Evaluation of Electronic Medical Record System in Outpatient Dr. Wahidin Sudirohusodo Makassar Central General Hospital in 2022

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History

• Submission Date: 26-03-2023;
• Review completed: 02-05-2023;
• Accepted Date: 12-05-2023.

DOI : 10.5530/pj.2023.15.95

Article Available online

http://www.phcogj.com/v15/i6

ABSTRACT

The Electronic Medical Record System in Indonesia is currently a concern of the government of the Republic of Indonesia by requiring every health facility including hospitals in Indonesia to implement an Electronic Medical Record System. To find out that this system is beneficial for health services in hospitals, an evaluation is needed. This study aims to evaluate the Electronic Medical Record System that has been running in the Outpatient of Dr. Wahidin Sudirohusodo Makassar Central General Hospital from a user perspective using the Human Organization Fit Model.

The type of research used is quantitative using an analytical observational design with a cross sectional study approach. The sample in this study were users of electronic medical records in the Outpatient Department of Dr. Wahidin Sudirohusodo Makassar Central General Hospital, totaling 174 respondents. Hypothesis testing in this study using path analysis.

The results of this study indicate that technology has a direct and significant effect on humans (<0,001) <0,05. Technology has a direct and significant effect on the organization (<0,001) <0,05. Humans have a direct and significant effect on the organization (<0,001) <0,05. Human has a direct and significant effect on benefits (<0,001) <0,05. Organization has a direct and significant effect on benefits (<0,001) <0,05. Technology has an indirect effect on benefits through people (ρ Value 0,007 < 0,05, path coefficient = 0,179). Technology has no indirect effect on benefits through organizations (ρ Value 0,051 > 0,05). This means that humans as intermediaries from technology to benefits have a significant effect while organizations as intermediaries from technology to benefits have an insignificant effect.

Key words: Electronic Medical Record System, System Evaluation, Hot-Fit, Outpatient.

INTRODUCTION

The Government of the Republic of Indonesia has required every health facility to organize Electronic Medical Records through the Regulation of the Minister of Health of the Republic of Indonesia Number 24 of 2022 concerning Medical Records. Electronic Medical Records are Medical Records made using an electronic system intended for the implementation of Medical Records (PMK 24 2022). Medical Records are documents containing data on patient identity, examination, treatment, actions and other services provided to patients. Basically, electronic medical records are the use of information technology devices for collecting, storing, managing and accessing data stored in patient medical records in hospitals in a database management system that collects various sources of medical data.[1]

To be able to ensure that the Electronic Medical Record system runs well and has a positive impact, it is necessary to analyze this system through an evaluation. Evaluation of an information system is a real effort to find out the actual condition of an information system implementation.[2] One method that can be used in evaluating a system is the HOT-Fit method. The HOT-FIT method was first developed by (Yusof et al., 2008),[3] This method consists of three aspects, namely human aspects, technological aspects, organizational aspects where these aspects are used to measure Net Benefits.[3] This evaluation method clarifies all the components contained in the information system itself, the first of which is human (human)

who assesses the information system from the side of use (system use) which relates to who uses, training, experience, knowledge, expectations, and attitudes to accept or reject the system. The second is organization (organization) which assesses a system from the organizational structure and organizational environment related to planning, management, system control, management support, and financing and the third is technology (technology) which assesses in terms of system quality, information quality and service quality.[4] Based on the research conducted by (Dayatri, 2019)[5] entitled designing of an application for evaluating the medical record information system for outpatients at Dr. Wahidin Sudirohusodo Central General Hospital using HOT-FIT, concluded that the medical record information system evaluation application using the HOT-FIT method in the form of a website-based questionnaire is in a very effective category so that it is feasible to use in evaluating the medical record information system at Dr. Wahidin Sudirohusodo Central General Hospital.

This research focuses on evaluating the Electronic Medical Record System in the Outpatient Department of Dr. Wahidin Sudirohusodo Makassar Central General Hospital from a user perspective using the HOT-Fit theory. Dr. Wahidin Sudirohusodo Makassar Central General Hospital is one of the health facilities in Indonesia that has been implementing Electronic Medical Records since 2017 based on the Decree of the President Director of Dr. Wahidin Sudirohusodo Hospital Number: HK.01.07/XVIII.1/2142/2017. The Electronic Medical Record system at Dr. Wahidin Sudirohusodo Makassar

Central General Hospital has been implemented in all services and is fully integrated but not yet paperless. However, in its implementation, Electronic Medical Records have not been fully utilized by users, especially in the Outpatient department. Various obstacles complained by users include the incomplete menu in the Electronic Medical Record system, slow internet access, some elderly users are overwhelmed by the use of the system, lack of socialization of the use of the system and lack of supporting facilities. For this reason, an evaluation of the implementation of the Medical Record System needs to be carried out to find out what factors affect the acceptance of the implementation of the Electronic Medical Record System.

MATERIALS AND METHODS

Location and research design

This study was conducted at the Outpatient Department of Dr. Wahidin Sudirohusodo Makassar Central General Hospital. The type of research used was analytic observational with cross sectional design.

Population and sample

The population used in this study were all users of Electronic Medical Records in the Outpatient Department of Dr. Wahidin Sudirohusodo Makassar Central General Hospital consisting of Doctors, Nurses and Midwives. The sampling technique uses the Slovin formula so as to obtain a result of 174 samples. Because the population consists of different professions, probability sampling is used in sampling with disproportionate stratified random sampling techniques so that each profession can be represented.

Data collection method

Researchers used a questionnaire that had been tested for validity and reliability in data collection. Reliability testing with internal consistency is done by testing the instrument only once, then the data obtained is analyzed using Cronbach's Alpha. To be said to be realible, the Cronbach's Alpha value must be> 0,6. The Cronbach's Alpha value for all variables is> 0,909 so that it can be declared reliable. The validity test is carried out by correlating the score of each item with the total score of each attribute, the coefficient formulation used is the Pearson Product Moment Test with the SPSS version 25 program. the correlation between the total score of the items is an interpretation by consulting the critical r value. If r count is greater than r critical, then the instrument is declared valid. From the statistical table with df = (n-2) = (50-2) = 48 = 0,279. From the validity test carried out on the score of each item with the total score of each attribute in this study, the results obtained for all items of the independent variable and the dependent variable show that they are valid or valid, with the Pearson correlation value between the question items and the total being positive above the 0,361 mark. The independent variables are technology, people and organization while the dependent variable is benefits.

Data analysis

Univariate analysis, conducted to obtain an overview of the research problem by describing each variable used in the study. Bivariate analysis, carried out to see the relationship between the dependent variable and the independent variable. The statistical test used is the Chi Square test. Multivariate analysis, carried out for the magnitude of direct and indirect effects between variables. The multivariate test uses the PLS Path analysis method. The first step of SEM-PLS analysis is to create a model.

RESEARCH RESULTS

In Table 1 the basic characteristics of each respondent are grouped by age, gender, length of service, profession and level of education. In this study, 174 respondents participated. Most research respondents in the

Table 1: Frequency distribution of respondent characteristics in outpatient hospital Dr. Wahidin Sudirohusodo Makassar central general hospital in 2022.

Characteristics	Research Sample	
	n	%
Age		
≤ 30 Years	15	8,6
31 - 40 Years	41	23,6
41 - 50 Years	70	40,2
> 50 Years	48	27,6
Total	174	100,0
Gender		
Male	61	35,1
Female	113	64,9
Total	174	100,0
Period of Employment		
≤ 5 Years	29	16,7
6 - 10 Years	16	9,2
11 - 20 Years	62	35,6
21 - 30 Years	41	23,6
> 30 Years	26	14,9
Total	174	100,0
Profession		
Doctor	70	40,2
Nurse	101	58,0
Midwife	3	1,7
Total	174	100,0
Education Level		
Associate degree	20	11,5
Bachelor's Degree	84	48,3
Master's Degree	39	22,4
Doctoral Degree	31	17,8
Total	174	100,0

Source: Primary data, 2022

Table 2: Frequency distribution of research variables at Dr. Wahidin Sudirohusodo Makassar central general hospital.

Variable	Total	Percentage
Technology		
Not Good	24	13,8
Good	150	86,2
Human		
Not Good	18	10,3
Good	156	89,7
Organization		
Not Good	21	12,1
Good	153	87,9
Benefits		
Not Good	15	8,6
Good	159	91,4
Total	**174**	**100%**

Source: Primary data, 2022

age range 41 - 50 years (40,2%) with the longest tenure in the range 11 - 20 years (35,6%) and most are female (64,9%). The profession of most respondents is nurse (58%) with the highest level of education is undergraduate (48,3%).

Table 2 shows that most respondents perceived the technology factor in the Electronic Medical Record system as good (60,3%). Human factors in the Electronic Medical Record system, 53,0% of respondents have a good perception. About 76,2% of respondents consider the

organizational factors that support the Electronic Medical Record system to be good and from the Benefits Most respondents consider the Electronic Medical Record System to be useful (81,5%).

Table 3A to 3D shows the relationship between independent variables and dependent variables. Based on the results of the analysis, it can be seen the relationship between the variables of technology, people, organization and benefits. The results of bivariate analysis with the Chi Square test show that there is a relationship between the technology variable on humans with a value of p = 0.000, the technology variable on the organization with a value of p = 0.000, the human variable on the benefits with a value of p = 0.000, the organizational variable on the benefits with a value of p = 0.000.

The results of statistical tests used to test the direct effect and indirect effect between variables in Figure 1 and Table 3.

There is a direct relationship between Technology and Humans, with ρ value 0,000 <0,05. The path coefficient is 0,668, meaning that if technology increases once, humans can increase by 66,8% positively.

There is a direct relationship between Technology and Organization, with ρ value 0,011 < 0,05. The path coefficient is 0,274, meaning that

Table 3A: Analysis of the relationship between technology and human at Dr. Wahidin Sudirohusodo Makassar central general hospital in 2022.

Technology	Human				Total		P
	Not Good		Good				
	n	%	n	%	n	%	
Not Good	41	69,5	18	30,5	59	100	
Good	24	20,9	91	79,1	115	100	0.000
Total	65	37,4	109	62,6	174	100	

Source: Primary data

Table 3B: Analysis of the relationship between technology and organization at Dr. Wahidin Sudirohusodo Makassar central general hospital in 2022.

Technology	Organization				Total		P
	Not Good		Good				
	n	%	n	%	n	%	
Not Good	40	67,8	19	32,2	59	100	
Good	18	15,7	97	84,3	115	100	0.000
Total	58	33,3	116	66,7	174	100	

Source: Primary data

Table 3C: Analysis of human relationships with benefits at Dr. Wahidin Sudirohusodo Makassar central general hospital in 2022.

Human	Benefit				Total		P
	Not Good		Good				
	n	%	n	%	n	%	
Not Good	52	80,0	13	20,0	65	100	
Good	47	43,1	62	56,9	109	100	0.000
Total	99	56,9	75	43,1	174	100	

Source: Primary data

Table 3D: Analysis of organizational relationships with benefits at Dr. Wahidin Sudirohusodo Makassar central general hospital in 2022.

Organization	Benefit				Total		P
	Not Good		Good				
	n	%	n	%	n	%	
Not Good	50	86,2	8	13,8	58	100	
Good	49	42,2	67	57,8	116	100	0.000
Total	99	56,9	75	43,1	174	100	

Source: Primary data

Table 4: Results of path analysis between technology, people, organization and benefits of electronic medical records at Dr. Wahidin Sudirohusodo Makassar central general hospital in 2022.

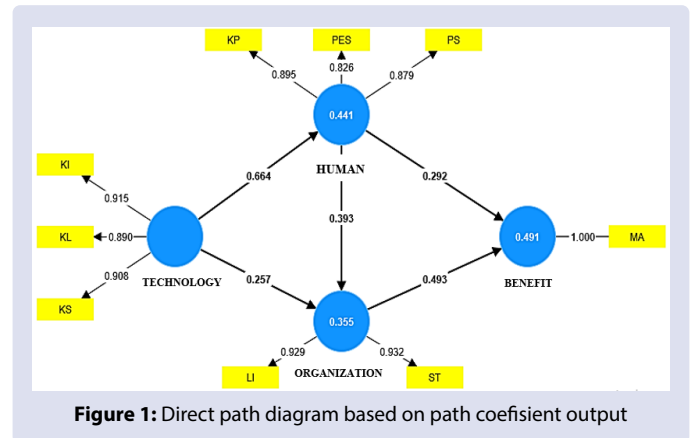| Variable	Coefficient	ρ value	Description
Technology → Human	0,668	0,000	Direct
Technology → Organization	0,274	0,011	Direct
Human → Benefit	0,268	0,003	Direct
Organization → Benefit	0,462	0,000	Direct
Technology → Human → Benefit	0,179	0,007	Indirect
Technology → Organization → Benefit	0,127	0,051	Indirect

Source: Primary data

Figure 1: Direct path diagram based on path coefisient output

if technology increases once, the organization can increase by 27,4% positively.

There is a direct relationship between People and Benefits, with ρ value 0,003 <0,05. Path coefficient 0,268, meaning that if Humans increase once, Benefits can increase by 26,8% positively

There is a direct relationship between Organization and Benefits, with ρ value 0,000 <0,05. The path coefficient is 0,462, meaning that if the organization increases once, the benefits can increase by 46,2%, positively.

There is an indirect relationship between Technology and Benefits through Humans, with ρ value 0,007 <0,05. Path coefficient 0,179, meaning that if Technology increases once, Benefits can increase indirectly by 17,9% through humans positively

There is no indirect relationship between Technology and Benefits through Organization, with ρ value 0,051 > 0,05.

DISCUSSION

Based on statistical analysis, it is known that technology is directly related to humans in the outpatient department of Dr. Wahidin Sudirohusodo Makassar Central General Hospital. A significant relationship is also indicated by a significant value of <0.001. Technology in this study is system quality, information quality and service quality. While humans here mean user satisfaction, system usage and system development. The results found in the study are in line with research conducted by (Lestari, 2020)[6] which found the compatibility between technology and humans with the suitability of the two relationships affecting each other, especially the benefits felt by users, but some shortcomings of the system can be used as a reference by IT in making developments. In line with that, research conducted by (Mudiono, 2018)[7] shows that the better the quality of the system provided by the application, the greater the system users operate the application.

Based on the statistical analysis conducted, it is known that Technology is directly related to Organization in the Outpatient Department of

Dr. Wahidin Sudirohusodo Makassar Central General Hospital. A significant relationship is also indicated by a significant value of <0,001. From previous research conducted by (Sholistiyawati *et al.*, 2020)[8] shows that there is a significant relationship between technology and organization with a positive relationship direction and high correlation strength. The existence of a relationship between technology and organization is also supported by the opinion (Rahmawati & Nadjib, 2018),[9] information technology in the organization is used by management to analyze problem solving and reports. The use of computers will make it easier and faster for management to obtain information for decision making. This is also supported by research (Sebayang & Tarigan, 2009)[10] which states that if a company wants to survive, it must implement 3 aspects of information technology, namely information technology has a direct or indirect impact on providing better services than before, information technology can improve the quality of decision making in the form of providing relevant, precise, accurate, reliable and high-value information, and information technology is able to increase organizational revenue with a customer approach.

Based on the statistical analysis conducted, it is known that Humans are directly related to Benefits in the Outpatient Department of Dr. Wahidin Sudirohusodo Makassar Central General Hospital. A significant relationship is also indicated by a significant value of <0,001. In line with this research, (Beny, 2021)[11] concluded that human factors affect net benefits. The human component assesses the information system in terms of system usage, user satisfaction and system development. In line with that, (Try Windy *et al.*, 2020)[12] states that human factors, namely user satisfaction, are positively and significantly related to system usage and system benefits, the more qualified a technology is, the more useful a system will be which will affect user satisfaction so that it has an effect on improving the quality of hospital staff performance. In this study, Electronic Medical Record users feel the benefits of this system. 91.4% of respondents stated that the Electronic Medical Record System was useful. Users feel that the application of this system helps their daily work and can increase their work productivity.

Based on the statistical analysis conducted, it is known that Organization is directly related to Benefits in Outpatient Hospital of Dr. Wahidin Sudirohusodo Makassar. A significant relationship is also indicated by a significant value of <0,001. (Supriyono, 2020)[13] suggests that organizational factors, leadership and regulation have a significant relationship with net benefits. In line with that (Mudiono, 2018)[7] states that the organization has a positive influence on benefits, encouragement from the organization can significantly provide motivation for the existence of the system. Based on field findings, the application of the system is supported by top management with a decree on the implementation of electronic medical records and received attention from the central government with a policy on implementing an electronic medical record system in hospitals.

Based on the statistical analysis carried out, it is known that technology on benefits through humans is indicated by a significant value of 0,007 <0,05. So, it is concluded that there is an indirect relationship between technology and the benefits of the system through humans in the Outpatient of Dr. Wahidin Sudirohusodo Makassar Central General Hospital. With a Path Coefficient value of 0,179 which means, if technology increases once, benefits can increase indirectly by 17,9% through humans positively. Information technology that can fulfill user desires in the sense that the system is easy to use, easy to understand, the information produced is complete, up to date and as needed and supported by adequate technical services will increase the desire to continue using information technology so that it will have an effect on increasing user productivity. The results of previous research conducted by (Kodarisman & Nugroho, 2013)[14] found that technology which includes system quality, information quality and service quality has an impact on user satisfaction, while user satisfaction affects benefits (significant level α = 0,05). In line with research conducted by (Setyowati & Respati, 2017),[15] someone who feels the ease of using an information system will be satisfied in using an information system where the benefits felt in the sense of work is completed faster, performance increases, productivity increases, work is more effective, making work easier and overall useful, he will be motivated to use the system so as to improve his work performance.

The indirect relationship between technology and system benefits through the organization in Outpatient Dr. Wahidin Sudirohusodo Makassar Central General Hospital, based on statistical analysis conducted, it is known that there is no indirect relationship between technology and benefits through the organization indicated by a p value of 0,051> 0,05. So indirectly technology through the organization has no indirect relationship with benefits. Based on the results of the path analysis, organizational variables cannot be used as intervening variables. From research conducted by (Satria Dewi *et al.*, 2021)[16] found that technology has a significant effect on benefits with a significant value of 0,000 <0,05 and from research conducted by (Sholistiyawati *et al.*, 2020)[8] found that there is a strong relationship between technology and organization (p-value = 0,006, r = 0,690) but there is no relationship between organization and system performance (P-value =0,530, r =0,184).

CONCLUSIONS AND SUGGESTIONS

The results showed that there is a direct relationship between technology and humans, there is a direct relationship between technology and organizations, there is a direct relationship between humans and benefits, there is a direct relationship between organizations and benefits, there is an indirect relationship between technology and benefits through humans and there is no indirect relationship between technology and benefits through organizations in Outpatient Hospital Dr. Wahidin Sudirohusodo Makassar Central General Hospital. It is hoped that the results of this study can be used as a reference to contribute to the development of hospital information technology, especially the development of Electronic Medical Record Systems in hospitals.

It is recommended to the hospital, there is a need to increase the technology variables, especially in the aspects of system quality and service quality which get the smallest value. To improve these aspects, the hospital needs to pay attention to the completeness of the menu in the system according to user needs, for example a menu related to images, how many users still complain about slow networks, so it needs attention from hospital management to improve the existing network and pay more attention to ensuring data security protection in managing the system.

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