

## Analysis Of Customer Satisfaction With Packaged Drinking Water Products Using Service Quality (SERVQUAL) And Importance Performance Analysis (IPA) Methods

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### ABSTRACT

PT. XYZ is a bottled mineral water manufacturer in Gresik, striving to deliver customer satisfaction and stay competitive. This study aims to quantify consumer satisfaction with PT. XYZ's product quality. We collected data through a questionnaire and analysed it using the Servqual method and Importance Performance Analysis (IPA). The questionnaire included nine quality attributes, categorised into five dimensions. IPA was utilised to prioritise service quality attributes. The Servqual method revealed a negative gap, indicating suboptimal service. The Cartesian IPA diagram highlighted two critical areas for improvement: enhancing staff interaction during service and improving personnel demeanour, specifically their politeness and friendliness. These improvements are vital as they align with consumer expectations and are essential for enhancing overall service quality at PT. XYZ.

**Keywords:** Service Quality, Importance Performance Analysis (IPA), SERVQUAL

### Introduction

In modern times, company competition is increasing sharply. Bottled Drinking Water is currently one of the instant products on the market, offering a variety of advantages and benefits[1]. With competition between bottled water companies, customers will be selective in purchasing decisions[2]. Many people decide to buy a product because they are faced with a need[3]. Today, many people prefer beverages or food products that are more natural because of their needs [4].

The mineral water industry is increasingly advanced because the need for drinking water continues to increase along with population growth[5]. More and more companies are engaged in the drinking water business and continue to carry out promotions to expand the customer network in the market[6]. The need for mineral water in today's society is so great that in certain places, mineral water or clean water is very rare to find, and the most important thing for their health is clean water, which guarantees health.[7].

Servqual has been widely used to evaluate PT. XYZ, Based on the Application of Service Quality methods in decision support systems to See the Effect of Performance employees on the Quality of Public Services, namely from the results of the analysis carried out from several existing alternatives, the results of the percentage results were obtained that the assessment conducted by thirty (30) respondents stated that the percentage of service to the community was included in the category of satisfied with the percentage results of 87.50%. Therefore, more optimally[8]. Customer satisfaction evaluates using or consuming goods or services[9]. Customer satisfaction, such as feelings, appears to be the output of assessing the experience of using products or services [10]. Third, customer satisfaction is a customer's response to goods or services consumed [11]. Fourth, customer happiness depends on the company's quality of service [12]. According to Kotler, satisfaction is a feeling felt by consumers, be it feelings of pleasure, satisfaction or disappointment, after consumers compare perceptions of the quality or performance of a product or service that is perceived against their expectations[13]. The key to customer loyalty to products and services can be created through customer satisfaction. The quality of customer relations services influences sixth, 27.7% of customer loyalty [14].

In addition, some of these things are also realised by PT. XYZ is located in Gresik. In the competition of mineral water, PT. XYZ is required to continuously and consistently increase the quality of service to customers of mineral water products. PT. XYZ needs to optimise the form of service in the form of services, facilities and infrastructure, product quality and delivery of appropriate products to customers[15].

PT. XYZ is one of the mineral water factories with the concept of friendly service, comfortable place, and affordable price. PT. XYZ was established in 1988 and already has many lines, one of which is the production of bottled drinking water in the city of Gresik, East Java[16]. Service quality research is conducted at one of PT. XYZ in Gresik. PT. XYZ is not the only mineral water factory in Gresik. Several mineral water industries are competitors of PT. XYZ in Gresik city[17].

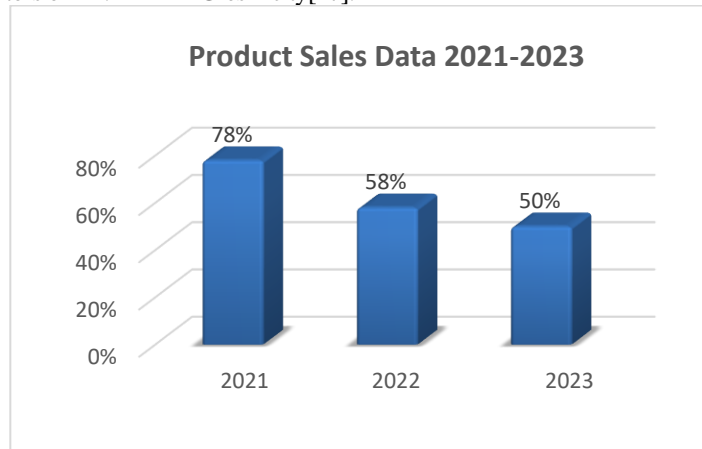


Figure 1, Customer satisfaction data for 2021 - 2023

The trend in the number of PT customers. XYZ has decreased from 2022 to 2023 (Figure 1). The customer decrease is caused by the quality of service and facilities provided (no change) or even a decrease. This is the basis for conducting research at PT. XYZ in addition to being by customer expectations and desires can attract customer attention, PT. XYZ constantly conducts various types of business in its service activities[18]. Implementing service to customers is one type of activity in the service program that is one of the customers' concerns when choosing a product, especially mineral water. Service quality greatly influences customer implementation of the service. A preliminary study was conducted to determine the condition of PT's service quality. XYZ[19].

A method that can be used to measure customer fulfilment is the Service Quality (Servqual) method. Service Quality or Servqual is a method of measuring customer satisfaction using a compact scale option. Still, it has a high level of trust and truth that can be used by company management to determine the percentage of customer perception and expectations of the services assumed.

This research was conducted at PT. XYZ. PT. XYZ is one of the companies involved in producing mineral water in Gresik. This location was chosen because the place is the city centre or is in the middle of the city of Gresik and has the things needed in this research, namely, its location that is easily accessible so that it can ease the burden of both mind, energy and material as well as the availability of data needed in connection with the research to be carried out and also the absence of research conducted at PT. XYZ.

### Research Methods

This research was conducted using a survey conducted on customers of PT. XYZ in Gresik. The data type used is qualitative data consisting of respondents' answers to quality variables at PT. The XYZ (Table 1). The population in this study is all customers of PT. XYZ in Gresik. The determination of the number of samples is done by Equation 1[20].

$$n = \frac{(z_{\alpha/2})^2(p \cdot q)}{e^2}$$

With:

- n : number of samples
- z : Z value with the required confidence level percent sampling.
- Z : Normal distribution value or confidence level
- p : Probability of population not sampled
- q : Probability of population taken as sample (1 – p)

As for the level of accuracy ( $\alpha$ ) used in this study of 5% and the level of conviction of 95%, the value of Z = 1.96 is obtained, and the value of e is the value used as a predetermined error rate of 10%.

The probability of the population not being taken or rejected is 0.5 each. According to Bernoulli's formula, therefore the following sample number results are obtained: Known:

$$n \geq \frac{((1,96)^2 \cdot 0,5 \cdot 0,5)}{(0,1)^2}$$

$$n \geq \frac{3,84 \cdot 0,25}{0,01}$$

$$n \geq \frac{0,96}{0,01}$$

$$n \geq 96$$

The minimum number of samples taken is 96, representing the existing population. Sampling by distributing questionnaires with a total of 100. The distribution of stage one is 70 questionnaires and the second stage is 30 questionnaires[21]. The questionnaire consists of two parts. Part one is the opening and instructions for filling out questionnaires for respondents, and the second part is the quality attributes that will be assessed for the level of quality in reality and expectations. The respondents who filled out the questionnaire were customers who had used the services of PT. XYZ or customers who happen to come to place a product order.

**Table 1.** Quality variables measured

No.	Attribute
<b>Tangible</b>	
1	Quality of facilities and infrastructure
2	Good service di PT. XYZ
<b>Reliability</b>	
3	Employee competency/ability when providing services
4	Ease of service via application
5	Product suitability in terms of service standards with the products provided
<b>Responsiveness</b>	
6	Handling service user complaints
7	Speed of time in the product delivery process
<b>Assurance</b>	
8	Competitive product prices
<b>Empathy</b>	
9	The behavior of officers in delivery is related to politeness and friendliness

The results of calculations with service quality (Table 4) are used to make Importance Performance Analysis (IPA) diagrams. The average reality value of each item will be placed on the performance axis (x-axis) on the IPA chart and the average expectation value of each item will be placed on the expectation axis (y-axis) on the IPA chart (Figure 2). Based on the IPA diagram, the service quality items in Table 1 can be grouped into 4 parts, namely, top priority attributes that are very important to improve (quadrant A), quality attributes that must be maintained because they are good (quadrant B), quality attributes that have low priority to be developed further (quadrant C), and quality attributes that are given excessively to customers (quadrant D)[22].

## Results and Discussion

### Test the Validity and Reliability of the questionnaire.

A validity test is performed to find r count. The data used is the data of each attribute (question) from each respondent's data (Table 1). The results of the r calculate are then compared with the r table[23]. The r value of the table uses the number of samples (n) 55 which is the spread of stage one with a significance ( $\alpha$ ) of 95%. The result r of the stage one spread table was obtained (df = 102 – 2 = 100) of 0.266. Then, the value of r is calculated for variable one.

Reliability tests are performed to find Cronbach's alpha value. Cronbach's alpha value is then compared to 0.6. The questionnaire is declared reliable if Cronbach's alpha score > 0.6. However, the questionnaire is declared unreliable if Cronbach's alpha value < 0.6. The first dissemination perception questionnaire used resulted in Cronbach's alpha of 0.895, so the questionnaire was reliable. The first

spread expectation questionnaire used resulted in Cronbach's alpha of 0.928, so the questionnaire was reliable.

**Table 2.** Validity Test Results of Perception Questionnaire

Variable	r count	r table	Information
1	0.537	0.266	Valid
2	0.872	0.266	Valid
3	0.824	0.266	Valid
4	0.718	0.266	Valid
5	0.839	0.266	Valid
6	0.768	0.266	Valid
7	0.557	0.266	Valid
8	0.778	0.266	Valid
9	0.703	0.266	Valid

**Table 3.** Expectancy Questionnaire Validity Test Results

Variable	r count	r table	Information
1	0.537	0.266	Valid
2	0.869	0.266	Valid
3	0.871	0.266	Valid
4	0.810	0.266	Valid
5	0.872	0.266	Valid
6	0.841	0.266	Valid
7	0.617	0.266	Valid
8	0.836	0.266	Valid
9	0.860	0.266	Valid

### Service Quality

*This Service Quality method is used to find the gap value (gap) of customer satisfaction of mineral water products in PT. XYZ. Calculation of the gap with Equation 2.*

**Table 4.** Gap Value Calculation

Attribute	Average Reception	Average Hope	Value Gap
1	4.236	4.127	0.109
2	3.672	3.581	0.091
3	3.727	3.545	0.182
4	3.472	3.527	0.055
5	3.563	3.490	0.073
6	3.672	3.709	-0.037
7	4.236	4.218	0.18
8	3.527	3.509	0.18
9	3.581	3.563	0.18
Sum			1.013
Average			0.112

### Importance Performance Analysis (IPA)

The Importance Performance Analysis (IPA) method categorises or divides all attributes with negative gap values into cartesian diagrams[24]. The Cartesian diagram has four priority categories[25]. The four categories are four quadrants in the IPA diagram, namely: top priority (Quadrant A), low priority (Quadrant C), maintain quality (Quadrant B), and excess quality (Quadrant D). Average reality and expectation data (Table 3) are processed using Microsoft Excel to be plotted onto cartesian diagrams or science diagrams

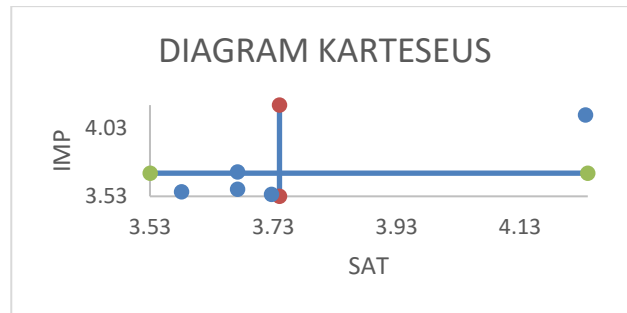


Figure 2. Importance Performance Analysis (IPA) diagram

An Importance Performance Analysis diagram is created to group all attributes with negative gap values into four quadrants. The diagram is separated into four parts enclosed by two lines intersecting perpendicular to the point (X, Y) where X is the average level of performance or customer satisfaction of all factors or attributes and Y is the average of the average score of importance or expectation of all factors affecting customer satisfaction[26].

PT. XYZ has two main priority attributes that are very important to improve (quadrant C). First, PT. XYZ must provide the competence of officers in service (attribute No. 3). Second, PT. XYZ must provide officer behaviour in delivery regarding courtesy and friendliness (attribute No. 9). The improvement of these two quality attributes is expected to increase customer satisfaction so that customers can buy back PT. The XYZ.

PT. XYZ has seven quality attributes that must be maintained because it is good (quadrants A and B). PT. XYZ quality of facilities and infrastructure (attribute No. 1). PT. XYZ has service suitability (attribute No. 2). PT. XYZ has service through the app (attribute No. 4). PT. XYZ provides conformity of service products within the standard of service provided (attribute No. 5). PT. XYZ has a service user complaint handling (attribute No. 6). PT. XYZ has a speed of time in the product delivery process (attribute No. 7). PT. XYZ can provide competitive product prices (attribute No. 8).

PT. XYZ has two quality attributes with low priority for further development (quadrant C). First, PT. XYZ officer's ability to perform service (attribute No. 3). Second, PT. XYZ has the behaviour of a dispatcher regarding courtesy and courtesy (attribute No. 9). PT. XYZ has one quality attribute that is given redundant to consumers (quadrant B). i.e., PT. XYZ has quality facilities and infrastructure (attribute No. 1).

## Conclusion

Based on the analysis of the results, all items still have negative values in the negative gap. This shows that the quality of services and facilities provided by PT. XYZ has not met customer expectations. The results of grouping attributes using Importance Performance Analysis are as follows: there are two attributes for the main priority, seven for maintaining quality or achievement, and one for the excessive category. PT. XYZ must improve the attributes that are at the top priority. Attributes that need to be improved by PT. XYZ means improving the service of officers or employees when providing services, and companies must improve officers or employees in delivering products related to politeness and friendliness. Consumers expect improvements and improvements in these two quality attributes, so customer interest is also expected to increase.

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