

# Evaluation of the Hospital Information System (HIS ) using EUCS and PIECES Methods on the Medical Record Section of RSUD dr. Haryoto Lumajang

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**Abstract**—The use of HIS itself in Indonesia is 82.21% of hospitals have adopted HIS and only 15.79% have not adopted HIS. However, the use of SIMRS still uses paperless medical records because there are still several aspects of SIMRS that need to be developed according to user needs. The purpose of this study was to evaluate HIS using the PIECES and EUSC methods. The PIECES method is used to evaluate based on system performance consisting of performance, information, economy, control, efficiency and service variables. The EUSC method is used to evaluate user satisfaction using content, format, accuracy, timeliness and easy of use variables. This type of research is quantitative descriptive and analytic with a sample of 45 people. Descriptive data processing using scoring and analytical using chi square test. Descriptive data processing using scoring and analytical using chi square test. The results of descriptive research using the PIECES method: the performance variable is 69.0%, the information variable is 70.18%, the economy variable is 67.3%, the control variable is 71.4%, the efficiency variable is 72.3%, the service variable is 73.2% and all variables included in the good category. The results of analytical research using the End User Computing Satisfaction method found that there are 4 variables that affect user satisfaction, namely content, format, timeliness and easy of use, while the accuracy variable does not affect HIS user satisfaction.

**Keywords**—Evaluation, PIECES, EUCS, HIS

## I. INTRODUCTION

Information system is a mixture of information technology to assist operations and management that can produce information. <sup>1</sup>Ministry of Health (2020) within the Strategic Plan of the Ministry of Health for 2020-2024 additionally explains that the improvement and growth of the implementation of information systems in hospitals (SIMRS GOS), in addition to integration/interoperability on the transaction data level in

health care facilities should be achieved in order that data may be applied optimally starting from primary health facilities, advanced health facilities, local government, provincial government, and central government. This is also strengthened by the Regulation of the Minister of Health of the Republic of Indonesia Number 82 of 2013 regarding Hospital Management Information Systems article 3 which explains that every health facility is obliged to prepare SIMRS (Ministry of Health RI, 2013)<sup>[2]</sup>. The 2015 survey confirmed that most effective about 10% of public hospitals within the US already use a complete EHR (Electronic Health Record) system and basic EHR (Hariana et al., 2018)<sup>[3]</sup>. This adoption rate is greater or much less the equal in European countries. In the 2017 survey only about 11.9% of general hospitals in Austria and 7.0% in German hospitals used a complete EHR (Hariana et al., 2018)<sup>[3]</sup>. In the same year, only about 10.1% of hospitals in Japan had adopted EHR. But in Korea, only 9% use EHR comprehensively. Then, the use of SIMRS itself in Indonesia, 82.21% of hospitals have adopted SIMRS and only 15.79% have not adopted SIMRS. The adoption of information systems in health sector in Indonesia itself uses quite a lot of information systems, one of the cities in Indonesia, namely Yogyakarta, has reached 82.21% of the research in 57 hospitals (Hariana et al., 2013)<sup>[3]</sup>.

The policy that regulates the hospital's obligation to organize SIMRS is regulated in the Regulation of the Minister of Health of the Republic of Indonesia 1171/MENKES/PER/VI/2011 which was revealed in the Technical Guidelines for Hospital Information Systems in 2011 (Ministry of Health, 2011)<sup>[2]</sup>. Hospital Management Information System is used to collect, process and present information that can be used as a reference in decision making. SIMRS that is implemented must be in line with the vision and mission of the hospital (Handiwidjojo, 2015)<sup>[4]</sup>. Likewise SIMRS which is used in the Regional General

Hospital (RSUD) Dr. Haryoto Lumajang is one of the advanced type B health facility in Lumajang. Hospital Dr. Haryoto Lumajang also implemented SIMRS. The outcomes of the preliminary study explained that SIMRS General Hospital Dr. Haryoto underwent an update with more complete features on January 1, 2021. The SIMRS update affects the user's adaptation in using the new SIMRS so that it is not uncommon to find criticism and suggestions if there are problems in using it, especially withinside the medical record section because the first input is completed via the registration officer who is part of the medical record and the final outcomes (output) are also processed by medical records to be used as useful information. The results of a preliminary study using interview techniques on June 1, 2021 to several medical record officers said that the information system at RSUD Dr. Haryoto Lumajang is still found not to fulfill several aspects. The process of analyzing a system will usually be carried out on several aspects including performance, information, economy, software security, efficiency and customer service (Ragil, 2017 17)<sup>[5]</sup>.

## II. METHODOLOGY

The type of research in this research is descriptive and quantitative analytical research with a cross sectional approach. The descriptive design in this study is to describe the aspects of Performance, Information, Economy, Control, Efficiency, Security while quantitative analysis for aspects of Content, Format, Accuracy, Timeliness, and Easy of Use according to the implementation of SIMRS at Dr. Hospital. Haryoto Lumajang. The independent variables consist of content, format, accuracy, timeliness and ease of use. The dependent variable in this study is user satisfaction. The number of samples in this study were 55 users of SIM Medical Record. The method used for this sampling is saturated sampling (census)/total sampling, which means the technique of determining the sample by taking all members of the population (Sugiyono, 2018 78)<sup>[8]</sup>. The data analysis techniques used were scoring, univariate analysis, and bivariate analysis.

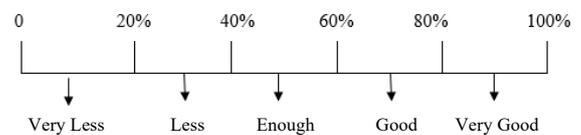
- a. Scoring In this study used every variable contained in the PIECES method that was asked to respondents through a questionnaire sheet. A score is a score created to distinguish between data obtained from researchers. The score is done to distinguish each variable contained in the research method. Score rating categories on question items:  
 1= Very Less  
 2= Less  
 3= Enough  
 4= Good  
 5= Very Good  
 Then calculate the score using:  
 Description:

Results of interpretation calculations on performance variables:

- $\sum$  Score for respondents answering Very Good (5) :  $n \times 5 = n5$
- $\sum$  Score for respondents answering Good (4) :  $n \times 4 = n4$
- $\sum$  Score for respondents answering Enough (3) :  $n \times 3 = n3$
- $\sum$  Score for respondents answering Less (2) :  $n \times 2 = n2$

$\sum$  Score for respondents answering Very Less (1) :  $n \times 1 = n1$   
 Total amount =  $\sum n$   
 Highest amount of score = highest value of score x  $\sum$ question x  $\sum$  respondent

$$\text{Score Interpretation} = \frac{\text{Amount of Scores } (\sum n)}{\text{Highest Amount of Score}} \times 100\%$$



- Description:
- Number 0 – 20% = Very Less
  - Number 21% - 40% = Less
  - Number 41% -60% = Enough
  - Number 61% -80% = Good
  - Number 81% -100% = Very Good

- b. Univariate analysis is performed on each EUCS variable. The identified variable consists of dependent variables and variables independent of EUCS variables. Univariate analysis results in the distribution and frequency (percentage) contained in each variable. This analysis aims to clearly know the description of each variable used to identify user satisfaction on each variable.
- c. Bivariate analysis conducted in this study is used to determine the relationship of each of the eucs independent variables (content, format, accuracy, timeliness and easy of use) with dependent variables (user satisfaction). The statistical test used in this study is the Chi-square statistical test. The results of questionnaire data obtained from the results of research are processed using SPSS application software. The requirements of the data scale used for the chi-square test are categorical or nominal, while the data scale contained in this research questionnaire is ordinal so that the processing of the scale from ordinal to nominal uses a cut of point from the mean. The data correlated in this test does not have to be normal distribution because the chi-square test is a non-parametric type of statistic.

## III. OUTCOMES AND DISCUSSIONS

- a. SIMRS Evaluation Based on User Perception of System Performance Variables  
 Table 4.1 Respondents Answer to Performance Variables.

Criteria	Question						Amount	%
	P1	P2	P3	P4	P5	P6		
Very Good	4	5	4	8	4	3	28	8,5
Good	20	14	23	34	21	20	132	40
Enough	21	36	20	13	22	19	131	39,7
Less	10	0	8	0	8	13	39	11,8
Very Less	0	0	0	0	0	0	0	0
TOTAL							330	100

Source : Processed Data, 2021.

Results of interpretation calculations on performance variables:

$$\sum \text{Score for answering Very Good (5)} : 28 \times 5 = 140$$

$$\sum \text{Score for answering Good (4)} : 132 \times 4 = 528$$

$$\sum \text{Score for answering Enough (3)} : 131 \times 3 = 393$$

$$\sum \text{Score for answering Less (2)} : 39 \times 2 = 78$$

$$\sum \text{Score for answering Very Less (1)} : 0 \times 1 = 0$$

$$\text{Total amount } (\sum n) = 1139$$

$$\text{Highest amount of score} = \text{highest value of score} \times \sum \text{question} \times \sum \text{respondent}$$

$$= 5 \times 6 \times 55$$

$$= 1650$$

$$\text{Score Interpretation} = \frac{\text{Amount of Scores } (\sum n)}{\text{Highest Amount of Score}} \times 100\%$$

$$= \frac{1139}{1650} \times 100\% = 69,0\%$$

The results of the study at dr. Haryoto Lumajang Hospital conducted to 55 respondents of hospital information system users using kuesoner obtained a percentage of performance results of 69.0%. Results of 69.0% included in the score range of 60-80% which is included in the criteria both. Based on table 4.1 can be known from all the questions contained in the answer questionnaire that obtained the highest number, namely on the criteria of both 40% of respondents and the lowest number is in the criteria is very less, which is 0%.

Performance variables are used to evaluate the simrs performance of systems that have been designed based on user perception (Whitten et al in Utama, 2016). Variables in the aspect of good performance should already be able to meet the needs of hospitals such as report needs, the display produced is easily understood by users of information systems, the work function is quite complete and there is only a little damage to SIMRS. Based on research conducted by researchers there are still shortcomings in the performance aspect, namely reports produced by the system must be processed again to get hospital reports such as reports of death, drugs and efficiency of bed use. The report is a type of report used for external reporting of hospitals.

Death reports are used for RL 4, while reports on drugs are used to make RL 3.13 reports (Juknis SIRS, 2011). Death reports on SIMRS have not included gender in deceased patients so officers had to conduct a search on the patient's visit list. The explanation is not in accordance with one of the indicators of performance aspects (throughput), namely throughput explaining that the output produced by the SIMRS system can meet the needs of users (Nuryati et al, 2015)<sup>[9]</sup>. The results of respondents' answers to question indicators on performance variables that answer less, namely contained in SIMRS can produce output according to the needs of units in the hospital.

b. SIMRS Evaluation Based on User Perception of System Performance on Information Variables.

Table 4.2 Respondents Answers to Information Variables

Criteria	Question					Amount	%
	I1	I2	I3	I4	I5		
Very Good	5	4	3	3	3	18	6,5
Good	20	29	30	35	26	140	50,9
Enough	17	13	20	16	16	82	29,8
Less	13	9	2	1	9	34	12,4
Very Less	0	0	0	0	1	1	0,4
<b>TOTAL</b>						275	100

Source : Processed Data, 2021.

The results of the study at dr. Haryoto Lumajang Hospital conducted on 55 respondents of hospital information system users using questionnaires obtained a percentage of information results of 70.18%. Results of 70.18% included in the score range of 60-80% which is included in the criteria both. Based on table 4.2 can be known from all the questions contained in the answer questionnaire that obtained the highest number, namely in the criteria of both 50.9% of respondents and the lowest number is in the criteria is very less, which is 0.4%.

Data variables are used to evaluate the information simrs generates based on user perception. Information is data that has been processed and has benefits or useful value for users, has a specific purpose and supports decision making (Supriyatna, 2015)<sup>[10]</sup>. The resulting information must be accurate, relevant and timely (Hikmah and Farlinda, 2014)<sup>[11]</sup>. Based on research conducted by researchers there are still shortcomings in the aspect of information such as still not accessible to some of the report menu contained in SIMRS. The information generated by the system is also not accurate because there is a difference between the time of filling the patient referral and the report displayed on the information system.

When patients with this type of arrival are referred to other hospitals, the officer has included information that the patient is a type of patient with the arrival of another faskes referral but when looking at the patient reporting referral in SIMRS there are no report results that indicate that the patient is a referral patient. According to Lipursari (2013)<sup>[12]</sup> accurate also means that information must clearly reflect its intent. Information must be accurate because from the source of information to the recipient of information there may be a lot of interference (noise) that can change or damage the information. Referral activities consist of referral patients received from health centers, private hospitals, returned to puskesmas. While the referred activity consists of the referral patient, the patient comes alone and the patient is readmitted. However, the results of the report are still not in accordance with input at the time of patient registration. Referral activities are used in the reporting of RL 3.14 on referral activity reports. Referral activity is used for the delivery of the patient then in this chapter is asked for data about the referral patient and the patient referred (Juknis SIRS, 2011).

c. SIMRS Evaluation Based on User Perception of System Performance Based on Economy Variables.

Table 4.3 Respondents Answers to Economy Variables

Criteria	Question					Amount	%
	E1	E2	E3	E4	E5		
Very Good	3	3	3	4	3	16	5,8
Good	25	22	13	17	18	95	34,5
Enough	18	30	30	26	34	138	50,2
Less	9	0	9	8	0	26	9,5
Very Less	0	0	0	0	0	0	0
<b>TOTAL</b>						275	100

Source : Processed Data, 2021

The results of the study at dr. Haryoto Lumajang Hospital conducted on 55 respondents of hospital information system users using questionnaires obtained a percentage of economic results of 67.3%. The result of 67.3% is included in the score range of 60-80% which is included in the good criteria. Based on table 4.3 can be known from all the questions contained in the answer questionnaire that obtained the highest number, namely in the criteria of enough as much as 50.2% of respondents and the lowest number is in the criteria is very less, which is 0%. Economy variables are used to evaluate economic aspects of SIMRS based on user perception.

Variables in good economic aspects should SIMRS can be used with other applications and there are already resources that have been prepared for the development of information systems. Based on research conducted by SIMRS researchers can already be connected with other applications but only in the form of Microsoft excel. Reports generated using in Microsoft Excel still need to be cross-checked with SIMRS data so that other applications are needed more effectively, namely by using microsoft access databases and maximizing the features contained in the report creation (Rohman et al, 2017)<sup>[13]</sup>.

d. SIMRS Evaluation Based on User Perception of System Performance Based on Control Variables

Table 4.4 Respondents Answers to Control Variables

Criteria	Question					Amount	%
	C1	C2	C3	C4	C5		
Very Good	4	5	5	5	4	23	8,4
Good	9	17	32	34	34	126	45,8
Enough	33	33	18	14	14	112	40,7
Less	9	0	0	2	2	13	4,7
Very Less	0	0	0	0	1	1	0,4
TOTAL						275	100

Source : Processed Data, 2021

The results of the study at dr. Haryoto Lumajang Hospital conducted on 55 respondents of hospital information system users using questionnaires obtained a percentage of control results of 71.4%. The result of 71.4% is included in the score range of 60-80% which is included in the good criteria. Based on table 4.4 can be known from all the questions contained in the answer questionnaire that obtained the highest number, namely in the criteria of both 45.8% of respondents and the lowest number is in the criteria is very less, which is 0.4%. Control variables are used to evaluate SIMRS security based on user perception. Here is the sim security system of dr. Haryoto Lumajang Hospital.

Based on the results of research conducted by SIMRS researchers at dr. Haryoto Lumajang Hospital, there is already an access right to be able to login into the system. Each officer has a username and password to log into the system and access rights so that the officer can only megaxes according to his field. The creation of usernames and passwords submitted to the PDE team as the overall it admin at dr. Haryoto Lumajang Hospital in accordance with the purpose of information security is used to maintain the integrity, confidentiality, authenticity, and availability of information processed by the institution (Ferreira et al, 2018).

e. SIMRS Evaluation Based on User Perception of System Performance Based on Efficiency Variables

Table 4.5 Respondents Answers to Efficiency Variables

Criteria	Question					Amount	%
	EF1	EF2	EF3	EF4	EF5		
Very Good	7	14	4	5	3	33	12
Good	30	24	26	21	26	127	46,2
Enough	15	15	15	28	23	96	34,9
Less	3	1	9	0	1	14	5,1
Very Less	0	1	1	1	2	5	1,8
TOTAL						275	100

Source : Processed Data, 2021.

The results of the study at dr. Haryoto Lumajang Hospital conducted on 55 respondents of hospital information system users using questionnaires obtained a percentage of efficiency results of 72.3%. The result of 72.3% is included in the score range of 60-80% which is included in the good criteria. Based on table 4.5 can be known from all the questions contained in the answer questionnaire that obtained the highest number, namely in the criteria of both 46.2% of respondents and the lowest number is in the criteria is very less, which is 1.8%. Efficiency variables are used to evaluate simrs performance efficiency based on user perception. Efficiency variables contain 2 indicators, namely usability and maintainability. Based on research conducted by researchers, on the usability indicator there is still no help menu and instruction manual in using information systems. The help menu on a system is used to explain the tools of using a system (Rizki et al, 2016)<sup>[14]</sup>.

The absence of a help menu on SIMRS has an impact that takes a long time to learn information systems. On the maintainability indicator according to the user the information system easily corrects errors at the time of error. It can be concluded that SIMRS has fulfilled the maintainability aspect but on the usability indicator has still not been achieved.

f. SIMRS Evaluation Based on User Perception of System Performance Based on Service Variables

Table 4.6 Respondents Answers to Service Variables

Criteria	Question					Amount	%
	S1	S2	S3	S4	S5		
Very Good	4	7	4	4	4	23	8,4
Good	16	25	36	33	33	143	52
Enough	34	21	14	17	14	100	36,4
Less	1	1	1	1	2	6	2,2
Very Less	0	1	0	0	2	3	1,1
TOTAL						275	100

Source : Processed Data, 2021

The results of the research in RSUD dr. Haryoto Lumajang made to the 55 respondents who are users of hospital information system using the questionnaire obtained the percentage of the results of the service by 73,2%. Results 73,2 % included in the score range of 60-80%, which is included in both criteria. Based on table 4.6 can be aware of all the questions contained in the questionnaire answers obtain the number of the most high on both criteria as much as 52% of respondents and the amount of the most low-contained in the criteria very less i.e. by 1.1 %. Variable service used to evaluate the performance of the security SIMRS based on the perception of the user.

Based on research conducted by researchers there are still some problems about the speed in the indicators of reliability. At the time of the patient to be inpatient register and will do a search of the rooms are empty, the system information can provide notice about the status of filled in and whether or not the room

will be but often is not appropriate. Patients who have back the status of the room is still filled so that the registration officer need to make a clarification to the nurses of the wards of the empty room. The lack of information on the availability of the beds accurate generally resulted in the loss of reception of patients and waiting times are excessive. This resulted in communication that is not efficient when looking for a place to sleep that is appropriate for the patient (Siswanto, 2018)<sup>[15]</sup>.

g. Analysis of the relationship between Content Variable and User Satisfaction

Table 4.7 Results of the relationship between Content Variable and User Satisfaction

Satisfaction	Content				Total		P value
	Appropriate		Inappropriate		N	%	
	N	%	N	%			
Not Satisfied	20	76.9	6	23.1	26	100	0.000
Satisfied	4	13.8	25	86.2	29	100	
Amount	24	90.72	31	109.3	55		

Source: Statistical Processed Data, 2021.

Table 4.7 results of calculation of the relationship between the variable content (content) to the satisfaction of the 20 respondents that stated content (content) SIMRS already fit but feel not satisfied by 76.9%. Respondents amounted to 6 states content SIMRS less fit and feel is not satisfied by 23.1%. Respondents that consists of 4 states content SIMRS fit and feel satisfied by 13.8% and the respondents amounting to 25 states content SIMRS less appropriate but feel satisfied by 86.2%, with the number of 25 officers who feel less fit but feel satisfied because of the content on the SIMRS RSUD dr. Haryoto Lumajang some of the items that are less among which the item internal reports, external reports hospital reports of 10 diseases outpatient and inpatient care and the creation of charts baber johnson.

The significance value (Asymp. Sig. 2-sided) on the variable content (content) is 0.000 using the Continuity Correction. Statistical test results obtained p value 0.000 is smaller than the alpha value of 5% (0.05), then there is a significant relationship between the content (content) with user satisfaction. Based on the explanation above, it can be concluded that there is a significant relationship between the content and user satisfaction with the value of the contingency coefficient 0.536 so it can be concluded that there is a relationship (correlation) between the content (content) on the SIMRS to the satisfaction of the user. Evidenced by the study by Rasman (2014), which is expressed with p value 0.000 is smaller than the alpha value of 5% (0.05) which means that there is a significant relationship between the content (content) with user satisfaction. It can be concluded that the variable content (content) SIMRS associated with user satisfaction because users felt there were a few items that are less so there are some reports that remain to be done manually in the register book and entered into Microsoft Excel or Microsoft Word. The variable content is the content in the system in accordance with the needs of the user so that it can provide information according to the needs of the user, the modules in the system complete and in accordance with the needs of the user (Hidayah et al., 2016)<sup>[15]</sup>.

h. Analysis of the relationship between Accuracy Variable and User Satisfaction

Table 4.8 Results of the relationship between Accuracy Variable and User Satisfaction

Satisfaction	Accuracy				Total		P value
	Appropriate		Inappropriate		n	%	
	N	%	N	%			
Not Satisfied	10	55.6	8	44.4	18	100	0.34
Satisfied	14	37.8	23	62.2	37	100	
Amount	24	93.39	31	106.6	55		

Source: Statistical Processed Data, 2021

Table 4.8 results of calculation of the relationship between the variable Accuracy (accurate) with the satisfaction of the 10 respondents who stated Accuracy (accurate) SIMRS already fit but feel not satisfied by 55.6%. Respondents who were 8 stated Accuracy (accurate) SIMRS less fit and feel is not satisfied by 44.4%. Respondents consisted of 14 states Accuracy (accurate) SIMRS fit and feel satisfied by 37.8% and respondents amounted to 23 stated Accuracy (accurate) SIMRS fit and feel satisfied by 62.2%. The accuracy of the data and the accuracy of the information contained on SIMRS RSUD dr. Haryoto Lumajang is accurate, so that the data and information confidential.

The significance value (Asymp. Sig. 2-sided) on the variable accuracy (accurate) is 0.34 use the Continuity Correction. Statistical test results obtained p value 0.34 greater than the alpha value of 5% (0.05) then there is no significant relationship between the accuracy (accurate) with user satisfaction. Based on the explanation above, there is no significant relationship between the accuracy (accurate) and user satisfaction with the value of the contingency coefficient 0.165 so it can be concluded that there is a relationship (correlation) between the accuracy (accurate) on the SIMRS to the satisfaction of the user. In line with the research of the Son (2016)<sup>[17]</sup> is known that the variable accuracy (accurate) does not affect the user satisfaction because of the level of system accuracy is not an influential factor in the satisfaction of the user.

It can be concluded that the variable accuracy (accurate) SIMRS no relationship with user satisfaction because of the SIMRS RSUD dr. Haryoto Lumajang is considered to be accurate because it is able to show patient data in accordance with the existing data in the field. In accordance with previous research conducted by the Son (2017) states based on the test results it is known that accuracy does not affect the user satisfaction in the application SAIBA, they assume that a system must accommodate the accuracy so it will not affect the level of satisfaction. Something similar is stated in the study conducted by Suryawan and Prihandoko, 2017 which concluded that the accuracy is not there is the influence positively to the satisfaction of the use of ACADEMIC information system.

But it is contrary to the research Hendrawan, et al (2017)<sup>[18]</sup> which states that the data SIMRS less accurate because the number of inpatient admissions in SIMRS different with the number of patients in the census daily so that reporting officers should be more meticulous in workmanship number of visits and reports morbidity.

i. Analysis of the relationship between Format (display) Variable and User Satisfaction

Table 4.9 Results of the relationship between Format (display) Variable and User Satisfaction

Satisfaction	Format (display)				Total		p value
	Appropriate		Inappropriate		N	%	
	N	%	N	%			
Not Satisfied	21	80.8	6	23.1	26	100	0.000
Satisfied	3	10.7	25	89.3	28	100	
Amount	24	91.48	31	112.4	55		

Source: Statistical Processed Data, 2021

Table 4.9 results of calculation of the relationship between the variable Format (display) to the satisfaction of the 21 respondents who stated Format (display) SIMRS already fit but feel not satisfied by 80.8%. Respondents amounted to 6 states Format (display) SIMRS less fit and feel is not satisfied by 23.1%. Respondents amounted to 3 states Format (display) SIMRS fit and feel satisfied by 10.7%. and respondents amounting to 25 states the Format (display) SIMRS fit and feel satisfied by 89.3%. Format (display) on RSUD dr. Haryoto Lumajang every officer feel satisfied but on the part of the initial page of the SIMRS make the attendant confusion at the time of the selection of the item report of the patient that are not directly on the start page SIMRS, so the officers had to return to the menu in the initial election to the report of the patient.

The significance value (Asymp. Sig. 2-sided) on the variable format (display), namely 0.000 using the Continuity Correction. The results of the statistical test produced a p value 0.000 is smaller than the alpha value of 5% (0.05), then there is a significant relationship between the formatting (the look) with user satisfaction. Based on the explanation above, it can be concluded that there is a significant relationship between the format of the display and user satisfaction with the value of the contingency coefficient 0.560 so it can be concluded that there is a relationship (correlation) between format (display) on the SIMRS to the satisfaction of the user. In line with the research Djunanto and Papilaya (2018)<sup>[19]</sup>, Testing the influence of the format significantly influence user satisfaction of the system. It can be concluded that the variable format (display) SIMRS associated with user satisfaction. This is in accordance with previous research conducted by Djunanto et al (2018) that the format of the influential significant with the satisfaction of a user of the system BDS on the application of TCR on the company's Bank Indonesia because of the display, the system interface and the format of the report (report) is clear and interesting and easier for users when using, so as to improve the effectiveness of the user (Hidayah et al., 2016)<sup>[20]</sup>.

j. Analysis of the relationship between Timeliness and User Satisfaction

Table 4.10 Results of the relationship between Timeliness and User Satisfaction

Satisfaction	Timeliness				Total		p value
	Appropriate		Inappropriate		N	%	
	n	%	N	%			
Not Satisfied	20	80.0	5	20.0	25	100	0.000
Satisfied	4	13.3	26	86.7	30	100	
Amount	24	93.33	31	106.6	55		

Source: Statistical Processed Data, 2021

Table 4.10 results of calculation of the relationship between the variables Timeliness (timeliness) to the

satisfaction of the 20 respondents who stated Timeliness (timeliness) SIMRS already fit but feel not satisfied by 80.0%. Respondents a total of 5 states Timeliness (timeliness) SIMRS less fit and feel is not satisfied by 20.0%. Respondents that consists of 4 states Timeliness (timeliness) SIMRS fit and feel satisfied by 13.3%. and respondents amounted to 26 states Timeliness (timeliness) SIMRS fit and feel satisfied by 86.7%. Timeliness (timeliness) on SIMRS RSUD dr. Haryoto Lumajang is already better because each room is already integrated with each other, so that the punctuality at the time of collection of the data required of each room are readily available on SIMRS. But not all data is integrated and available in a variety SIMRS for example an item that is not yet available in SIMRS that item internal reports, external reports hospital reports of 10 diseases outpatient and inpatient care and the creation of charts baber johnson. In the absence of these items resulted in a precision of time is not good that means in terms of reporting is still a delay.

The significance value (Asymp. Sig. 2-sided) on the variable timeliness (timeliness), namely 0.000 using the Continuity Correction. The results of the statistical test produced a p value 0.000 is less than the alpha value of 5% (0.05), then there is a significant relationship between timeliness (timeliness) with user satisfaction. Based on the explanation above, it can be concluded that there is a significant relationship between timeliness (timeliness) and user satisfaction with the value of the contingency coefficient 0.556 so it can be concluded that there is a relationship (correlation) between timeliness (timeliness) on SIMRS to the satisfaction of the user. Evidenced by the research of Cider and Samsudin (2018)<sup>[21]</sup>, which declares the variable ease of use application has positive and significant effect on the variable user satisfaction. According to Tilahun and fritz (2015)<sup>[22]</sup> in penelitiannya stated that the response time associated with user satisfaction. It can be concluded that the variable Timeliness (timeliness) SIMRS associated with user satisfaction. According to previous research conducted Rasman (2012)<sup>[23]</sup>, there is a relationship between the timeliness with user satisfaction. Dimension Timeliness measure the satisfaction of users of the timeliness of the system in the present or provide data and information needed by the user. Proper system time can be categorized as real-time systems, means any request or input made by the user will be directly processed and the output will be shown quickly without having to wait a long time (Dalimunthe and ismiati, 2016)<sup>[24]</sup>.

k. Analysis of the relationship between Ease of Use and User Satisfaction

Table 4.11 Results from the relationship between Ease of Use Variable (ease of user) and User

Satisfaction	Ease of Use				Total		p value
	Appropriate		Inappropriate		N	%	
	N	%	N	%			
Not Satisfied	1	5.9	16	94.1	17	100	0.000
Satisfied	23	60.5	15	39.5	38	100	
Amount	24	66.41	31	133.6	55		

Source: Statistical Processed Data, 2021

Table 4.11 results of calculation of the relationship between the variables Ease of Use (ease of users) to the satisfaction of 1 respondents who stated Ease of Use (ease of

users) SIMRS already fit but feel not satisfied by 5.9%. Respondents amounted to 16 states Ease of Use (ease of users) SIMRS less fit and feel is not satisfied by 94.1%. Respondents amounted to 23 states Ease of Use (ease of users) SIMRS fit and feel satisfied by 60.5%. and respondents who totaled 15 states Ease of Use (ease of users) SIMRS fit and feel satisfied by 39.5%. Operating RSUD dr. Haryoto Lumajang facilitate the user at the time of running the SIMRS at the time of the service and complete the work of each officer.

The significance value (Asymp. Sig. 2-sided) on the variable ease of use (ease of users), namely 0.000 using the Continuity Correction. The results of the statistical test produced a p value 0.000 is smaller than the alpha value of 5% (0.05), then there is a significant relationship between ease of use (ease of the user) with user satisfaction. Based on the explanation above, it can be concluded that there is a significant relationship between ease of use (ease of the user) and user satisfaction with the value of the contingency coefficient 0.454 so it can be concluded that there is a relationship (correlation) between ease of use (ease of users) on the SIMRS to the satisfaction of the user. In line with research Ulfah (2018)<sup>[25]</sup>, which states the value of p value of  $0.000 < \alpha$  value of 0.05 indicates that the ease of user influence on user satisfaction. It can be concluded that the variable Ease of Use (ease of users) SIMRS associated with user satisfaction. The results obtained are in accordance with the research previously conducted by the Suryawan and Prihandoko (2017)<sup>[26]</sup> that the easy of use affect positively to the satisfaction of the use of ACADEMIC information system. Previous research done by the Gods (2016)<sup>[27]</sup> that perform the analysis of user satisfaction on the portal of informatics study program using end user computing satisfaction result in that variable easy of use generate greater positive influence on user satisfaction.

#### 1. Describes Hospital Management Information System (SIMRS) with PIECES and EUCS methods.

The results of the interpretation of the score for the method of PIECES consisting of performance (performance), information (information), economic (economy), supervision (control), efficiency (eficiency) and security (security) performance has average which is pretty good because in addition to the already fit the needs of any user of the system other things that support is the suitability of the SIMRS available have a positive impact on the performance of any user that has a positive effect on user satisfaction. Supported by the results of research Juwandi and Africano (2014) stated the higher the satisfaction felt users of the system, the higher its impact on system performance information. Viewed from the side according to the needs of there items on SIMRS still not in the SIMRS which resulted in reporting is often too late. Items that are not contained in the SIMRS such, the item internal reports, external reports hospital reports of 10 diseases outpatient and inpatient care and the creation of charts baber johnson.

#### SUMMARY

Evaluation results using PIECES obtained the lowest interpretation of the score in the economy variable which is

67.3% and the highest score is in the service variable which is 73.2%. All PIECES variables consisting performance, information, economy, control, efficiency and service variables interpretation results obtained fall into good category. There is a significant and very strong relationship between content in the Hospital Management Information System (SIMRS) to user satisfaction. There is a significant and very strong relationship between the Format (display) in the Hospital Management Information System (SIMRS) to user satisfaction.

There is a significant and very strong relationship between Timeliness in the Hospital Management Information System (SIMRS) to user satisfaction. There is a significant and sufficient relationship between Ease of Use in the Hospital Management Information System (SIMRS) to user satisfaction. There is no relationship and weak relationship between Accuracy in the Hospital Management Information System (SIMRS) and user satisfaction. SIMRS performance is already good so that it has a positive impact on each individual performance and user satisfaction.

#### REFERENCES

- [1] Kemenkes. 2021. Peraturan Menteri Kesehatan Republik Indonesia Nomor 21 Tahun 2020 Tentang Rencana Strategis Kementerian Kesehatan Tahun 2020-2024. Jakarta.
- [2] Kemenkes. 2011. Peraturan Menteri Kesehatan Republik Indonesia Nomor 1171/Menkes/Per/VI/2011 tentang SIMRS. Jakarta: Kemenkes.
- [3] Hariana, E., Sanjaya, G. Y., Rahmanti, A. R., Murtiningsih, B., & Nugroho, E. (2013). Penggunaan sistem Informasi manajemen rumah sakit (SIMRS) di DIY. SESINDO2013, 2013. *Jurnal Informasi*, 4(3): 64-84.
- [4] Handiwidjojo, W. 2015. Sistem informasi manajemen rumah sakit. *Jurnal Eksplorasi Karya Sistem Informasi dan Sains*, 2(2): 62-79.
- [5] Ragil, Wukil. 2017. Analisis menggunakan Metode Pieces. Jakarta.
- [6] Puspitasari, Trismayanti Dwi, Dony Setiawan HP, & Mochammad Choirul Roziqin. 2017. Penerapan Analisis Jalur Kepuasan Pengguna Terhadap Intensitas Pengguna SIMRS. *JSINBIS (Jurnal Sistem Informasi Bisnis)*, 7(2), 131-138.
- [7] Larinse, D. S. 2015. Evaluasi Sistem Informasi Manajemen Rumah Sakit (SIMRS) Menggunakan Human Organization Technology (HOT)-Fit di Rumah Sakit Umum Daerah Talud Kab. Kep. *Jurnal Talud*, 7(4): 25-46.
- [8] Sugiyono. 2018. Metode Penelitian Kuantitatif, Kualitatif, dan R&D. Bandung: Alfabeta.
- [9] Nuryati., Widayanti, N. A. 2015. Evaluasi Implementasi Sistem Electronic Health Record (EHR) di Ruma Sakit Akademik Universitas Gadjah Mada Berdasarkan Metode Analisis PIECES. *Jurnal Manajemen Informasi Kesehatan Indonesia (JMiki)*, 3(1): 24-41.
- [10] Supriyatna, A. 2015. Analisis Dan Evaluasi Kepuasan Pengguna Sistem Informasi Perpustakaan dengan Menggunakan PIECES Framework. *Jurnal PilarNusaMandiri*, 11(1),43-52.
- [11] Hikmah, F., & Farlinda, S. 2014. Electronic Health Record untuk Rekam Medik. (N. S. WIBOWO, Ed.). Bogor: Mitra Wacana Media.
- [12] Lipursari, Anastasia. 2013. Peran Sistem Informasi Manajemen (Sim) Dalam Pengambilan Keputusan. *Jurnal STIE Semarang*, 5(1), 26-37.
- [13] Rohman, H., Handoko, T., & Sulisty, W. 2017. Perancangan Sistem Informasi Pelaporan Rekam Medis Rawat Jalan. *Jurnal Ilmu Kesehatan Bhakti Setya Medika*, 30(2): 21-42.
- [14] Rizki, S. D., Van FC, L. L., & Lisnawita, L. 2016. Sistem Informasi Geografis Pemetaan Kandang Perternakan Di Kabupaten Padang Pariaman Berbasis Android. *Digital Zone: Jurnal Teknologi Informasi dan Komunikasi*, 7(2), 100-107.

- [15] Siswanto, J. 2018. Prototipe Sistem Manajemen Tempat Tidur Rumah Sakit pada RSUD Islam Harapan Anda Tegal. *Jurnal Manajemen*, 4(2): 12-22.
- [16] Hidayah, Chiquita Nuraini. 2016. Analisis Kepuasan Penerimaan Pengguna Akhir Sistem Cashier Distribution Center (CDC) Menggunakan End User Computing Satisfaction (EUCS): studi kasus 11 kantor cabang PT. Indomarco Prisamtama, 7(3): 104-121.
- [17] Putra, Gigih Alfrian Pratama. 2017. Analisis Faktor-Faktor yang Memengaruhi Kepuasan Pengguna Sistem Akuntansi Instansi Basis Akrual (SAIBA) dengan Model End-User Computing Satisfaction. *Indonesian Treasury Review: Jurnal Perbendaharaan, Keuangan Negara dan Kebijakan Publik*, 2(3), 33-42.
- [18] Hendrawan, V. Y., Winardi, S., & Surbakti, H. 2017. Sistem Informasi Rekam Medis Rawat Jalan Dan Pemeriksaan Penunjang Diagnosa Berbasis Website (Studi Kasus: Rumah Sakit Khusus Bedah Klinik Sinduadi, Mlati, Sleman, Yogyakarta). *Jurnal Teknologi Informasi Respati*, 9(27): 67-82.
- [19] Papilaya, R. (2018). Effect of process approach combined with internet resources through mobile phone on EFL students' ability in writing (Doctoral dissertation, Universitas Negeri Malang).
- [20] Djunanto, R. A., & Papilaya, F. S. 2018. Analisis Kepuasan Penerimaan Pengguna Akhir Sistem Branch Delivery System (BDS) pada Layanan Teller Cash Recycler (TCR) Menggunakan End User Computing Satisfaction (EUCS) dan ISO/IEC 12207: 2008 pada Perusahaan Bank di Indonesia. *Jurnal Sistem Informasi Indonesia*, 3(1): 12-27.
- [21] Sari, A. P., & Syamsuddin, M. A. 2018. Analisis faktor end user computing satisfaction terhadap kepuasan pengguna: studi kasus kantor pelayanan pajak madya balikpapan. *Jurnal pajak indonesia (Indonesian Tax Journal)*, 1(2), 92-101.
- [22] Tilahun, B., & Fritz, F. 2015. Comprehensive evaluation of electronic medical record system use and user satisfaction at five low-resource setting hospitals in Ethiopia. *JMIR medical informatics*.
- [23] Rasman, Yoel Indra Kusuma. 2012. Gambaran Hubungan Unsur-Unsur End User Computing Satisfaction Terhadap Kepuasan Pengguna Sistem Informasi Rumah Sakit Di Rumah Sakit Umum Daerah Kota Depok Tahun 2012. *Jurnal Universitas Indonesia*, 6(3): 153-173
- [24] Dalimunthe, N., & Ismiati, C. 2016. Analisis Tingkat Kepuasan Pengguna Online Public Access Catalog (Opac) Dengan Metode Eucs (Studi Kasus: Perpustakaan Uin Suska Riau). *Jurnal Ilmiah Rekayasa dan Manajemen Sistem Informasi*, 2(1), 71-75.
- [25] Ulfah, A. 2016. Faktor-Faktor Yang Mempengaruhi Kepuasan Pemakai Akhir Sistem Informasi Akuntansi (Studi Empiris Pada Bank Perkreditan Rakyat Di Kota Surakarta) (Doctoral dissertation, Universitas Muhammadiyah Surakarta).
- [26] Suryawan, M. B., & Prihandoko, P. 2017. Evaluasi Penerapan SIAKAD Politeknik Negeri Madiun Menggunakan Pendekatan TAM dan EUCS. *Creative Information Technology Journal*, 4(3), 233-244.
- [27] Dewa, R. 2016. Analisis Kepuasan Penggunaan Terhadap Portal Program Studi Informatika Menggunakan Eucs (End User Computing Satisfaction). *Jurnal Kesehatan*, 4(2): 156-168.