Customer Satisfaction Analysis on Service Quality Using SERVQUAL and Importance Performance Analysis (IPA) at PT XYZ

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Abstract

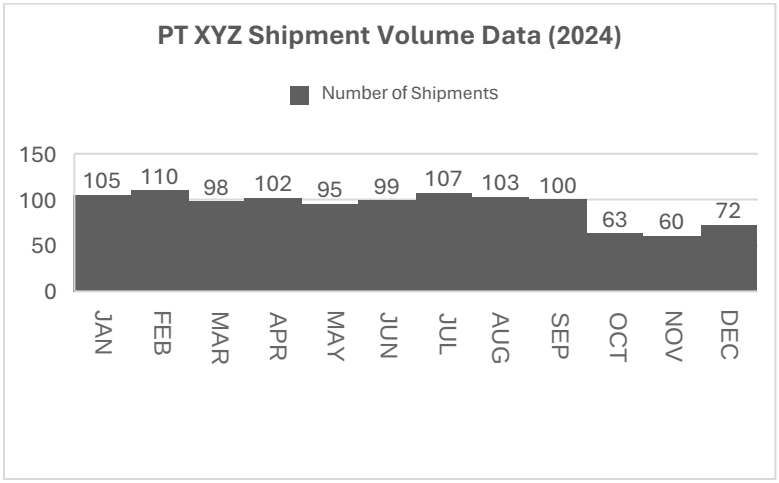
The logistics industry in Batam is growing rapidly in line with the increase in export-import activities and the need for shipping efficiency (Putri & Santosa, 2022). PT XYZ, as a freight forwarding company, faces challenges in maintaining customer satisfaction in the midst of fierce competition (BP Batam, 2025). This study analyzed the quality of service using the Service Quality and Importance Performance Analysis (IPA) methods (Parasuraman et al., 1988; Martilla & James, 1977), based on data from 25 active clients. The results showed that the tangibles (-0.60), assurance (-0.10), and reliability (-0.04) dimensions had the highest negative gaps, indicating the need for service improvement. On the other hand, empathy and responsiveness show a positive gap, exceeding customer expectations. Based on the mapping of the IPA, attributes in the three main dimensions are included in Quadrant I as a priority for improvement. Therefore, it is recommended to increase delivery accuracy, simplify the ordering process, and implement SOPs based on service KPIs (Nurwahyudi & Rimawan, 2021).

Keywords: Customer Satisfaction, Service Quality, Importance Performance Analysis (IPA), Service Quality

1. Introduction

The logistics industry in Batam has a strategic role in supporting the Indonesian economy, especially in the international trade sector. BP Batam (2022) states that Batam, with its favorable geographical position, is an important center of logistics activities for trade between countries. One of the companies operating in Batam is PT XYZ, which was established in 2000 and focuses on services Freight forwarding. As a leading logistics company, PT XYZ faces stiff competition and must continuously improve the quality of service in order to meet the ever-growing expectations of customers.

However, in 2024, PT XYZ has experienced a decrease in the number of shipments in the last three months, which indicates problems in the company's operational performance. When compared to Batam's total export-import volume in 2024 which reached around 50,000 shipments (Batam Customs, 2024), PT XYZ's contribution is only around 2% of the total volume, which indicates that there is a great opportunity that has not been utilized to the fullest. This decline indicates the need for an in-depth evaluation of the quality of services provided by PT XYZ, especially in aspects directly related to customer satisfaction.



Picture 1. *Shipment Number Data Diagram of PT. PT XYZ Logistics Indonesia (2024)*

Customer satisfaction is a major factor in the success of a logistics company. Previous research by Nurwahyudi & Rimawan (2021) shows that service quality dimensions such as delivery timeliness, responsiveness to complaints, and safety of goods are important factors in creating customer satisfaction. In addition, the research of Hidayat, Tosungku, & Fathimahhayati (2023) also highlights that the Reliability and Responsiveness has significant gaps, which need to be a priority for improvement. Although PT XYZ has been operating by providing quality services, there are several areas that need improvement, especially related to the timeliness of delivery and responsiveness to problems faced by customers.

For this reason, it is important for PT XYZ to measure the quality of services provided and identify existing gaps. One of the methods used in this study is Service Quality, which measures the difference between customer expectations and their perception of the services received. By identifying these gaps, PT XYZ can find out which areas need improvement. Moreover, Importance Performance Analysis (IPA) will be used to map service attributes based on customer interests and perceived performance, so that companies can prioritize improvements in areas that have a major impact on customer satisfaction (Martilla & James, 1977).

This study aims to measure PT XYZ's customer satisfaction through the Service Quality and IPA, as well as providing strategic recommendations to improve the quality of service and the competitiveness of the company in the Batam logistics market.

2. Research Methods

This research was conducted at PT XYZ, located in Batam, one of the main logistics centers in Indonesia. This study uses an exploratory descriptive approach with a quantitative method. The research process is carried out in several stages, namely: preparation stage, data collection, data processing, analysis and discussion, as well as drawing conclusions and suggestions.

2.1 Data Collection

This research was conducted from June to July 2025. The object of this research is the quality of service provided by PT XYZ. The data collection process is carried out through two types of data, namely primary data and secondary data.

- Primary Data was obtained directly from respondents through a survey conducted on 25 active customers of PT XYZ who used the service at least once every month in the past year. The data collected includes customer perceptions of the quality of services provided, including the dimensions of reliability, responsiveness, empathy, tangibles, and assurance. In addition, customer demographic data such as job position and length of customer tenure are also collected.
- Secondary Data is derived from documents available from the company, such as annual reports, company profiles, and other relevant information from internal and external sources that support the research.

2.2 Data Processing

The data that has been collected is then processed and analyzed using the Service Quality and IPA. At this stage, the data is calculated to find out the gap between customer expectations and their perception of the services provided, which will then be analyzed to map improvement priorities based on perceived performance by the customer.

2.3 Measurement Scale on Service Quality

The measurement scale used in this study is the Likert scale, which is a psychological scale that is often used in survey research to measure respondents' opinions, views, or attitudes towards a phenomenon. In this study, the Likert scale was used to measure customer expectations and perceptions of PT XYZ's service quality.

2.4 Service Quality Method

Method Service Quality It is used to measure the quality-of-service attributes by identifying the gap between customer perception of the service received and the customer's expectations of the service that should be provided (Hidayat, Tosungku, & Fathimahhayati, 2023). The data obtained from the questionnaire was calculated on average for each question from all respondents, using the following formula:

$$\underline{x} = \frac{\sum_{i=1}^{n} X_i}{n}$$

$$\underline{y} = \frac{\sum_{i=1}^{n} Y_i}{n}$$

Where:

$\bar{X}$ = Average satisfaction score/reality
$\bar{Y}$ = Average score of interest/expectation level
n = Number of respondents

2.5 Validity Test

Validity tests are conducted to ensure the questionnaire measures exactly what the researcher means. The questionnaire is considered valid if the r-calculated value is greater than the r-table (Hidayat, Tosungku, & Fathimahhayati, 2023). With the number of respondents (n = 25), the r-table value at a significance of 5% was 0.396. Due to the exploratory descriptive research with a small number of respondents, the minimum limit of item validity was determined to be $r \geq 0.3$ (Hair et al., 2014). The validity test was conducted using SPSS Statistic 25 software.

1. If the value of r-is calculated > r-table, then the question is said to be valid.
2. If the value of r-calculates < r-table, then the question is said to be invalid.

The formula for testing validity is as follows:

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

Where:

r_{xy} = Correlation coefficient
$\sum x$ = Total item score X
$\sum y$ = Total score
n = Number of respondents

2.6 Reliability Test

Reliability tests are used to measure the consistency of the results of the questionnaires used in the study. The questionnaire is considered reliable if the value of the coefficient Cronbach's alpha greater than 0.6, which indicates that the measurement instrument is reliable (Hidayat, Tosungku, & Fathimahhayati, 2023). Reliability testing uses the following formula:

$$R_{ac} = \left(\frac{k}{k-1}\right)\left(\frac{1 - \sum \sigma b^2}{\sigma t^2}\right)$$

Where:

Rac = Reliability coefficient
K = Number of questions
$\sum \sigma b2$ = Total grain variants
$\sigma t2$ = Total variants

2.7 Importance Performance Analysis (IPA) Method

Importance Performance Analysis (IPA) is used to map improvement priorities based on the importance and performance of service attributes perceived by customers. Each service attribute is assessed based on two dimensions: the level of importance given by the customer and the perceived performance (Hidayat, Tosungku, & Fathimahhayati, 2023). The service attributes are then mapped into four quadrants using the following formula:

$$Tki = \frac{\bar{x}i}{\bar{y}i} \times 100\%$$

Where:

Tki = Respondent's suitability level
Xi = Average score of the company's performance appraisal
Yi = Average score of respondents' expectations assessment

Using IPA, this study identifies service attributes that need to be improved immediately, as well as attributes that are already running well and need to be maintained.

3. Results and Discussion

The data that has been processed is then analyzed further. This analysis process includes testing the adequacy, validity, and

reliability of the data. The processing of service quality data is carried out based on the results of the calculation of the Service Quality and Importance Performance Analysis (IPA). The results of the analysis can be seen in Table 1, Table 2, Table 3, Table 4, and Table 5 which provide details about the service quality gap and the priority of improving service attributes that need to be done.

Table 1. Validity Test Results Against Customer Expectations

No.	Items	r Count	r Table	Desc.
		Reliability		
1	H1	.387	.3	Valid
2	H2	.507	.3	Valid
3	H3	.505	.3	Valid
4	H4	.335	.3	Valid
		Responsiveness		
1	H5	.450	.3	Valid
2	H6	.398	.3	Valid
3	H7	.676	.3	Valid
4	H8	.511	.3	Valid
		Assurance		
1	H9	.320	.3	Valid
2	H10	.465	.3	Valid
		Empathy		
1	H11	.497	.3	Valid
2	H12	.352	.3	Valid
		Tangible		
1	H13	.406	.3	Valid
2	H14	.575	.3	Valid

Source: Data processed by the author using SPSS (2025)

Table 2. Validity Test Results on Customer Perception

No.	Items	r Count	r Table	Desc.
		Reliability		
1	P1	.626	.3	Valid
2	P2	.361	.3	Valid
3	P3	.531	.3	Valid
4	P4	.469	.3	Valid
		Responsiveness		
1	P5	.590	.3	Valid
2	P6	.549	.3	Valid
3	P7	.484	.3	Valid
4	P8	380	.3	Valid
		Assurance		
1	P9	.531	.3	Valid
2	P10	.665	.3	Valid
		Empathy		
1	P11	.389	.3	Valid
2	P12	.386	.3	Valid
		Tangible		
1	H13	.333	.3	Valid
2	P14	.547	.3	Valid

Source: Data processed by the author using SPSS (2025)

Table 3. Reliability Test Results Against Customer Expectations

Cronbach's Alpha	N of Item
.788	14

Source: Data processed by the author using SPSS (2025)

Table 4. Reliability Test Results on Customer Perception

Cronbach's Alpha	N of Item

.797 14

Source: Data processed by the author using SPSS (2025)

Table 5. GAP Analysis Results

Code		Statement	Perception	Hope	GAP	Desc
Reliability	Q1	PT XYZ can deliver goods on time as promised.	4,84	4,88	-0,04	Not Satisfactory
	Q2	PT XYZ can be relied upon to deliver goods without errors.	4,40	4,76	-0,36	Not Satisfactory
	Q3	PT XYZ always meets the agreed delivery schedule.	4,56	4,60	-0,04	Not Satisfactory
	Q4	PT XYZ maintains good condition until the destination.	4,88	4,60	0,28	Exceeding Expectations
		Mean	**4,67**	**4,71**	**-0,04**	**Not Satisfactory**

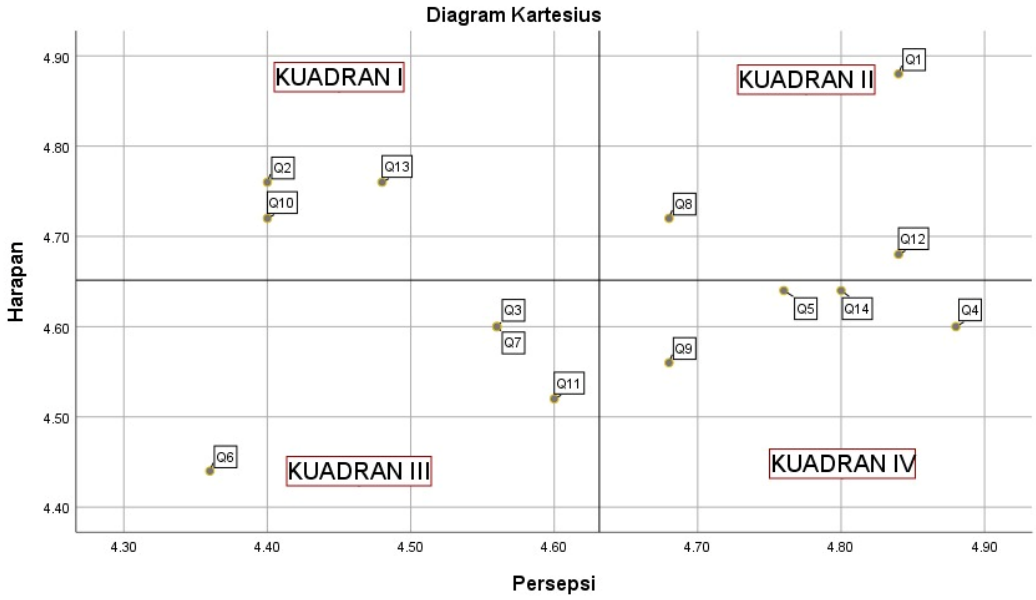
Code		Statement	Perception	Hope	GAP	Desc
Responsiveness	Q5	PT XYZ handles any issues or requests in a timely manner.	4,76	4,64	0,12	Exceeding Expectations
	Q6	PT XYZ provides effective and timely assistance when you need it.	4,36	4,44	-0,08	Not Satisfactory
	Q7	PT XYZ provides quick information when there are delivery problems.	4,56	4,60	-0,04	Not Satisfactory
	Q8	PT XYZ staff are easy to contact when I need help.	4,68	4,72	-0,04	Not Satisfactory
		Mean	**4,59**	**4,60**	**-0,01**	**Not Satisfactory**

Code		Statement	Perception	Hope	GAP	Desc
Assurance	Q9	I am confident in PT XYZ's ability to handle the delivery of goods.	4,68	4,56	0,12	Exceeding Expectations
	Q10	PT XYZ provides a security guarantee for the goods sent.	4,40	4,72	-0,32	Not Satisfactory
		Mean	**4,54**	**4,64**	**-0,10**	**Not Satisfactory**

Code		Statement	Perception	Hope	GAP	Desc
Empathy	Q11	Employees are friendly and ready to help with information about shipping.	4,60	4,52	0,08	Exceeding Expectations
	Q12	PT XYZ provides services that pay attention to customer satisfaction.	4,84	4,68	0,16	Exceeding Expectations
		Mean	**4,72**	**4,60**	**0,12**	**Exceeding Expectations**

Code		Statement	Perception	Hope	GAP	Desc
Tangible	Q13	The ordering process or arranging the delivery of goods is easy.	4,48	4,76	-0,28	Not Satisfactory
	Q14	PT XYZ's offices and vehicles look professional and well-maintained.	4,80	4,64	0,16	Not Satisfactory
		Mean	**4,80**	**4,64**	**-0,6**	**Not Satisfactory**

Source: Processed by the Author (2025)



Picture 2. *Cartesian Diagram of Results of Company Performance and Customer Expectations*

3.1 Calculation of Service Quality

In analyzing the quality of services provided by PT XYZ, the following formula is used:

Based on the calculation results, the quality of service is considered good if Q > 1. The average Q value obtained is 0.7, so it can be concluded that PT XYZ's services have not met the standards of customer expectations. A Q-value of less than 1 indicates a gap between expectations and service performance that needs improvement.

3.2 Service Quality Gap Results

Analysis results Service Quality shows that four dimensions of PT XYZ's services have negative gaps: Tangible (-0,60), Assurance (-0,10), Reliability (-0.04), and Responsiveness (-0,01). The biggest gap in Tangible reflects customer dissatisfaction with physical facilities, according to the theory of Parasuraman et al. (1988) that this aspect affects the initial perception of service quality. Assurance and Reliability indicates the need for improved security as well as delivery consistency, in line with Kotler & Keller (2016). Responsiveness relatively good, but it has not exceeded customer expectations.

Meanwhile, the empathy dimension showed a positive gap of 0.12, which means that the staff's attention, friendliness, and concern for customers exceeded expectations. These findings support the view of Zeithaml et al. (1990) that interpersonal relationships in services can be a major force in creating customer satisfaction. Thus, PT XYZ needs to focus on improving on tangible, assurance, and reliability aspects, while maintaining excellence in the dimensions of empathy and responsiveness.

3.3 Priority Mapping with Science

The mapping of service attributes in a science diagram results in four quadrants with different strategic implications:

- Quadrant I (Top Priority):
  Important but underperforming attributes, namely:
  - Q2 (error-free delivery),
  - Q10 (Goods Security Guarantee),
  - Q13 (ease of ordering process).

  All three need to be corrected immediately through improved operational control, clarity of service assurance, and simplification of the order process (Martilla & James, 1977).
- Quadrant II (Maintain Performance):
  Attributes that are important and have performed well, such as Q1 (punctuality), Q8 (easy to contact staff), and Q12 (service pays attention to satisfaction). Companies need to maintain this standard as a competitive advantage (Parasuraman et al., 1988).
- Quadrant III (Low Priority):

Attributes with low importance and performance, such as Q3, Q6, Q7, and Q11. Although not a priority, gradual improvements are still recommended to prevent potential complaints.

- Quadrant IV (Resource Overload):
  High-performance attributes but considered less important by customers, such as Q4, Q5, Q9, and Q14. Companies can balance resource allocation without sacrificing service quality.

3.4 Conclusion

This study shows that the questionnaire instrument used has met the requirements for validity and reliability, so it is feasible to use it to measure the quality of services at PT XYZ. However, the results of the analysis show that the overall level of service quality is still below customer expectations, with a Q value of 0.7. Dimension Tangible showed the largest negative gap (-0.60), followed by Assurance (-0.10) and Reliability (-0.04), which reflects a mismatch between the customer's expectations and the service received.

The mapping of IPA shows attributes in three dimensions—tangibles, assurance, and reliability—in Quadrant I, so it is a priority for improvement because it is important but underperforms. Improvements can be made through simplification of orders, time-based delivery SOPs, and evaluation of service KPIs. Meanwhile, the dimensions of empathy and responsiveness that have exceeded expectations need to be maintained as a standard to maintain a competitive advantage. Consistency in the implementation of this strategy is expected to increase customer satisfaction and loyalty.

3.5 Recommended Improvements

Based on mapping IPA demonstrate three service attributes in Quadrant I (top priority): error-free delivery, guaranteed safety of goods, and ease of ordering. All three are important but underperform, so they need to be improved through delivery SOPs that include time standards, data validation, and tracking Real-time. Service assurance can be improved by strengthening communication related to goods protection, insurance, and structured complaint handling.

In addition, to support continuous performance improvement, PT XYZ needs to set specific Key Performance Indicators (KPIs), such as: on-time delivery rate (%), number of delivery complaints per month, and average time to resolve customer complaints. These KPIs can be monitored on a monthly basis and used as the basis for evaluating the performance of each division. In terms of ease of delivery requests, companies can develop a simpler online delivery request system that is integrated with customer databases. With this approach, service improvement strategies are not only based on customer perception, but also operationally measurable through clear data and performance indicators.

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