

Study of Consumer Satisfaction Levels with E-Pharmacy Services Using the Customer Satisfaction Index (CSI) and Importance Performance Analysis (IPA)

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Received: 03 April 2023; Accepted: 28 June 2024

Abstract: E-pharmacy is one of the efforts to improve pharmaceutical services to make them easier and more efficient. Customer Satisfaction Index (CSI) is a scale that can describe consumer satisfaction with a product or service. Customer satisfaction with e-pharmacy services can be assessed by the value of customer expectations for service quality and the reality of the service performance received. This study aims to examine the level of consumer satisfaction, expectations, and priorities for attribute improvement in the dimensions of e-pharmacy services so that service providers can evaluate and improve their services. Furthermore, the analytical method in this study uses an analysis of the results of the gap based on the Service Quality (Servqual), Customer Satisfaction Index (CSI), and Importance Performance Analysis (IPA). The results of this study indicate that attributes' performance on the dimensions of e-pharmacy services is not satisfactory. Customer satisfaction in e-pharmacy service is 86.11% or in the 'very satisfied' category. Meanwhile, the service attribute prioritized for service providers is to improve the guarantee that the drugs given are in good condition (by showing the drug's expiration date).

Keywords: Customer satisfaction, CSI, E-Pharmacy, IPA, pharmaceutical services

DOI:10.15408/pbsj.v6i1.37922

1. INTRODUCTION

Over time, the internet has developed into most people's first source of information about all aspects of life. Currently, the internet is used to find information and as part of people's lives, especially in e-commerce (Rachmarwi & Wiwik, 2018). Based on the data, it can be concluded that the growth of online business sales figures in Indonesia has increased by 40%, obtained from 93.4 million internet accessors and 71 million mobile phone users in Indonesia (Rachmarwi & Wiwik, 2018). The use of digital technology and online resources occurs in the medical field and the pharmaceutical industry. Interest in purchasing products online is also increasing, including purchasing medicines that must be routinely purchased.

Therefore, the industry must keep up with the development of digital technology to serve and fulfill consumer interests maximally and efficiently. One of the innovations in healthcare that is still nascent is electronic pharmacy or e-pharmacy. E-pharmacy means the sale of medicines online so that it does not require meeting in person (Dutta & Shivani, 2017). E-pharmacy can help patients and consumers get medicines without having to leave home. E-pharmacy is one of the efforts to improve pharmaceutical services to make them easier and more efficient (Dutta & Shivani, 2017). According to a sociological survey in India, 83.2% of consumers are aware of online pharmacies, and the main reason consumers choose to buy medicine online is the price difference (Soboleva et al., 2022).

According to the Regulation of the Indonesian Minister of Health number 73 of 2016, Pharmaceutical Services is a direct and responsible service to patients related to pharmaceutical preparations to achieve definite results to improve patients' quality of life. Therefore, whether digital or conventional, every patient has the right to obtain pharmaceutical services of the highest quality. Good pharmaceutical services are directly oriented on using drugs, ensuring their safety, effectiveness, and rational use by applying science and functions in patient care (Bertawati, 2013). Service quality is the totality of the characteristics of goods and services that demonstrate their ability to satisfy obvious and hidden customer needs (Syakuron & Fadhlán, 2022). Customer satisfaction is a consumer assessment after comparing the services, products, or services received to what is expected (Syakuron & Fadhlán, 2022). If the customer's satisfaction is far from expectations, the consumer is unsatisfied. This shows that the service received needs to be delivered properly or maximally. Customer satisfaction has an important role in creating customer loyalty or loyalty, preventing customer turnover, reducing customer sensitivity to price, reducing marketing failure costs, reducing operating costs caused by increasing the number of customers, increasing advertising effectiveness, and improving business reputation (Devani *et al.*, 2016). Five basic attributes are often used in assessing service quality: tangibles, reliability, responsiveness, assurance, and empathy (Devani *et al.*, 2016). The five attributes can be measured, and a quaternary diagram is produced, referred to as the Servqual method.

Servqual is an instrument for measuring service quality developed by Parasuraman, Zeithaml, and Berry in a series of research on the service sector. This model is called the Gap (Jiwantara *et al.*, 2013). The Servqual score on each pair of questions can be calculated based on the perceived score minus the

expected score, or this formula is called the Gap.

Furthermore, overall satisfaction is measured using the Customer Satisfaction Index (CSI). CSI is a measurement scale that can describe consumer satisfaction with a product or service (Kurniawati *et al.*, 2014). CSI aims to determine the overall level of consumer satisfaction by looking at the level of importance of product attributes. The more accurate the selection of attributes is, the more accurate the overall satisfaction measure will be (Kurniawati *et al.*, 2014). CSI is a very good satisfaction measurement scale because it covers consumer assessment scores about several service attributes as a single score. CSI also has clear data on the level of customer satisfaction to help in periodic evaluation activities. This evaluation can help improve services so users feel satisfied because their expectations are met.

Apart from the calculation of CSI, customer satisfaction can also be continued with the Importance-Performance Analysis (IPA) calculation. IPA is a descriptive analysis technique introduced by John A. Martilla and John C. James in 1977 (Suhendra *et al.*, 2016). IPA is used to identify what performance factors an organization must demonstrate to meet consumer satisfaction (Suhendra *et al.*, 2016). The assessment of the level of importance and the performance assessment results can produce a value of the suitability of the level of significance and the level of implementation. Therefore, the level of conformity can determine the priority scale that affects customer satisfaction (Suhendra *et al.*, 2016). IPA analysis produces a mapping of service attributes in a Cartesian diagram. The Cartesian diagram in this analysis consists of four quadrants, which have their explanations.

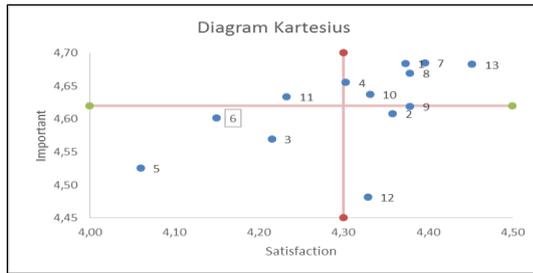


Figure 1. Cartesian diagram of IPA analysis

Quadrant I (Concentrate These) contain factors considered important by consumers but needs to meet expectations, so this quadrant must be improved. Quadrant II (Keep Up the Good Work): this quadrant contains factors considered important by consumers, are by what is felt, and the level of satisfaction is relatively high, so this quadrant must be maintained. Quadrant III (Low Priority): this quadrant contains factors considered less important by customers and are not very special, so this quadrant can be reconsidered because the perceived impact is very small. Quadrant IV (Possible Overkill): this quadrant contains less important factors. It is considered excessive, so this quadrant can be reduced to take advantage of other more useful factors. Based on the explanation above, this research is conducted to assess the satisfaction level of patients or consumers regarding the use of telepharmacy based on CSI and IPA.

2. MATERIALS AND METHODS

2.1 Materials and Data Collection Techniques

This study's material comes from data collected from 401 respondents. The data used is primary data that has been distributed to respondents and conducted online using Google Forms. The questionnaire in the Google Form consists of questions about respondent demographics and questions grouped according to the five attributes of the Servqual method. The developed questionnaire was subjected to an ethical code test by the UIN Jakarta Faculty of Health Sciences' Health Research Ethics Committee, using reference number Un01/F10/KP/01/1/KESP/0908006/2022. Following

the ethical assessment, 30 randomly chosen respondents participated in validity and reliability testing to ascertain whether the questionnaire could be distributed to the respondent. The five attributes are physical evidence (tangible), reliability, responsiveness, assurance, and empathy.

The sampling technique in this study used purposive sampling technique. The purposive sampling technique is carried out on consumers with the following conditions: consumers have used the telepharmacy applications such as Grabhealth, Go-health, Halodoc, Alodokter or via WhatsApp from each health facility, consumers can read well and consumers are willing to fill out existing questionnaires. Because the population size is unknown (unrestricted), the Limeshow formula was used to determine the number of responders. The respondents were divided into age and geographic groups throughout Indonesia. A minimum of 350 responders were obtained using the Limeshow equation's calculation result. For a month, the survey was disseminated via social media and other avenues of communication. 401 respondents were counted as responders in this study.

The questionnaire used was self-constructed and had previously undergone validation testing with 30 respondents. The results obtained from the validity and reliability testing indicate that the questionnaire meets the requirements. The satisfaction questionnaire's validity has been validated, as evidenced by scores that surpass 03 and range from 0634 to 0966. The reliability test produced a rating of 0780, over 06, which is regarded as dependable.

2.2 Data Processing and Calculation Techniques

Data processing and analysis techniques in this study include Gap analysis with the Servqual (Service quality) method, calculation of the Customer Satisfaction Index (CSI), and analysis of the level of

importance and performance of service attributes (IPA). This research used the Microsoft Excel software package to calculate mathematical data calculations. In the servqual method, the value given to respondents to the performance of service attributes is reduced by the value of respondents' expectations of these attributes. Thus, satisfaction is considered fulfilled if the attribute performance value is the same as the expected value. Conversely, satisfaction is not achieved if the attribute performance value is lower than the respondent's expectation value (Prananda et al., 2019).

Furthermore, the customer satisfaction index (CSI) calculation is carried out to determine the overall level of customer satisfaction. Several steps are taken to determine the percentage of CSI. The first step is to define each variable's Mean Importance Score (MIS) or each attribute's average level of importance. Step two is to determine Weight Factors (WF) per variable. Step three is to determine each attribute's Mean Satisfaction Score (MSS) or the average performance of each service dimension attribute. Create a weighted score (WS) for each variable in step four. This calculation is a multiplication of the Weight Factor (WF) with the Mean Satisfaction Score (MSS). The fifth step is to determine the Customer Satisfaction Index (CSI) with the following formula (Yulia et al., 2016 & Helia et al., 2018 & Utami et al., 2022):

$$CSI = \frac{\sum_{i=1}^n WSi}{HS} \times 100\%$$

HS is the maximum scale used in this study, with a five-value. For the calculation of WS, the class vulnerability of the difference between the performance score and the expectation score is referred to in table 1.

Table 1. Satisfaction level class range

Range of difference class	Criteria	Score
-4,00 to -2,40	Not satisfied	1
-2,41 to -0,81	Less satisfied	2
-0,80 to +0,80	Quite satisfied	3
+0,81 to +2,40	satisfied	4
+2,41 to +4,00	Very satisfied	5

Furthermore, the difference number is converted into a value that shows the level of satisfaction. The value of the satisfaction level is then multiplied by WF to obtain the WS value. Then, the WS amount is divided by the maximum scale or HS (5) and multiplied by 100%. Then, the amount resulting from the calculation is the percentage result of the CSI. In determining the level of customer satisfaction from the results of the CSI percentage, Table 2 can be used as a guide (Helia et al., 2018).

Table 2. Customer satisfaction index guidelines

Index Value	Criteria
81,00% - 100,00%	Very satisfied
66,00% - 80,99%	satisfied
51,00% - 65,99%	Quite satisfied
35,00% - 50,99%	Less satisfied
0,00% - 34,99%	Not satisfied

The next step is determining the Importance Performance analysis (IPA) matrix. In this step, the service attributes are mapped based on the respondents' assessment scores from the Servqual analysis results and displayed as a Cartesian diagram. The Cartesian diagram produces four quadrants, which have their criteria (Figure 1). Quadrant I shows attributes with the highest importance but lower performance. So that this quadrant becomes the top priority for service improvement (Yulia et al., 2016). Quadrant II shows attributes considered important and good performance, so their performance must be maintained because they are service excellence. Quadrant III shows attributes considered less important and need better performance, so attributes in this quadrant are not considered a top priority in service improvement. Quadrant IV shows attributes considered less important but has good performance, so it is deemed excessive; it is advisable to concentrate

on something other than this part of the quadrant. Resources should focus on improvements to the attributes in quadrant I (Utami *et al.*, 2022).

3. RESULTS AND DISCUSSION

The results of the calculation of the analysis of the dimensions of physical evidence/tangibility with the Servqual (Service Quality) method in Table 3 show that the attribute "the server used remains stable when heavily used" gets the lowest performance assessment. However, the attribute "telepharmacy applications are easily accessible anywhere" gets a fairly high importance performance. This shows that telepharmacy applications need to improve the performance of the "easy to access anywhere" attribute and enhance the performance of the "server is stable even though it is widely used." That way, the resulting gap from the server attribute can be minimized (Arifin *et al.*, 2022).

The reliability dimension analysis calculation results show that this dimension has the highest gap value among other dimensions. This indicates that the service performance and expectations in this dimension are not balanced and do not meet respondents' expectations (Novalia, 2018). Therefore, this dimension requires an increase in performance in order to match these expectations. In addition, the attribute "using language that is easy to understand" performs fairly well compared to other attributes. Furthermore, the attribute "service has information about drug storage" has the lowest performance value and the highest gap compared to other attributes, so it needs to be improved (Bachtiar *et al.*, 2020).

The results of the responsiveness dimension analysis calculation show that this dimension has the highest average performance and expectation scores among other dimensions. This indicates that respondents have high expectations and good performance in this

dimension, even though the resulting gap value is quite low (Syarif, 2019). Therefore, the performance of the two attributes still needs to be improved because the resulting gap is still minus and has the highest expectations.

The results of the calculation of the analysis of the assurance dimension show that of the two service attributes, assuring that the drugs provided are in good condition (by showing the expiration date of the drug) has a fairly low-performance value. Therefore, improving the performance of drug guarantees given in good condition is necessary.

The results of the Emphaty dimension analysis calculation show that of the two service attributes, there is a Customer care menu (for 24 hours) or a menu to ask if you have problems accessing the menu, which has the highest expectation value compared to other attributes. Therefore, service providers are expected to provide a 24-hour customer care menu to meet the expectations of respondents/consumers. Meanwhile, this dimension also produces the lowest average gap value compared to other dimensions, especially in the service attribute, where there is a "get well soon" or "thank you" greeting at the end of the service provided (Min Li *et al.*, 2015). The gap analysis results of 13 service attributes with the Servqual (Service Quality) method in this study can be seen in full in Table 3.

From the calculation of the Customer Satisfaction Index (CSI) in this study, 86.11% was obtained. Judging from the results of this percentage, the customer satisfaction index category in Table 2 shows that customer satisfaction is in the 'very satisfied' category (Mohebifar., 2016). This indicates that respondents who represent consumers of e-pharmacy consider the services they receive very satisfying. When viewed from Table 1, the satisfaction score has an average of 3, which indicates that each attribute is

Table 3. Results of Assessment of service attributes in e-pharmacy

Dimensions	Label	Service Attributes	Performance	Expectations	GAP	Quadrant
Physical Evidence / Tangible	A	Telepharmacy application is easily accessible anywhere	4,373	4,684	- 0,311	II
	B	Menu display is easy to access and use	4,358	4,608	- 0,250	IV
	C	The server used remains stable when heavily used	4,216	4,569	- 0,353	III
	Average dimension score		4,316	4,620	- 0,305	
Reliability	D	There is information about the drug name, dosage, and drug usage rules on the app features	4,303	4,655	- 0,352	II
	E	There is information on drug storage	4,060	4,525	- 0,465	III
	F	There is information on the effects of using the drug	4,150	4,602	- 0,452	III
	G	Using language that is easy to understand	4,453	4,683	- 0,230	II
Average dimension score		4,241	4,616	- 0,375		
Responsiveness	H	Easy access to required drug information	4,379	4,669	- 0,290	II
	I	There are information prompts for transactions made	4,379	4,618	- 0,239	II
	Average dimension score		4,379	4,644	- 0,265	
Assurance	J	The application guarantees that the information provided is kept confidential	4,332	4,638	- 0,306	II
	K	Provide assurance that the medicine provided is in good condition (by showing the expiration date of the medicine)	4,233	4,633	- 0,400	I
	Average dimension score		4,282	4,635	- 0,353	
Empathy	L	There is a "get well soon" or "thank you" at the end of the service provided.	4,329	4,481	- 0,152	IV
	M	There is a Customer care menu (for 24 hours) or an inquiry menu if you have problems accessing the menu.	4,397	4,685	- 0,288	II
	Average dimension score		4,363	4,583	- 0,220	

'quite satisfactory,' and the average of the performance value (4.30) and importance value (4.62) of each attribute is considered 'satisfied.' The overall level of satisfaction of respondents with the services of e-pharmacy is shown in Table 4

The results of the Cartesian diagram mapping in this study show that all attributes are spread throughout the quadrant. Quadrant I has a K service attribute (Figure 1 and Table 3). Label K refers to the attribute in the

Assurance dimension, namely 'Providing a guarantee that the medicine provided is in good condition (by showing the expiration date of the medicine).' Therefore, this attribute is considered important to consumers, but its implementation could be better, so it does not satisfy respondents or consumers (Dixit *et al.*, 2016). This attribute needs to be a priority for improvement, namely by mentioning the drug's expiration date.

Table 4. Customer performance index and customer satisfaction index

Attributes	Performance	Level of Importance	Gap	Satisfaction score	WF	WS
A	4,37	4,68	-0,311	3	7,80	34,12
B	4,36	4,61	-0,250	3	7,67	33,44
C	4,22	4,57	-0,353	3	7,61	32,07
D	4,30	4,66	-0,352	3	7,75	33,36
E	4,06	4,53	-0,465	3	7,54	30,59
F	4,15	4,60	-0,452	3	7,66	31,80
G	4,45	4,68	-0,230	3	7,80	34,72
H	4,38	4,67	-0,290	3	7,78	34,05
I	4,38	4,62	-0,239	3	7,69	33,68
J	4,33	4,64	-0,306	3	7,72	33,45
K	4,23	4,63	-0,400	3	7,72	32,66
L	4,33	4,48	-0,152	3	7,46	32,31
M	4,40	4,69	-0,288	3	7,80	34,30
Average	4,30	4,62				
Total	60,27	64,67				430,56
CSI (Customer Satisfaction Index) = 86,11%						

Quadrant II has service attributes labeled A, D, G, H, I, J, and M (Figure 1 and Table 3). Label A refers to the attribute in the Tangible dimension, namely, 'The telepharmacy application is easily accessible anywhere.' Labels D and G refer to attributes in the Reliability dimension, namely, 'There is information about drug names, doses, and rules of use on the application features' and 'Using language that is easy to understand.' Labels H and I refer to attributes in the Responsiveness dimension, namely, 'Ease of access to find the drug information needed' and 'There are information instructions for transactions made.' Label J refers to attributes in the Assurance dimension, namely, 'The application guarantees that the information provided is kept confidential.' Label M refers to the attribute in the Empathy dimension: 'There is a Customer care menu (for 24 hours) or an inquiry menu if you have problems accessing the menu'. The service attributes in this quadrant are considered important, and respondents/consumers consider their performance good enough so that the service attributes in this quadrant are recommended to maintain their performance.

Quadrant III has service attributes labeled C, E, and F (Figure 1 and Table 3). Label C refers to the attribute in the Tangible dimension, namely, 'The server used remains stable when heavily used.' Labels E and F refer to attributes in the Reliability dimension, namely, 'There is information about drug storage' and 'There is information about the effects of drug use.' These attributes have a fairly low priority for improvement. This is because although respondents consider their performance to need to be better, respondents think these three attributes to be not very important to them (Dixit et al., 2016 & Akob et al., 2021 & Giao et al., 2020). So, service providers can improve their quality in these service attributes, but they do not need to prioritize these attributes (Widi et al., 2013).

Quadrant IV has service attributes labeled B and L (Figure 1 and Table 3). Label B refers to the attribute in the Tangible dimension, namely, 'The menu display is easy to access and use.' Label L refers to the attribute in the Empathy dimension. Namely, There is a "get well soon" or thank you at the end of the service provided. In this quadrant, these attributes have been considered good implementation by respondents. Even so, respondents did not think it important, so the

characteristics in this quadrant were considered quite excessive. So, in the development of this quadrant service, service providers should pay little attention to these attributes and can prioritize improving service attributes that are the top priority to be improved and improved (Azman et al., 2015).

4. CONCLUSION

Based on Servqual (Service Quality) analysis, the performance of the attributes in the five dimensions of e-pharmacy services still needs to be considered sufficient to satisfy respondents' expectations. The negative difference or gap in all service attributes indicates this. Based on the CSI (Customer Satisfaction Index) results in this study, the level of customer satisfaction represented by 401 respondents is in the very satisfied category (CSI 86.11%). The service attributes prioritized in repair and improvement for e-pharmacy services based on the IPA matrix are service providers assuring that the drugs provided are in good condition by showing the drug's expiration date.

5. ACKNOWLEDGMENT

The author expresses gratitude to the Research and Publishing Center (PUSLITPEN) of LP2M UIN Syarif Hidayatullah Jakarta for the assistance provided to Mabrurrotul Mustafidah under the Research Funding Program of the Public Service Agency with Reference Number: Un01/KPA/1141/2022

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