Statistical Analysis to Evaluate The Service Quality at Community Health Center in Padang, Indonesia

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Abstract. Healthcare provider have to take care of patient satisfaction. Therefore, the management should do a kind of evaluation to examine the patient satisfaction on the corresponding services. The purpose of this study is to evaluate the service quality of public health centre and to identify the attributes of services to be improved. This study was cross sectional study conducted by distributing the questionairres to the patients of public health centre in Padang, Indonesia from April to June 2015. This study involved 446 respondents with complete information. Customer Satisfaction Index (CSI) was used to measure the service quality of corresponding public health centre. Importance Performance Analysis (IPA) approach was also applied to identify any attributes to be improved. The respondents of this study were very satisfied with the health service that they ever got. All attributes of service were plotted in four quadrants. This study proved that CSI and IPA methods are pertinent to be applied to measure patient satisfaction and identify any attributes of service to be maintained or improved.
Key-words: Patient satisfaction, service quality, public health centre, Customer Satisfaction Index, Importance Performance Analysis.

1. Introduction

The evaluation of public service should be done periodically in order to maintain and develop the quality of service at corresponding public sector (Arabatzis & Grigoroudis, 2010; Bjertnaes, Skudal, & Iversen, 2013). To achieve this goal, all elements of a service should be evaluated. Thus, management can design the regulation for general evaluation based on community 's need and community's hope. In doing evaluation, it's needed a kind of marking on service quality at corresponding public service. Customer satisfaction is one of method that can be used toestimate the marking on public service [5][10].

Satisfaction is sometimes considered as a judgement of individuals regarding any object or even after gathering some experience. Customer satisfaction is explained as a cognitive response of customers or consumer's evaluation of consumption experience. Customer satisfaction index is an index to measure individual's satisfaction after receiving a service [6][9].

Healthcare is one of the fastest growing service, especially in Indonesia. The growth of health awareness in the community is followed by the growth of knowledge, education level, medical technology and social status of the community. Individu have free choice to decide

where they get healthcare. They will go the the health centre that best meet their healthcare needs. Therefore, healthcare quality and patient satisfaction are two things that are important and be health outcome and quality measure where patient is as the center of healthcare quality [11].

Thus, it is important to do a study in the aims to do the evaluation to community health centre. This research can give information and evaluation material for management in order to improve the quality of their service to the patients. This study is also purposed to conduct a literature survey to understand how the service quality measures the patient satisfaction.

2.   Literature Reviews

Many studies have been done regarding to patient satisfaction on quality of healthcare service. Bayraktar et al. (2012) defined consumer satisfaction in terms of the concepts of cognitive and affective dimensions. Meanwhile Manolitzas, Grigoroudis, & Matsatsinis (2014) defined customer satisfaction as a ratio of customer perception and customer expectation. Miranda et al. (2010) found that one of the principal factors of customer satisfaction is service or product. They also studied that perceived quality is one of the determinants of patient satisfaction.

There were some researchers also identified the indicators that could be implemeted to measure patient satisfaction on healthcare service. Such as a study by Parasuraman, et al. (1988) who suggested a popular model known as SERVQUAL which identified five attributes, i.e., reliability, responsiveness, assurance, emphaty and tangibles. All five attributes were used to measure consumer satisfaction in terms of service quality. Jabbari et al. (2014) identified some indicators in order to measure quality which emphasized on customer's perception and customer's expectation, such as attitude, behaviour, experience (interaction quality), social factors else. A study conducted by Chen, Hsiao, & Hwang (2012) explained that patient satisfaction was measured by quality that explained in two ways, these are 1) quality as an indicator of individual's satisfaction based on individual's experience on any medical service attributes, such as comfort, security, dignity, privacy and else, 2) quality as an indicator of individual's overall satisfaction on life after receiving medical service.

Scotti, Harmon & Behson. (2007) also revealed that patient satisfaction was driven by respect and dignity, efficiency and speed, emotional support, comfort, information and communication. Another study conducted in Taiwan was also focus on factors to measure patient satisfaction, this study was done by Hu et al. (2010). They mentioned that there must be attributes and attractive attributes in measuring patient satisfaction. Comfort, convenience, medical technology, capacity and commitment were the variables of attributes. Meanwhile the attractive attributes consist of variables such as quality of doctors, quality of drug, etc. They measured the patient satisfaction in Taiwan by applying Customer satisfaction Index.

3.   Materials and Methods

This present study used primary data which collected by distributing the questionnaires to the patients who ever received healthcare at least twice in selected public health service in Padang, West Sumatera, Indonesia. The survey was conducted from March to June 2015. The aims of this research is to measure the level of patient's satisfaction on healthcare service in Padang, Indonesia and to identify the importance and performance of any items based on patient's perception. To achieve both aims, CSI and IPA approach were implemented here [15][16].

In the beginning of the questionnaires, the respondents were asked about their profiles, such as age, education level, their job. Then, the respondents were asked about their satisfaction level on service quality items that break down into 18 items, such as requirements, procedures, time in service, fee, product of service, staffs, etc. A five point Liker scale was used to measure the importance of each item in questionnaire, ranging from 5 (very important) to 1 (very unimportant). The performance of each corresponding item was also measured using five point Liker scale ranging from 5 (very satisfied) to 1 (very unsatisfied). More than 500 questionnaires were distributed to the patients, however only 446 patients of them provided complete information.

CSI method measure customer satisfaction through certain attributes depend on information needed in study. The steps to measure CSI values are 1) calculate the mean of customer's perception on importance of items (MIS) and the mean of customer's satisfaction of items (MSS), 2) calculate weight factor for each customer by comparing MIS of each customer over MIS total, 3) calculate weight score by multipliying weight factor and MSS, 4) calculate CSI from dividing weight score by 5 [15].

IPA was first introduced and proposed by Martilla and James (1977) as a means by satisfaction as the function of two components, they are the importance of a product or a service to a client and the performance of a business in providing the corresponding service or product. Therefore, IPA identifies both performance of an item and importance of that item which both factors indicated as a determining factor in satisfaction to the respondent. Those two factors then combined to provide an overall view of client's satisfaction of that service or product.

The IPA model is presented into quadrants, with performance on the x-axis and importance on the y-axis. There are four quadrants in IPA, quadrant I with high importance and high performance is labeled by "Keep Up the Good Work". Quadrant II with high importance and low performance is indicated by "Concentrate Here". Quadrant III is concluded as "Low Priority" with low importance and low performance. Quadrant IV with low importance and high performance is indicated as "Possible Overkill". Figure 1 below describes all four quadrants in IPA.

	Quadrant II "Concentrate Here"	**Quadrant I** "Keep Up the Good Work"
Importance	**Quadrant III** "Low Priority"	**Quadrant IV** "Possible Overkill"

Performance

Figure 1. Four Quadrants in IPA

4.   Results

In the beginning of the analysis, it's presented the characteristic of respondents who involved in the analysis, as showing in the following Table 1.

Table 1. Respondent's Profile

Item	Classification	Frequency	Percentage (%)
Gender	Male	187	41,9
	Female	259	58,1
Age group	27 and below	139	31,2
	28 to 37	75	16,8
	38 to 47	106	23,8
	48 to 57	71	15,9
	58 and above	55	12,3
Education level	Elementary	57	12,8
	Junior high school	108	24,2
	Senior high school	217	48,7
	Diploma	26	5,8
	Bachelor	37	8,3
	Master and above	1	0,2

Table 1 informed us that 58,1% of all respondents were female and 41,9 % were male. Most respondents in this survey were in the age group of 27 years old and below (31,2%), 23,8% of them were 38 to 47 years old. Based on education level, most respondents were senior high school (48,7%) and only 1 respondent or 0,2 of all respondents had master (or PhD).

Then CSI approach was implemeted in order to measure the satisfaction level of respondents in term of having healthcare at selected healthcare center in Padang, Indonesia. By allowing all steps in calculating CSI as described above, the values for each steps are presented in Table 2. It's informed that this study yielded the CSI value is 87,723, indicated as "very satisfied". This CSI value here is interpreted that the respondents were very satisfied after having healthcare at any selected health care centers in Padang, Indonesia.

Table 2. CSI Analysis for Importance and Performance of Items in Healthcare

No	Items	Importance Average	Weight Factor	Performance Average	Weight Score
	Requirements				
1	Information on requirements is clear	4.336	0.031	4.074	0.124
2	It's easy to complete the document	4.517	0.032	4.242	0.135
3	Between requirements and service are relevan	4.443	0.031	4.268	0.133
	Procedure				
4	Information on procedures is clear	4.423	0.031	4.275	0.133

5	Easy to follow service procedures	4.477	0.031	4.329	0.136
6	The procedure for giving complaints available	4.450	0.031	4.356	0.136
7	The maintenance process in accordance	4.456	0.031	4.336	0.136
Service Time					
8	Full schedule certainty and clear	4.262	0.030	4.114	0.123
9	Service time is reasonable	4.470	0.031	4.329	0.136
10	The length of service in accordance with the promised	4.416	0.031	4.383	0.136
Service charge					
11	Information about cost is available	4.396	0.031	4.456	0.138
12	Information on payment is clear	4.510	0.032	4.470	0.142
13	Reasonable service charge	4.430	0.031	4.510	0.141
14	No additional costs	4.510	0.032	4.503	0.143
Specification product service					
15	Results of the service in accordance with established	4.309	0.030	4.396	0.133
16	Results could be accepted	4.490	0.032	4.436	0.140
17	All service process are safety	4.336	0.031	4.443	0.136
Competence of officer					
18	Officers are clear	4.450	0.031	4.436	0.139
19	Officers have good knowledge	4.430	0.031	4.369	0.136
20	Officers have good skill	4.544	0.032	4.409	0.141
21	Officers have good experience	4.436	0.031	4.510	0.141
Behavior of officers					
22	Officers served quickly	4.430	0.031	4.349	0.136
23	Officers are polite	4.443	0.031	4.436	0.139
24	Officers serving with the system turn	4.497	0.032	4.510	0.143
25	Officers are fair	4.537	0.032	4.463	0.142
26	Officers willing to help without being asked	4.570	0.032	4.470	0.144
27	Officers are patient	4.463	0.031	4.503	0.141
28	Officers are friendly	4.336	0.031	4.369	0.133
Service information					

29	Services standard are available	4.436	0.031	4.409	0.138
30	Officers serve based on service standard	4.477	0.031	4.409	0.139
	Complaints and suggestions				
31	This unit provides access to complaints, suggestions and input	4.342	0.031	4.443	0.136
32	Complaints advice immediately actionable	4.503	0.032	4.329	0.137
	Total Score	142.121			4.386
	CSI Value				**87.72**

After measuring the CSI value, this study want to identify the position of each items based on importance and performance values where obtained from respondent's perception. By applying IPA approach, this following Figure 2 presents the plotting of 32 items in four quadrants.
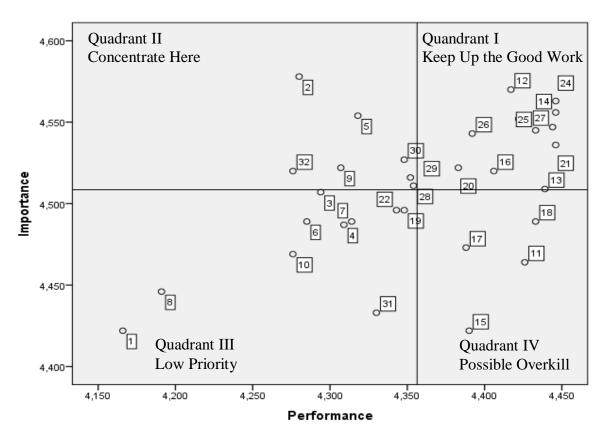

Figure 2. The IPA Grid

In Figure 2, the x-axis represents respondent's performance perception while the y-axis represents respondent's importance perception. The mean values for overall importance is 4,509, the mean of overall performance is 4.356. Both lines are used to split the axes become four quadrants.

Based on Figure 2, it can be seen that items fall in quadrant I (Keep Up the Good Work) are items 2, 5, 9, 28, 29, 30 and 32. This quadrant suggests that healthcare centre is doing well and hope could continue the good work in corresponding items. The quadrant II (Concentrate Here) contains items 12, 13, 14, 16, 20, 23, 24, 25, 26 and 27. Items falled inside this quadrant suggest that must improve the performance of those items. The following items located in quadrant III (Low Priority) 1, 3, 4, 6, 7, 8, 10, 19, 22 and 31. The items falled in this area are not important based on respondent's perception and the performance of those items were not also good. Meanwhile items number 11, 15, 17 and 18 falled in quadrant IV (Possible Overkill) that reflect a low priority region.

5.   Conclusions

The main purpose of the present study is to measure the patient satisfaction level on healthcare service by implementing the methods of customer satisfaction index and importance performance analysis. This research can give information and evaluation material for management in order to improve the quality of their service to the patients. This study is also purposed to conduct a literature survey to understand how the service quality measures the patient satisfaction. In this study, two statistical methods were implemented to real data set regarding to patient satisfaction on healthcare service in Padang, Indonesia.

This study proved that CSI and IPA methods were approprite to be implemented in the data of patient satisfaction. This atudy found that respondents were satisfy after having healthcare services at selected healthcare center in Padang, Indonesia. It was indicated by the value of CSI is 87,723, indicated as "very satisfied". Meanwhile based on IPA, this study identified the plotting of all 32 items in four quadrants. There were 7 items falled in quadrant I, 10 items falled in quadrant II, 10 items in qundrant III and 4 items falled quadrant IV. Those finding are important for managements in order to maintain and improve the quality of their service to the patients [8].

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