


DIJDBM:
**Dinasti International Journal of Digital
Business Management**

E-ISSN: 2715-4203
P-ISSN: 2715-419X

<https://dinastipub.org/DIJDBM> dinasti.info@gmail.com +62 811 7404 455

DOI: <https://doi.org/10.38035/dijdbm.v6i3>
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Analysis of the Implementation of Hospital Management Information Systems (SIMRS) to Improve the Quality of Pharmaceutical Services: Literature Review

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Abstract: Hospital Management Information System (SIMRS) is a communication information technology that integrates and processes the entire flow of hospital service processes. SIMRS currently has a very important role in hospital management because it can help manage hospital operations both in data processing and patient service activities. This research is intended to analyze the implementation of the Hospital Management Information System (SIMRS) in order to improve the quality of services in hospitals, especially pharmaceutical services. The research uses a qualitative method with a literature review approach that analyzes various literature sources relevant to the topic of implementing the Hospital Management Information System (SIMRS) which has an important role in improving the quality of pharmaceutical services in hospitals. The results of the analysis show that the implementation of SIMRS can improve the efficiency of drug management, prescription accuracy and patient therapy monitoring. The success of SIMRS implementation is influenced by careful planning, user training, and system maintenance. This research contributes to the development of SIMRS implementation strategies to improve the quality of pharmaceutical services.

Keywords: SIMRS, Quality of Pharmaceutical Services, Hospital.

INTRODUCTION

Quality health services are one indicator for evaluating the effectiveness of the health system in Indonesia. Improving the quality of health services is the government's main concern, especially in hospitals which function as one of the health service centers. Health services at hospitals consist of emergency services, inpatient and outpatient services, supporting services such as radiology, laboratory and pharmacy. Hospitals are health service institutions that play an important role in providing comprehensive and complete health services for the community. Likewise, pharmaceutical facilities in hospitals are an element of

the health service system which aims to provide safe and quality medicines and pharmaceutical products to patients, including as an information center regarding the appropriate use of drugs, management of drug therapy and education for patients.

In the implementation of health services, information technology plays an important role and is one of the factors in the success of services to the community (Setyawan, 2016), the use of information technology enables the collection, processing and dissemination of health data efficiently, making it easier to access information for medical personnel and patients, besides technology information also supports more effective communication between patients and healthcare providers. Hospitals are required to be able to improve medical services, reduce medical errors, provide timely access to information, and at the same time must be able to monitor service activities and control operational costs (Wulur, et. al., 2023). In order to improve medical services, efforts are needed to reduce fatal medical errors, medication errors, drug management and ensure the provision of timely and accurate access to information for patients and medical personnel. Hospital Management Information System (SIMRS) is a tool for integrating various aspects of management including medical services. Effective implementation of SIMRS is expected to improve the quality of hospital services where there are pharmaceutical services which are an important element in the health system. SIMRS is currently important because hospitals' needs continue to increase in managing patient data, improving operational efficiency and improving service quality.

Management Information System is an integrated system of humans and computer machines to present information to support organizational management functions and decision-making processes within an organization (Sutabri: 2005 in Mawarni et al, 2024: 14). MIS plays an important role in the decision-making process in an organization, evaluating performance and optimizing resources to achieve organizational goals effectively and efficiently. A management information system is a network of data processing procedures by an organization and put together if deemed necessary with the aim of providing internal and external data as a basis for making decisions in order to achieve organizational goals (Moekijat: 2009 in Mawarni et al, 2024: 15). With this data, management can make better and strategic decisions to increase operational efficiency and effectiveness. The Hospital Management Information System is a computerized information system that works due to human and computer interaction. The management information system will produce output in the form of information that can be used as consideration (tool) for taking or making decisions. According to McLeod and Schell (2007) in Mulyani (2016:24) Management Information Systems are "as a computer-based system that makes information available to users with similar needs". This system can collect, manage and distribute information with high efficiency and speed so that by utilizing information technology, this system allows users to access data that is relevant to their needs and facilitates decision making in various contexts, especially in the service sector.

A hospital is a health service institution that provides complete individual health services, providing inpatient, outpatient and emergency services (Permenkes, 2016). Hospitals are health service institutions that play an important role in providing comprehensive individual health services, equipped with various facilities and competent medical personnel so that hospitals are committed to improving the quality of public health and providing solutions to health problems faced by the community.

Quality of hospital service is the level of excellence provided by a hospital service unit to patients. Quality is not only absolute but relative depending on the standards used, quality is an important parameter in assessing various aspects of life. Service quality refers to the act of providing assistance, support and services to other people or the community which aims to meet the needs and expectations of the individuals or groups served.

The theoretical model of this research focuses on the relationship between hospital SIM

and improving the quality of effective Hospital SIM services which is expected to improve pharmaceutical services, which ultimately has an impact on service. This model is in line with the findings of Sutrisno (2021) which highlights the synergy of these variables in growing productive organizations.

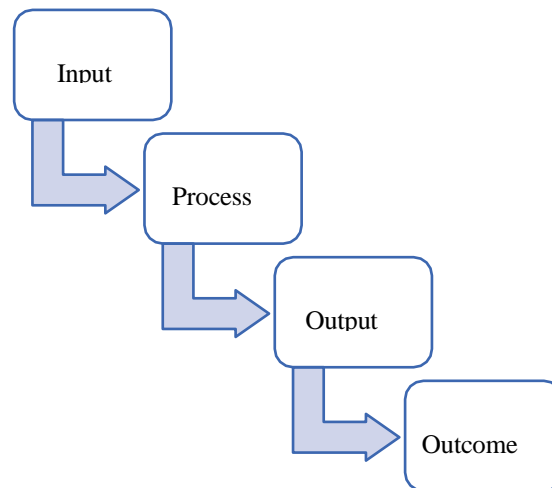


Chart 1. Theoretical Research Model

METHOD

This research method is based on a literature review which includes a theoretical discussion. The research was conducted to analyze various existing studies and draw conclusions regarding best practice in implementing SIMRS. Through a literature review, researchers analyzed the implementation of SIMRS and its impact on the quality of pharmaceutical services.

This research data was obtained from relevant national scientific articles published within the last 5 years (2019 – 2024) found in the Google Scholar database. The terms used in the search for related literature were hospital management information systems, pharmaceutical and hospital service quality. This article was written using a qualitative method with a literature study approach which aims to obtain a series of ideas about the factors that can influence the variables to be studied.

RESULTS AND DISCUSSION

The results of the search for writing this article were carried out using qualitative methods with a literature study approach aimed at obtaining the variables to be studied. Search results using several databases such as Scopus, Google Scholar and also collecting information obtained from online journal articles sourced from reference books related to the topic. Literature searches are also carried out with the help of the Google engine by entering a key into the search engine. The steps in fulfilling the requirements were then reviewed for quality and synthesized in this literature review. The following are the stages of a literature review:

1. Identify Research Keywords

The aim of this research is to analyze the implementation of the Hospital Management Information System to improve the quality of pharmaceutical services, therefore the researcher determined the stages to be carried out before conducting a literature search. The stage begins by collecting various previous research journals that are relevant to the topic to be

researched by identifying them through search keywords on a search engine, namely implementation, quality, service, management information systems, hospitals, pharmaceutical installations and SIMRS.

2. Literature Search

Researchers conducted a literature review search using the Publish or Perish application and Google Scholar using keywords that were determined in the application. Apart from that, researchers looked for online journal articles, books and websites. The search produced 80 pieces of literature from 2019 to 2024.

3. Screening Process

After the search process, the researcher carried out a title and abstract screening process to obtain 15 articles that were appropriate to the topic to be reviewed.

4. Determination of Criteria and Eligibility

The articles obtained will be subjected to full-text review, and 9 (nine) research articles will be found that meet the standards and requirements for review based on the inclusion criteria set by the researcher and the essence of the article has been taken and synthesized according to the topic in the literature review.

Table 1. Reviewed Articles

No	Researchers and Researcher Locations	Article Title	Research Design	Research Result
1	Saputra, Dyahariesti (2024)	Level of User Satisfaction of Management Information System for Pharmaceutical Services at Salatiga Regional Hospital	Quantitative	The level of satisfaction of pharmaceutical installation officers with regard to the quality indicators of the management information system is included in the sufficient category
2	Siregar, et al (2024)	Analysis of the Implementation of Hospital Information Systems on the Administrative Services of Haji Syaiful Anwar Hospital	Qualitative	The implementation of SIMRS at RSU Haji Syaiful Anwar, reviewed from the perspective of Performance, Information/Data, Economic, Control/Security, Efficiency, Service, is quite good, but still needs to be improved so that SIMRS can function optimally and provide maximum benefits for the hospital.
3	Polii, et. Al (2022)	Study of the Utilization of Hospital Management Information Systems in the Pharmacy Installation and Procurement of Medical Equipment at RSU GMIM Siloam Sonder	Qualitative Descriptive	The SIM RS at RSU GMIM Siloam Sonder has been utilized in drug and BHP management activities but has not been utilized in the medical equipment procurement process

4	Effendy, et. al (2024)	The Role of Information Technology, Human Resource Management, and Hospital Information Systems in Improving Hospital Performance (Literature Review)	Qualitative literature review approach	Integration between information technology, human resource management (HR), and Hospital Information Systems (SIRS) has a very important role in improving hospital performance.
5	Santosa, et. al (2024)	Analysis of the Implementation of the Hospital Management Information System (SIMRS) in Improving Efficient Hospital Management at Surakarta Regional General Hospital	Qualitative	The implementation of the Hospital Management Information System (SIMRS) at Surakarta Regional General Hospital brought significant changes in the administrative workflow. After the implementation of SIMRS, operational efficiency increased drastically, accelerating the process of checking, reporting, claims, and transactions.
6	Putri, et. al (2024)	Challenges and Solutions in the Implementation of SIMRS in Government Hospitals in Indonesia	Qualitative Case Study	The implementation of the Hospital Management Information System (SIMRS) in government hospitals in Indonesia has been an important step in improving the efficiency and quality of health services
7	Wulur, et. al (2023)	Analysis of the Influence of the Utilization of Management Information Systems on Hospital Health Services: Literature Review	Qualitative Literature Study	The management information system in health services is something that integrates the entire flow of hospital service processes in the form of a network that improves human resources in a health service. A quality information system in a hospital is a system that is easy to use by users of health facilities.
8	Pane, et. al (2023)	Hospital Management Information System (SIMRS) to Improve the Quality of Health Services in Indonesia	Qualitative Literature Study	Hospital Management Information Systems (SIMRS) are very important in improving the quality of health services in Indonesia. SIMRS can help improve the efficiency and effectiveness of hospital management processes, speed up the right decision making, and improve monitoring of the performance of each unit in the hospital

9	Puspita, et. al (2024)	Education on the Implementation of Simrs Electronic Medical Records in the Kediri Regency General Hospital Pharmacy Installation	Quantitative	Human resources (HR) and organizational factors play an important role in the success of technology acceptance, SIMRS is an optimal technology development innovation for service
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From the 9 articles above, the results show that the Analysis of the Implementation of Management Information Systems in health services, especially pharmaceutical services in hospitals, refers to the evaluation and assessment process of the implementation of information systems used to support the management and operations of pharmaceutical services. By implementing a Management Information System, hospitals can speed up the process of managing patient, drug and administrative data, thereby improving services to patients. This system also helps monitor patient use of medication, minimize medication errors, and ensure the availability of necessary medications. In addition, this research shows that challenges in implementing SIM, such as resistance from staff and training needs, must be overcome to achieve optimal results. Management support and involvement of all relevant parties is essential to ensure a smooth transition. Thus, effective implementation of MIS can contribute to improving the quality of pharmaceutical services in hospitals, providing long-term benefits for patients and health institutions.

The results of the review of the article above on the Analysis of the Implementation of the Hospital Management Information System (SIMRS) are as follows:

1. Hospital Human Resources (HR).

All employees in hospitals, from doctors, nurses, to administrative staff are human resources who have an important role in providing optimal health services. Each employee contributes to patient care, facility management, and financial administration. A complex hospital environment requires collaboration between professions to ensure that patients receive fast and effective treatment. Each employee must understand their responsibilities and how their role is related to other functions, so as to create a harmonious service system. The Hospital Management Information System (SIMRS) functions as the main tool in improving the work efficiency and effectiveness of hospital employees. SIMRS facilitates patient data management, scheduling and medical documentation, allowing employees to access the required information quickly and accurately. To produce a quality management information system, human resources are needed who understand and are competent in the field of management Information systems (Fidyah: 2019). With SIMRS, communication between departments becomes smoother, and employees can carry out their duties better. The use of information technology also helps in data-based decision making, thereby improving service quality and patient satisfaction.

2. Pharmaceutical Activities

Pharmaceutical activities play an important role in the health system by ensuring that patients receive the right medication, both in terms of type and dose. Pharmacy officers are responsible for supervising drug use, providing information and education to patients, and managing drug therapy. Pharmaceutical activities are not only limited to administering drugs, managing and monitoring side effects and drug interactions but also include managing health supplies, so that pharmacists contribute significantly to patient safety and the effectiveness of therapy. Pharmaceutical Service Standards in Hospitals include management standards for Pharmaceutical Preparations, Medical Devices and Consumable Medical Materials and clinical pharmacy services (Permenkes: 2016). SIMRS allows staff to access patient

information in real-time, so they can make better decisions regarding treatment. With SIMRS integration, pharmacists can manage drug inventory, monitor drug use, and optimize prescription filling, based on research by Samra, R., et al. (2016) that there are several monitoring strategies that can be used as monitoring methods in implementing patient safety efforts. Monitoring strategies can be adjusted to the needs of pharmaceutical services so that SIMRS implementation can increase drug management efficiency, prescription accuracy and patient satisfaction will also of course increase. Data generated from this system can also be used for analysis and continuous improvement in pharmacy practice, thereby improving the quality of health services.

3. Management Information System in Hospitals (SIMRS) in pharmaceutical activities

Hospital Management Information System (SIMRS) is a system designed to assist hospital management in managing resources, information and health service processes effectively and efficiently. The important role of information systems in improving health services is that they can improve health service processes and operations, make decisions by staff and management more accurate and serve as a basis for determining strategies for improving competitive services (Molly & Itaar, 2021). SIMRS covers various aspects of hospital operations including pharmaceutical services ranging from drug management and BMHP to clinical pharmacy services. Pharmaceutical services have an important role in ensuring patient safety and the effectiveness of therapy so that medication inventory management is required, this can be done with the implementation of SIMRS, apart from that SIMRS can also facilitate the process of making and managing drug prescriptions by doctors, through SIMRS errors in writing prescriptions can be minimized and pharmacies can easily access prescriptions. In order to improve the quality of service, SIMRS can be developed by integrating a system of clinical pharmacy activities such as prescription screening, drug history tracking, checking drug interactions, drug related problems, monitoring drug therapy and drug side effects. With SIMRS, pharmacies can implement drug efficiency and patient waiting times thereby increasing patient satisfaction. This is in line with research into information systems that can integrate patient data from various departments, so that doctors can view treatment history as a whole and provide more appropriate treatment (Alolayyan et al., 2020). In addition, SIMRS provides better security for patient data and drug information because access is limited to authorized personnel only. Analysis of data related to drug use, treatment patterns, effectiveness of therapy, drug inventory and BMHP, routine reports and quality reports can be made possible with the implementation of SIMRS.

4. Challenges in implementing SIMRS for pharmaceutical services.

Limited resources that require investment in hardware, software and staff training are challenges in implementing SIMRS in hospitals, besides that users experience difficulties in adapting to new systems, especially if they are used to manual systems and pharmaceutical services must comply with various regulations relating to The use of drugs that require special attention in managing data through SMIRS is another challenge that must be addressed by management. As in Putri's research, et. al. (2024) who stated that even though the system had been implemented, many medical personnel had difficulty adapting because they were more accustomed to manual recording systems. To overcome this problem, hospitals must provide ongoing training and provide staff with an understanding of the long-term benefits of digital systems, such as ease of accessing patient information and speeding up the administration process (Tangel, et. al.: 2024).

CONCLUSION

All hospital employees, including doctors, nurses and administrative staff, have a vital role in providing optimal health services. Collaboration between professions is essential to ensure that patients receive prompt and effective care. The Hospital Management Information System (SIMRS) functions as the main tool in increasing employee work efficiency by facilitating patient data management, scheduling and medical documentation.

Pharmaceutical activities are also very important in the health system, ensuring patients receive appropriate and safe medications. SIMRS allows pharmacy staff to access real-time patient information, which supports medication management and improves service quality.

However, SIMRS implementation faces challenges, such as limited resources and difficulty in adapting staff to the new system. It is important for hospitals to provide ongoing training and explain the long-term benefits of digital systems, to improve employee understanding and skills. In this way, it is hoped that the quality of health services can continue to be improved.

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