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Evaluation of the application of hospital management information system by using the hot-fit method

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Abstract

Background: The hospital management information system (SIMRS) is an important part of supporting health service decisions, so it is necessary to pay attention to its sustainability. SIMRS in Aek Kanopan, North Labuhanbatu found obstacles in the form of errors and delays in sending data, resulting in incomplete monthly reports.
Purpose: To find out the implementation and evaluation of the SIMRS hospital management information system at Aek Kanopan Hospital by looking at the human, organizational and technological aspects of net benefit (hot-fit).
Method: Quantitative study with cross-sectional design, data collection was collected through interviews and questionnaires, with a sample population of 31 people, and data were analyzed univariate and multivariate with multiple linear regression tests.
Results: Based on the results obtained from the characteristics of the respondents, univariate analysis and multiple regression analysis it can be concluded that the user's perception of the human aspect of the net benefit variable is said to be good, the same is true of the organizational aspect of the net benefit variable is also good, and for the perception of the technological aspect of the net benefit variable is said to be good. This research also found that human, technological and organizational variables on net benefits have a significant effect on net benefits together.
Conclusion: There is a good relationship between human, technological and organizational variables on net benefits.

Keyword: Hot-Fit; Information System; Management

INTRODUCTION

The importance of the Hospital Management Information System (SIMRS) is stated in Law No. 44 of 2009 article 52; Minister of Health Regulation Number 1171 of 2011 Article 1 paragraph 1; and Minister of Health Regulation Number 82 of 2013 concerning Management Information Systems Hospitals that specifically regulate SIMRS where these regulations will beimprove the quality of technology and information-based services (Wafidah, Marwanto, Pramono, & Muzaqi, 2023).

SIMRS is a very important supporting tool, even said to be absoluteto support the operational management of the hospital (Wijayanta, 2022). SIMRS utilization operationally useful to improve performance and service, facilitating coordination between units, improve HR capabilities (Pujihastuti, 2021). SIMRS use in hospital can overcome obstacles in health services at the existence hospital. SIMRS is urgently needed, as a management strategy in improving quality health services and win business competition (Molly & Itaar, 2021). SIMRS is an information system prepared to handle the entire home management process hospital, starting from diagnosis services and patient action, pharmacies, pharmaceutical warehouses, billing,personnel database, employee payroll, accounting process up

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to control by management (Nurmariza, Kholili, & Hanafi, 2021).

The application of SIMRS is important to integrate all the information generatedin the service process (Putri, Fitriani, & Asriwati, 2022). One form of application through the system services by utilizing information technology through the use of Information Systems computer based. In this regard, the roles and functions of data and information services are carried out by the hospital as one of the data and information management work units demanded to be able to make various adjustments and changes (Faigayanti, Suryani, & Rawalilah, 2022). Evaluation of an information system is a real effort to find out the actual conditions of an information system implementation (Khasanah & Imani, 2022). HOT-Fit is a method or framework for evaluating health information systems that is measured using dimensions *human* factor, *organization* factor, *technological components*, and the suitability of these factors and their influence on*net benefit* benefits (Yusof, Kuljis, Papazafeiropoulou, & Stergioulas, 2008). The alignment of human factors, organizational factors, and technology components will determine how well the hospital information system is implementation (Nastiti & Santoso, 2022).

Good quality hospital services with increased work productivity, speed, accuracy, integration, security and efficiency, can only be realized if the SIRMS is of high quality. WHO data (2019) shows that the number of hospitals that have information systems with the best technology in Europe reaches 81.1%, while in Southeast Asia it is only 23% of the total existing hospitals. Meanwhile the Indonesian Ministry of Health (2018), stated that out of 2,813 hospitals in Indonesia, only 14.23% had a good and quality information system (Kusmiranti, Narmi, & Balaka, 2022).

Based on research conducted at the Medical Records Installation of H. Adam Malik Hospital, it was found that there were network problems and reporting data originating from SIMRS had to be reprocessed manually, resulting in delivery delays (Dewi, Ginting, & Gultom, 2021). Apart from that, research at Pariaman Hospital found that the network was not evenly distributed so it could not be used in all units and hardware was not yet available in all units, especially the poly section (Putri, Fitriani, & Asriwati, 2021). Based on interviews with SIMRS staff at Aek Kanopan Hospital, North Labuhanbatu Regency, information was obtained that the implementation of SIMRS has not been optimal, characterized by network problems and the absence of SIMRS training for certification. Training is only carried out when the vendor comes to visit the hospital, so users do not yet understand how to use the system. Apart from that, the development of the SIMRS application is considered to be still lacking even though an evaluation has been carried out by IT. As a result, the input carried out by the operator on each unit sometimes experiences errors and delays in data transmission. This situation makes the SIMRS admin have to wait a long time to process the required data. For example, the medical records unit still uses manual medical records, causing the medical record documents distributed to each unit to be lengthy, this makes monthly reporting incomplete.

Research at Praya Hospital found that the evaluation of SIMRS implementation related to SIMRS implementation still had problems, one of which was the low utilization of sustainable information systems. The implementation of information systems in hospitals is expected to encourage hospitals to carry out service activities more productively, quickly, easily, accurately, integrated, safely and efficiently. For hospital management, the information obtained will be used as a basis for decision making or performance assessment of a part of the hospital, commonly known as the Management Information System (Susilo & Mutofa, 2021).

RESEARCH METHOD

This quantitative research uses a design cross-sectional study. The independent variables studied included humans, organizations, technology. Meanwhile, the dependent variable is an analysis of benefits (net benefits) (Puspitasari & Nugroho, 2021). This research was conducted at Aek Kanopan Hospital, North Labuhanbatu Regency. Sampling was carried out by non-probability sampling, namely by means of total sampling, so that the samples involved inthis study as many as 31 respondents. This research was conducted in April - June 2023. Primary data was collected through interviews with questionnaires that had been tested for validity and reliability. While secondary data comes from the local

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District Hospital and Health Office. Data were analyzed univariately to interpret the mean and standardization, and multivariately using multiple linear regression tests with the help of the SPSS V20 application. The normality test uses the Shapiro-Wilk formula where if the p-value > 0.05 then the frequency distribution is considered normal, and if the p-value < 0.05 then the frequency distribution is considered abnormal. Before finding the results of the univariate test and regression analysis test, researchers conduct tests validity in order to know the percentage of results obtained in this study so that it willproduce hypotheses and conclusions regarding this research. Before to test the validity of the researcher must know what the r table value is used for find out the size of each item obtained, r table (0.361), system usage (0.376-0.456), user satisfaction (0.435-0.771), system quality (0.378-0.665), information quality (0.363-0.726), service quality (0.405-0.636), organizational structure (0.448-0.801), and *net benefit* (0.360-0.582). While test *Cronbach's Alpha* obtained by 0.791 (> 0.6).

RESEARCH RESULT

Table 1. Characteristics of the Respondents (N=31)

Variable	Results
Age (Mean ± SD)(Range)(Years)	(30.37±7.787)(25-32)
Gender (n/%)	
Male	1/3.2
Female	30/96.8
Level of education (n/%)	
Diploma	23/74.2
Nurse	1/3.2
Masters	7/22.6
Length of the service (Year)	
1-5 Years	3/9.7
6-8 Years	28/90.3

Respondent descriptions were grouped into 4, namely based on age, gender, highest level of education and length of working. Based on the age of the respondents with a mean and standard deviation (30.37 ± 7.787) with an age range of 25-32 years. The majority of respondents were female, namely 96.8%. Based on their latest education, the majority of respondents were at the Diploma level, 74.2%. And based on length of work, the majority of respondents with 6-8 years of work were 90.3%.

Table 2. Univariate Test (N=31)

Variable	Mark			
	Mean	Std. Deviation	Min	Max
Human	44,94	1,672	41	49
Technology	64,87	2,825	57	71
Organization	26.10	3,091	20	31
Net Benefit	37,68	1,973	34	42

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Based on the results of the univariate test above, it can be seen that the scores obtained by each variable are different. For human factors the average score obtained is 44.94 so it is included in the good category, for organizational factors the average score obtained is 26.10 so it is included in the quite good category, for technology factors the average score obtained is 64 .87 so it is included in the good category, and for net benefit the average value obtained is 37.68 so it can be said to be in the good category. Next, the researcher carried out a regression analysis test to determine the influence of all independent variables on the dependent variable.

Table 3. Regression Analysis Test (N=31)

Variable	B	T	Sig.
Human	0,898	6,325	0,000
Technology	0,483	5,161	0,000
Organization	0,230	2,081	0,046
Constant	-3,540	-0,546	0,590

Based on the regression analysis test, it can be seen that the human variable has a significance value of 0.000 <0.05, which shows that the human element has an influence on net benefits. The technology variable with a significance value of 0.000 <0.05 indicates that the technology element influences the net benefits. And for organizations the significant value is 0.046 <0.05 indicating that organizational variables have an influence on net benefits.

DISCUSSION

Characteristics in this study include age, gender, education and years of service. Based on the research results obtained in terms of age, with a mean and standard deviation (30.37 ± 7.787) with an age range of 25-32 years. The majority of respondents based on gender were 30 women and only 1 man. The majority of respondents have a diploma education and the majority of respondents have worked for more than 6-8 years at Aek Kanopan Hospital, North Labuhanbatu Regency.

This is also in line with other research regarding reporting BPJS claims at Aek Kanopan Hospital, North Labuhanbatu Regency, the results of which show that the characteristics of the majority of respondents were 38 women and 3 men, the majority aged 45-54 years, 17 people. community, and minorities aged 20-34 years, namely 2 respondents, the majority with tertiary education, namely 24 respondents and the minority from elementary school, namely 1 respondent (Zulfikar, Nyorong, & Nuraini, 2023).

According to the researchers' findings, the characteristics of respondents greatly influence the use of SIMRS, especially as there are many employees over 28 years of age, so this greatly influences the difficulty in using SIMRS, apart from that, the length of working also influences the use of SIMRS (Eunike, Kawuwung, Citraningtyas, & Jayanto, 2023).

Based on the research results obtained from the results of the regression analysis test, a significant value of 0.000 <0.05 means that human factors have an influence on the benefits of overnet, this is because users already understand a lot about the use of SIMRS in completing reports. Apart from that, the use of SIMRS is also optimal because many employees use SIMRS. This is also in line with research at the Sanggau Regional General Hospital, West Kalimantan, which stated that the research results showed that respondents understood the benefits of SIMRS and were easy to understand, but there were still some who did not meet user satisfaction. because the process still takes a long time (Olivia, Putra, Dewi, & Fannya, 2023).

Research findings show that technological variables have an impact on net profit. This can be seen from the results of the regression analysis test where the significance value is 0.000 <0.05. This shows that the technological factors in SIMRS are ideal and play an important role in hospital management; In addition, SIMRS helps hospital directors make decisions quickly and in accordance

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with the data it produces. This is also in line with research at RSD Kalisat which states that there is a positive relationship between the quality of SIMRS software and the readiness of the technology used and its utilization. The better the technology used, the higher the influence on the ease of use of the system during service hours (Sabran, Deharja, & Pratiwi, 2020).

Based on the research results obtained from the results of the regression analysis test, the significance value for the organization was 0.046 <0.05. This shows that organizational variables influence net benefits, this is because in a SIMRS design process, Aek Kanopan management must involve SIMRS users in using SIMRS to determine input, process and output to suit the needs of each user (Oktaviana, Putra, & Rachmadi, 2022). As is done at Aek Kanopan Hospital, many users already understand SIMRS, so this is what encourages the development of SIMRS in hospitals. So the management of Aek Kanopan Hospital does not feel worried about SIMRS users, because they are always given good training so they can use SIMRS well and can run it optimally (Mudiono & Roziqin, 2019). However, this is not in line with research at the Medical Records Installation of RSUP H. Adam Malik, in his research regarding organizational factors that do not have a significant effect on net benefits because in every SIMRS module/menu design process, hospital management must involve SIMRS users in determining input, process and the output to suit the desires and needs of each user, not just buying ready-made applications from vendors so that many of the outputs are not in accordance with hospital needs (Dewi, Ginting, & Gultom, 2021).

Research conducted in a 2000-bed tertiary general hospital in Shanghai, China suggests effective collaboration between physicians, administrators, and technical staff is necessary during system promotion to improve system usability and user experience. Clear communication of the organization's mission to staff and support from top management are necessary to speed up the system implementation process and achieve wider system adoption (Zhai, Yu, Zhang, Qin, Yang, & Zhang, 2022).

Research at the General Hospital in the Kurdistan Region, Iraq (KRI) states that HIS is significantly influenced by individual, technological, organizational and collective environmental dimensions. Through qualitative methods in a new context, this research has revealed real issues (individual, technological, organizational and environmental) influencing the use of HIS. In addition, a complete and comprehensive model based on the Theory of Acceptance and Use of Technology (UTAUT) has been developed (.

CONCLUSION

Based on the results obtained from the characteristics of respondents, univariate analysis and multiple regression analysis, it can be concluded that the user's perception of the human aspect in the net benefit variable is said to be good, as well as the organizational aspect in the net benefit variable is said to be good. the benefit variable is also good, and the perception of technological aspects towards the net benefit variable is also good. said to be good. So it can be concluded that human, technological and organizational variables have a significant influence on net benefit.

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