

***End User Computing Satisfaction of Hospital Information System  
in Mitra Delima Hospital***

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**ABSTRACT**

*Mitra Delima Hospital as one of the health facilities in providing its services is required to carry out the management and development of HMIS in accordance with Minister of Health Regulation Number 82 of 2013 with the aim of supporting and improving the health service process at the hospital. The aim of this research is to analyze user satisfaction of the Hospital Management Information System (HMIS) using the End User Computing Satisfaction (EUCS) method at Mitra Delima Hospital. This type of quantitative research, the research sample used was 35 health workers at Mitra Delima Hospital. The instrument uses a questionnaire and the analysis technique uses linier regression analysis. The research results showed that some respondents were very satisfied with the use of the Hospital Management Information System (HMIS) using the End User Computing Satisfaction (EUCS) method at Mitra Delima Hospital. The regression analysis showed that content ( $p$  value 0,001) and timeliness ( $p$  value 0,003) influence the user satisfaction, while the other three which is accuracy ( $p$  value 0,563), appearance ( $p$  value 0,094) and ease of use ( $p$  value 0,232) have no influence on user satisfaction. In the simultaneously analysis showed that there is an influence between all independents variables to users satisfaction ( $p$  value 0,00;  $R$ square 0,935) at Mitra Delima Hospital. It can be concluded that overall respondents are satisfied with the use of the Hospital Management Information System (HMIS) using the End User Computing Satisfaction (EUCS) method at Mitra Delima Hospital. Mitra Delima Hospital can maintain and increase the level of satisfaction with using HMIS using the EUCS method, where it can provide additional training to officers in using HMIS*

**Keywords:** *Satisfaction, Hospital Management Information System, EUCS.*

**INTRODUCTION**

Hospital Management Information System (HMIS) is a communication information technology system that processes and integrates the entire hospital service process flow in the form of a

network of coordination, reporting and administrative procedures to obtain precise and accurate information based on Minister of Health Regulation No. 82 of 2013 concerning HMIS<sup>1</sup>. The role of information systems in hospital management activities

to improve the efficiency and effectiveness of hospital health services<sup>2</sup>. The implementation of HMIS must provide guidance and supervision over the implementation of HMIS in accordance with their respective duties, functions and authorities, namely by carrying out monitoring and evaluation as stipulated in Minister of Health Regulation No. 82 of 2013 article (10) concerning HMIS. The increasingly advanced technology of information systems and knowledge at this time has a positive impact in various fields and provides opportunities for hospitals to develop IS/IT to facilitate the performance of a hospital<sup>3</sup>. Almost all hospitals are trying to improve hospital management conditions to face competition and. One of the improvements made is in the field of information systems technology<sup>4</sup>.

One important indicator in the success of developing a hospital management information system is user satisfaction or end user satisfaction<sup>5</sup>. This shows how important it is to know the wishes and opinions of the user, where if the wishes are fulfilled then satisfaction will be realized for the user of the hospital management information system<sup>6</sup>. So user satisfaction plays an important role in the success of a hospital management information system. Information system user satisfaction is one measure of the success of information system adoption<sup>7</sup>.

Based on previous research with the title evaluation of HMIS user satisfaction levels using the EUCS method at RSUD prof. Dr. h. Aloe Saboe, Gorontalo City, showed that the results of the research showed that of the five EUCS variables, there were 2 variables in the satisfied category and 3 variables in the very satisfied category. And the results of the influence measurement show that the five

EUCS variables influence user satisfaction both partially and simultaneously<sup>8</sup>. Another research with the title Evaluation of User Satisfaction of Hospital Management Information Systems Using the EUCS Method at Doloksanggul Regional Hospital in 2020 shows that the level of end user satisfaction with HMIS at Doloksanggul Regional Hospital is at a fairly satisfied level. Based on the analysis using the EUCS method with variables include: content, accuracy, format, user satisfaction and timeliness. There is 1 variable with a satisfaction scale of respondents who are less satisfied, namely the timeliness variable<sup>9</sup>.

In particular, there are several basic things that this research carried out at Mitra Delima Hospital. Currently the management of Mitra Delima Hospital continues to make improvements to both the physical appearance of the building and the quality of services, especially the services in the hospital management information system (HMIS)<sup>10</sup>. Therefore, in this improvement process, it is necessary to continue to make changes to improve the hospital management information system in providing quality health services and it is necessary to carry out an analysis of system user satisfaction in order to encourage system development<sup>11</sup>. User satisfaction is one of the markers of the success of an information system, so that when the user's desires are fulfilled, satisfaction will be achieved for the system user<sup>12</sup>.

Based on the description above, the aim of this research is to analyze user satisfaction of hospital management information systems, so that it can encourage system development so that it is more efficient and effective and improve the quality of hospital management information systems.

## METHODS

This research was a quantitative research with a cross sectional survey research design which aims to detect the relationship between the independent variables and the dependent variable and to see employee satisfaction with the implementation of HMIS<sup>13</sup>. The population was employees of Mitra Delima Hospital who used SIMRS with a total population of 114 who used SIMRS at Mitra Delima Hospital. According to Arikunto, if there are less than one hundred subjects, it is better to take all of them so that the research is a population. However, if the number of subjects is large, it can be taken between 10-15% or 15-25% or more. This opinion is in accordance with Roscoe in Sugiyono, the appropriate sample size in research is between 30 to 500" from the total population of 114 employees, so according to the opinion above, the sample size in this research can be taken as 30% of the total population. So the sample size for this research was 35 employees<sup>14</sup>. Data collection was carried out through the use of closed questionnaires. Sampling technique is a sampling technique to determine which samples will be used in research<sup>15</sup>.

When collecting data, the researcher used an ordinal data scale, but during testing the researcher changed the data scale by using a ratio data scale so that a linear regression test could be carried out. The multiple linear regression test is a test used with multivariate analysis, which includes the t test and F test. The requirements for the linear regression test are that the data scale is interval or ratio, must be normally distributed, non-autocorrelation, non-multicollinearity, constant, the relationship between the

independent variables and the dependent variable must be linear.

Before carrying out a multiple linear regression test, the classical assumption test must be met. This test consists of normality tests, tests multicollinearity, test heteroscedasticity, and test autocorrelation. Condition for to get a good regression model if the data distribution is normal or close to normal. If the data is not normally distributed, it is necessary to carry out data transformation first. Furthermore, a good regression model is a regression model that does not occur multicollinearity, heteroscedasticity, and autocorrelation. After all the conditions for analysing a regression model are met. So, the next step to find out whether or not the proposed hypothesis is accepted is to carry out a simultaneous test (F test) and significance test (T test). The t test is carried out to identify and analyze the individual impact of each independent variable on the dependent variable which is considered fixed or constant. The F test is carried out to identify and analyze the influence of independent variables simultaneously on the dependent variable.

## RESULTS AND DISCUSSION

### Classical Assumption Test Result

Normality test result in output the one sample Kolmogorov-Smirnov Test table shows that the p value for the Kolmogorov-Smirnov test = 0.172 > 0.05, so it can be concluded that the residuals are normally distributed. Multicollinearity test result shows that all variables X obtained a tolerance value of more than 0.10 and a VIF of more than 10.00. It can be concluded that there are no symptoms of multicollinearity in this study.

Heteroscedasticity test result shows that the content variable obtained a

significance value of 0.208, the accuracy obtained a significance value of 0.197, the display obtained a significance value of 0.173, the ease of obtaining a significance value of 0.075, and the accuracy of obtaining a significance value of 0.207 which shows that the value is more than 0.05 so it can be concluded that this research did not occur heteroscedasticity. Autocorrelation test result in output the Summary Model table shows that from the case above, the value  $d = 1.728$  and the  $dU$  value in table H for the number of respondents is 35 and  $\alpha 0.05 = 1.584$ , then the  $4-dU$  value = 2.416. The formula  $du < d < 4-du$  is obtained and the result is  $1.584 < 1.728 < 2.416$ . So it can be concluded that this research model is free from autocorrelation symptoms. So it can be concluded that this research passed the prerequisite test for multiple linear regression.

**Table 5** Characteristics of Respondents

Characteristics	F	%
<b>Gender</b>		
Man	11	31%
Woman	24	67%
<b>Age</b>		
20-25	3	9%
26-30	6	17%
30-35	19	54%
>35	7	20%
<b>Education</b>		
High school/equivalent	6	17%
D1/2/3	18	52%
S1	11	31%
<b>Length of use of SIMRS</b>		
>1 year	1	3%
2-4 years	18	51%
>5 years	16	46%
<b>User satisfaction</b>		
Quite satisfied	7	20%
Satisfied	13	37%
Very satisfied	15	43%
<b>Contents</b>		
Not Good	1	3%
Good	5	14%

Characteristics	F	%
Very Good	29	83%
<b>Accuracy</b>		
Not Good	0	0%
Good	5	14%
Very Good	30	86%
<b>Format</b>		
Not Good	0	0%
Good	5	14%
Very Good	30	86%
<b>Ease of use</b>		
Not Good	0	0%
Good	10	28%
Very Good	25	72%
<b>Timeliness</b>		
Not Good	0	0%
Good	5	14%
Very Good	30	86%

In table 1 it is shown that the majority of respondents were women with a total of 24 people with a percentage of 67%. The most vulnerable age of the respondents was early adulthood or in the age range 26 – 30 years, amounting to 19 people with a percentage of 54%. The majority of respondents had D1/2/3 education, 18 people with a percentage of 52%. Based on the length of time they have used HMIS, the majority of respondents have used HMIS for 2-4 years, with a total of 18 people and a percentage of 51%. Some respondents were very satisfied with the use of HMIS<sup>16</sup>.

**Table 6** Regression linear of EUCS Analysis

Model	t	Sig.	F	Sig.
1 (Constant)	-.162	.873		
Contents (X1)	3.725	.001		
Accuracy (X2)	.585	.563		
Format (X3)	-1.731	.094		
Ease of use (X4)	-1.221	.232		
Timeless (X5)	3.187	.003		
2 Regression			40.153	.000 <sup>a</sup>

Based on the results from the table above, it can be seen that the significance value of the content variable is 0.001 ( $< 0.05$ ) and the calculated t value is 3.725 ( $> t$  table 2.045). From these results, it can be concluded that there is a significant influence between the content variable and HMIS user satisfaction. It was concluded that the use of content in HMIS plays an important role in increasing user satisfaction obtained from using the system. What is important in determining the success of a system is whether the system meets the expected user needs. In addition, the importance of the system also involves providing comfort and ease of use that suits the needs and work patterns of the intended professional<sup>17</sup>. Based on content indicators, it provides an illustration that the HMIS content has been presented clearly, provides the right information when needed, and is useful for the administration process at Mitra Delima Hospital. Thus, it can be said simply that the use of HMIS at Mitra Delima Hospital, if assessed based on content indicators, can show that there is conformity between the content of HMIS and user needs and HMIS also provides the reports required by users<sup>18</sup>.

Furthermore, the significance value of the accuracy variable is 0.563 ( $> 0.05$ ) and the calculated t value is 0.585 ( $< t$  table 2.045). Thus, it can be concluded that there is no significant influence between the accuracy variable and HMIS user satisfaction. The accuracy variable in this study was used to assess HMIS user satisfaction in terms of accuracy. This gives an idea of whether respondents are satisfied or not with the accuracy of using HMIS at Mitra Delima Hospital. In accurate SIMRS, there will be no data duplication or errors during the input or

output process. The accuracy variable can determine the suitability of input and output in HMIS and can measure accuracy and errors in the error data processing process in HMIS. HMIS accuracy is measured by looking at how often the system produces incorrect output when processing input from HMIS users. This research shows that some people feel quite satisfied with the accuracy variable, this is characterized by conformity with standards, providing reliable information, producing accurate information, and the suitability of information at input and output<sup>19</sup>.

The significance value of the display variable is 0.094 ( $> 0.05$ ) and the calculated t value is -1.731 ( $< t$  table 2.045). Therefore, it can be concluded that there is no significant influence between display variables and HMIS user satisfaction. The display variable (format) in this study is used to assess HMIS user satisfaction in terms of display (format). The display variable (format) assesses the form of interaction response between HMIS users and the HMIS used, such as the appearance of the HMIS application. The display of the HMIS application is clear and not confusing, making it faster for users to carry out work. Presentation of report output is presented in a useful display (format) for HMIS users<sup>20</sup>.

The significance value of the user convenience variable is 0.232 ( $> 0.05$ ) and the calculated t value is -1.221 ( $< t$  table 2.045), so it can be concluded that there is no significant influence between the display variable and HMIS user satisfaction. The ease of use variable in this study assesses HMIS user satisfaction in terms of ease of use. HMIS is user friendly, that is, users can use tools easily when operating the information system. The ease

of use variable can measure the level of ease of use of HMIS by HMIS users<sup>21</sup>. This research provides an illustration that the use of HMIS at Mitra Delima Hospital can provide satisfaction to staff in inputting data. However, in the results of this research, respondents felt quite satisfied because HMIS is easy to understand, can be operated easily, makes interaction with users easier, and there is a help menu which can certainly provide solutions to officers when they experience problems when inputting data<sup>22</sup>.

The significance value of the timeliness variable is 0.003 (< 0.05) and the calculated t value is 3.187 (> t table 2.045), so it can be concluded that there is a significant influence between the content variable and SIMRS user satisfaction. The timeliness variable in this study is used to assess how satisfied HMIS users are in terms of timeliness. Timeliness in question is an updated information system in providing data and information. Timeliness variables also provide information quickly without HMIS users having to wait long. The results of this research show that the use of HMIS at Mitra Delima Hospital has an updated information system in providing information data, as well as information that is presented quickly without having to wait. Besides that, Timeliness also does not reduce the level of validation of the information obtained, in other words the use of HMIS certainly has an impact on the effectiveness and efficiency of the work carried out by health workers at Mitra Delima Hospital. So this timeliness variable has a big influence when looking at whether each HMIS user is satisfied or not<sup>23</sup>.

Based on multiple linear regression analysis, an F-count value of 40.153 was found with a significance value of 0.000.

Because the significance value (0.000) is smaller than the specified significance level (0.05) and the F-count value (40.153) is greater than the F-table value (3.316), it can be concluded that there is a significant simultaneous influence between the content variables., accuracy, appearance, convenience, accuracy on HMIS user satisfaction variables.

**Table 7** Coefficient of Determination

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.935a	.874	.852	.967

From the output results in the table above, it is found that the R Square value is 0.935. This indicates that the variables of content, accuracy, appearance, convenience and accuracy together have an effect of 93.5% on HMIS user satisfaction. Based on the results of the f test of this research, maintaining HMIS performance in each unit is very important by carrying out continuous monitoring and evaluation. This will help improve HMIS operations so that they can run better. Such steps will help identify user satisfaction by ensuring work efficiency, effectiveness, error reduction, good communication, cost control and cost reduction.

Successful implementation of information systems will have a more beneficial impact. Therefore, it is hoped that the hospital will be able to pay attention to factors that can maintain the quality of HMIS such as content, accuracy, appearance, ease of use and timeliness so that HMIS continues to produce accurate information for hospitals. This will help improve HMIS operations so that they can run better. Such steps will help identify user satisfaction by ensuring work

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## CONCLUSION

Based on the results of the research and discussion in the previous chapter, it can be concluded that some respondents were very satisfied with the use of the Hospital Management Information System (HMIS) using the End User Computing Satisfaction (EUCS) method at Mitra Delima Hospital. There is an influence of content on HMIS user satisfaction at Mitra Delima Hospital. There is no influence between accuracy and satisfaction of HMIS users at Mitra Delima Hospital. There is no influence between appearance variables and user satisfaction at Mitra Delima Hospital. There is no influence between ease of use and satisfaction with using HMIS at Mitra Delima Hospital. There is a significant influence between punctuality and HMIS user satisfaction at Mitra Delima Hospital. And there is a simultaneous or joint influence between the variables content, accuracy, appearance. Ease of use, timeliness and satisfaction of HMIS users at Mitra Delima Hospital.

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