

Evaluation of the Implementation of Hospital Management Information Systems: Literature Review

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Abstract- Hospital Management Information System (SIMRS) is an application system and a communication information technology system that processes and integrates the entire flow of hospital service processes in the form of a network of coordination, reporting and administrative procedures that aim to assist hospitals in improving existing services at the hospital. The information systems can help an organization to be able to carry out various activities more accurately, with quality and on time so as to increase efficiency and effectiveness. Evaluation of an information system is a real effort to find out the actual condition of an information system implementation. With this evaluation, the achievements of the implementation of an information system can be identified and further actions can be planned to improve the performance of its implementation. The purpose of this literature review is to describe the evaluation of the application of hospital management information systems in outpatient services using the Hot-Fit method. This research method uses a literature review with observational and descriptive methods using 14 research journals that are in accordance with the topics raised. Journal search using Google Scholar database and researchgate.

Index Terms- Evaluation, Implementation, Hospital Management Information System (SIMRS).

I. INTRODUCTION

Entering the digital era, technological developments are increasingly rapid in various fields including the health sector [1]; [2] Hospital Management Information System (SIMRS) is one of the subsystems in the hospital that processes all information related to humans as users according to their respective roles. Information systems play an important role in supporting the entire process in hospitals with information technology (R.-F. Chen et al 2012; [2]. Hospitals are complex organizations in providing health services through health care approaches (promotive, preventive, curative and rehabilitative) which are carried out thoroughly in accordance with applicable laws and regulations. The hospital as one of the public service institutions requires the existence of an information system that is accurate and reliable, and adequate enough to improve its services to patients and other related environments [3]; [4].

The importance of recording and reporting in hospitals is regulated by Article 52 Paragraph (1) of Law No. 44 of 2009 concerning Hospitals, which explains that the obligation of each hospital in carrying out activities is to record and report in the form of a Hospital Management Information System [5]. SIMRS according to PMK No. 82 of 2013 states that there is a process and integration of hospital services in communication information technology systems in the form of a network of coordination, reporting and administrative procedures aimed at establishing a Health Information System in order to obtain precise and accurate information [6].

In the process of using information systems, the implementation part is one of the most crucial parts in determining the success or failure of the system. Implementation is all organizational work activities in adopting, managing, and routinizing an innovation. To be able to measure the success and failure of a system, evaluation is needed. In this phase, it is determined whether the current system is good and needs to be maintained or new planning is needed for repairs, or even replacement of the existing system. If it is felt that the system that is running is not in accordance with the goals of the organization, then the steps that can be taken are to return to the planning phase which consists of analyzing the hospital situation, determining goals and strategies and determining the necessary changes (Laudon & Laudon, 2015; [4].

There are five components that underlie the implementation of SIMRS, namely human resources (HR), hardware (hardware), software (software), data, and networks. HR as SIMRS users is a major factor in the acceptance of a new technology. The adoption process in the application of SIMRS is part of human behavior and determines the smooth implementation of SIMRS. Technological devices play a role in the level of difficulty or ease of implementation as well as benefits for individuals and organizations, so that each component can be a problem and cause interference in the implementation of SIMRS [7].

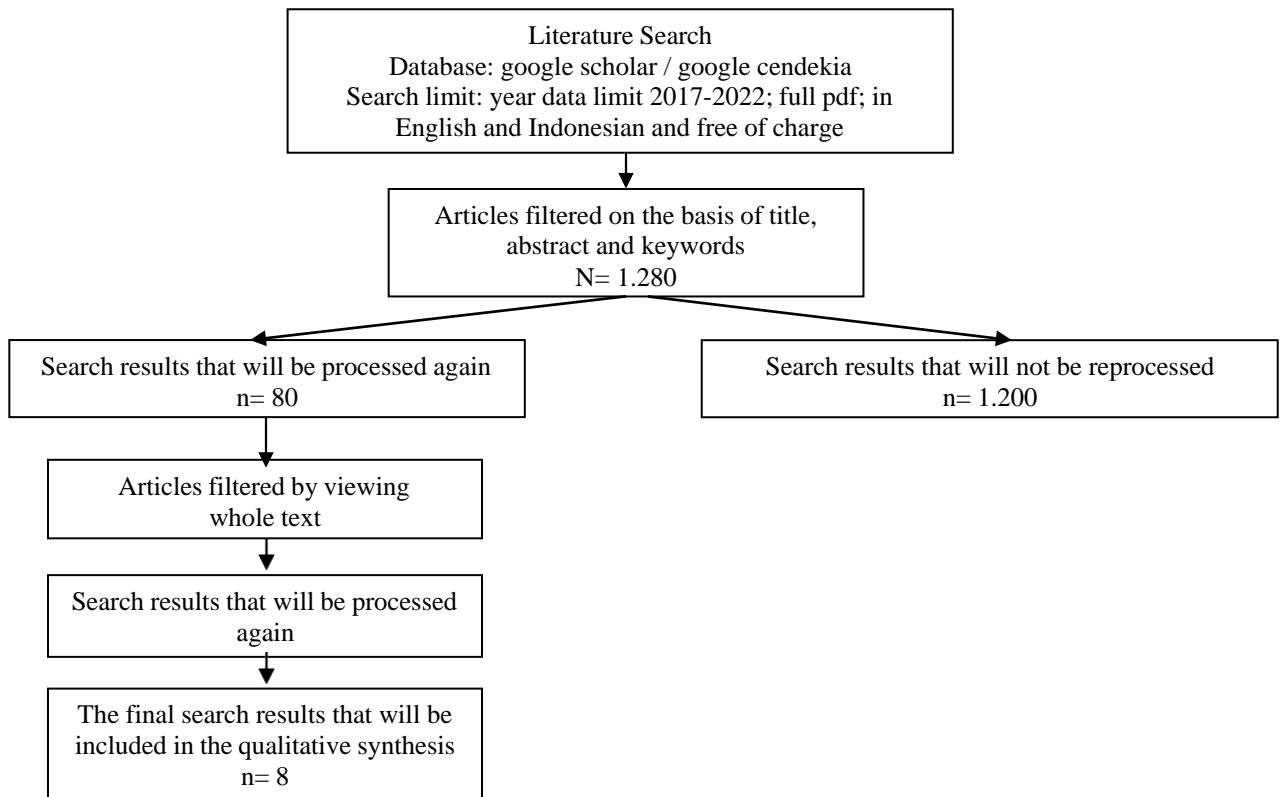
Evaluation of an information system is a real effort to find out the actual condition of an information system implementation. With this evaluation, the achievements of the implementation of an information system can be identified and further actions can be planned to improve the performance of its implementation.

Research conducted by Anika Gusfita 2021 on "Evaluation of the Implementation of Hospital Management Information Systems (SIMRS) at Arosuka Hospital, Solok Regency in 2021" obtained results from the human aspect, the use of SIMRS is intended for entry and searching of patient data. There has been no special training for officers. In the organizational aspect, there is no SK and SOP for SIMRS implementation, computers are lacking, planning and funding for SIMRS development has not become a priority. Aspects of technology, on the quality of the system network problems still occur, the quality of information is appropriate and appropriate but data entry by officers is still incomplete, the quality of service by IT staff is quite good. In terms of net benefits, SIMRS has helped improve the efficiency and effectiveness of officers at work. This is similar to Afriza Faigayanti's research on "Evaluation of the Implementation of Hospital Management Information Systems (SIMRS) at Besemah Hospital, Pagar Alam City in 2021" which states that there are three factors that influence net benefits, namely organizational environment, user satisfaction, and service quality. While the factors that do not have an influence on the net benefit of SIMRS in Besemah Hospital are: system use, organizational structure, system quality, and information quality.

Based on the research journal above, several factors were found to be unsuccessful, namely SIMRS user satisfaction, system use, support from management, and technology quality. So that researchers are interested in conducting a "Literature Review Study on "Evaluating the Application of Hospital Management Information Systems in Outpatient Services".

II. METHODS

This study uses a literature review design, namely research that examines scientific articles by integrating and drawing conclusions about evaluating the application of hospital management information systems (SIMRS). The data used in this study is secondary data obtained not from direct observation, but from the results of research that has been done by previous researchers. Sources of research data obtained in the form of articles or journals that are relevant to the topic of Evaluation of the Implementation of Hospital Management Information Systems. The data search was carried out using the Google Scholar database. The keywords used in this study are "Evaluation" OR "Implementation of SIMRS" AND "Hospital Management Information System/SIMRS". Data analysis was carried out using literature review techniques including looking for similarities (compare), looking for dissimilarities (contrast), giving views (critique), compare (synthesize), and summarize.



Gambar 1. PRISMA *Flow* diagram

III. RESULTS

In collecting articles on Evaluation of the Implementation of Hospital Management Information Systems, the author conducted a search using keywords that had been compiled and after that selection was carried out and produced as many as 80 articles and then re-selected into only 8 articles. The articles that were re-selected were carried out a descriptive approach by covering the discussion requirements, namely in the form of an overview of the evaluation of the implementation of the hospital management information system in 2021-2022. Based on a literature review conducted on 8 sources from national articles, the results obtained can be seen in table 1.

Table 1: Overview of 8 National Article Sources

No	Title	Author	Methods	Result	Database
1	Evaluation of Simrs Outpatient Information System at Dr. Hospital. Reksodiwiryono Using the Hot-Fit Method year 2021	Regita Nolandari, Yulia Fitriani.	The research was conducted at Dr. Reksidiwiryono Hospital Padang, the time of data collection was 4-12 July 2021. This type of qualitative research with a phenomenological approach. The research was conducted with in-depth interviews and observations of 1 head of medical records, 1 IT officer, 2 outpatient registration officers. The research tools used interview guides, voice recorders (mobile phones) and cameras	The results of the SIMRS evaluation study found that there was a shortage of human resources, lack of staff skills, no training for IT officers and lack of support from management. Monev according to SOP, no management support other than RM. There is a network error problem.	Google Scholar
2	Evaluation of the Hospital Management Information System (SIMRS) at the Outpatient Registration Section using the HOT-FIT method year 2018	Gita Agustina, Amalina Susilani, Supatman Rina Tri	The research method used is observational analytic research. The subjects in this study were the outpatient registration officer and the head of the medical record. The independent variables are system quality, service quality, people and organization. The dependent variable is the benefit. Statistical test using linear regression test.	The result of the beta coefficient KS -> M has a value of 0.516, the result of the beta coefficient KS -> O has a value of 0.533, the result of the beta coefficient KL -> M has a value of 0.548, the result of the beta coefficient of KL -> O has a value of 0.495, the coefficient results beta M -> NB has a value of -4.034, the result of the coefficient of beta O -> NB has a value of 4.375.	Google Scholar
3	Evaluation of the Hospital Management Information System Using the Hot-Fit Method at the Tora Belo Regional General Hospital (RSUD) Sigi Regency year 2017	Astria Lolo, Eko Nugroho	Quantitative research with a cross sectional design to measure the variables of human, organization, technology, leadership and regulation of the net benefit of SIMRS in Tora Belo Sigi Hospital. Because the total population is less than 100, the sample is taken using a total sampling technique. Data analysis was carried out using SEM PLS and the name of the application used was	The results of this study explain that there are three factors that influence the net benefit, namely: user satisfaction, organization structure and regulation. While the factors that do not have an influence on the net benefit of SIMRS at Tora Belo Hospital are: system use, environment organization, system quality, information quality, service quality and	Google Scholar

			SmartPLS version 3.0.	leadership.	
4	Evaluation of the Implementation of Hospital Management Information Systems at SLG Hospital Kediri by Using the HOT-Fit. Method year 2022	Ilafi Nastiti dan Dian Budi Santoso	Analytical quantitative research was conducted with a cross-sectional approach. Data collection was done by distributing online questionnaires to SIMRS users. From 54 respondents, 39 responsive data were analyzed using multiple linear regression method to see the relationship of each variable to the net benefit.	The highest percentage of satisfaction is found in the system use variable of 71.79%, while the highest percentage of dissatisfaction is found in the vendor support variable of 26.28%. The p-value (95% CI) of the relationship with the net benefit for system quality is 0.000 and IT capability of staff is 0.028, so this has an influence on the net benefit. User satisfaction (0.079), top management support (0.774), project management (0.446), vendor support (0.56), system quality (0.381), information quality (0.084), and service quality (0.696) are known to have no effect.	Google Scholar
5	Factors Affecting User Satisfaction and Benefits of SIMRS at the Regional General Hospital Beriman year 2021	Lis Indrayati, Irwandy, Noer Bahry Noor, Fridawaty Rivai, Lalu Muhammad Saleh, Ansariadi	This research is a quantitative research using an analytical survey design with a cross sectional study approach. The study was conducted at the Beliman Regional General Hospital (RSUD) Balikpapan from March to April 2021 with 145 respondents who were SIMRS users. Data analysis was carried out using path analysis.	The results showed that the system quality variable had no effect on user satisfaction with a significance value of 0.844 ($p > 0.05$). There is an effect of information quality variable on user satisfaction with a significance value of 0.000 ($p < 0.05$). There is an effect of service quality variable on user satisfaction with a significance value of 0.000 ($p < 0.05$). There is an effect of user satisfaction on benefits with a significance value of 0.033 ($p < 0.05$).	Google Scholar
6	Model of Improving The Utilization of Hospital Management Information System (SIMRS) Based On Human, Organization Technology-Fit (Hot-Fit) Method at RSPI Prof. Dr. Sulianti Saroso year 2021	Anang Suryana, Fransiskus Adikara, MF Arrozi, Akhmad Rizky Taufik	This research uses quantitative research methods with explanatory causality research. The analytical method used is multiple linear regression analysis. Respondents in this study were respondents RSPI Prof. Dr. Sulianti Saroso who directly operates SIMRS as many as 154 employees.	The results of this study indicate that there is a significant influence from Human, Organization, Technology, Knowledge, and Regulations that affect the benefits of 80.9%. Humans, Organizations, Technology, Knowledge, and Regulations partially affect the benefit, with the	Google Scholar

				provisions of the regulation being the variable that has the most influence on the benefit.	
7	Evaluation of the Implementation of Hospital Management Information System (SIMRS) at Besemah Hospital, Pagar Alam City year 2021	Afriza Faigayanti	Quantitative research with a cross sectional design to measure human, organization, and technology variables on the net benefit of SIMRS at Besemah Hospital. Because the total population is less than 100, the sample is taken using a total sampling technique. Data analysis was carried out using SEM PLS and the name of the application used was SmartPLS version 3.0.	The results of this study explain that there are three factors that influence the net benefit, namely: organizational environment with p-values of 0.007, user satisfaction with p-values of 0.008, and service quality with p-values of 0.020. While the factors that do not have an influence on the net benefit of SIMRS in Besemah Hospital are: system use, organizational structure, system quality, and information quality.	Google Scholar
8	Evaluation of the Implementation of Hospital Management Information System (SIMRS) at Arosuka Hospital, Solok Regency year 2021	Anika Gusfita	The design of this study is a qualitative research conducted in June 2021. Informants were determined by purposive sampling. The study used the HOT-Fit evaluation model. Data was collected by interview, observation, and document review. Data processing is carried out by means of data reduction, presentation, drawing conclusions and conducting data analysis by data triangulation.	The human aspect, the use of SIMRS is intended for entry and retrieval of patient data. There has been no special training for officers. In the organizational aspect, there is no SK and SOP for SIMRS implementation, computers are lacking, planning and funding for SIMRS development has not become a priority. Aspects of technology, on the quality of the system network problems still occur, the quality of information is appropriate and appropriate but data entry by officers is still incomplete, the quality of service by IT staff is quite good. In terms of net benefits, SIMRS has helped improve the efficiency and effectiveness of officers at work.	Google Scholar

IV. DISCUSSION

In conducting a journal review, it can be done by using literature review techniques, including determining compare, contrast, criticize, synthesize, summarize.

a. Similarity

Of the eight journals that have been analyzed, there are similarities to the Evaluation of the Application of Hospital Management Information Systems, namely the similarity seen from the data collection methods used in the study. According to research conducted by Gita Rina Agustina, et al [8], Anika Gusfitadan [9], Afriza Faigayanti, et al [10] and Anang Suryana, et al [11]. the method used is data collection methods such as conducting interviews, observations, and questionnaires. This is in line with research conducted by Regita Nolandari, et al [12], Astria Lolo, et al [13], Ilafi Nastiti, et al [14] and Lis Indrayati, et al [15]. The data collection method also uses the method of observation, interviews, and questionnaires.

b. Inequality

Of the eight journals that have been analyzed, there are differences between one another, due to looking at the results of research in the journals used. According to research conducted by Regita Nolandari et al, Astria Lolo et al, Ilafi Nastiti et al and that the cause of the problems that occurred in this study was the lack of human resources, lack of staff skills, no training for IT officers and lack of support from management. Monev according to SOP, no management support other than RM. There is a network error problem. This contradicts the research conducted by Lis Indrayati et al, Gita Rina Agustina, et al, Anika Gusfitadan, Afriza Faigayanti, et al and Anang Suryana, et al that the cause of the problems that occurred in this study showed that there was an influence on the quality of information and service quality on user satisfaction, while the quality of the system has no significant effect on user satisfaction.

c. View

From the analysis of several journals, in some hospitals, it is still found that there is a lack of compliance by outpatient registration officers in filling out the Hospital Management Information System, the lack of quality of the Hospital Management Information System in determining its relationship to the monitoring process, evaluation and assessment of internal control, and it still happens frequently. Error during outpatient registration, there is still a shortage of human resources in the hospital.

Hospitals should have a standard operating procedure (SOP) for those devoted to routine control, supervision and attention to SIMRS so that the maintenance of company assets on the tools and facilities used to support the process of monitoring, evaluating, and assessing internal control problems can be directly replaced by the tools and facilities used as well as the resource requirements that run the system must always be monitored and there is always scalable maintenance in order to maintain the accuracy of the system.

The officer who runs and is responsible for the SIMRS must have special education and training to more easily correct errors or disturbances in SIMRS without the need for a third party to correct the disturbance so that business processes run in a timely and efficient manner without wasting time, and for that it is necessary recommendations to make system improvements, especially related to existing functions on the system, improving data accuracy and conformity between system functions and system user needs.

d. Comparison

The results of research conducted by Regita Nolandari, Yulia Fitriani (2022) that the causes of problems in the application of hospital management information systems in outpatient services can be seen from three aspects, namely aspects of human resources and aspects of infrastructure and monitoring and evaluation, while according to Anika Gusfita (2021) that the causes of problems in implementing the hospital management information system can be seen from two aspects, namely in terms of human resources, aspects of the SIMRS implementation process. From these two opinions, it is said that the causes of problems in implementing hospital management information systems in outpatient services include: aspects of human resources and aspects of infrastructure and aspects of the SIMRS implementation process, monitoring and evaluation so that it will affect the quality of hospital services.

e. Summary

The results of research conducted by Gita Rina Agustina, et al, Anika Gusfitadan, Afriza Faigayanti, et al and Anang Suryana, et al, Lis Indrayati et al, Gita Rina Agustina, et al, Anika Gusfitadan, Afriza Faigayanti, et al and Anang Suryana, et al. That the causes of problems that occur in the application of hospital management information systems can be seen in terms of:

1. Human Resources

Human resources are people who are in the hospital and have the competence and characteristics to work and have their respective roles in doing work, which can be seen from the responsibilities they have, knowledge, and motivation to work in accordance with applicable rules. From the results of the research that has been carried out by the eight researchers, the officers implementing the hospital management information system still do not have good competence in implementing the implementation of the hospital management information system, the lack of responsibility of the officers implementing the hospital management information system, and the lack of responsibility for implementing the hospital management information system. Motivation of hospital management.

2. Infrastructure

Facilities and infrastructure are everything that is used as a support in carrying out an activity. The facilities and infrastructure used to support SIMRS implementation activities are hardware, software, networks, SOPs. From the results of the research that has been carried out by the eight researchers. For Problems Supporting facilities such as hardware, software are good enough, for network problems they still often experience disturbances/errors in this case, there is no quick solution for handling problems, and also for SOP problems that have not performed well in the hospital from the three journals.

3. Implementation

Implementation is defined as the activity steps and activities carried out by medical record officers in using the SIMRS application. From the results of the research that has been done by the eight researchers, the implementation of the hospital management information system has not run optimally.

4. Monitoring and Evaluation

Monitoring and evaluation is an important part of the process because with the evaluation will get feedback on the program and implementation of activities. Monitoring is an activity to monitor the process or course of a program or activity, while evaluation is an activity to assess the results of a program for activities. From the results of the research that has been carried out by the eight researchers, the Monitoring and Evaluation of each hospital has not been carried out properly, in fact there are still hospitals that have never carried out an evaluation of their hospital management information system. This is what causes the implementation of the hospital management information system to not run optimally in accordance with existing standards.

V. CONCLUSION

Based on a review of eight journals conducted regarding the Evaluation of the Implementation of Hospital Management Information Systems, the following conclusions were obtained:

1. Human Resources

From the research results of eight journals that have been analyzed, for officers implementing hospital management information systems, they do not have good competence in implementing the implementation of hospital management information systems, lack of training for SIMRS officers, lack of responsibility for implementing home management information systems. Illness, and lack of support from management/motivation of hospital management information system officers.

2. Infrastructure

From the results of the research of eight journals that have been analyzed for problems. Supporting facilities such as hardware, software are good enough, for network problems they still often experience disturbances / errors in this case there is no quick solution for handling problems, and also for SOP problems that have not been implemented properly. Good on the hospital of the eight journals.

3. Implementation

From the results of the research, the eight journals that have been analyzed for the implementation of the hospital management information system have not run optimally.

4. Monitoring and Evaluation

From the results of the research, eight journals that have been analyzed for Monitoring and Evaluation of each hospital have not been carried out properly, in fact there are still hospitals that have never carried out an evaluation of the hospital management information system. This is what causes the implementation of the hospital management information system to not run optimally in accordance with existing standards.

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