Application of Electronic Medical Records as an Effort to Improve Health Services at RSGM Unsoed

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ABSTRACT

The use of technology at this time is very much needed, one of which is in the health sector in order to improve services. The hospital as an institution that stores so much data also require correct and accurate data processing that can be presented in such a way as a report so that it needs an application of technology, although previously the report was processed manually but there were quite a lot of lack in its implementation. RSGM Unsoed currently used manual medical records and electronic medical records in supporting services, because it is something new, RME still needs to be evaluated again whether there are still some lack that can be corrected so that the implementation of RME can be effectively developed and maximized. The main focus of research is directed at the relationship between the human aspect, the technological aspect, and the benefits generated by the system. Thepurpose of this research is to know the implementation of RME at RSGM Unsoed which has just been implemented so that it can be effective and useful. This type of research is analytical research with a quantitative approach. Total research respondents amounted to 40 people. The data collection method used in this study was an interview with an instrument in the form of a questionnaire. Hypothesis testing is done by doing a test using SPSS. The results of this study show that all hypothetical pathways in the framework of the model tested have an influence on each other.

Keywords: Electronical Medical Records, Health Services, Dental and Oral Hospital

1. Introduction

In this technological era, the need for something effective is felt by the community in using health facilities such as hospitals, clinics, and health centers, which need to be supported by effective and efficient technology to speed up the health service process. As an institution that stores so much data, a hospital also requires correct and accurate data processing that can be presented in such a way as reports. The presentation of the report in the form of such information must correspond to the usefulness and function of each section. The hospital stores all of the data in the form of a file called a medical record file.Traditional medical record file storage is generally a folder containing papers that record patient health data. This kind of storage requires a large space. Moreover, it is

a bit slow to obtain whenever the file is needed for medical purposes because it takes time to search for it (Faida, 2021).

The problem that also often arises is that patient complaint indicates that every time they enter a health care provider, they answer the same question at each visit or diagnosis. Patients complain that the questions given by the doctor at the time of diagnosis are almost the same. It leads to a buildup of the same data on diagnoses and repeated medical records. Some of the problems mentioned above need to be designed as a centralized electronic medical record system that stores patients' medical records in a centralized database.

If all these files could be computerized, it would facilitate the process of searching, retrieving, and processing data. The process can be done quickly and accurately so that medical procedures that require a history of patient health data can be quickly implemented. One of the technologies that can be applied is electronic medical records. Electronic medical records have advantages over manual medical records. RSGM Unsoed currently uses manual and electronic medical records in supporting services. However, its implementation is still ineffective because the application has not been developed optimally and is difficult to use, so medical personnel working at RSGM Unsoed have difficulty filling in electronic medical records. There are still several other things that need to be known from this study.

The implementation of RME at RSGM Unsoed, which has not been very effective, needs re-evaluation. Based on the background above, several problems need to be studied, namely how to apply electronic medical records to improve health services at RSGM Unsoed.

2. Literature Review

2.1 Technology Factors

The technological component consists of system quality and information quality. The quality of the system in the information system concerns the interrelationship of features in the system, including system performance and user interface. It had ease of use, learning, response time, usability, availability, flexibility, and security. Information quality criteria that can be used to assess the quality of information include completeness, accuracy, timeliness, availability, relevance, consistency, and data entry (Yusof et al., 2008).

2.2 Human Factors

Human factors are obtained byseparating an evaluation method known as HOT-Fit, including assessing human, organizational, technological, and net-benefit indicators. This component assesses the system from the aspect of user satisfaction. User satisfaction is an overall evaluation of the user experience in using the information system and the potential impact of the information system. User satisfaction can be related to the perceived benefits and user attitudes towards information systems influenced by personal characteristics. Therefore, the main human component sets assessment indicators regarding system use and user satisfaction.

2.3 Net Benefit

Net benefit is a component of the balance between the positive and negative impacts of health information system users (medical workers, managers, non-medical employees, system developers and all related departments). System user benefits (net benefits) can be assessed using direct

benefits, work effects, efficiency and effectiveness, reducing error rates, communication, controlling expenses and costs. The higher the positive impact generated, the more successful the implementation of information systems.

2.4 Electronic Medical Records

Electronic medical records are the electronic storage of all health system data and information in an electronic format related to processing information and knowledge to manage the health company system (Hannan, 2016). At first, the terminology of electronic medical records originated from computer-based medical records. In terms of application, this computer-based patient medical record has been applied since about 40 years ago. However, the concept was first revealed in depth in one Institute of Medicine (IOM) publication in 1991, entitled *The Computer-Based Patient Record: An Essential Technology for Health Care.* In the 1990s, the term changed to electronic medical records and electronic health records. According to Sabarguna (2007), some of the special features of electronic medical records include:

- List, including a to-do list, schedule, and patient waitlist
- Manager, including scanning information, call back, fax, automatic patient coller
- Support system, including sketchpad, synchronization, related therapy, interfaces

3. Research Methodology

This research used descriptive research methods with a quantitative approach. Descriptive research describes things that happen or is studied in a population. Sugiyono (2016) explained that quantitative research methods are research methods based on the philosophy of positivism, used to research certain populations or samples. Data analysis is quantitative or statistical, with the aim of testing hypotheses that have been determined. The population in this study were users of Electronic Medical Records (RME) at RSGMP Unsoed. The sample was part of the number and characteristics possessed by the population (Sugiyono, 2016). This study's samples were taken from the total population, namely as many as 40 RME user. Data collection techniques were carried out by distributing questionnaires, observations, interviews, and literature studies to obtain data for this study.

3.1 Hypothesis Framework

The model image of this study is:

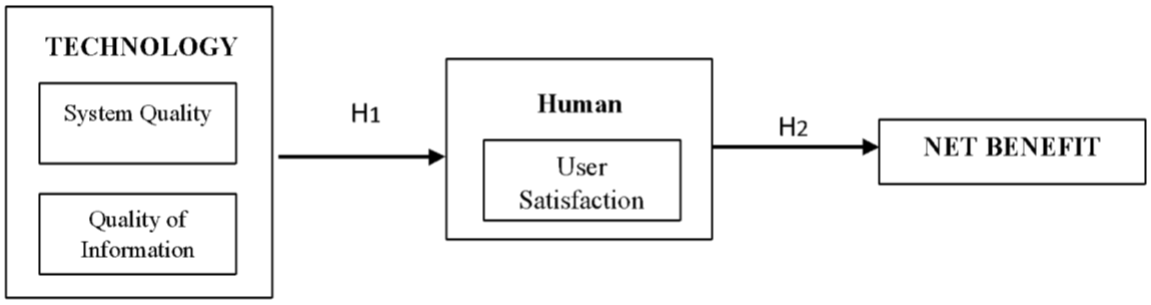

Figure 1.

4. Result

4.1 Validity Test

The validity test was intended to test whether the answers to each item of the statement on the questionnaire were valid or not. For example, the technology variable (X_1) obtained the r-count value ≥ r-table (0.2144), humans (X_2) obtained the r-count value ≥ r-table (0.2144), and the net benefit (Y) obtained the r-count value ≥ r-table (0.2144). Thus, all questionnaire items were declared valid. For this reason, the questionnaire used was suitable for processing research data.

4.2 Reliability Test

Reliability tests were used to determine whether the indicators and questionnaires used were reliable as variable measuring tools. The results of the reliability test in this study were carried out using SPSS 22 software, the results of which were as follows:

Table 1. Results of the Research Instrument Reliability Test

Variable	Cronbach's Alpha	Standard Cronbach's Alpha	Description
Technology (X_1)	0,854	0,600	Reliable
Human (X_2)	0,926	0,600	Reliable
Net Benefit (Y)	0,919	0,600	Reliable

Sources: Data was processed by SPSS 22 (2022).

Based on the test results in table 4.1shows that the technology variable (X_1), the human variable (X_2), and the net benefit variable (Y) are reliable. It is evidenced by each variable having a Cronbach's alpha value greater than 0.600.

4.3 Normality Test

The normality test of this study was carried out using Kolmogorov-Smirnov as follows:

Table 2. Results of the Normality Test

One-Sample Kolmogorov-Smirnov Test		
		Unstandardized Residual
N		40
Normal Parameters[a,b]	Mean	.0000000
	Std. Deviation	1.39719384
Most Extreme Differences	Absolute	.081
	Positive	.048

	Negative	-.081
Test Statistic		.081
Asymp. Sig. (2-tailed)		.084[c]

Source: The data were processed by SPSS 22 (2022).

It can be seen from the table above that the asymph value. The sig (2-tailed) was 0.044. Therefore, the Asymph Sig (2-tailed) value referred to by this was 0.084, above the significance threshold of 0.05. Therefore, it can be said that the assumption of normality has been met, and the data was normally distributed.

4.4 Multicollinearity Test

The multicollinearity test was performed to believe that the independent variables did not have multicollinearity or did not have a correlation relationship between independent variables.

Table 3. Multicollinearity Test Results

Coefficients[a]								
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	10.648	4.565		2.332	.023		
	Technology	.255	.131	.207	1.943	.057	.635	1.574
	Human	.522	.089	.624	5.859	.000	.635	1.574
a. Dependent Variable: Net Benefit								

Source: The data were processed by SPSS 22 (2022).

Based on the results of multicollinearity testing in table 4.3, the tolerance value of each independent variable, namely technology and human, was obtained by 1,574. Therefore, it means that the VIF value was less than 10. Thus, it can be concluded that this regression model has no symptoms of multicollinearity among independent variables.

4.5 Multiple Linear Regression Analysis

In accordance with the objectives of the study, multiple linear regression analysis was used to find out how much influence the independent variables consisting of technology (X_1) and humans (X_2) had on the dependent variables, namely net benefit (Y). The test results are as follows:

Table 4. Multiple Linear Regression Test Results

Coefficients[a]						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	10.648	4.565		2.332	.023
	Technology	.255	.131	.207	1.943	.057
	Human	.522	.089	.624	5.859	.000
a. Dependent Variable: Net Benefit						

Source: Data was processed by SPSS 22 (2022).

It can be seen that in table 4.4, in the second column (Unstandardized Coefficients), part B has a constant value of 10.648, a technology variable value (X_1) of 0.255, and a human variable value (X_2) of 0.522. Therefore, from these results, the regression equation is obtained:$Y = 10.648 + 0.255 X_1 + 0.522 X_2$

The regression equation above has the meaning:

- The value of constant (a) had a positive value of 10.648. A positive sign indicates a unidirectional influence between an independent and dependent variable. For example, this shows that if all independent variables, including technology (X_1) and human (X2), were valued at 0% or have not changed, then the net benefit value (Y) was 10.648.
- The value regression coefficient for the technology variable (X_1) was 0.255. It shows that if technology experiences an increase of 1%, Net Benefit will increase by 0.255, assuming other independent variables are considered constant. A positive sign means that it indicates a unidirectional influence between an independent variable and a dependent variable
- The regression coefficient value for the human variable (X_2) had a negative value of 0.522. It shows that if technology experiences a 1% increase, Net Benefit will increase by 0.522, assuming other independent variables are considered constant. A positive sign means that it indicates a unidirectional influence between an independent variable and a dependent variable

4.6 T-Test

The T-test was carried out to determine the degree of significance of the influence of each independent variable on the dependent variable, assuming that the other independent variable did not change. Finally, partial hypothesis testing was intended to statistically test whether the formulation of the hypothesis created was accepted or rejected.

Table 5. Partial Hypothesis Test Results (T-Test)

Coefficients[a]				
Model	Unstandardized Coefficients	Standardized Coefficients	t	Sig.

		B	Std. Error	Beta		
1	(Constant)	10.648	4.565		2.332	.023
	Technology	.255	.131	.207	1.943	.057
	Human	.522	.089	.624	5.859	.000
a. Dependent Variable: Net Benefit						

Source: Data was processed by SPSS 22 (2022).

Based on table 4.5 in this test, technology has a t-count of 1.943 where the t-count was >t-table (1.943 > 1.67203) and a significance value of 0.057 > 0.05. It means that partially technology (X_1) has an effect but is not significant on the net benefit (Y) in the RSGM Unsoed Service Unit.Humans have a t-count of >t-table (5.859 > 1.67203) and a significant value of 0.000 < 0.05. Humans (X_2) significantly affect net benefit (Y) in the RSGM Unsoed Service Unit.

4.7 F-test

The F test or simultaneous hypothesis testing is intended to determine the effect of the variable Technology (X1) and Human (X2) have a simultaneous effect on Net Benefit (Y) can be done with the F statistical test (simultaneous test). The significance in this study used is 5% (0.05) by comparing the calculated F with the F table.

Table 4.6 Hypothesis Test Results Simultaneously (F Test)

ANOVA[a]						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	791.570	2	395.785	40.824	.000[b]
	Residual	552.614	57	9.695		
	Total	1344.183	59			
a. Dependent Variable: Net Benefit						
b. Predictors: (Constant), Manusia, Teknologi						

Source: Data processed by SPSS 22 (2022).

Based on table 4.6, the F-count value >F-table (40.824 > 2.40) was also strengthened by a significance value of 0.000 < 0.05. Thus, Ha_3 was accepted. It can be concluded that technology (X_1) and humans (X_2) have a significant simultaneous effect on net benefit (Y) in the RSGM Unsoed Service Unit.

5. Discussion

5.1 The Effect of Technology (X_1) on Net Benefit (Y)

The analysis results obtained the value of the regression equation Y = 13.065 + 0.719 X1. This result indicated a constant value of 13,065, stating that without technology, the net benefit remained at 13,065. And the technology variable had a positive effect on net benefit with a

coefficient of 0.719, meaning that if the technology variable increased by one unit, then net benefit would increase by 0.719. The study results show that the strength of the relationship between technology and the net benefit was indicated by the value of the correlation coefficient (r) of 0.584. It means that the degree of closeness between the technology variable and the net benefit variable has a moderate relationship. The t-countwas greater than the t-table (1.943 > 1.67203) and the significance value was 0.057 > 0.05.It means that partially, technology (X1) has an effect but is not significant to the net benefit (Y).Net benefits are benefits obtained from the system that can be measured from the benefits of the system directly, for example from the information generated by the system or from indirect benefits such as the impact on performance, efficiency and effectiveness of organizational activities (Erimalata, 2016). Based on the results of the study, it shows that users are still not satisfied with the system, so this causes users to feel that the perceived benefits of the existing information system are also still low. efficient, then most users are less willing to use the existing system.

5.2 The Effect of Human (X_2) On Net Benefit (Y)

The analysis results obtained the value of the regression equation Y = 17.176 + 0.627 X2. This result indicated a constant value of 17.176, stating that without humans, the net benefit remained at 17.176. And the human variable had a positive effect on the net benefit with a coefficient of 0.627, meaning that if the human variable increased by one unit, the net benefit would increase by 0.627. The study results show that the strength of the relationship between humans and net benefit is indicated by the value of the correlation coefficient (r) of 0.749. It means that the degree of closeness between human and net benefit variables has a strong relationship.The t-count value was greater than the t-table (5.859 > 1.67203) and the significant value was 0.000 < 0.05. It means that being partially human (X2) significantly affects the net benefit (Y).RME user satisfaction at RSGM Unsoed shows that users are satisfied with the implementation of RME. Research McGill et al. (2013) also found that the better the system and the system output provided, the more users will not feel reluctant to reuse and take advantage of the system. Efforts to increase user satisfaction with the existing system must continue to be carried out by RSGM Unsoed if you want to increase user satisfaction with the net benefits of the system.

5.3 Effect of Technology (X1) and Humans (X2) on Net Benefit (Y)

Based on the results of the study, it showed that technology (X1) and humans (X2) on net benefit (Y) obtained regression equation Y = 10.648 + 0.255 X1 + 0.522 X2. Furthermore, the value of the correlation coefficient, or the degree of influence between the independent variable and the dependent variable, was obtained by 0.584 (X1) and 0.749 (X2), meaning that the variables Technology (X1) and Humans (X2) has a strong relationship level to Net Benefit (Y). The value of the coefficient of determination or contribution of influence simultaneously was 58.9%, while the remaining 41.1% was influenced by other factors that were not carried out in the study. The hypothesis test obtained the F-count value >F-table (40.824 > 2.40). It was also strengthened by a significance value of 0.000 < 0.05. Thus, Ha3 was accepted. It can be concluded that technology (X1) and humans (X2) have a significant simultaneous effect on net benefit (Y) in the RSGM Unsoed Service Unit.According to Westerling et al. (2011), net benefits are a series of units from individual entities to the whole that can have an impact on information system activities. Research by Gursel et al. (2014) also shows the results that the high degree of benefits obtained from an information system causes users to be more satisfied.

6. Conclusion

The application of electronic medical records at RSGM Unsoed as an effort to improve health services if carried out optimally will affect the net benefits. This is in accordance with the results of research in this journal where technology and humans have an influence on net profits. The better the medical application, the better health services at RSGM Unsoed**.**

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