of this reliability test it can be seen that the results of the reliability test for the questionnaire have a satisfaction level of 0.838 and an importance level of 0.772, so the data can be stated reliable because it is more than 0.60.

Furthermore, Service Quality data processing is carried out, the purpose of doing this Service Quality data processing is to find out the size of the gap that occurs between the level of customer interest and the level of customer satisfaction. If the results of the Service Quality test are negative, what the customer feels is that the level of satisfaction does not match the level of interest that the customer expects. However, if the results of the Service Quality test are positive, it means that the customer is satisfied with the service provided by J&T Express Benjeng. In this study it was found that all the question indicators in the questionnaire had negative values, which meant that there was a gap between the level of importance and the level of satisfaction experienced by customers. Based on table 7 it is known that the value of the gap is in the reliability dimension of -0.52, the assurance dimension is -0.47, the responsiveness dimension is -0.41, the empathy dimension is -0.40, and the tangibles dimension is -0.37. Integration of Service Quality Methods, Importance Performance Analysis, and Customers Satisfaction Index In this study has the slaughter to find out the priority of the act of repair along with the amount of customer satisfaction index, so that the company can be more objective in carrying out actions.

### Importance Performance Analysis (IPA) Data Processing

Importance Performance Analysis (IPA) serves the primary purpose of displaying information about service factors that consumers believe have a significant impact on their satisfaction and loyalty, as well as service factors that consumers believe should be improved because they are currently unsatisfactory. Referring to table 3, it is known that quadrant I is a priority for corrective action that should take precedence for repair or improvement. In this study it is known that there are 9 indicators belonging to quadrant I, namely comfortable environment (A7), Adequate Seating (A8), Promised timeliness (B1), Ability to manage in providing adequate service (B2), Having record keeping accurate (B5), consumers don't wait too long for service (C4), staff concern for customer satisfaction (D2), sensitivity in paying attention to suggestions and criticism (D3), and staff politeness towards consumers (E2).

### Customers Satisfaction Index (CSI) Data Processing

The CSI calculation yields 71.40%, placing this result in the happy group for Benjeng's J&T Express service. Table 4 shows the results of paying for services in the happy category. If J&T Gresik wants to achieve very satisfying service satisfaction, changes are needed, especially in quadrant 1 of the Performance Importance Analysis diagram

## Conclusion

The conclusion that can be drawn is that the main priorities that must be improved on the J&T Express Benjeng service are attributes A7, A8, B1, B2, B5, C4, D2, D3 and E2. On the criteria of customer satisfaction through CSI calculations, it is seen at 71.40%, which means it is included in the satisfied category. The following can also be seen that the order of the level of gaps from the highest is the reliability dimension of -0.52, the assurance dimension is -0.47, the responsiveness dimension is -0.41, the empathy dimension is -0.40, and the tangible dimension is -0,37. The action that J&T Express Benjeng must take to increase customer satisfaction is to make improvements that focus on quadrant 1 of the IPA Cartesian diagram.

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