

Testing User Satisfaction Using End-User Computing Satisfaction (EUCS) Method in Hospital Management Information System (SIMRS) (Case Study at the Regional Public Hospital dr. A. Dadi Tjokrodipo)

Ahmad Cucus (Corresponding author)
Faculty of Computer Science, Universitas Bandar Lampung

Ghufranil Halim
Master of Management Postgraduate Program, Universitas Bandar Lampung
Faculty of Economics, Universitas Bandar Lampung

Abstract

Accuracy and timeliness of information are the main priority in hospital services. The purpose of this study is to determine the level of satisfaction of users of the Hospital Management Information System at the Regional Public Hospital dr. A. Dadi Tjokrodipo in order to obtain an overview of the level of user satisfaction as a reference for future evaluations and examine the factors that influence user satisfaction with the EUCS method of Hospital Management Information Systems in the hospital. The sampling technique in this study is purposive sampling technique. The variables used in this study are: Content (X_1), Accuracy (X_2), Format (X_3), Ease of Use (X_4), Timeliness (X_5), and User Satisfaction (Y). Variable measurement scale in the study used Likert Scale. The results of the study concluded in the Content (X_1), Accuracy (X_2), Format (X_3), Ease of use (X_4), and Timeliness (X_5) are in a quite good category, with an average percentage of 55.67%, 60.27 %, 62.50%, 64.83%, and 66.17%. The research results also conclude that based on the results of descriptive analysis, the variable User Satisfaction (Y) on Hospital Management Information System according to each question is in the Good category with an average value of 71.33%.

Keywords: Hospital Management Information System; Information systems; User satisfaction

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1. Introduction

1.1 Background

Technological developments have reached an amazing level. The development of technology is based on an increase in technological needs by humans. The development of these technologies has not only occurred in one field but has occurred in all aspects of human life. One technology that is developing rapidly is in the field of information and communication technology. In the present decade, the influence of Information technology and communication is undeniable in the business and government segments. Information needs cannot be separated from human life; there are parties who provide information and there are also parties who receive information. The process of sending or exchanging information is currently in digital form. Software applications often play an important role as a medium for delivering and storing information (Jusuf, 2008).

Regional Public Hospital (RSUD) dr. A. Dadi Tjokrodipo Bandar Lampung is in the middle of the city which is easily accessible to the public. The service of RSUD dr. A. Dadi Tjokrodipo continues to be improved to meet patient needs. The hospital constellation should not only provide health services but also play a role in creating a service system that can support efforts to improve health services in a comprehensive, integrated and sustainable manner. One effort that can be done is by having a hospital management information system (SIMRS). This hospital information system will assist in providing information that is at the hospital. Globally, hospital information systems are divided into several subsystems. They are the registration section or better known as medical records, polyclinic section, pharmacy section, cashier section, outpatient department and inpatient department.

The application of SIMRS that has been carried out in a hospital needs to be accompanied by measures of

assessment, measurement, and evaluation to determine the success of the application of the information system. After implementing a hospital management information system (SIMRS) it is important for a Regional General Hospital (RSUD) to find out the success of the application of the information system. One important factor that can determine the success of implementing an information system is the satisfaction of end-users of the system (Subiyakto et al., 2014; Subiyakto et al., 2016b).

Other studies that have been conducted and related to the topic of research that will be carried out are Analysis of information systems entry online at Bina Darma University using the end-user computing (euc) satisfaction method (Jefri Gumilar Pratama, S. Kom., 2012). The study was conducted to calculate the level of student satisfaction in the use of the online KRS entry information system in UBD so as to find out how much influence the Online KRS Entry Information System reviewed from the content factor, accuracy, shape, ease of use and timeliness with the EUCS method. Then there are also other studies namely E-learning User Satisfaction Analysis Using the End-User Computing Satisfaction Method (I Gusti Ngurah Satria Wijaya, 2017). This study aims to determine the satisfaction analysis in using the e-learning system on the STIKOM Bali website using the End-User Computing Satisfaction method.

Based on the above, we will conduct a study to determine the success rate of the application of SIMRS in dr. RSUD A. Dadi Tjokrodipo based on the perception of end-user satisfaction. In addition, we will also identify problems that might arise as a result of systems that have never been evaluated. The results of this study are expected to explain the level of satisfaction of SIMRS users and show important factors that influence the level of satisfaction of SIMRS based on the perspective of end users so that it can be input to the SIMRS management for future system development plans.

1.2 Research Objectives

- a. Based on the background and formulation of the problems described earlier, this research was conducted with two objectives, namely to:
- b. Knowing the status of user satisfaction of the hospital management information system (SIMRS) at the regional public hospital (RSUD) dr. A. Dadi Tjokrodipo.
- c. Test the factors that influence user satisfaction with the EUCS method on hospital management information systems (SIMRS) regional public hospitals (RSUD) dr. A. Dadi Tjokrodipo.

2. Literature Review

2.1 Definition of Satisfaction Testing

According to The Great Dictionary of the Indonesian Language, testing in general is a trial process to determine the quality of something (deafness, skill, endurance, etc.). Satisfaction Definition according to Kotler in Abdurrahman and Prasetyo (2016) is the level of one's feelings after comparing performance or results with expectations. Satisfaction can be seen from the suitability of expectations with what is obtained from a service. The word 'satisfaction' comes from the Latin "satis" (meaning quite good, adequate) and "facio" (meaning to do or make), so that it can simply be interpreted as an effort to fulfill something (Tjitptono, 2000).

2.2 Definition of Examiner Information System Satisfaction

Information system satisfaction testing is a process carried out to determine the success of an information system through the level of user satisfaction when using the system by comparing system performance and user expectations.

2.3 End-User Computing Satisfaction (EUCS)

End-User Computing Satisfaction is the overall evaluation of the information system used by system users in connection with the experience of using the information system. The experience was measured to find out whether the information system used is effective and in accordance with what is desired (Chin & Lee, 2000)

This EUCS evaluation model was developed by Doll & Torkzadeh in 1998. This model emphasizes end-user satisfaction with technological aspects by assessing content, accuracy, timeliness, and ease of use of the system.

EUCS is a method of measuring the level of satisfaction of users of an application system by comparing the expectations and reality of an information system (Pratama et al. 2012). End-User Computing Satisfaction is the overall evaluation of the information system used by system users in connection with the experience of using the information system. The usage experience is measured to determine whether the information system used is effective and in accordance with what is desired (Chin & Lee, 2000).

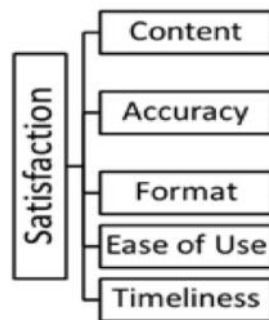


Figure 1.
ModelEUCS(Doll and Torkzadeh,1998)

This EUCS evaluation model was developed by Doll & Torkzadeh in 1998. This model emphasizes end-user satisfaction with technological aspects by assessing content, accuracy, format, timeliness, and ease of use of the system. EUCS is a method for measuring the level of satisfaction of users of an application system by comparing expectations and reality of an information system (Pratama et al., 2012).

2.4 Hospital Management Information System.

The Hospital Management Information System (SIMRS) is an integrated information system prepared to handle the entire management process of the Hospital. The use of information technology is very important for hospitals. SIMRS or often referred to as Hospital Management System (HMS) or Hospital Information System (HIS) is a data processing procedure based on information technology and integrated with manual procedures and other procedures to produce timely and effective information to support management decision making processes in hospitals. The Management Information System is currently the main resource. This system has strategic value and has an important role for the Hospital to be able to provide the best service.

3. Research Methods

3.1 Population and Research Samples

In this study the units that became the object of research were SIMRS users at the Regional General Hospital, dr. A. Dadi Tjokrodipo especially in the medical record work unit, polyclinic, radiology and emergency department (ED). They are employees who carry out medical records for outpatient and inpatient activities, input radiology data, patient registration, poly queues and counter queues. The sampling technique used in this study is Purposive Sampling. The questionnaire was designed in the form of a statement in line with the research approach and strategy which was then disseminated to the 30 respondents who had been targeted.

3.2 Types and Data Sources

The data to be obtained is primary data. This data will be obtained from the respondent's answer to the list of questionnaires sent and delivered directly to the end user. Data collection is done by questionnaire method by giving some questions to the respondents.

3.3 Operational Definitions and Variable Measurements

This study uses five independent variables namely content (X1), accuracy (X2), format (X3), user convenience (X4) and timeliness (X5), and one dependent variable, User Satisfaction (Y). Here is the explanation for each dimension measured by Doll & Torkzadeh's End User Computing Satisfaction method:

1. Content (X₁)

Is a dimension to measure user satisfaction in terms of the content of a system. The contents of the system are usually in the form of functions and modules used by system users and also information generated by the system. The contents also measure whether the system produces information that is in accordance with user needs. The more complete the module and the informative the system, the higher the level of satisfaction of users (Rasman, 2012).

2. Accuracy (X_2)

Is the dimension used to measure user satisfaction in terms of data accuracy when the system receives input and then processes it into information. System accuracy is measured by seeing how often the system produces the wrong output when managing user input. Besides that, it can also be seen from how often errors occur in the data management process (Setiawan, 2016).

3. Format (X_3)

Is a dimension to measure user satisfaction from the side of the application itself. The format dimension aims to measure user satisfaction in terms of appearance and aesthetics of the system interface design. The format of the report or information produced by the system is whether the interface of the system is interesting and whether the appearance of the system makes it easier for users when using the system so that it can indirectly affect the level of effectiveness of the user (Rasman, 2012).

4. Ease of user (X_4)

Ease of use dimensions are dimensions that are used to measure satisfaction in terms of user convenience or user friendliness in using systems such as data input processes, data processing, and searching for information needed.

5. Timeliness (X_5)

Timeliness dimensions are dimensions to measure user satisfaction in terms of system timeliness in presenting or providing data and information needed by users. Timely systems can be categorized as real-time systems. This means that every request or input made by the user will be immediately processed and the output will be displayed correctly without having to wait long.

6. User Satisfaction (Y)

Is overall user satisfaction determined by perceived value factors, perceived quality and user expectations to the overall customer which has behavioral consequences in the form of customer complaints and customer loyalty (Usmara, 2008: 115-116).

3.4 Variable Scale

The variable measurement scale in this study refers to the Likert Scale. The Likert scale is a psychometric scale that is commonly used in questionnaires and is the scale most widely used in several research surveys. On the Likert Scale five scaling options are provided in the following format: [1] strongly disagree, [2] disagree, [3] neutral, [4] agree, and [5] strongly agree (Syofian et al., 2015).

3.5 Test of Validity

Validity test is done to find out whether a measuring instrument that has been compiled really measures what needs to be measured. The validity test is useful to determine how carefully a tool performs a function whose size can be trusted.

In this study the validity test was carried out using the Pearson Product Moment correlation technique. The number of correlations obtained statistically must be compared with the critical number table correlation r value between significant f 95%. If $r\text{-count} > r\text{-table}$, this means that the data is significant (valid). Conversely, if $r\text{-count} < r\text{-table}$, this means that the data is not significant (invalid).

4. Results and Discussion

4.1 Validity Test Results

The results of testing the research instrument on 30 respondents indicated that all statement items for independent variables had a $r\text{-count}$ correlation value greater than $r\text{-table}$ 0.361, so that all items of statements tested to respondents on each variable were valid.

4.2 Reliability Test Results

The results of testing the research instrument in terms of reliability of total statistics can be explained in the following table:

Table 1 Reliability Test Results

Variables	Alpha Value	Information
Conent	0,900	Reliable
Accuracy	0,809	Reliable
Format	0,876	Reliable
Ease of user	0.745	Reliable
Timeliness	0.877	Reliable
User Satisfaction	0.886	Reliable

Source: Results of 2018 Data Processing

In the table above it can be concluded that all variables in this study are reliable because the Cronbach-Alpha (α) value of each variable is greater than 0.60.

4.3 Descriptive Analysis

The data of this study can be described using qualitative analysis which is intended to describe the results of filling out respondents' answers according to the data obtained in the field at the time of the study. The description of the data is obtained through the answer categories of 30 respondents studied with 25 items on the questionnaire submitted in 6 research variables. They are 4 items in the content variable (X1), 5 items in the accuracy variable (X2), 4 items in the format variable (X3), 4 items in the accuracy variable (X4), 4 items in the timeliness variable (X5), and 4 items on user satisfaction variable (Y).

The followings are the results of the research questionnaire for each variable:

1. Variable (X₁) Content.

To find out the Respondent's answer category from the questionnaire statement submitted, it falls into the category of Strongly Disagree (SD), Disagree (D), Neutral (N), Agree (A), and Strongly Agree (SA). Then we conducted an analysis with the Likert Method. The steps taken are as follows:

- a. Determine the amount of the interval with the formula as follows:

$$i. I = \frac{NT - NR}{K} = \frac{20 - 4}{5} = \frac{16}{5} = 3,2to3$$

- b. Determine the amount of the criterion score (performance score) (ΣSK).

- i. ΣSK = The highest score for each statement item X Number of items statement X
Number of respondents

- ii. $\Sigma SK = 5 \times 4 \times 30 = 600$

- c. The total score of the results of variable data collection (X₁)

- i. Number of Results Scores (SH) = 334

- d. Determine the percentage (P)

$$P = \frac{\sum SH}{\sum SK} \times 100\%$$

$$P = \frac{334}{600} \times 100\% = 55.67\%$$

From the above calculation, the range of categories is obtained, while the range of categories is as follows:

Very Not Good	Not Good	Fairly Good	Good	Very Good
20-35%	36 – 51%	52 – 67%	68 – 83 %	84 – 100%

From the range of categories, it can be seen that the results of the distribution of the percentage of End User answers based on the Content variable (X1) is 55.67% which is included in the Fairly Good category.

2. Variables (X2) Accuracy.

To find out the respondent's answer category from the questionnaire statement submitted, it is included in the category of Strongly Disagree (SD), Disagree (D), Neutral (N), Agree (A), and Strongly Agree (SA). Then, we carried out an analysis with the Likert Method. The steps taken are as follows:

- a. Determine the amount of the interval with the formula as follows:

$$I = \frac{25 - 5}{5} = \frac{20}{5} = 4$$

- b. Determine the amount of the criterion score (performance score) (ΣSK).
 ΣSK = the highest score for each statement item X Number of items statement X Number of respondents.
 $\Sigma SK = 5 \times 5 \times 30 = 750$

- c. Number of total score results of variable data collection (X2) Total Results Score (SH) = 452
 d. Determine the percentage (P)

$$P = \frac{\sum SH}{\sum SK} \times 100\%$$

$$P = \frac{452}{750} \times 100\% = 60.27\%$$

From the above calculation, the range of categories is obtained. The range of categories is as follows:

Very Not Good	Not Good	Fairly Good	Good	Very Good
20-35%	36 – 51%	52 – 67%	68 – 83 %	84 – 100%

From the range of categories, it can be seen that the results of the distribution of the percentage of End-User answers based on the variable Accuracy (X2) is 60.27% which is included in the Fairly Good category.

3.Variable (X3) Format

To find out the respondent's answer category from the questionnaire statement submitted, it is included in the category of Strongly Disagree (SD), Disagree (D), Neutral (N), Agree (A), and Strongly Agree (SA). Then, we carried out an analysis with the Likert Method. The steps taken are as follows:

- a. Determine the amount of the interval with the formula as follows:

$$I = \frac{20 - 4}{5} = \frac{16}{5} = 3,2to3$$

- b. Determine the amount of the criterion score (performance score) (ΣSK).
 ΣSK = the highest score for each statement item X Number of items statement X Number of respondents
 $\Sigma SK = 5 \times 4 \times 30 = 600$
- c. Total score of the results of variable data collection (X3)
 Total Results Score (SH) = 375

- d. Determine the percentage (P)

$$P = \frac{\sum SH}{\sum SK} \times 100\%$$

$$P = \frac{375}{600} \times 100\% = 62.50\%$$

From the above calculation, the range of categories is obtained, while the range of categories is as follows:

Very Not Good	Not Good	Fairly Good	Good	Very Good
20-35%	36 – 51%	52 – 67%	68 – 83 %	84 – 100%

From the range of categories, it can be seen that the distribution of the percentage of End User answers based on the Format variable (X3) is 62.50%. It is included in the **Fairly Good** category.

2. Variable (X4) Ease of Use.

To find out the respondent's answer category from the questionnaire statement submitted, it is included in the category of Strongly Disagree (SD), Disagree (D), Neutral (N), Agree (A), and Strongly Agree (SA). Then, we carried out an analysis with the Likert Method. The steps taken are as follows:

- a. Determine the amount of the interval with the formula as follows:

$$I = \frac{20 - 4}{5} = \frac{16}{5} = 3,2to3$$

- b. Determine the amount of the criterion score (performance score) (ΣSK).

ΣSK = The highest score for each statement item X Number of items statement X Number of respondents

$$\Sigma SK = 5 \times 4 \times 30 = 600$$

- c. Total score of variable data collection results (X_4)

Number of Results Scores (SH) = 389

- d. Determine the percentage (P)

$$P = \frac{\sum SH}{\sum SK} \times 100\%$$

$$P = \frac{389}{600} \times 100\% = 64.83\%$$

From the calculation above, we get the range of categories. The range of categories is as follows:

Very Not Good	Not Good	Fairly Good	Good	Very Good
20-35%	36 – 51%	52 – 67%	68 – 83 %	84 – 100%

From the range of categories, it can be seen that from the results of the distribution of the percentage of End-User answers based on the User Ease variable (X_4) is 64.83% which is included in the **Fairly Good** category.

3. Variable (X5) Timeliness

To find out the answer categories of the Respondents from the questionnaire statements submitted, they fall into the category of Very Disagree (STS), Disagree (TS), Neutral (N), Agree (S), and Strongly Agree (SS). Next, what we do is analyze with the Likert Method. The steps taken are as follows:

- a. Determine the amount of the interval with the formula as follows:

$$I = \frac{20 - 4}{5} = \frac{16}{5} = 3,2to3$$

- b. Determine the amount of the criterion score (performance score) (ΣSK).

ΣSK = The highest score for each statement item X Number of items statement X Number of respondents

$$\Sigma SK = 5 \times 4 \times 30 = 600$$

- c. Total score of variable data collection results (X_4)

Number of Results Scores (SH) = 397

- d. Determine the percentage (P)

$$P = \frac{\sum SH}{\sum SK} \times 100\%$$

$$P = \frac{397}{600} \times 100\% = 66.17\%$$

From the above calculation, the range of categories is obtained, while the range of categories is as follows:

Very Not Good	Not Good	Fairly Good	Good	Very Good
20-35%	36 – 51%	52 – 67%	68 – 83 %	84 – 100%

From the range of categories, it can be seen that the results of the distribution of the percentage of End User answers based on the Timeliness variable (X5) is 66.17% which is included in the **Fairly Good** category.

4. Conclusion

Based on the results of the analysis that has been carried out, the following conclusions can be drawn:

1. SIMRS users are satisfied with the implementation of SIMRS at the Regional Public Hospital (RSUD) dr. A. Dadi Tjokrodipo. This is indicated by the percentage of 71.33% of users who agree with SIMRS.
2. The conclusions regarding each variable can be explained as follows:
 1. Based on the results of the descriptive analysis, the variable Fill (X1) on SIMRS according to each question is included in the Pretty Good category or with a percentage value of 55.67%.
 3. Based on the results of the descriptive analysis, the Accuracy variable (X2) on SIMRS according to each question is in the category of Good or with a percentage value of 60.27%.
 4. Based on the results of the descriptive analysis, the Format variable (X3) in SIMRS according to each question is in the category of Good or with an average value of 62.50%.
 5. Based on the results of the descriptive analysis, the User Ease variable (X4) on SIMRS according to each question is in the Good category or with a percentage value of 64.83%.
 6. Based on the results of the descriptive analysis, the timeliness variable (X5) on SIMRS according to each question is included in the Good category or with a percentage value of 66.17%.

Our suggestion for further research is that it can be further developed by using other methods as material for comparison with the methods already done.

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