



# Hospital Management Information System Implementation Strategy To Improve The Quality Of Health Services At Pindad General Hospital Bandung

Fikri Emsa Silmi

Teknologi Rekayasa Perangkat Lunak, Politeknik Mardira Indonesia

[fikriemsa@poltekmi.ac.id](mailto:fikriemsa@poltekmi.ac.id)

## Abstract

The Hospital Management Information System (SIMRS) is a critically strategic component in improving the quality of healthcare services. This study aims to examine the implementation of SIMRS, identify barriers to its implementation, and formulate effective implementation strategies at Pindad General Hospital (RSU Pindad), Bandung City. The research employed a descriptive qualitative approach using a single case study method. Data were collected through in-depth interviews, direct observation, and document analysis from relevant stakeholders at RSU Pindad Bandung. Data analysis utilized SWOT analysis (Strengths, Weaknesses, Opportunities, Threats) based on four SIMRS pillars: technoware, humanware, infoware, and organiware. The results indicate that SIMRS implementation at RSU Pindad Bandung is suboptimal, as evidenced by a weakness score (1.82) exceeding the strength score (1.57) in the IFAS matrix, although opportunities (1.50) outweigh threats (1.30) in the EFAS matrix. This positions RSU Pindad in Quadrant III (turn-around/WO strategy), indicating that the hospital must address internal weaknesses in order to leverage external opportunities. Key barriers include limited IT human resources, an insufficient SIMRS budget, the absence of comprehensive SOPs, and incomplete system adoption across units. The recommended strategies encompass four 4M dimensions: Man (IT staff recruitment and training), Money (budget planning based on the Strategic Plan), Material (infrastructure modernization and open-source software development), and Method (SOP drafting, policy formulation, and comprehensive IT strategic planning).

Keywords; SIMRS, service quality, SWOT analysis, technoware, humanware, infoware, organiware, strategy

## Abstrak

Sistem Informasi Manajemen Rumah Sakit (SIMRS) merupakan komponen strategis yang sangat penting dalam peningkatan mutu pelayanan kesehatan. Penelitian ini bertujuan untuk mengkaji penerapan SIMRS, mengidentifikasi hambatan implementasinya, serta merumuskan strategi penerapan yang efektif di Rumah Sakit Umum (RSU) Pindad Kota Bandung. Penelitian menggunakan pendekatan kualitatif deskriptif dengan metode studi kasus tunggal (single case study). Data dikumpulkan melalui wawancara mendalam (in-depth interview), observasi langsung, dan studi dokumentasi terhadap para pemangku kepentingan di RSU Pindad Bandung. Analisis data menggunakan metode SWOT (Strengths, Weaknesses, Opportunities, Threats) berdasarkan empat pilar SIMRS yaitu technoware, humanware, infoware, dan organiware. Hasil penelitian menunjukkan bahwa penerapan SIMRS di RSU Pindad Bandung belum optimal, ditandai dengan skor kelemahan (1,82) yang lebih besar dari kekuatan (1,57) dalam matriks IFAS, namun peluang (1,50) lebih besar dari ancaman (1,30) dalam matriks EFAS. Posisi ini menempatkan RSU Pindad pada kuadran III (strategi turn-around/WO), artinya rumah sakit perlu memperbaiki kelemahan internal untuk memanfaatkan peluang eksternal. Hambatan utama meliputi terbatasnya SDM IT, anggaran SIMRS yang kurang memadai, belum tersedianya SOP yang komprehensif, serta penggunaan sistem yang belum menyeluruh. Strategi yang direkomendasikan meliputi empat dimensi 4M: Man (rekrutmen dan pelatihan SDM IT), Money (perencanaan anggaran berbasis Renstra), Material (peremajaan infrastruktur dan pengembangan software open source), dan Method (penyusunan SOP, kebijakan, serta rencana strategis SI/TI yang komprehensif).

Kata Kunci; SIMRS, mutu pelayanan, analisis SWOT, technoware, humanware, infoware, organiware, strategi

## INTRODUCTION

Hospitals play a fundamental role in the national healthcare service system. As health institutions, hospitals are required to organize both medical and non-medical staff and provide services 24 hours a day, 7 days a week. Consequently, hospital services rely intensively on information management. Information systems in hospitals are of critical importance because hospitals exist to serve the community, thereby necessitating accurate and reliable data processing. Based on Law Number 44 of 2009 concerning Hospitals, Article 52, every hospital is required to conduct recording and reporting on all hospital operations in the form of a management information system. The Regulation of the Minister of Health of the Republic of Indonesia Number 82 of 2013 concerning the Hospital Management Information System (SIMRS) affirms that SIMRS is an information and communication technology system that processes and integrates the entire flow of hospital service processes through coordination networks, reporting mechanisms, and administrative procedures, with the objective of obtaining timely and accurate information.

Glandon, Smaltz, and Slovensky (2014) stated that high-quality patient care is contingent upon thorough documentation of each patient's medical history, health status, current medical condition, and treatment plan. Financial information is equally essential for strategic planning and efficient operational support in the patient care process. Hospital management requires information that is reliable, accurate, current, secure, and relevant from both clinical and administrative perspectives. According to DeLone and McLean (2013), the success of an information system is a function of the quality of SIMRS application software, the quality of information and data produced through the use of the SIMRS application, and the quality of service provided by the SIMRS management team at the hospital. Purba (2010) noted that information systems and technology have become important and broadly applicable components for the success of health organizations, as they facilitate operational activities and enhance efficiency, effectiveness, communication, collaboration, and organizational competitiveness.

Pindad General Hospital (RSU Pindad), Bandung City, is a Class B healthcare facility providing inpatient, outpatient, and emergency care services. Since its establishment on April 1, 1966, RSU Pindad has undergone various transformations, including in the implementation of information systems. However, based on performance data from 2015 to 2019, the number of patient visits in almost all hospital service units experienced a decline. The Bed Occupancy Rate (BOR) indicator in 2019 reached only 57.42%, falling below the ideal standard of the Indonesian Ministry of Health, which is 70–85%. This condition indicates the need to evaluate and improve the service system, including SIMRS.

Hakam (2016) stated that SIMRS is a comprehensive information system consisting of several subsystems within each unit, which are integrated with one another. In its implementation, SIMRS can operate optimally when integration between subsystems is achieved, ensuring that the system does not function in a stand-alone manner and enabling faster data transactions. The current ineffectiveness of SIMRS at RSU Pindad is primarily attributed to the absence of clear policy formulation regarding SIMRS procurement. Based on the aforementioned issues, this study aims to examine SIMRS implementation, identify implementation barriers, and formulate SIMRS implementation strategies to improve the quality of healthcare services at RSU Pindad, Bandung City.

## RESEARCH METHODS

This study employed a descriptive qualitative approach using a single case study method. According to Sugiyono (2016), descriptive research aims to obtain a description of the characteristics of the research variables—namely, the internal and external factors that influence the object under study. This research design was selected because the researchers sought an in-depth and comprehensive understanding of SIMRS implementation at RSU Pindad Bandung.

The research site was Pindad General Hospital, located at Jl. Jend. Gatot Subroto 517 Bandung, West Java. The study was conducted from the data collection stage through the reporting of research findings. Data sources consisted of both primary and secondary data. Primary data were obtained through in-depth interviews with key informants, namely the Head of the Information Systems Unit (Sisfo), the MIS-IT (Management Information System – Information Technology) team, and SIMRS users across various service units, including registration, medical records, pharmacy, outpatient, and inpatient services. Secondary data were obtained from RSU Pindad Bandung's performance reports, the hospital's Strategic Plan (Renstra), medical record data, and relevant literature. Irawan (2011) noted that the descriptive survey method examines only the general description of variables or relationships among variables.

Data collection techniques included: (1) in-depth qualitative interviews with competent informants; (2) direct field observation at the Information Systems Division and various service units of RSU Pindad Bandung; (3) documentary study of relevant documents; and (4) a literature review drawing from books, scientific journals, and prior research. The data analysis technique employed SWOT analysis (Strengths, Weaknesses, Opportunities, Threats), combined with the IFAS (Internal Factor Analysis Summary) and EFAS (External Factor Analysis Summary) matrices. This analysis was conducted based on four SIMRS pillars: (1) Technoware—physical components comprising hardware, software, and network support devices; (2) Humanware—human resources responsible for operating the information system; (3) Infoware—the database and information generated by the system; and (4) Organiware—procedures, formal policies, and operational governance of SIMRS. Hashemi (2012) stated that SWOT analysis provides a key summary of business environmental issues and development strategies, serving as a foundation for determining future strategic options. Data validity was ensured through source triangulation and member checking, the latter involving the verification of data obtained by the researcher with

the data providers or informants. Data analysis was conducted using a qualitative-descriptive-exploratory approach through the processes of data reduction, data presentation in descriptive-narrative form, and conclusion drawing.

## RESULTS AND DISCUSSION

Pindad General Hospital Bandung was established on April 1, 1966, initially named Chandra Kirana Hospital, and officially inaugurated on May 6, 1966. Based on Decree No. Skep96/5/1967, the hospital's initial capacity comprised 100 beds and approximately 100 employees. RSU Pindad is a subsidiary of PT Cakra Mandiri Pratama, which oversees several non-supporting business units of PT Pindad. The vision of RSU Pindad is to become a professional, independent, high-quality, and trusted hospital.

RSU Pindad Bandung is currently a Class C hospital with 125 beds, comprising Class 3, Class 2, Class 1, and VVIP service categories. The hospital is supported by a total of 304 human resources, consisting of 57 physicians (general practitioners and specialists), 98 nursing staff, and 79 other healthcare personnel. However, the information systems unit has only two staff members, which constitutes one of the primary constraints in the optimization of SIMRS.

### *SIMRS Implementation at RSU Pindad Bandung*

Since the hospital's establishment, its information systems were manually operated. In 1993, management began adopting computer systems, employing three staff members with programming expertise and utilizing DOS-based programs alongside the existing manual system. A significant transition occurred in 2000 when the information systems unit was formally incorporated into the organizational structure under the president director, and the manual system was completely phased out. In 2019, management procured computer-based SIMRS supporting software from a private vendor company.

SIMRS implementation at RSU Pindad Bandung is grounded in four information system pillars as articulated by the Head of the RSU Pindad Information Systems Unit: (1) Technoware, encompassing hardware, software, and communication devices; (2) Humanware, comprising the brainware and human resources; (3) Infoware, consisting of the database; and (4) Organiware, including the organizational structure, job descriptions, and operational procedures. Information system management is directly under the president director's authority, in accordance with Law No. 44 of 2009, Article 52, Paragraph 1, which obligates every hospital to conduct recording and reporting in the form of SIMRS.

Based on the research findings, the system quality, information quality, and service quality of SIMRS have not yet reached optimal levels. The majority of user dissatisfaction stems from the fact that not all operational tasks can be automatically performed and processed within SIMRS. Vafae (2010) concluded that problems arising from inadequate information quality within the system and its misalignment with user needs result in decreased user satisfaction. Loudon and Loudon (2013) stated that implementation encompasses all organizational work activities involved in adopting, managing, and routinizing an innovation; consequently, a poorly planned implementation process will ultimately lead to system failure.

### *SWOT Analysis of SIMRS at RSU Pindad Bandung*

The SWOT analysis was conducted based on the four SIMRS pillars. In terms of strengths, RSU Pindad already possesses reasonably adequate infrastructure, with computers available in every unit, internet connectivity (LAN and WiFi), and dedicated IT experts. In addition, data and information are already utilized by management in the decision-making process, and there is institutional support for information technology development. The hospital's clearly defined mission and the existence of a dedicated Information Systems unit within the organizational structure are also identified as significant strengths.

In terms of weaknesses, it was found that not all internal hospital computers are integrated, data access speeds remain insufficient, the network frequently experiences disruptions, and IT human resources are extremely limited in number. The budget allocated for SIMRS development is considered inadequate. The software currently in use is closed-source, preventing independent development by the hospital. Moreover, the absence of SIMRS management SOPs and a written IT strategic plan constitutes a significant obstacle to sustainable system development.

In terms of opportunities, the rapid advancement of information technology and network infrastructure, plans for fiber optic procurement, and government regulatory support through Minister of Health Regulation No. 82 of 2013 on SIMRS represent substantial opportunities. RSU Pindad's strategic location in the center of Bandung City, combined with an extensive network of partners, also constitutes a notable strategic opportunity. Meanwhile, the primary threats include competition from hospitals with more advanced information systems, resistance to change from certain users, and the dynamic evolution of reporting policies and standards.

Based on the weighting and scoring of the IFAS Matrix, the total Strengths score was 1.57, while the total Weaknesses score was 1.82, resulting in an internal factor differential of -0.25. From the EFAS Matrix, the total Opportunities score was 1.50 and the total Threats score was 1.30, yielding an external factor differential of +0.20.

The grand strategy coordinate position of SIMRS at RSU Pindad Bandung falls at the point (-0.25; +0.20), placing RSU Pindad in Quadrant III (WO or turn-around strategy). This indicates that while the hospital faces substantial market opportunities, it simultaneously possesses internal weaknesses that must first be addressed. The focus of this strategy is to minimize internal weaknesses, thereby enabling the hospital to capitalize on available opportunities (Wheelen & Hunger, 2011).

### *Barriers to SIMRS Implementation*

The barriers to SIMRS implementation at RSU Pindad Bandung can be categorized according to the four main pillars. First, from the technoware aspect: incomplete system integration, low data access speeds, frequent network disruptions, and several units still relying on manual data entry. Second, from the humanware aspect: extremely limited IT human resources (only two staff members), low computer literacy in several units, and minimal ongoing training and professional development for IT personnel.

Third, from the infoware aspect: incomplete SIMRS utilization across all units, frequent changes in report formats, and several reports generated by SIMRS that do not align with external reporting requirements. Fourth, from the organiware aspect: the absence of comprehensive SIMRS management SOPs, the lack of a written IT strategic plan, and a SIMRS scope that remains confined to the hospital's internal environment. Rogers (2005) asserted that communication, as the process of information dissemination, is most effective when delivered through structured socialization, training, and mentoring activities.

#### *SIMRS Implementation Strategy for Improving Healthcare Service Quality*

Based on RSU Pindad's position in Quadrant III (WO strategy), the researchers formulated a SIMRS implementation strategy in the form of a 4M framework comprising Man, Money, Material, and Method. This strategy also draws on the position of Glueck and Jauch (2010), who argued that a sound strategy is a unified, comprehensive, and integrated plan that connects the organization's strategic advantages with environmental challenges.

**Man (Human Resources):** The first strategy involves recruiting IT human resources with the appropriate qualifications, followed by the implementation of a structured and sustainable SIMRS training and mentoring program. Each department head should also receive training in leveraging SIMRS outputs for informed decision-making. Commitment from all levels of management—operational, tactical, and strategic—is essential to achieving a well-functioning SIMRS.

**Money (Budget):** The second strategy encompasses SIMRS budget planning as formalized within the hospital's Strategic Plan (Renstra). Management is required to establish proportional budget allocations for infrastructure development, software licensing, human resource training, and periodic system maintenance. Adequate investment in SIMRS will have a direct impact on improving operational efficiency and stakeholder satisfaction.

**Material (Infrastructure and Equipment):** The third strategy involves the phased renewal of hardware across all units, enhancement of network capacity and stability (including plans for fiber optic procurement), and the development of more flexible SIMRS software. It is recommended that the hospital consider acquiring the source code of its information system, enabling program development and customization to be conducted independently by internal programmers. In cases where vendor services are engaged, it is advisable to purchase the source code of the hospital information system (Rustiyanto, 2010).

**Method (Procedures and Policies):** The fourth strategy involves the development of comprehensive SIMRS management SOPs, the establishment of management policies specifying implementation timelines, incentive mechanisms, and sanctions to support successful system implementation. A written IT strategic plan should also be formulated promptly to serve as a long-term development guide. Patton and Savicky, as cited in Nugroho (2011), affirmed that implementation is as important as the policy itself; therefore, implementation failure is equivalent to policy failure. Furthermore, it is essential to ensure the existence of a clear data cut-off policy during the conversion from manual data to the information system in order to guarantee the validity of the resulting data.

From an information systems perspective, the applicable strategies include: (1) utilizing and improving the existing information system; (2) replacing and developing a new information system through in-house development; or (3) replacing and developing a new information system through vendor development. The selection of a strategy must be aligned with the organizational capacity, budget, and specific needs of RSU Pindad Bandung. Wheelen and Hunger (2011) defined strategic management as a set of managerial decisions and activities that determine the long-term success of an organization, encompassing strategy formulation and planning, implementation, and evaluation.

## **CONCLUSION**

SIMRS implementation at Pindad General Hospital, Bandung City, has not yet been operating optimally. Based on analysis using the four SIMRS pillars (technoware, humanware, infoware, and organiware) and the IFAS-EFAS matrices, it was found that internal weaknesses (score 1.82) continue to outweigh strengths (score 1.57), although external opportunities (1.50) exceed threats (1.30). This position places RSU Pindad within the WO (turn-around) strategy, which emphasizes the strengthening of internal weaknesses in order to leverage available opportunities.

The primary barriers to SIMRS implementation include limited IT human resources, an inadequate budget, the absence of SOPs and an IT strategic plan, and incomplete system utilization across units. The recommended SIMRS implementation strategies encompass the 4M framework: (1) Man—IT human resource recruitment and training; (2) Money—Renstra-based budget planning; (3) Material—infrastructure modernization and software development; and (4) Method—development of comprehensive SOPs, management policies, and a written IT strategic plan.

The successful implementation of SIMRS requires strong commitment and cooperation from all hospital stakeholders, particularly top management, the IT department, the finance division, and frontline service staff. In accordance with the Regulation of the Minister of Health of the Republic of Indonesia No. 82 of 2013, every hospital is obligated to implement SIMRS with the objective of improving

efficiency, effectiveness, and the quality of healthcare services. Future research may extend the scope of investigation by quantitatively measuring the impact of SIMRS implementation on patient satisfaction and overall hospital organizational performance.

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