

OPTIMIZATION OF HOSPITAL MANAGEMENT INFORMATION SYSTEM TO SUPPORT MANAGERIAL DECISIONS

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Abstract

The development of information technology has brought fundamental changes to hospital governance. One strategic instrument that plays a crucial role is the Hospital Management Information System, as regulated in Minister of Health Regulation Number 82 of 2013. SIMRS functions not only as an administrative system but also as a decision support system that provides real-time and integrated data to support managerial decision-making. This study uses a literature review method by analyzing various recent research results related to the implementation and optimization of SIMRS in hospitals. The results show that SIMRS can improve administrative efficiency, accelerate patient data access, strengthen inter-departmental coordination, and facilitate data-driven decision-making. However, several obstacles remain, including high implementation costs, user resistance to change, system complexity, limited cross-module integration, and data security risks. Optimizing SIMRS requires a continuous training strategy for all staff, system adjustments to hospital needs, regular software updates, and close collaboration between the information technology team and medical personnel.

Keywords: *Hospital Management Information System.*

INTRODUCTION

The development of information technology in the healthcare sector has shifted the paradigm of hospital management from a manual to a digital system (Santoso et al., 2025). One of the main instruments in this transformation is the Hospital Management Information System (SIMRS), which is designed to integrate various clinical, administrative, and financial services into a single, integrated platform (Pujiawati et al., 2025). The presence of SIMRS is not merely a tool for recording patient data, but a strategic instrument that has the potential to improve operational efficiency, service quality, and support evidence-based managerial decision-making (Pratiwi et al., 2025). In the context of increasingly fierce competition in healthcare services, optimizing SIMRS has become an urgent need for hospitals in Indonesia, both government and private. Hospitals, as primary healthcare providers, often face challenges in information management, both for internal and external needs (Fadilla, 2021). The need for improved, efficient, fast, easy, accurate, and secure information management is becoming increasingly important given the complexity and density of the healthcare services they offer. Information technology-based management systems are a crucial solution in this context, as outlined by Magdalena et al. (2023). Hospital management certainly requires fast and accurate data management to provide the best possible service. Manual data management clearly has many drawbacks. Besides being time-consuming, it also offers unacceptable accuracy due to the high potential for error (Dano & Rianse, 2024).

The implementation of SIMRS in hospitals is a mandate of Law Number 44 of 2009 concerning hospitals, where the provisions of Article 52 paragraph (1) of hospitals state that hospitals are required to record and report on all hospital management activities in the form of a hospital management information system, this is emphasized by the Regulation of the Minister of Health of the Republic of Indonesia number 1171/MENKES/PER/VI/2011 concerning Hospital Information Systems (Rusman & Suwardoyo, 2022). Although the implementation of a Hospital Management Information System (SIMRS) has been mandated by regulations, such as Regulation of the Minister of Health of the Republic of Indonesia Number 82 of 2013 concerning SIMRS, its implementation in the field is often suboptimal. Many hospitals face obstacles related to limited infrastructure, lack of integration between units, low

digital literacy among healthcare workers, and data quality issues that do not meet interoperability standards (Zahwa, 2025). This condition has resulted in low utilization of SIMRS as a managerial analysis tool that should be able to provide real-time data on quality indicators, workload, resource utilization, and hospital financial performance. As a result, strategic decision-making by management often still relies on manual reports that are time-consuming, thus reducing the speed of response to the dynamics of healthcare service needs. Previous studies have shown that optimizing a Hospital Management Information System (MISRS) directly contributes to improved service quality and management efficiency. A well-operated SIMRS enables disease trend analysis, medical staff performance evaluation, drug and medical device logistics planning, and operational cost control (Laila et al., 2024). Furthermore, successful SIMRS optimization can support the implementation of *Hospital Business Intelligence* and *Health Big Data Analytics concepts*, which serve as the foundation for *predictive decision-making* (Supriono, 2024). However, most studies still focus on the technical aspects of implementation, while optimal use of SIMRS as a basis for managerial decisions has not been comprehensively examined, particularly in the context of hospitals in Indonesia with heterogeneous resources and complex regulations. Therefore, a study on optimizing SIMRS to support managerial decisions is crucial. This research not only highlights the technical issues of SIMRS implementation but also analyzes how this system can be optimized to produce accurate, timely, and relevant information for decision-makers. Therefore, the research findings are expected to provide practical contributions to strengthening hospital governance and theoretical contributions to the development of information systems-based management models in the healthcare sector.

LITERATURE REVIEW

Hospital Management Information System (SIMRS) Theory

The Hospital Management Information System (SIMRS) is a system designed to manage and process information related to hospital operations, including health services, administration, and other resource management. According to Oktaviyana (2023), an information system is a collection of interacting components that collect, store, process, and distribute information to support decision-making, coordination, control, analysis, and planning within an organization. In the hospital context, SIMRS aims to integrate all information flows between medical, administrative, financial, and patient management departments, thereby increasing operational efficiency and effectiveness. With SIMRS, hospital management processes can be more transparent, structured, and based on accurate data. Good integration of this system can improve the quality of health services by reducing medical errors, accelerating administrative processes, and optimizing the use of existing resources (Puspita et al., 2024).

Technology and Organization Theory

This theory explains how technology, including MISRS, can influence the structure, processes, and performance within an organization. Technology can be a key driver of change within an organization. The adoption of technology such as MISRS influences the way hospitals operate, including workflow, interdepartmental communication, and decision-making. Technology can help organizations adapt to rapidly changing external environments and improve operational efficiency and effectiveness. However, technology adoption also presents challenges in terms of training, organizational culture change, and system integration. Therefore, managing change within an organization is key to maximizing the benefits of adopted technology, including MISRS, to improve overall hospital performance (Effendy et al., 2024).

METHOD

This study uses a systematic literature review method to analyze the optimization of Hospital Management Information Systems (SIMRS) in supporting managerial decisions. This approach was chosen because it can provide a comprehensive overview of trends, challenges, and SIMRS optimization strategies based on published academic findings.

1. Data source

The articles used for the study were obtained from reputable international and national databases, including Scopus, Web of Science, PubMed, ScienceDirect, SpringerLink, Google Scholar, and Garuda. The selected journals were from the 2020–2025 period to ensure relevance to the latest developments in health information technology implementation.

2. Inclusion and Exclusion Criteria

The inclusion criteria established include:

- An article that discusses the implementation and optimization of SIMRS or *Hospital Information System* directly.
- An article that highlights the relationship between SIMRS and managerial decision-making, both in clinical, administrative and financial aspects.
- Articles published in peer-reviewed journals.
- Articles in Indonesian and English.

Meanwhile, the exclusion criteria are:

- Articles in the form of opinions, editorials, or short reports without empirical data.
- Articles that only discuss the technical aspects of SIMRS without any connection to managerial decision making.
- Duplication of publications in different sources.

The literature search process was conducted using combined keywords such as: “*Hospital Management Information System*”, “*SIMRS optimization*”, “*decision making in hospitals*”, and “*health information system management*”. The search strategy followed the PRISMA (*Preferred Reporting Items for Systematic Reviews and Meta-Analyses*) protocol to ensure transparency in literature selection.

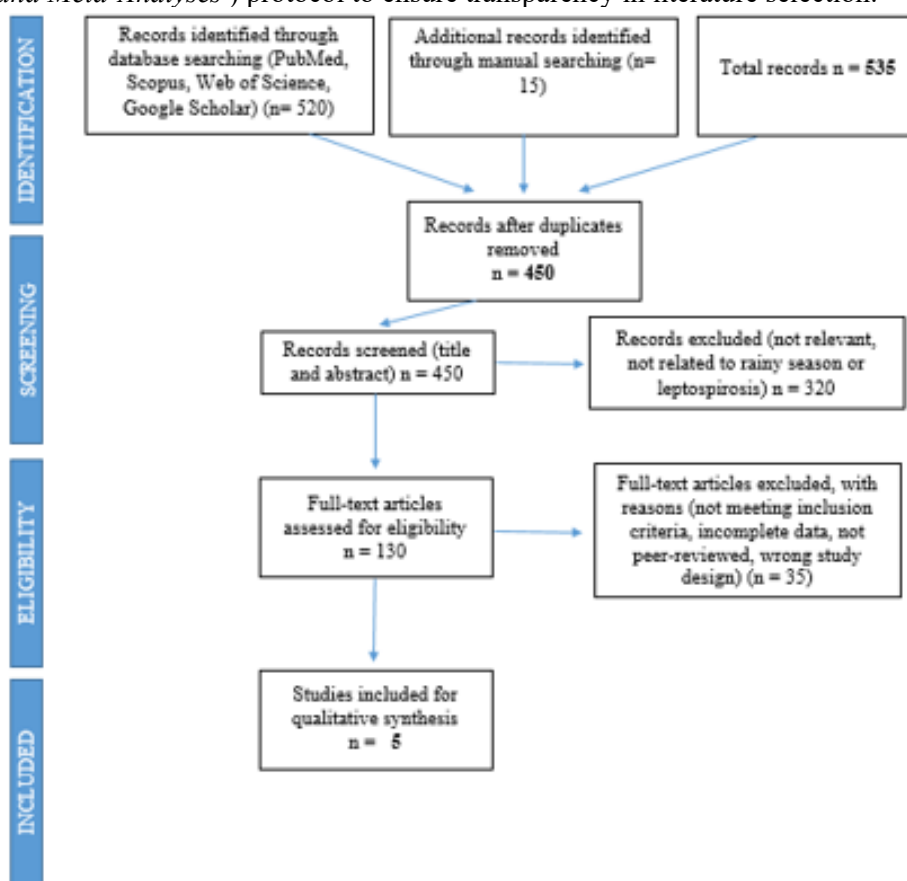


Figure 1. Prisma Flow Diagram

RESULTS AND DISCUSSION

Table 1. Summary of Literature Review Findings

NO	Author and Year	Title	Method	Research Findings
1	Nurfarahin, Aldiga Rienarti Abidin, Raja Rachmadhina	Optimizing SIMRS Management in the Outpatient Nurse Station Unit at Pekanbaru Eye Center Eye Hospital in 2024	Ultrasound (Urgency, Seriousness, Growth) and Fish Bone Diagram	The research results show that these steps have the potential to significantly improve operational efficiency, data accuracy, and the quality of hospital services.
2	Ratna Wardani, Ilham Nur Muhammad, Agus Zainal Abidin, Fendy Hardyanto, Didit Setiawan	Optimizing the SIM-Rs for Online Patient Registration at the Slg Regional Hospital in Kediri	Conducting field studies by searching for SIMRS-related documents, interviews with stakeholders, and direct observations in the field.	The analysis resulted in a turnaround strategy to optimize online registration. This included the development of standard operating procedures (SOPs) for online registration for patients and staff, and the integration of social media with the hospital website to provide information on health and hospital services.
3	Sri Hajijah Purba, Khairunnisa, Chindy Khairani, Nur Wanny	Strategy for Optimizing the Use of SIMRS to Improve Hospital Performance	literature study	The results of this study indicate that one of the main strategies for optimization is ensuring comprehensive training for all hospital staff, from administrative personnel to healthcare providers. Effective use of a Hospital Management Information System (SIMRS) requires an understanding of its various functions. Implementing and optimizing a Hospital Management Information System (SIMRS) is a crucial strategic step in efforts to improve hospital performance. SIMRS integrates various operational, administrative, and clinical functions in a single platform, enabling hospitals to improve efficiency, the quality of patient care, and the effectiveness of overall hospital management. However, its implementation also presents challenges, such as

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				high implementation costs, difficulties in integrating existing systems, and resistance from staff accustomed to manual systems.
4	Antik Pujihastuti, Nunik Maya Hastuti, Novita Yuliani	Implementation of Hospital Management Information Systems to Support Management Decision Making	This research is descriptive with a cross-sectional approach.	The results show that the information system has subsystems ranging from outpatient registration to filling, but it needs to evaluate the outpatient module related to more specific response time. Updates to data entry errors are tracked by the editing process related to the identity of the officer, the date and time of replacement. Automatic synchronization of SMIRS with the data required by SISMADAK Version 5.0.3 as reporting, national accreditation by the patient safety quality improvement team (PMKP). SIMRS data to be filled in completely, accurately, consistently requires automatic identification and tracing of data entry results according to work shifts without printouts from the cashier section. Information from the SIMRS data type structure of the patient registration module can be added to the poly edit menu entity in collaboration with the system developer.
5	Muhammad Guntur Dano, La Ode Mohammad Masri, La Ode Baka, Muhammad Suriyadarman Rianse	Optimization of the Hospital Management Information System at the Lm. Baharuddin Regional Hospital, Muna Regency	qualitative approach, with primary and secondary data sources and supporting data obtained from books, journals, and report documents related to this study	The study results show that SIMRS supports hospital operations by accurately managing patient registration, medical records, and administrative reporting, increasing efficiency and effectiveness. This system also reduces human error, improves data integration, and improves the quality of patient care. To maximize benefits,

				hospitals need to plan SIMRS development well, involve various parties, and provide training to staff. SIMRS implementation must be accompanied by evaluation, ongoing maintenance, and integration between units to ensure smooth and accurate information flow.
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The findings from the articles in Table 1 were then reviewed to assess the quality and relevance of each piece of literature found. The data obtained from the articles were then summarized and presented in a conclusion table. The analysis was made narrative and presented in Table 2.

Table 2. Conclusion Matrix

No	Main Findings	Similarity of results	Literature
1	SIMRS improves operational efficiency and accuracy of hospital service data	SIMRS is able to speed up the service process, reduce human error, and improve data quality.	Journal 1, Journal 5
2	SIMRS supports online patient registration and information integration with digital media.	optimization strategy through online registration SOP and integration with hospital information systems	Sources 2 and 3
3	SIMRS acts as a tool to support managerial decision making.	The research emphasizes the importance of module evaluation, data synchronization, and improving the quality of entries to produce valid information as a basis for decisions.	Sources 2 and 4
4	Optimizing SIMRS requires planning, continuous evaluation, and HR training.	The similarity of findings shows that the success of SIMRS is not only determined by the system, but also by the involvement of human resources and continuous maintenance.	Sources 1, 2, and 3
5	There are still challenges in the integration aspects between units and the speed of system response.	Several studies have mentioned the need to improve response time and interoperability between modules to support service quality.	Journal 1 and Journal 5

DISCUSSION

Optimization of Hospital Management Information System (SIMRS) to Support Managerial Decisions

In the modern healthcare era, advances in information technology have brought fundamental changes to hospital governance. The Hospital Information System (SIMS), as defined in Minister of Health Regulation Number 82 of 2013, is not merely an administrative instrument but also a strategic platform that can support managerial decision-making. This system integrates the entire operational flow, from registration and medical records to billing and logistics management, to financial reporting, resulting in a comprehensive, *real-time database* for management needs (Dano et al., 2024). Optimizing a Hospital Management Information System (MISRS) in a managerial context extends beyond technical implementation to how the system is utilized to generate relevant, timely, and accurate information for decision-makers. Previous research indicates that the main obstacles frequently encountered are the lack of utilization of analytical features, workforce resistance to change, and limited integration between modules (Dharmawan et al., 2022). If a SIMRS is used solely for data recording, its strategic value for management will be diminished. Therefore, hospitals need to maximize its function as a *decision support system* that can provide key

performance indicators (KPIs), workload analysis, resource efficiency, and disease trends that support long-term planning (Pujihastuti et al., 2024). One crucial optimization strategy is comprehensive training for all levels of hospital staff, not only on how to operate the system but also on how to read, interpret, and utilize the data as a basis for decision-making. For doctors and nurses, this relates to the speed of access to clinical data to support *clinical decision-making*, while for management, SIMRS data serves as a basis for formulating service policies, human resource planning, and evaluating hospital quality (Wardani et al., 2024). Thus, SIMRS is not only a technical instrument but also a strategic asset in modern hospital governance.

Furthermore, the SIMRS needs to be tailored to the specific needs of the organization. A standardized system ensures uniformity, but hospitals with varying characteristics require flexibility in workflow design. Customizing SIMRS modules, such as integrating inpatient, emergency, and pharmacy services, will facilitate management in monitoring bed availability, drug prescribing patterns, and the effectiveness of facility utilization. Literature shows that a properly tailored system will strengthen the SIMRS's role in generating analytical reports that can be used for strategic decision-making (Nurfarahin et al., 2025). Furthermore, the sustainability of SIMRS optimization is determined by regular system updates. These updates not only encompass technical improvements and data security, but also alignment with the latest accreditation standards, health regulations, and evolving clinical protocols. This is crucial because SIMRS reports and data are often used by management as a basis for budget planning, unit performance evaluation, and the establishment of service strategies based on patient needs and hospital quality standards.

Table 2. SIMRS Management in Hospitals

Strategy	Description	The main purpose
Comprehensive Staff Training	Provide training to all staff, from administrative staff to medical personnel, so that they can use SIMRS effectively.	Ensuring staff can make optimal use of the system.
System Adaptation to Hospital Needs	Adapting SIMRS to the hospital's workflow and organizational structure to suit specific operational needs.	Improve operational efficiency with seamless integration.
Regular System Updates	Ensure systems are always updated with the latest software, bug fixes, and security protocols to maintain optimal performance.	Keeping the system safe, fast and efficient.
System Performance Monitoring and Evaluation	Establish key performance indicators (KPIs) to monitor the results of SIMRS usage and conduct periodic evaluations to ensure the system is functioning properly.	Identify areas for improvement and maximize results.
Collaboration Between IT and Clinical Staff	Improve communication and collaboration between the IT department and medical staff to provide useful feedback on the use of SIMRS.	Ensuring the system can continue to meet the needs of clinical staff.

Another important strategy for optimizing the use of a SIMRS is establishing clear metrics to monitor and evaluate system performance. Hospitals should identify key performance indicators (KPIs) that can be directly impacted by the SIMRS, such as patient satisfaction, time to care, resource utilization, and financial performance. By regularly monitoring these KPIs, hospitals can assess whether the system is achieving desired outcomes or whether adjustments are needed. Furthermore, analyzing data trends can help identify pain points or inefficiencies in hospital processes, allowing corrective action to be taken. Collaboration between IT professionals and clinical staff is also crucial to the success of SIMRS optimization. Healthcare professionals often have valuable insights into how the system can be used more effectively in the clinical setting. Involving them in the ongoing review and optimization process will ensure that the system continues to meet the evolving needs of patients and healthcare providers. (Puspita et al., 2024).

CONCLUSION

Optimizing the Hospital Management Information System (SIMRS) has proven to have a strategic role in supporting managerial decision-making by providing comprehensive, real-time, and evidence-based data. SIMRS implementation not only functions as an administrative tool but also as a *decision support system* that enables hospital management to conduct performance evaluations, resource planning, and policy formulation based on key performance indicators. The results of the literature review indicate that the main advantages of SIMRS lie in its ability to automate administrative processes, improve coordination efficiency between departments, strengthen regulatory compliance, and provide a database for strategic decision-making. However, there are several challenges that need to be anticipated, including high implementation costs, staff resistance to change, system complexity, limited cross-application integration, and data security risks. Therefore, SIMRS optimization must be carried out continuously through a comprehensive training strategy, system adjustments to suit hospital characteristics, regular updates aligned with accreditation standards and health regulations, and increased collaboration between the information technology team and medical personnel. With these steps, SIMRS can develop into a strategic instrument that not only improves operational efficiency but also strengthens the competitiveness and quality of hospital services in the modern digital healthcare era.

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