

# Patient Satisfaction Analysis of Service Quality with Importance Performance Analysis (IPA) Method and Customer Satisfaction Index (CSI)

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**Keywords:** Service Quality, SERVQUAL, Importance Performance Analysis (IPA), Customer Satisfaction Index (CSI).

**Abstract:** Satisfaction is the level of one's feelings after comparing the performance or results they feel with expectations. Importance Performance Analysis (IPA) method and Customer Satisfaction Index (CSI) is one of the methods used to determine the level of conformance between performance and expectations. In this study IPA and CSI methods were used to determine the level of patient satisfaction in one hospital in Sumatera Utara with a sample of 83 respondents. Data collection methods using questionnaires and conducting interviews directly with respondents. The method used to measure the quality of service is applied SERVQUAL method with five dimensions of service characteristics namely, physical evidence, reliability, responsiveness, assurance and awareness. The results of data analysis applied IPA method that there are four service attributes that must be repaired by the hospital because the quality of service is still considered low but its performance is considered very important by the patient. The results of data analysis applied the CSI method indicate that the level of patient satisfaction with the quality of care at the hospital is 0,82, this is included in the category of very satisfied.

## 1 INTRODUCTION

Health is a state of well-being from the body, soul and social that allows productive life socially and economically. In this sense health must be seen as a whole which consists of physical, mental and social elements (UU No.23, 1992 tentang kesehatan). Health is one of the basic human needs. Therefore, choosing a health service provider or hospital is something that must be done in order to get good health services from the hospital.

The hospital is the spearhead of development and public health services, but not all hospitals in Indonesia have the same standard of service and quality. The increasing number of hospitals in Indonesia and the higher public demand for quality and affordable health facilities, the hospital must strive to compete in the midst of increasingly fierce competition while meeting these demands. It became one of the foundations for hospitals to provide excellent service to every type of service provided.

Understanding the needs and desires of patients is an important thing that affects patient satisfaction. Satisfied patients are a very valuable asset because if patients feel satisfied they will continue to use their

chosen services, but if patients feel dissatisfied they will tell others twice about their bad experiences.

The variables studied were Emergency Room, Doctor, Nurse, Medical Facility, Food and drink, comfort and cleanliness, administration and finance, as well as information and registration. this percentage is said to be good in accordance with the measurement aspect set by Indonesian Ministry of Health. The measurement aspect for inpatient services is said to be good if the percentage of patient patient satisfaction is greater than 80%

## 2 LITERATURE REVIEW

### 2.1 Importance Performance Analysis Method

This technique was first put forward by Martilla and James in 1977 in their article "Importance-Performance Analysis" published in the Journal of Marketing. In this technique, respondents are asked to assess the level of importance and performance of the company, then the average value of the level of

importance and performance is analyzed in the Importance-Performance Matrix, where the x axis represents perception while the y axis represents hope. In pursuance of Supranto (2006:41) The level of suitability is the result of a comparison of the performance performance score with a score of importance. This level of suitability will determine the priority order of increasing factors that affect customer satisfaction. The formula used is:

$$T_k = \frac{X}{Y} \times 100\% \tag{1}$$

Where:

- $\bar{X}$  = Score the average level of attribute performance assessment to-*i*
- $\bar{Y}$  = The average score of the level of importance assessment of attributes to-*i*
- n* = Number of respondents

Then to calculate the average level of importance and performance of the overall attributes using the formula

$$\bar{\bar{X}} = \frac{\sum \bar{X}}{K} \quad \bar{\bar{Y}} = \frac{\sum \bar{Y}}{K} \tag{2}$$

Where:

- $\bar{\bar{X}}$  = Performance average value of all questions
- $\bar{\bar{Y}}$  = Performance average value of all questions
- K* = Number of question attributes

Then the results will be obtained in the form of four quadrants according to the Figure 1.

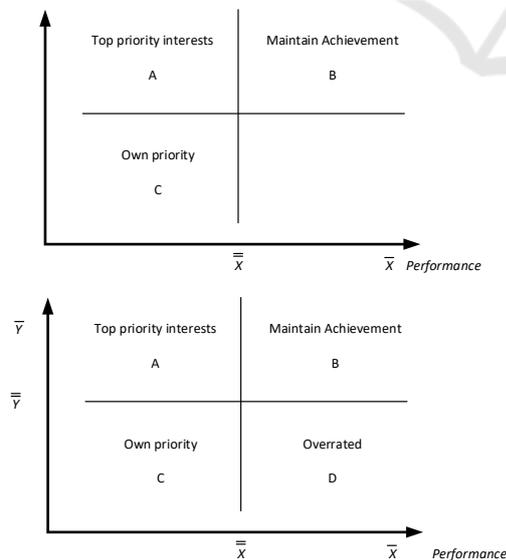


Figure 1: IPA Quadrant

Where:

- A. First Quadrant (top priority) shows factors or attributes that are considered to affect customer satisfaction, including elements of services that are considered very important, but management has not implemented it according to customer wishes. Considered very important and unsatisfactory;
- B. Second Quadrant (maintain achievement) shows the essential service elements that have been successfully carried out by the company, for which it must be maintained. Considered very important and very satisfying.
- C. Third quadrant (low priority) shows some of the less important factors for the customer, its implementation by the average company. Considered less important and less satisfying.
- D. The last quadrant (exaggerated) shows the factors that influence customers is less important, but the implementation is excessive. Considered less important but very satisfying.

## 2.2 Customer Satisfaction Index (CSI) Method

CSI is used to analyze the overall level of service user satisfaction by looking at the expected level of product / service attributes. CSI value in this study is divided into five criteria according to the use of Likert assessment. Point 5 of the level is very unsatisfactory to very satisfying.

Irawan (2004), measurement of CSI is needed because the results of the measurement can be used as a reference to determine targets in the coming years. CSI can be calculated with the following stages

1. Determine Mean Important Score (MIS) and Mean Satisfaction Score (MSS). This value is based on the level of importance and performance of each respondent.

$$MIS = \frac{1}{n} \sum_{i=1}^n Y_i \quad \text{and} \quad MSS = \frac{1}{n} \sum_{i=1}^n X_i \tag{3}$$

Where:

*MIS* = Mean Important Score

*MSS* = Mean Satisfaction Score

*n* = number of respondents

*Y<sub>i</sub>* = value of the attribute to-*i*

*X<sub>i</sub>* = attribute performance value to-*i*

2. Weighting Factors (WF) is a function of the mean importance score (MIS<sub>*i*</sub>) of each attribute in the form of percent (%) of the total importance score for all attributes tested by.

$$WF = \frac{MIS_i}{\sum_i MIS_i} \times 100\% \tag{4}$$

Where:

*WF* = Weighting Factors

$MIS$  = Mean Important Score

$i$  = attributes of the marketing mix to- $i$

3. Weighted Score (WS) is a function of the mean satisfaction score (MSS) multiplied by WF.

$$WS = MSS \times WF \quad (5)$$

Where:

$WS$  = Weighted Score

$MSS$  = Mean Satisfaction Score

$WF$  = Weighting Factors

4. The Customer Satisfaction Index (CSI) function of the weighted average (WA) divided by highest scale (HS / maximum scale used in this research scale 5 multiplied by 100%)

$$CSI = \frac{\sum WS}{HS} \times 100 \% \quad (6)$$

Where:

$CSI$  = Customer Satisfaction Index

$WA$  = Weighted Average

$HS$  = Highest Scale

The satisfaction index criteria use a range of 0,00 to 1,00 (not satisfied until satisfied), which can be seen in the Table 1.

Table 1: Customer Satisfaction Index Criteria

No	Value	Criteria
1	0,00 – 0,34	Not satisfied
2	0,35 – 0,50	Less satisfied
3	0,51 – 0,65	Quite satisfied
4	0,66 – 0,80	satisfied
5	0,81 – 1,00	Very satisfied

### 3 DISCUSSION

In this paper there were 83 respondents who were used as samples to analyze the level of patient service satisfaction in one hospital in Sumatra Utara.

#### 3.1 Data Validity Testing

Validity test is conducted to determine the level of validity of the questionnaire used in collecting data obtained from research by correlating each score of the respondent's answer.

Validity test is done by using SPSS 22.00 program with the following criteria:

1. If  $r_{count} \geq r_{table}$  then the question item is valid;
2. if  $r_{count} < r_{table}$  then the question item is not valid;
3.  $r_{count}$  calculate can be seen in the column Corrected Item Total Correlation;

4.  $r_{table}$  under the condition  $df = (n - 2)$  and a significance level of 5% that is  $df = (83 - 2) = 81$ , using spreadsheet obtained values  $t_{table} = 1,989$  so that the value is obtained  $r_{table} = 0,216$ .

The results of the validity test of respondent perception data can be seen in Table 2. The results of the validity test of respondent reliability data can be seen in Table 3.

Table 2: Validity Test of Respondent Perception Data

Attributes	$r_{table}$	Pearson Correlation ( $r_{count}$ )	Conclusion
Q1	$2,16 \times 10^{-1}$	$5,40 \times 10^{-1}$	Valid
Q2	$2,16 \times 10^{-1}$	$4,55 \times 10^{-1}$	Valid
Q3	$2,16 \times 10^{-1}$	$5,25 \times 10^{-1}$	Valid
Q4	$2,16 \times 10^{-1}$	$7,28 \times 10^{-1}$	Valid
Q5	$2,16 \times 10^{-1}$	$5,53 \times 10^{-1}$	Valid
Q6	$2,16 \times 10^{-1}$	$5,77 \times 10^{-1}$	Valid
Q7	$2,16 \times 10^{-1}$	$7,30 \times 10^{-1}$	Valid
Q8	$2,16 \times 10^{-1}$	$7,91 \times 10^{-1}$	Valid
Q9	$2,16 \times 10^{-1}$	$7,55 \times 10^{-1}$	Valid
Q10	$2,16 \times 10^{-1}$	$7,86 \times 10^{-1}$	Valid
Q11	$2,16 \times 10^{-1}$	$6,07 \times 10^{-1}$	Valid
Q12	$2,16 \times 10^{-1}$	$8,23 \times 10^{-1}$	Valid
Q13	$2,16 \times 10^{-1}$	$8,52 \times 10^{-1}$	Valid
Q14	$2,16 \times 10^{-1}$	$8,41 \times 10^{-1}$	Valid
Q15	$2,16 \times 10^{-1}$	$7,63 \times 10^{-1}$	Valid
Q16	$2,16 \times 10^{-1}$	$7,29 \times 10^{-1}$	Valid
Q17	$2,16 \times 10^{-1}$	$7,97 \times 10^{-1}$	Valid
Q18	$2,16 \times 10^{-1}$	$8,26 \times 10^{-1}$	Valid
Q19	$2,16 \times 10^{-1}$	$6,61 \times 10^{-1}$	Valid
Q20	$2,16 \times 10^{-1}$	$7,66 \times 10^{-1}$	Valid
Q21	$2,16 \times 10^{-1}$	$6,24 \times 10^{-1}$	Valid
Q22	$2,16 \times 10^{-1}$	$6,21 \times 10^{-1}$	Valid
Q23	$2,16 \times 10^{-1}$	$7,41 \times 10^{-1}$	Valid
Q24	$2,16 \times 10^{-1}$	$6,51 \times 10^{-1}$	Valid

Where:

- Q1 = Cleanliness and comfort of inpatient and hospital facilities.
- Q2 = Have a comfortable waiting room.
- Q3 = The inpatient room has complete equipment.
- Q4 = Medics (doctors, nurses and medical support) look neat and clean.
- Q5 = The hospital has clear directions and instructions.
- Q6 = Medics (doctors, nurses and medical support) provide thorough, careful and timely services according to the specified schedule.
- Q7 = Medics (doctors, nurses and medical support) help if the patient has a problem.

- Q8 = The doctor tells the complete type of disease and tells you how to treat it.
- Q9 = Medics (doctors, nurses and medical support) explain the actions to be taken.
- Q10 = The medical (doctors, nurses and medical supporters) are willing to respond to complaints of the patient's illness.
- Q11 = Responsive nurses in serving patients.
- Q12 = Medics (doctors, nurses and medical support) receive and serve patients well.
- Q13 = Medics (doctors, nurses and medical support) do the right and responsive actions.
- Q14 = Medics (doctors, nurses and medical support) perform actions according to procedures.
- Q15 = Doctors have the ability and knowledge to properly diagnose the disease.
- Q16 = The hospital provides complete medicines.
- Q17 = Medical personnel (physicians, nurses and medical aids) are respectful of patients.
- Q18 = Doctors serve with a reassuring attitude so that patients feel safe.
- Q19 = Hospitals may provide patient medical information.
- Q20 = Doctors provide good service time for patients.
- Q21 = Nurses provide services in accordance with the schedule and patient needs.
- Q22 = Nurses pay attention to patients well.
- Q23 = Doctors listen to complaints of patient illness and give suggestions / solutions.
- Q24 = Nurses are polite and friendly in serving patients.

### 3.2 Data Reliability Test

Test Reliability is done to find out whether the measurement results can be trusted to be used in data collection and used to determine the consistency of the measuring instrument, whether the measuring device used is reliable and remains consistent if the measurement is repeated.

Reliability testing was carried out using the 22.00 SPSS program with the following criteria.

1. If value *Cronbach's Alpha*  $\geq 0,6$  then the data in this study are said to be reliable;
2. if value *Cronbach's Alpha*  $< 0,6$  then the data in this study are said to be unreliable.

Table 3: Validity Test of Respondent Reliability Data

Attributes	$r_{table}$	Pearson Correlation ( $r_{count}$ )	Conclusion
Q1	$2,16 \times 10^{-1}$	$8,72 \times 10^{-1}$	Valid
Q2	$2,16 \times 10^{-1}$	$6,93 \times 10^{-1}$	Valid
Q3	$2,16 \times 10^{-1}$	$6,65 \times 10^{-1}$	Valid
Q4	$2,16 \times 10^{-1}$	$7,65 \times 10^{-1}$	Valid
Q5	$2,16 \times 10^{-1}$	$7,53 \times 10^{-1}$	Valid
Q6	$2,16 \times 10^{-1}$	$8,18 \times 10^{-1}$	Valid
Q7	$2,16 \times 10^{-1}$	$7,85 \times 10^{-1}$	Valid
Q8	$2,16 \times 10^{-1}$	$8,25 \times 10^{-1}$	Valid
Q9	$2,16 \times 10^{-1}$	$8,10 \times 10^{-1}$	Valid
Q10	$2,16 \times 10^{-1}$	$8,29 \times 10^{-1}$	Valid
Q11	$2,16 \times 10^{-1}$	$7,84 \times 10^{-1}$	Valid
Q12	$2,16 \times 10^{-1}$	$8,07 \times 10^{-1}$	Valid
Q13	$2,16 \times 10^{-1}$	$8,28 \times 10^{-1}$	Valid
Q14	$2,16 \times 10^{-1}$	$8,38 \times 10^{-1}$	Valid
Q15	$2,16 \times 10^{-1}$	$7,73 \times 10^{-1}$	Valid
Q16	$2,16 \times 10^{-1}$	$8,30 \times 10^{-1}$	Valid
Q17	$2,16 \times 10^{-1}$	$8,50 \times 10^{-1}$	Valid
Q18	$2,16 \times 10^{-1}$	$8,22 \times 10^{-1}$	Valid
Q19	$2,16 \times 10^{-1}$	$7,26 \times 10^{-1}$	Valid
Q20	$2,16 \times 10^{-1}$	$7,71 \times 10^{-1}$	Valid
Q21	$2,16 \times 10^{-1}$	$8,24 \times 10^{-1}$	Valid
Q22	$2,16 \times 10^{-1}$	$8,12 \times 10^{-1}$	Valid
Q23	$2,16 \times 10^{-1}$	$7,43 \times 10^{-1}$	Valid
Q24	$2,16 \times 10^{-1}$	$7,84 \times 10^{-1}$	Valid

Table 4: Reliability Test of Respondent Perception Data

Cronbach's Alpha	N of Items
0,959	24

From Table 4 it can be seen that the value of Cronbachs Alpha  $0,959 \geq 0,6$  so that respondent perception data is reliable and can be used for this research.

Table 5: Reliability Test of Respondent Reliability Data

Cronbach's Alpha	N of Items
0,977	24

From Table 5 it can be seen that the value of Cronbachs Alpha  $0,977 \geq 0,6$  so that respondents' expectations data are reliable and can be used for this research.

### 3.3 Analysis of Performance Interest Level with Importance Performance Analysis (IPA) Method

The IPA method is used to measure the relationship between consumer perceptions and priority of product / service quality improvement, which is also

known as quadrant analysis. Quadrant analysis which is divided into four quadrants covering the first quadrant top priority, second quadrant maintain achievement, third quadrant low priority and excessive quadrant.

The quadrant IPA mapping can be seen in the Figure 2.

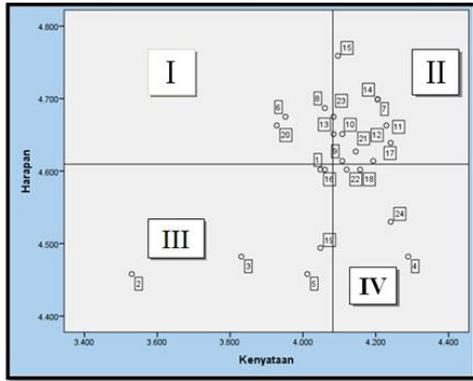


Figure 2: IPA Quadrant Analysis.

### 3.4 Satisfaction Level Analysis with the Method of Customer Satisfaction Index (CSI)

Measuring the level of patient satisfaction in this study uses the CSI method. To see the results of the analysis of the calculation of satisfaction with the CSI method will be explained in the table as follows.

Table 6: Calculation Result with CSI Method

No	Attributes	MSS	MIS	WF (%)	WS
1	Q1	4,060	4,602	0,042	0,171
2	Q2	3,530	4,458	0,040	0,141
3	Q3	3,831	4,482	0,041	0,157
4	Q4	4,289	4,482	0,041	0,176
5	Q5	4,012	4,458	0,040	0,160
6	Q6	3,952	4,675	0,042	0,166
7	Q7	4,205	4,699	0,043	0,181
8	Q8	4,060	4,687	0,042	0,171
9	Q9	4,108	4,614	0,042	0,173
10	Q10	4,108	4,651	0,042	0,173
11	Q11	4,241	4,639	0,042	0,178
12	Q12	4,229	4,663	0,042	0,178
13	Q13	4,084	4,651	0,042	0,172
14	Q14	4,205	4,699	0,042	0,177
15	Q15	4,096	4,759	0,043	0,176

16	Q16	4,048	4,602	0,042	0,170
17	Q17	4,193	4,614	0,042	0,176
18	Q18	4,157	4,602	0,042	0,174
19	Q19	4,048	4,494	0,040	0,176
20	Q20	3,928	4,663	0,042	0,165
21	Q21	4,145	4,627	0,042	0,174
22	Q22	4,120	4,602	0,041	0,169
23	Q23	4,084	4,675	0,042	0,172
24	Q24	4,241	4,530	0,041	0,174

The results of the analysis applied CSI of 83 respondents the level of patient satisfaction with the services provided by the hospital was 0,8198 so that it was rounded to 0,82. This shows that the quality of service in the hospital is categorized as very satisfied. In this study identified that patients in the hospital were very satisfied with the services provided by the hospital.

## 4 CONCLUSIONS

Based on data analysis so that it can be taken conclusion from research result, based on the level of importance it can be seen that the most important thing is that the doctor has the ability and knowledge to determine the diagnosis of the disease properly while the lowest level of importance according to the patient is that the hospital has a fairly comfortable waiting room and the hospital has clear directions and instructions. Based on quadrant analysis applied IPA method, the factors that are in the first quadrant are factors that are considered important and expected by consumers, but the performance of the producers has not given satisfaction to what consumers expect optimally, so make consumers feel disappointed. This dimension needs to be prioritized for improvement. By applied CSI method, the level of patient satisfaction with the services provided by the hospital was 0,82 indicating that the patients in the hospital were very satisfied with the services provided by the hospital.

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