

Analysis of Quality of Pharmacy Management Information System at Sultan Agung Islamic Hospital, Semarang

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ABSTRACT

Background: Hospital is one of the important links in the service delivery system to the community so that the hospital is expected to provide information to support the provision of timely and accurate services. To improve the quality of hospital services, an up to date information system is needed. The user satisfaction on information system can be used to evaluate the quality of an organization's information system. **Objective:** to evaluate the quality of the pharmacy management information system (PMIS) at Sultan Agung Islamic Hospital (SAIH), Semarang, and determine the priority of area for improvements.

Methods: In this cross-sectional qualitative study, the responses of all employees to questionnaire were obtained; these employees worked at the pharmacy of Sultan Agung Islamic Hospital in Semarang. The PIECES method was applied. The data analysis included gap and customer window

Results: The gap value on the dimension of performance, information, economic, control, efficiency, service was -1.10, -0.82, -0.28, -0.22, 0.01, -0.62, respectively

Conclusion: The user's unfulfilled expectation on PMIS at SAIH including dimensions of performance, information, economy, control, service, and efficiency. Priority areas for quality improvement of PMIS at the Sultan Agung Islamic Hospital's pharmacy included the menu display, system responsiveness, the completeness of the system, no error occurs, the alert system of the drug stock, the responsiveness of the IT department to the problem of PIMS use.

Keywords: PMIS, PIECES, Gap Analysis, Customer Window Analysis

ABSTRAK

Latar Belakang: Rumah sakit merupakan salah satu mata rantai yang penting dalam sistem pemberian pelayanan kepada masyarakat sehingga rumah sakit diharapkan dapat memberikan informasi untuk menunjang pemberian pelayanan yang cepat dan akurat. Untuk meningkatkan kualitas pelayanan rumah sakit dibutuhkan suatu sistem informasi yang selalu mengikuti perkembangan teknologi informasi. Kepuasan pengguna sistem informasi dapat digunakan untuk mengevaluasi kualitas sistem informasi suatu organisasi. **Tujuan:** untuk mengevaluasi kualitas Sistem Informasi Manajemen Farmasi (SIMF) Rumah Sakit Islam Sultan Agung (RSISA) Semarang serta menentukan prioritas perbaikan yang perlu dilakukan.

Metode: Subyek penelitian adalah semua karyawan di instalasi farmasi RSISA Semarang. Penelitian ini merupakan penelitian deskriptif analitik menggunakan metode *PIECES* melalui pendekatan kualitatif dengan survey. Analisis data yang digunakan adalah analisis *gap* dan analisis jendela pelanggan.

Hasil : Nilai *gap* pada dimensi *Performance* sebesar (-1,10), dimensi *Information* (-0,82), dimensi *Ekonomi* (-0,28), dimensi *Control* (-0,22), dimensi *Effisiensi* (0,01), dimensi *Service* (-0,62).

Kesimpulan: Kepuasan pengguna SIMF RSISA Semarang belum dapat terpenuhi pada dimensi *Performance*, *Information*, *Ekonomi*, *Control*, *Service*, dan pada dimensi *Effisiensi* kepuasan pengguna dapat terpenuhi dengan nilai *gap* bernilai positif. Prioritas perbaikan yang perlu dilakukan untuk meningkatkan kualitas SIMF RSISA Semarang adalah tampilan menu, kecepatan respon dari sistem, kelengkapan sistem kerja, tidak terjadi error, adanya *alert* sistem stok obat hampir habis/kosong, respon bagian IT terhadap masalah pemakaian SIMF.

Kata Kunci : SIMF, *PIECES*, Analisis *Gap*, Analisis Jendela Pelanggan

INTRODUCTION

Information technology advancement has potential to impact almost all organizational units, both government and private in all sectors including health and non-health sectors. This triggers the organization to continuously improve its ability to manage data in order to be able to produce accurate, timely and precise information. The number of variables in hospitals also determines the speed of information flow required by users and the hospital (Puspitasari et al., 2013). A key factor in planning and implementing health services is the

availability of health information. Technology based information system can facilitate or fasten the information management (Pratama et al., 2012).

In the globalized world, the rapid technological advancement especially in information technology allows timely and accurate data or information processing. Since hospitals are one of the components in the health care to the community, they are expected to be able to provide information to support fast and accurate service delivery (Rustiyanto, 2010). Users are the main key to the success or failure of a program implementation, because no matter how good the program and system, it will not run well without their support. A successful program development requires user's perceived ease of use of the program (Gunarti et al., 2016).

Since users are the beneficent the system, evaluating their perception is of importance. Perception is a cognitive process experienced by everyone in understanding information about their environment through sight, feeling and experience (Prasetya et al., 2009). One of the evaluations of system performance is based on user perceptions and expectations. The PIECES method is a method to assess the quality of an information system consisting of the dimensions of Performance, Information/data, Economic, Control/security, Efficiency, Service (Whitten and Bentley, 2007).

Sultan Agung Islamic Hospital (SAIH), located on Jl. Raya Kaligawe KM 4 Semarang, and established as a teaching hospital for students of Universitas Islam Sultan Agung, UNISSULA, is a class B teaching hospital that provides quality integrated health services by prioritizing aspects of research-based education. Since the use of the computerized system, SAIH has never evaluated the information system used, so that the quality of the pharmacy management information system according to users is unknown for the development of a pharmacy management information system that will be developed by the IT department.

METHODS

This was a cross-sectional qualitative study on the quality of pharmacy management system. PIECES method was applied by conducting a survey to obtain primary data. Respondents in this study were users of the pharmacy installation at Sultan Agung Islamic Hospital (SAIH), Semarang. They were all employees at the pharmacy installation of SAIH Semarang (n= 61). The data on the user satisfaction and the quality of the pharmacy management information system of SAIH Semarang were analyzed using gap analysis and customer window analysis.

RESULTS

1. Calculation of Gap in Value

a) Indicators on the Performance's Dimension

The satisfaction of users with the pharmacy management information system at SAIH Semarang had not been met the criteria of performance indicated by negative value of all indicators on this dimension as shown in table 1.

Table 1. Gap value of performance

Code	Indicator	Mean		Gap
		Perception (P)	Expectation (E)	P-E
1	Display menu	2.76	3.40	-0.64
2	System responsiveness	2.50	3.41	-0.91
3	Completeness of work flow	2.28	3.43	-1.16
4	No errors of the system	1.97	3.66	-1.69
	Mean	2.38	3.47	-1.10

b) Indicators on the Information dimension

The satisfaction of users of the pharmacy management information system at the private hospital had not met the criteria of information dimension indicated by a negative gap value of all indicators as shown in table 2.

Table 2. Gap value of Information

Code	Indicator	Mean		Gap
		Perception (P)	Expectation (E)	P-E
5	Accuracy of information system	3.02	3.48	-0.47
6	Relevant information	3.00	3.46	-0.47
7	Well documented data	3.02	3.47	-0.45

8	Easy access to the data	2.98	3.41	-0.43
9	Alert system for drug shortage	2.10	3.71	-1.60
10	Alert system for unavailability of drugs	1.88	3.72	-1.84
11	Understandable data	2.91	3.43	-0.52
Mean of Information/Data		2.70	3.53	-0.82

c) Indicator on the Economic dimension

The satisfaction of users with the pharmacy management information system at the private hospital had not met the criteria of economic dimension indicated by negative value of all indicators on this dimension as shown in table 3.

Table 3. Gap value in economic dimension

Code	Indicator	Mean		Gap
		Perception (P)	Expectation (E)	P-E
12	PMIS helps documentation of drug distribution	3.17	3.47	-0.29
13	PMIS improves the management of inventory	3.12	3.40	-0.28
14	PMIS reduces paper use	3.14	3.40	-0.26
Mean		3.14	3.42	-0.28

d) Indicators on the Control/Security dimension

The satisfaction of users with the pharmacy management information system at SAIH Semarang had not met the criteria of the control/security dimension indicated by a negative value for all indicators as shown in table 4.

Table 4. Gap value in control/security dimension

Code	Indicator	Mean		Gap
		Perception (P)	Expectation (E)	P-E
15	Access right is in accordance to the need	3.02	3.28	-0.26
16	Guarantee of Data safety	3.05	3.26	-0.21
17	Guarantee of data privacy	3.03	3.21	-0.17
18	Additional data back up	2.97	3.19	-0.23
Mean		3.02	3.23	-0.22

e) Indicators on the dimension of Efficiency

The satisfaction of users with the pharmacy management information system at the private hospital had not met the efficiency dimension indicated by a negative gap value for all indicators as shown in table 5.

Table 5. Gap value of Efficiency

Code	Indicator	Mean		Gap
		Perception (P)	Expectation (E)	P-E
19	The system improve productivity	3.17	3.17	0.00
20	PMIS improves work flow	3.22	3.21	0.02
21	The system improves the efficiency	3.24	3.16	0.09
22	The use of PMIS helps to manage the medical history data	3.14	3.21	-0.07
Mean		3.19	3.19	0.01

f) Indicators on Service dimension

The satisfaction of users with the pharmacy management information system at SAIH Semarang has not been fulfilled in the service dimension indicated by negative gap value for all indicators on this dimension as shown in table 6.

Table 6. Gap value on Service

Code	Indicator	Mean		Gap
		Perception (P)	Expectation (E)	P-E
23	The Information systems is practical	2.67	3.19	-0.52
24	The Interface is easy to understand	2.88	3.40	-0.52
25	The System works precisely	3.14	3.43	-0.29
26	The Information system is reliable for the works needed	2.88	3.40	-0.52
27	The PMIS is easy to operate	2.93	3.43	-0.50
28	The IT Department response fast to PMIS users	2.21	3.55	-1.34
Mean		2.78	3.40	-0.62

2. Customer Window Analysis

With the mapping of service quality dimension indicators in the cartesian diagram, it is hoped that it can be seen how far the achievement of the performance of the pharmacy management information system developer of SAIH Semarang in meeting user expectations. The results of the analysis of the customer window of the SAIH Semarang pharmacy management information system can be seen in Figure 1.

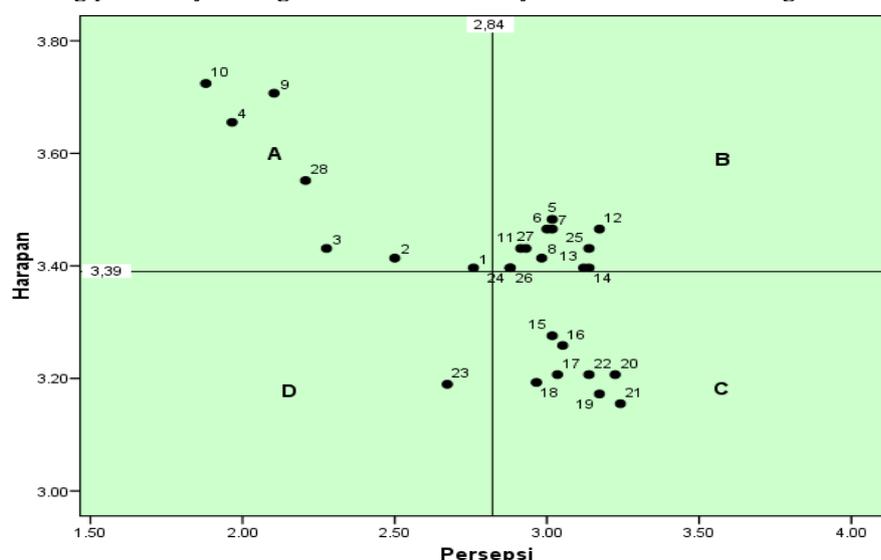


Figure 1: Customer window analysis

- A: Attention (Customer wants it and does not get it)
- B: Bravo (customer does not want it, and does get it)
- C: Cut or Communicate (customer does not want it, but he gets it)
- D: Don't Worry be Happy (customer does not want it, and gets it anyway)

DISCUSSION

One of the most important measure of customer satisfaction is the gap level between perceptions and expectations of customers on the quality of services. Gap analysis is carried out to determine the gap in the quality of services or services received by customers and the expectations of customers (Muchsam et al., 2011).

In measuring the quality of the pharmacy management information system (PMIS), it is necessary to calculate the value of the gap between perceptions and expectations of each indicator in the PIECES dimensions. Based on the measurement of the value of the gap between the perceived and the mean expectation on the quality of PMIS at SAIH Semarang, the gap value in the performance, information, economic control/security, efficiency was -1.10, -0.82, -0.22, -0.23, +0.01, -0.62, respectively. The results showed that the satisfaction of users on the pharmacy management information system of SAIH Semarang has not been fulfilled in the dimensions of performance, information, economy, control, service indicated by a negative gap, and on the dimension of efficiency of user satisfaction of the pharmacy management information system at SAIH Semarang can be fulfilled indicated by a positive gap.

According to Hussein *et al* (2011) the completeness of the information system is related to the completeness of the content of the information, in this case it is not only related to the volume but also the its relevancy with the expectations of the users (Hussein et al., 2011). The completeness of the data presented is one of the important factors in decision making related to patients. Users of the PMIS of the SAIH Semarang

perceived a slow loading of response process from the system leading to input process and data access takes times, no alert system for drug stock leading to undetected shortage of drugs so resulting in manual check.

Reliability is defined as the ability to deliver the desired service accurately and dependably, especially providing services on time (Yamit, 2010). The PMIS of SAIH currently used belongs to the developer (second party). Thus, users perceived a slow response to the complaints related to the system.

The use of customer window analysis in calculating customer satisfaction will be very useful in determining an appropriate strategy to maintain the achievements and correct deficiencies. The middle line of the cartesian diagram was determined using the mean value of the total perception scores (X) and expectations (Y) dividing the diagram into four (quadrants): quadrant A (top priority), quadrant B (maintain), quadrant C (low priority), quadrant D (excessive) (Tjiptono and Chandra, 2016).

Based on the customer window analysis, the proposed strategies for quality improvement included the understandable menu display, fast response of the average transaction/data entry, the completeness of the information system, no error when inputting inappropriate data, the availability of alert system for drug stock and drug shortage, the responsiveness of IT department.

CONCLUSION

It can be concluded that the user expectations on pharmacy management information system at SAIH has not been met in term of performance, information, economics, control, service, and the efficiency. User expectation can be met with a positive gap value. The proposed priority area for improvements includes the menu display, the responsiveness of system, the completeness of the work flow, error prevention, the alert system of the drug shortage, the responsiveness of the IT department to the problems of the PMIS.

CONFLICT OF INTEREST

Authors declare no conflict of interest during the manuscript's production.

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