Evaluating Patient Satisfaction in Surabaya Public Health Centers Using an Integrated IPA–Kano Framework

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ABSTRAK

Pelayanan kesehatan yang berkualitas di Puskesmas sangat penting untuk meningkatkan kepuasan dan kepercayaan masyarakat, terutama di kota besar seperti Surabaya. Penelitian ini bertujuan mengidentifikasi dan memprioritaskan atribut layanan menggunakan Importance Performance Analysis (IPA), mengklasifikasikannya dengan metode Kano, serta mengintegrasikan keduanya untuk merumuskan strategi peningkatan layanan yang komprehensif. Metode survei dengan kuesioner digunakan pada 85 pasien Puskesmas Surabaya, kemudian dianalisis melalui IPA dan Kano. Hasil IPA menunjukkan terrdapat 4 variabel berada di kuadran prioritas rendah. Keempat variabel tersebut adalah kecepatan proses pendaftaran, sikap petugas dalam memberikan pelayanan, kondisi ruang tunggu, dan ketersediaan area parkir yang memadai. sementara metode Kano mengklasifikasikan seluruh atribut sebagai One Dimensional (O), artinya peningkatan kualitas atribut akan sebanding dengan peningkatan kepuasan pasien. Hasil perhitungan dengan metode Kano didapatkan bahwa semua variabel yang tertera merupakan aspek One Dimensional (O), menunjukkan Peningkatan kepuasan konsumen akan sebanding jika atribut ini ditingkatkan. Sebaliknya, kepuasan akan berkurang jika kinerja atribut ini menurun. Integrasi Metode IPA dan Metode Kano ada beberapa variabel yang harus di tingkatkan yakni kecepatan proses pendaftaran, sikap petugas dalam memberikan pelayanan, kondisi ruang tunggu, dan ketersediaan area parkir yang memadai. Temuan ini menggarisbawahi pentingnya fokus pada aspek-aspek tersebut untuk meningkatkan kualitas pelayanan dan kepuasan pasien secara keseluruhan.
Kata kunci: Pelayanan Puskesmas; *Importance Performance Analysis* (IPA); Metode Kano; Integrasi Metode Kano dan IPA

ABSTRACT

Quality healthcare services at community health centers (Puskesmas) are crucial for enhancing public satisfaction and trust, particularly in large cities like Surabaya. This study aims to identify and prioritize service attributes using Importance Performance Analysis (IPA), classify them using the Kano method, and integrate both approaches to formulate a comprehensive service improvement strategy. A survey method with questionnaires was administered to 85 patients at Puskesmas Surabaya, and the data were analyzed using IPA and Kano methods. The IPA results show that four variables fall into the low-priority quadrant: registration speed, the attitude of the staff in providing service, waiting room conditions, and the availability of adequate parking spaces. Meanwhile, the Kano method classified all attributes as One Dimensional (O), meaning that improving the quality of these attributes will proportionally enhance patient satisfaction. Conversely, satisfaction will decrease if the performance of these attributes declines. The integration of IPA and Kano methods highlights the need to improve the speed of registration, staff service attitudes, waiting room conditions, and parking availability. These findings emphasize the importance of focusing on these aspects to improve overall service quality and patient satisfaction.
Keywords: *Public Health Center services; Importance Performance Analysis (IPA); Kano Method; IPA Method and Kano Method integration*

INTRODUCTION

In developing countries like Indonesia, healthcare services are a crucial indicator for improving the quality of life for the population [1]. As a metropolitan city with a continuously growing population, Surabaya faces challenges in maintaining the quality of healthcare services, especially through public facilities like community health centers (Puskesmas) [2]. Puskesmas located in urban centers play a strategic role in supporting public health [3]. Therefore, measuring patient satisfaction with the facilities and services provided is essential [4].

Health issues are one of the factors affecting quality of life, reflected in the fulfillment of basic human needs [5]. Improvements in healthcare are critical, as this sector is closely linked to development, particularly in terms of human resource development [6]. Population growth is a major cause of environmental problems. Overpopulation can lead to slums, poverty, environmental pollution, and the depletion of natural resources [7].

Importance Performance Analysis (IPA) is a multi-attribute method used to measure the relationship between consumer perceptions (in this study, Puskesmas patients) and the priorities for improving the quality of products or services, also known as quadrant analysis [8]. Importance Performance Analysis (IPA) combines the measurement of importance and satisfaction factors in a two-dimensional graph, making data easier to understand and providing practical recommendations [9]. The IPA graph is divided into four quadrants: Quadrant I "maintain good performance," Quadrant II "priority for improvement," Quadrant III "low priority," and Quadrant IV "possibly excessive" [10].

The Kano Model, developed by Noriaki Kano, categorizes product or service attributes based on their ability to meet customer needs and provide satisfaction [11]. A study at Arifin Hospital in Pekanbaru found that attributes that increased patient satisfaction included the doctor's accuracy in diagnosis, the availability of medication, the speed of examination services, and the tidiness of patient rooms, with satisfaction increases of 74%-87% when met. Conversely, attributes that decreased satisfaction included the speed of examination, the accuracy of diagnosis, staff performance in providing information, and services that did not differentiate patient status, with satisfaction decreases of 80%-85% when unmet.

Both IPA and Kano methods are commonly used to evaluate customer satisfaction, but each has its limitations when used separately [12]. IPA only measures two dimensions: importance and performance, without considering emotional impacts on customers, while Kano focuses more on customer preferences and expectations, without identifying priorities for improvement based on performance. Therefore, integrating both methods is necessary to provide a more comprehensive picture of service quality [13]. This study aims to identify and prioritize service attributes using IPA, classify them with the Kano model, and integrate both approaches to formulate a comprehensive service improvement strategy. The hypothesis is that integrating IPA and Kano will provide deeper insights into improving healthcare service quality.

METHOD

This study adopts a quantitative approach using a survey method. Primary data were collected through the distribution of questionnaires and interviews with patients at Puskesmas Surabaya. The sampling technique used was convenience sampling, where the questionnaire was randomly given to

patients who were present and willing to participate as respondents, with a total sample of 85 respondents.

The research instrument consists of demographic variables and patient satisfaction variables. Demographic variables include respondent origin, gender, age, marital status, occupation, and income level. Meanwhile, patient satisfaction variables were measured using an interval scale ranging from 0 (strongly disagree) to 4 (strongly agree), with columns for expectations and actual experiences based on the five SERVQUAL dimensions, which are:

1. Reliability – including friendliness, clarity of information, and service speed.
2. Responsiveness – covering the responsiveness and promptness of staff in providing service.
3. Assurance – relating to comfort, security, and staff competence.
4. Empathy – including the attention and care of staff towards patients.
5. Tangibles – covering physical facilities such as cleanliness, staff appearance, and parking area.

Data were analyzed using the Importance Performance Analysis (IPA) method to identify priority improvements, and the Kano Model to classify service attributes based on their impact on patient satisfaction [14].

To analyze the facilities at Puskesmas Surabaya that need improvement and maintenance, Importance Performance Analysis (IPA) is used with the following steps:

1. Calculate the average score for the "Actual" (X) and Expectation (Y) columns to obtain ($\bar{X}$) and ($\bar{Y}$)
2. Calculate the averages ($\bar{X}$) and ($\bar{Y}$) to obtain the boundary values ($\bar{\bar{X}}$) and ($\bar{\bar{Y}}$).
3. Create a plot on a Cartesian diagram as shown in Figure 2.1 using SPSS 17.0 software.
4. Interpret the Cartesian diagram based on the results by analyzing which variables fall into Quadrants I, II, III, and IV, and draw conclusions.

To analyze customer satisfaction with the facilities at Puskesmas, the Kano Method is used with the following steps:

1. Categorize each attribute (A, M, O, I, R, Q) from each functional and dysfunctional question using formulas in Microsoft Excel, with a value range as indicated in the table below.

Tabel 1. Score from Questionnaire Score to Value Canoe Method

Questionnaire Value Range	Value of the Kano Method
0 – 0,79	5
0,8 – 1,59	4
1,6 – 2,39	3
2,4 – 3,19	2
3,2 - 4	1

2. Determine which category (A, M, O, I, R, Q) appears most frequently, so that the category reflects each attribute.
3. Integrated each attributes of Kano and Importance Performance Analysis (IPA) method, so the result can be considered more focused for improvement in the future.

Seri (Kategori Kano)	Kepentingan	Kinerja	Kuadran IPA	Prioritas Strategi	
				Peningkatan Kinerja	Pertahankan Kinerja
M (Must Be)	Tinggi	Tinggi	I	-	1
	Tinggi	Rendah	II	1	-
	Rendah	Rendah	III	2	-
	Rendah	Tinggi	IV	-	2
O (One Dimensional)	Tinggi	Tinggi	I	-	3
	Tinggi	Rendah	II	3	-
	Rendah	Rendah	III	4	-
	Rendah	Tinggi	IV	-	4
A (Attractive)	Tinggi	Tinggi	I	-	5
	Tinggi	Rendah	II	5	-
	Rendah	Rendah	III	6	-
	Rendah	Tinggi	IV	-	6

(sumber: Kuo *et al.*, 2011)

Figure 1. Integration of IPA and Kano Model

RESULT AND DISCUSSION

Importance Performance Analysis (IPA)

Importance Performance Analysis (IPA) is used to compare consumer perceptions regarding the importance of service quality (Importance) with the level of service quality provided (Performance), using the five service quality dimensions that have been developed. IPA analysis on the dimensions of reliability, responsiveness, assurance, empathy, and tangibles was conducted to assess patient satisfaction at Puskesmas Surabaya concerning the variables related to the reliability dimension as follows.

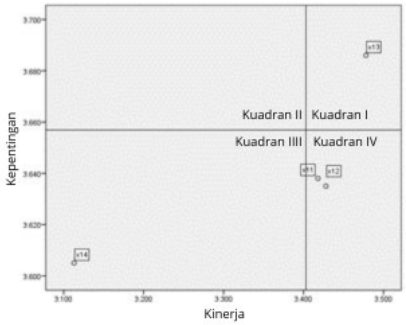

Figure 2. IPA Results for the Reliability Dimension

In Figure 2, the variable that falls into Quadrant I, which indicates high-quality service and needs to be maintained, is the staff's ability to clearly explain the usage of medications ($X_{1.3}$) In Quadrant III, which indicates low priority, aspects of service that receive less attention from patients and have lower service quality include the speed of the registration process ($X_{1.4}$). The staff's friendliness and politeness ($X_{1.1}$), and patient satisfaction with the information provided by pharmacy staff ($X_{1.2}$) fall into Quadrant IV, meaning that although these service elements are considered less important, the service provided is still satisfactory.

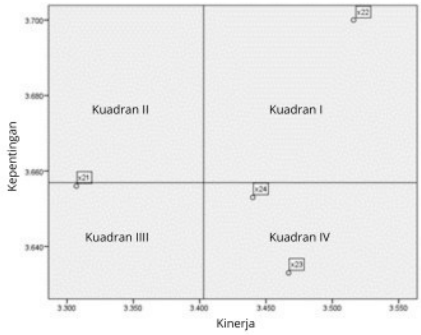

Figure 3. IPA Results for the Responsiveness Dimension

In Figure 3, the variable that falls into Quadrant I, indicating high-quality service that should be maintained, is the staff's ability to clearly explain how to use medications ($X_{2.2}$). In Quadrant III, which represents low priority, the service aspects that receive less attention from patients and have lower quality include the speed of the registration process ($X_{2.1}$). In Quadrant IV, which reflects less important service elements, the staff's friendly response to patient suggestions ($X_{2.3}$), and the staff's priority on patient comfort ($X_{2.4}$) are perceived as satisfactory despite being considered less important.

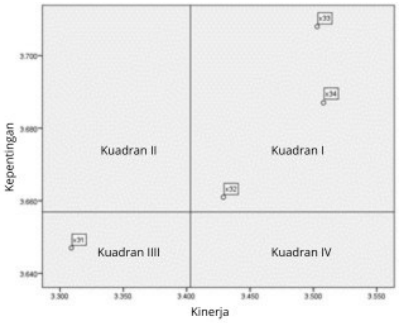

Figure 4. IPA Results for the Assurance Dimension

Based on Figure 4, the variables that fall into Quadrant I and represent excellent service, which should be maintained, include security while at the Puskesmas ($X_{3.2}$), cleanliness of the patient examination rooms ($X_{3.3}$), and staff's broad knowledge about Puskesmas operations and patient diseases ($X_{3.4}$). In Quadrant III, the low-priority variable is the comfort of the waiting area ($X_{3.1}$)

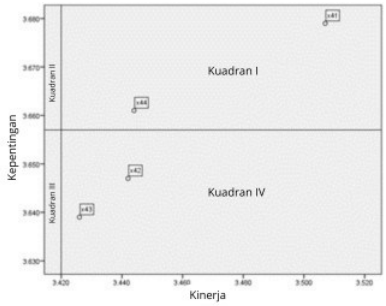

Figure 5. IPA Results for the Empathy Dimension

Based on Figure 5, the variables that fall into Quadrant I and indicate superior service that should be maintained include the staff's patience ($X_{4.1}$) and the staff's high empathy towards patients ($X_{4.4}$). In Quadrant IV, considered less important but still satisfactory, the availability of a good practice schedule ($X_{4.2}$), and a platform for patients to express complaints ($X_{4.3}$) fall into this category.

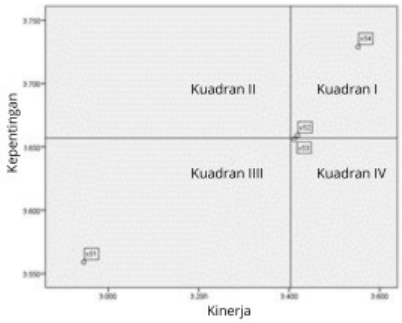

Figure 6. IPA Results for the Tangibles Dimension

In Figure 6, the variables that fall into Quadrant I, indicating excellent service that should be maintained, include cleanliness at the Puskesmas ($X_{5.2}$) and staff appearance being clean and neat ($X_{5.4}$) In Quadrant III, the low-priority variable is the availability of sufficient parking space ($X_{5.1}$). Cleanliness and comfort of the restrooms ($X_{5.3}$) are categorized in Quadrant IV, meaning they are considered less important, but the service provided remains satisfactory.

Analisis Metode Kano

In 1980, Noriaki Kano developed a diagram to categorize product or service attributes based on their ability to provide satisfaction to customers or service users. The results of the Kano Method calculations are as follows:

a. Results of the Kano Method Test for the Reliability Dimension are as follows.

Table 2. Kano Method Calculation for the Reliability Dimension

Variable	Explanation	Kano Method Calculation	Kano Method Categories
$X_{1.1}$	Hospitality and courtesy of officers	*Must-be (*M) =17 *One Dimensional (*O)=67 *Indifferent (*I)=1	*One Dimensional(*O)
$X_{1.2}$	Submission of overall pharmaceutical information by officers	*Must-be (*M) =13 *One Dimensional (*O)=70 *Indifferent (*I)=2	*One Dimensional(*O)
$X_{1.3}$	Officers conveying how to use drugs to be consumed	*Must-be (*M) =10 *One Dimensional (*O)=71 *Indifferent (*I)=2 *Atrractive* (A)=2	*One Dimensional(*O)

$X_{1.4}$	Speed of registration process	*Must-be (*M) =9 *One Dimensional (*O)=53 *Indifferent (*I)=19 *Atrractive* (A)=3 *Reverse* (R)=1	*One Dimensional(*O)

From the results of the Kano method calculation on 85 respondents, it was found that all variables in the Reliability Dimension are classified as One Dimensional (O), indicating that an increase in customer satisfaction will correspond to an improvement in these attributes. Conversely, satisfaction will decrease if the performance of these attributes declines.

b. Results of the Kano Method Test for the Responsiveness Dimension are as follows.

Table 3. Kano Method Calculation for the Responsiveness Dimension

Variable	Explanation	Kano Method Calculation	Kano Method Categories
$X_{2.1}$	Attitudes of officers in providing services	*Must-be (*M) =18 *One Dimensional (*O)=62 *Indifferent (*I)=5	*One Dimensional(*O)
$X_{2.2}$	Attitudes of officers in responding to patients' complaints	*Must-be (*M) =9 *One Dimensional (*O)=73 *Indifferent (*I)=1 *Atrractive* (A)=2	*One Dimensional(*O)
$X_{2.3}$	Attitudes of officers in responding to patients' suggestions	*Must-be (*M) =15 *One Dimensional (*O)=66 *Indifferent (*I)=2 *Atrractive* (A)=2	*One Dimensional(*O)
$X_{2.4}$	Officers prioritize patients' comfort	*Must-be (*M) =14 *One Dimensional (*O)=68 *Indifferent (*I)=3	*One Dimensional(*O)

From the results of the Kano method calculation on 85 respondents, it was found that all variables in the Responsiveness Dimension are classified as One Dimensional (O), indicating that an increase in customer satisfaction will correspond to an improvement in these attributes. Conversely, satisfaction will decrease if the performance of these attributes declines.

c. Results of the Kano Method Test for the Assurance Dimension are as follows.

Table 4. Kano Method Calculation for the Assurance Dimension

Variable	Explanation	Kano Method Calculation	Kano Method Categories
$X_{3.1}$	Waiting room conditions	*Must-be (*M) =16 *One Dimensional (*O)=61 *Indifferent (*I)=7 *Atrractive* (A)=1	*One Dimensional(*O)

$X_{3.2}$	Safety at the puskesmas	*Must-be (*M) =14 *One Dimensional (*O)=68 *Indifferent (*I)=3	*One Dimensional(*O)
$X_{3.3}$	Checking room conditions	*Must-be (*M) =12 *One Dimensional (*O)=72 *Indifferent (*I)=1	*One Dimensional(*O)
$X_{3.4}$	Officer knowledge of puskesmas	*Must-be (*M) =10 *One Dimensional (*O)=72 *Indifferent (*I)=2 *Reverse* (R)=1	*One Dimensional(*O)

From the results of the Kano method calculation on 85 respondents, it was found that all variables in the Assurance Dimension are classified as One Dimensional (O), indicating that an increase in customer satisfaction will correspond to an improvement in these attributes. Conversely, satisfaction will decrease if the performance of these attributes declines.

d. Results of the Kano Method Test for the Empathy Dimension are as follows.

Table 5. Kano Method Calculation for the Empathy Dimension

Variable	Explanation	Kano Method Calculation	Kano Method Categories
$X_{4.1}$	Officer patience	*Must-be (*M) =7 *One Dimensional (*O)=75 *Indifferent (*I)=3	*One Dimensional(*O)
$X_{4.2}$	Availability of treatment schedules	*Must-be (*M) =19 *One Dimensional (*O)=64 *Indifferent (*I)=1 *Atrractive* (A)=1	*One Dimensional(*O)
$X_{4.3}$	The availability of a medium for conveying the patient's complaints	*Must-be (*M) =11 *One Dimensional (*O)=69 *Indifferent (*I)=5	*One Dimensional(*O)
$X_{4.4}$	The officer gives sympathy to the patient	*Must-be (*M) =13 *One Dimensional (*O)=68 *Indifferent (*I)=1 *Reverse* (R)=1	*One Dimensional(*O)

From the results of the Kano method calculation on 85 respondents, it was found that all variables in the Empathy Dimension are classified as One Dimensional (O), indicating that an increase in customer satisfaction will correspond to an improvement in these attributes. Conversely, satisfaction will decrease if the performance of these attributes declines.

e. Results of the Kano Method Test for the Tangibles Dimension are as follows.

Table 6. Kano Method Calculation for the Tangibles Dimension

Variable	Explanation	Kano Method Calculation	Kano Method Categories
$X_{5.1}$	Availability of adequate parking area	*Must-be (*M) =29 *One Dimensional (*O)=41 *Indifferent (*I)=13 *Atrractive* (A)=1 *Reverse* (R)=1	*One Dimensional(*O)
$X_{5.2}$	Cleanliness in the Puskesmas area is good	*Must-be (*M) =15 *One Dimensional (*O)=69 *Indifferent (*I)=1	*One Dimensional(*O)
$X_{5.3}$	The cleanliness and comfort of the toilet is good	*Must-be (*M) =17 *One Dimensional (*O)=64 *Indifferent (*I)=2 *Atrractive* (A)=2	*One Dimensional(*O)
$X_{5.4}$	The officer is clean and neat	*Must-be (*M) =6 *One Dimensional (*O)=78 *Indifferent (*I)=1	*One Dimensional(*O)

From the results of the Kano method calculation on 85 respondents, it was found that all variables in the Tangibles Dimension are classified as One Dimensional (O), indicating that an increase in customer satisfaction will correspond to an improvement in these attributes. Conversely, satisfaction will decrease if the performance of these attributes declines.

Integration of the Importance Performance Analysis (IPA) Method with the Kano Method

The IPA-Kano integration is applied to address the shortcomings of each method. This model formulates priority development strategies for each service indicator. The results of the IPA-Kano integration are presented in Table 7.

Table 7. IPA-Kano Method Integration

Variable	Information	Result Of Kano Method	Kuadran IPA	Priority Strategy
$X_{1.1}$	Hospitality and courtesy of officers	O	4	Keep It Up
$X_{1.2}$	Submission of overall pharmaceutical information by officers	O	4	Keep It Up
$X_{1.3}$	Officers conveying how to use drugs to be consumed	O	1	Keep It Up
$X_{1.4}$	Speed of registration process	O	3	Improve

$X_{2.1}$	Attitudes of officers in providing services	O	3	Improve
$X_{2.2}$	Attitudes of officers in responding to patients' complaints	O	1	Keep It Up
$X_{2.3}$	Attitudes of officers in responding to patients' suggestions	O	4	Keep It Up
$X_{2.4}$	Officers prioritize patients' comfort	O	4	Keep It Up
$X_{3.1}$	Waiting room conditions	O	3	Improve
$X_{3.2}$	Safety at the puskesmas	O	1	Keep It Up
$X_{3.3}$	Checking room conditions	O	1	Keep It Up
$X_{3.4}$	Officer knowledge of puskesmas	O	1	Keep It Up
$X_{4.1}$	Officer patience	O	1	Keep It Up
$X_{4.2}$	Availability of treatment schedules	O	4	Keep It Up
$X_{4.3}$	The availability of a medium for conveying the patient's complaints,	O	4	Keep It Up
$X_{4.4}$	The officer gives sympathy to the patient	O	1	Keep It Up
$X_{5.1}$	Availability of adequate parking area	O	3	Improve
$X_{5.2}$	Cleanliness in the Puskesmas area is good	O	1	Keep It Up
$X_{5.3}$	The cleanliness and comfort of the toilet is good	O	4	Keep It Up
$X_{5.4}$	The officer is clean and neat	O	1	Keep It Up

Based on the results of the integration of the results of IPA and the Kano Method in Table 7, the following are some of the attributes based on strategic priorities that need to be improved in this study:

a. The speed of registration process
b. The officers' attitude while providing services
c. Waiting room's condition
d. The availability of adequate parking area

The speed of the registration process, quick, accurate, and friendly service from staff, as well as a comfortable waiting area, play a significant role in enhancing customer satisfaction, especially in the healthcare sector. Studies have shown that efficient service and friendly interactions improve

the positive perception of service quality. Additionally, a comfortable waiting area can reduce stress and increase patient comfort. However, the lack of adequate parking space can reduce patient comfort and time efficiency, ultimately affecting their overall experience and satisfaction with the provided service.

CONCLUSION

Based on a study of 85 patients at Puskesmas Surabaya using Importance Performance Analysis (IPA), no aspects of service were found in the priority quadrant (Quadrant II). This indicates that nearly all patients were satisfied with the aspects addressed in the questionnaire. However, several aspects were identified as low-priority, including the speed of the registration process, the speed, accuracy, and friendliness of staff (doctors and nurses), the comfort of the waiting area, and the availability of adequate parking.

The results of the Kano method calculation revealed that all listed variables are classified as One Dimensional (O), indicating that an increase in customer satisfaction will correspond to an improvement in these attributes. Conversely, satisfaction will decrease if the performance of these attributes declines.

The integration of the IPA and Kano methods showed that although most service elements are satisfactory, several aspects require further attention and improvement, including the speed of the registration process, the attitude of staff in providing service, the condition of the waiting area, and the availability of sufficient parking space. These findings underscore the importance of focusing on these aspects to enhance overall service quality and patient satisfaction.

This study is limited to Puskesmas Surabaya with a small sample size, so future research should expand the sample to include other Puskesmas and consider external factors that may influence patient satisfaction, such as policies or socioeconomic conditions, to gain a more comprehensive understanding.

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