

Organizational Effect on the Implementation of “SIMRS” (Hospital Management Information Systems) in Hospital: A Systematic Review

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ABSTRACT

Background: Utilization of information and communication technology has penetrated the field of health services. The form of health service innovation by utilizing information technology is the Hospital Management Information System (SIMRS). SIMRS is needed by Hospitals to ensure fast, accurate and reliable information needs in decision making, as well as the need for systematic data processing for strategic decision making. This study aimed to systematically review the influence of the organization on the implementation of “SIMRS”.

Subjects and Method: A systematic review were conducted by searching articles from three databases, namely Google Scholar, Pubmed, and Science Direct. Keywords to search for articles are “Organization” OR “group” AND “Hospital Management Information Systems” OR “SIMRS” or “Management” AND “Hospital” or “Healthcare”. Articles included are full-text English from 2014 to 2019. Articles were selected using a PRISMA flow diagram method.

Results: Organizational factors which include organizational structure and organizational environment are the main determining factors in the implementation of information systems. The successful implementation of SIMRS from the aspect of organizational structure, namely the role of leaders in providing support, motivation to users, a supportive work culture and work environment, a clear division of tasks and authority, regular monitoring and evaluation activities, fulfillment of infrastructure needs that support the implementation of SIMRS, availability of budget allocations for training and competency development for system users. While the organizational environment aspect, namely the role of Hospital management, has established policies as guidelines for the implementation of SIMRS.

Conclusion: Organizational factors from the aspect of organizational structure and organizational environment can increase the success of the implementation of "SIMRS" in Hospitals.

Keywords: SIMRS, organizational structure, organizational environment.

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BACKGROUND

Currently, the development of digital technology in the era of the Industrial Revolution 4.0 is increasing rapidly and is used in all areas of life. Technology is used by humans as

a tool to facilitate tasks and work and provide new ways of carrying out various activities. The hospital is a health service facility by empowering various units of trained and

educated personnel in dealing with and dealing with medical problems to treat medical problems restoration and maintenance of good health. Information technology has an important role in today's health services. The quality of information processing is an important factor for the success of health care institutions to support clinical workflows in various ways that will contribute to better and comprehensive patient care (Ammenwerth et al., 2007).

Information systems have 3 important roles in supporting the health service process, including supporting the process and operation of health services, supporting staff and management decision making and supporting various strategies for competitive advantage (Hernandez, 2010).

Setiawan et al. (2016) stated that Health service innovations using information technology include the Hospital Management Information System (SIMRS). SIMRS is an integrated information system that relates to the collection, processing, analysis of data, presentation, inference and delivery of information needed for hospital operational activities. SIMRS is expected to help ease the administrative burden which was initially done manually. The use of information systems has a significant impact on employees and the organization. Compared to when still using manual processes, the use of information systems in many cases has an impact on improving the quality of products and services offered.

SIMRS is needed by Hospitals to ensure fast, accurate and reliable information needs in decision making, as well as the need for systematic data processing for strategic decision making. The speed and accuracy of the information generated will provide satisfaction to the parties involved, both patients, hospitals and other parties related to it (Putra & Siswanto, 2016).

SIMRS is expected to help ease the administrative burden that was initially done manually. The use of information systems has a significant impact on employees and organizations. Compared to when still using manual processes, the use of information systems in many ways has an impact on improving the quality of the products and services offered.

Complete patient health information can help the process of better patient care. In its development, SIMRS has also been developed in various clinical functions such as electronic medical records (EHR), computerized physician order entry (CPOE) and clinical decision support systems (CDSS) to support the quality of medical services and improve patient safety. medication error by 50% (Garg et al., 2005).

The implementation of SIMRS in hospitals will of course depend on the implementing elements, namely the human and organizational elements, while the technology category is influenced by the human aspect in the system adoption process (Yusof et al., 2008).

Organizations are the main determining factor in the implementation of information systems, especially the use of SIMRS, organizational supporting factors including centralization of decision-making activities, hospital size, availability of infrastructure, and high-level management support (Ahmadi et al., 2015).

Variations in the level of adoption of electronic-based systems are influenced by various factors, including the size of a health care facility, the availability of IT units (information technology) and personnel, supporters as well as national, regional and local policies.

Based on this background, this study aims to systematically review the influence of the organization on the implementation of the information management system in the main hospital SIMRS.

SUBJECTS AND METHOD

1. Study Design

This research is a systematic review. Data collection from 3 databases, namely: Google Scholar, PubMed, and Science Direct. The keywords used were “Organization” OR “group” AND “Hospital Management Information Systems” OR “SIMRS” or “Management” AND “Hospital” or “Healthcare”.

2. Inclusion Criteria

The inclusion criteria are full English papers with a cross sectional design, and the outcome of the study is the implementation of Hospital Management Information Systems.

3. Exclusion Criteria

Exclusion criteria in this study were articles published in languages other than English, and not about Hospital Management Information Systems.

4. Data Extraction

In the initial stages, 1,235 articles were discovered. A multiple article was issued totaling 1,065. There were 164 articles published.

From the search results, 6 journals were relevant to be reviewed.

RESULTS

Process of searching article was carried out by searching several journal databases PubMed, Google Scholar, and Science Direct it can be seen using the PRISMA FLOW flow-chart shown in Figure 1.

Of the 6 reviewed journals, there are 5 journals journal which states that the organization plays a very important role in hospital information management, and the application of hospital management information systems or what is commonly called SIMRS. Meanwhile, 1 article states that there is a need for collaboration between health workers in hospitals to run a better hospital management information system, so that individual awareness and leadership roles are needed in making training programs for employees in hospitals.

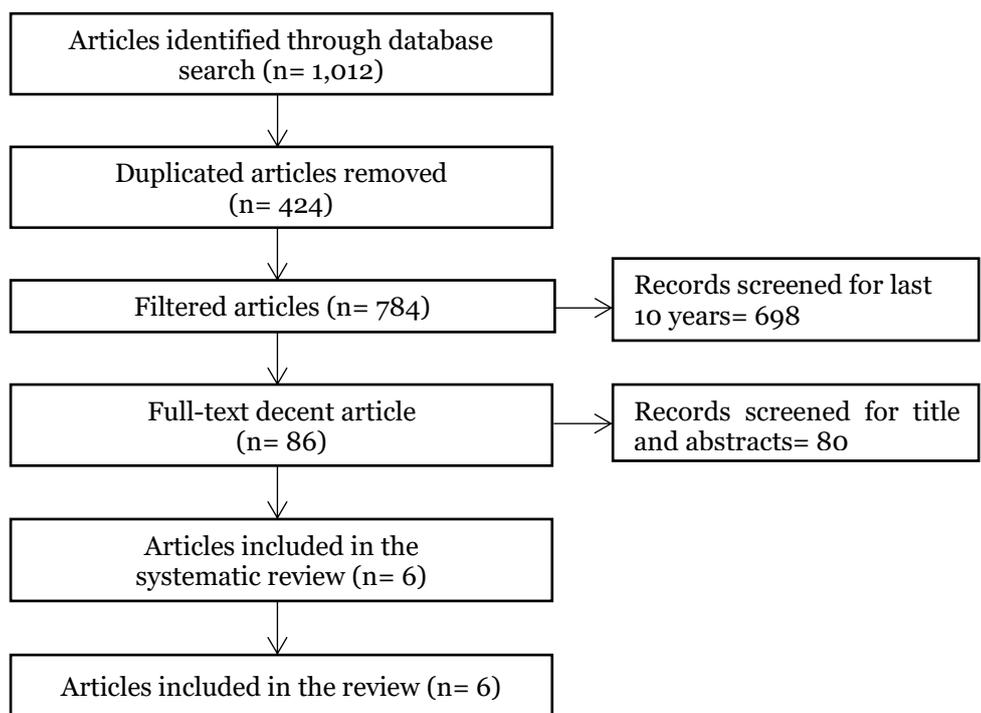


Figure 1. PRISMA FLOW Diagram

Table 2. Article Search Results for Hospital Management Information Systems in Hospital

| Author (Year) | Title | Journal | Study Design | Results | Conclusion |
|----------------------------|--|--|--|--|--|
| Hariana et al. (2013) | Use of Hospital Management Information System (SIMRS) in DIY | National Seminar on Indonesian Information Systems | Quantitative descriptive | As many as 82.21% of DIY hospitals have adopted the SIMRS system. SIMRS is used for administrative functions such as electronic patient registration (79.17%) and billing system (70.83%). Although still few, clinical functions have been used for medical documentation (58.33%), electronic prescribing (22.92%), laboratory examination results (39.58%), and pharmacy warehouse inventory systems (60.42%). Most hospitals still focus on administrative functions rather than clinical functions. Availability of IT units and IT personnel affect the level of use of SIMRS. | The use of hospital management information systems has been implemented in 48 hospitals in DIY. Use of this system still focused on administrative functions even though it has led to clinical functions. The role of the organization (availability of information system units) and human resources with an IT background is very supportive of the development and sustainability of SIMRS. The existing SIMRS variations need to be optimized for clinical function and support patient care comprehensively. |
| Mudiono and Roziqin (2019) | Evaluation of SIMRS Implementation in terms of Information Quality, System Use, and Organization at H. Koesnadi Bondowoso General Hospital | Journal of Health Polytechnic, Ministry of Health Jember | Explanatory research with cross sectional design | The problem of organizational aspects is that the management has conducted training for system users, but the training is still felt lacking. Training is only given to the unit head rather than the whole system user. Based on the problems, an evaluation of HIS is needed with aspects of the quality of information, system use and organization in H. Koesnadi Bondowoso General hospital. | The quality of information does not directly affect the organization with a p= 0.503. The need for regular training every 3 months and evenly on the operation of the SIMRS application to system user, also the need for establishing SOPs related to the operation of the SIMRS application in each unit |

| Author (Year) | Title | Journal | Study Design | Results | Conclusion |
|---------------------------|---|--|---|--|--|
| Binti et al. (2019) | Analysis of the Effect of Organizational Culture on The Success of SIMRS Implementation Using Ocai and Hot Fit | National Seminar on Information, Communication and Industry Technology | IS Research | Based on the results of statistical analysis of data using SEM PLS 3.0 software, the path coefficient value -0.077 with a t-table value of 2.325 determines that organizational culture has a positive and significant influence on the success of SIMRS implementation. Because culture can increase the intensity of users and the quality of SIMRS and it is easy to learn which will produce effective work, good information and can be accounted for with 93% R square test results which are at a strong level. | Organizational culture can increase user intensity and SIMRS quality. |
| Puspitasari et al. (2020) | Assessment of the benefits of the Hospital Management Information System (SIMRS) for individuals and organizations using the De-lone & Mclean model at Dr. Hardjono General Hospital, Ponorogo. | Journal of Information Systems for Public Health | Quantitative with survey method and cross sectional design. | The results of the outer model test show that construct forming indicators have met the validity and data reliability, while the inner test the model is obtained the test model meets the requirements fit models. The results of the analysis obtained a hypothesis that is not has an effect on user satisfaction, namely the variable information quality. As for the quality variable information and service quality have an effect on user satisfaction. User satisfaction variable affect the net benefit in the form of impact organization and individual impact | Information systems prove to be useful for individuals and organizations, however, the quality of information the resulting product is still deemed inappropriate needs and less convincing for system users and has no effect on user satisfaction. |

| Author (Year) | Title | Journal | Study Design | Results | Conclusion |
|-----------------------|---|---|---|---|--|
| Hasanah et al. (2022) | The Effect of Human, Organization and Technology on The Benefits of SIMRS t Asy-Syifa' Samb general hospital. | Journal Health Information Management Indonesian | Quantitative with cross-sectional design. | The results of the study include human factors significantly influence the benefits of SIMRS ($t_{count} = 2.25$; $p = 0.026$), organizational factors significantly affect the benefits of SIMRS ($t_{count} = 3.65$; $p < 0.001$) and there is an influence of technological factors on the benefits of SIMRS ($t_{count} = 8.26$; $p < 0.001$). An increase of 1 unit in human factors, organizational factors and technology can increase the benefits of SIMRS successively by 0.11 units ($B = 0.11$); 0.16 units ($B = 0.16$); and 0.34 units ($B = 0.34$). | Analysis of research data at Asy Syifa' Samb General hospital with the Pearson correlation test stated that there is a positive relationship between organizational factors and the benefits of SIMRS, with a strong level of relationship strength ($r = 0.705$; $p < 0.001$). |
| Setyawan (2016) | Implementation Analysis of Utilization of Hospital Management Information System (SIMRS) at Kardinah Tegal Hospital | Indonesian Journal on Computer and Information Technology | Quantitative descriptive | Information System Utilization Hospital Management (SIMRS) in Kardinah Hospital Tegal in accordance with Standard Operating Procedure (SOP) what applies is the information system management is used for registration patient, input patient data. For skills of 99 samples as much as 96% (95 respondents) say that it needs to be done the existence of SIMRS training for officer's input. | The role of the organization in the hospital is very influential on the implementation of hospital management, especially on the use of SIMRS. |

DISCUSSION

This study is based on a systematic review investigating the influence of the organization on the implementation of "SIMRS".

Hospitals carry out their duties well, carry out health efforts effectively and efficiently by prioritizing recovery and recovery efforts that are carried out in a harmonious and preventive manner and carry out referrals. Therefore, the role of nurses is needed to support the success of this role (Wendimagedgn & Bezuidenhout, 2019).

According to Vilcahuamán and Rivas (2017) Organizations must guide their vision and mission and manage their activities and resources to achieve this goal. There is no denying that there is a global competitive environment and market, especially in the healthcare sector. It is not the focus of surviving to be successful in such situations, such as achieving goals with good results (Vilcahuamán & Rivas, 2017). Therefore, Hospitals need a standardized and recognized management system that is result-oriented, patient-centric, good governance and consistency of common goals by fostering innovation. One of them is technically able to support and support the achievement of quality service goals by using SIMRS.

Ammenwerth et al. (2007) stated that the quality of information processing is an important factor for the success of health care institutions to support clinical workflows in various ways that will contribute to better and comprehensive patient care.

In carrying out tasks at the hospital, an organizational structure needs to be implemented so that it can regulate the relationship between work units, as well as perform the division and coordination of tasks and authorities more effectively (Molly and Itaar, 2021). The division of complex tasks and functions affects the success of information system adoption in hospitals.

Standard Operational Procedure (SOP) is needed to create order in the implementation of organizational tasks and public services. In addition to providing convenience for service users, it will also provide legal certainty for employees in carrying out their duties.

SOP is a guide that contains work steps for implementing the policy. One of the objectives of SOP is to avoid unwanted things during the work process, for this it is necessary to establish standard procedures (Rachmi et al., 2014). The lack of clarity in SOPs regarding mechanisms, systems and procedures for implementing policies, division of main tasks, functions and authorities, responsibilities among implementing organizations, also determines the failure of implementing a policy (Widodo, 2014).

The encouragement from the organization can significantly provide motivation to use the system and increase the perception of usefulness compared to organizational environmental technology factors that show a significant influence on the use of information systems. The successful implementation of SIMRS in hospitals needs to consider several factors including social, economic, technical, and organizational aspects. If this is not controlled it will cause system crashes and software problems (Lee et al., 2016). Top management support, user involvement, formalization of system development, training and education have a significant effect on information system performance.

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Hernandez (2010) stated that the effectiveness of the organization in the hospital, for example, making norms or standards of behavior in the organization,

always focusing on results and teamwork and focusing on service. and treat employees rationally, it will improve good corporate governance. The regulations that apply in the hospital industry will also affect the SIMRS development plan and the policies imposed by the organization in the implementation of SIMRS.

There are still many health service organizations that do not yet have the ability to manage health information systems properly and still need improvement at the organizational and management levels. Organizational design including officers, information management and technology are important factors in improving the quality of healthcare in the future (Demirel 2017). Top management support, user involvement, system development formalization, training and education have a significant effect on information system performance (Abhimantra and Suryanawa, 2016).

Organizational culture can be used as a foundation for the organization in order to continue to maintain its image in competitive advantage. An organization's culture is the personality, and set of beliefs, values, work styles, and collaborations that distinguish one organization from another. If the organizational culture is carried out effectively and there is a very supportive climate in the organization, norms or standards of behavior are always made in the organization, management always focuses on results and teamwork and focuses on service. There is an organizational culture that tends to treat its employees rationally, there is clear management support for sub-ordinates, there is a composition of employees and regulations that are always stable according to needs, accountability for each job is always carried out so that it will improve good corporate governance (Manik, 2014). Regulations that apply in the hospital

industry will also affect the SIMRS development plan and the policies imposed by the organization in implementing SIMRS (Rustiyanto, 2011).

In running the organization, the Hospital requires resources to achieve organizational or corporate goals. These resources are sources of energy, power, strength needed to create power, motion, activities, activities, and actions. Resources consist of natural resources, human resources, financial resources, as well as scientific and technological resources. Human resources are an important asset in an organization because they have a role as the subject of implementing policies and as executors of the operational activities of the organization or company (Donnie, 2014). In maintaining the existence of an organization, the organization or company must be able to face challenges and their implications, in dealing with changes and winning the competition.

The results of the research conducted by Khalifa show that continuous training is needed for staff in the use of hospital information systems and electronic medical records (Khalifa, 2013). The competencies that must be possessed by every human resource include aspects of knowledge, skills and work attitudes that are absolutely necessary in carrying out their duties. Competency development is all efforts made to improve the competence of human resource employees. The purpose of employee competency development is to increase work productivity (Hasibuan, 2002).

Likewise, human resources involved in SIMRS in hospitals need to increase their competence to improve their ability to provide services. Development is based on the fact that an employee needs a series of knowledge, skills and abilities that develop in order to work well in carrying out their duties and functions. Proper HR development will improve internal services that are

more optimal. An effective organization is an organization that is able to design organizational development programs and successfully implement these programs beyond the expectations contained therein. (Dony, 2014).

Thus, organizational factors which include organizational structure and organizational environment are the main determining factors in the implementation of information systems, currently the main one is SIMRS. The successful implementation of SIMRS is due to the leadership role in providing support, motivation to users, a supportive work culture and work environment, clear division of tasks and authority.

AUTHOR CONTRIBUTION

All the authors contributed to selects the topic, search articles, and collects research data.

CONFLICT OF INTEREST

There is no conflict of interest in this study.

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REFERENCE

- Ahmadi H, Nilashi M, Ibrahim O (2015). Organizational decision to adopt hospital information system: an empirical investigation in the case of Malaysian public hospitals. *Int. J. Med. Inform.* 84(3), 166–188. Doi: 10.1016/J.IJMEDIINF.2014.12.004
- Ammenwerth E, Ehlers F, Hirsch B, Gratl, G (2007). HIS-Monitor: an approach to assess the quality of information processing in hospitals. *International Journal of Medical Informatics*, 76 (2–3), 216–225. Doi: 10.1016/J.IJMEDIINF.2006.05.004
- Binti AI, Syaifullah S, Ahsyar KT (2019). Analisis Pengaruh Budaya Organisasi Terhadap Keberhasilan Implementasi Simrs Menggunakan Ocai Dan Hot Fit (Analysis of the Influence of Organizational Culture on the Successful Implementation of Simrs Using Okai and Hot Fit). *Seminar Nasional Teknologi Informasi Komunikasi Dan Industri*, 0(0), 101–108.
- Garg AX, Adhikari NKJ, McDonald H, Rosas-Arellano MP, Devereaux PJ, Beyene J, Sam J, et al. (2005). Effects of computerized clinical decision support systems on practitioner performance and patient outcomes: a systematic review. *JAMA*, 293(10), 1223–1238. Doi: 10.1001/JAMA.293.10.1223
- Hariana E, Sanjay, GY, Rahmanti AR, Murtiningsih B, Nugroho E (2013). Penggunaan Sistem Informasi Manajemen Rumah Sakit (SIMRS) di DIY (Use of Hospital Management Information System (SIMRS) in DIY). *SESINDO* 2013.
- Hasanah S, Wijaya WW, Wulandari S, (2022). Pengaruh Human, Organization And Technology Terhadap Manfaat SIMRS Di Rsu Asy-Syifa' Sambi (Influence of Human, Organization and Technology on the Benefits of SIMRS at Asy-Syifa' Sambi Hospital). *JHIMI*, 2(1), 24–30. Doi: 10.46808/JHIMI.V2I1.24
- Hernandes I (2010). *O'Brien Introduction to Information Systems*.
- Lee WC, Veeranki SP, Serag H, Eschbach K, Smith KD (2016). Improving the Collection of Race, Ethnicity, and Language Data to Reduce Healthcare Disparities: A Case Study from an Academic Medical

- Center. Perspectives in Health Information Management, 13(Fall).
- Molly R, Itaar M (2021). Analisis Pemanfaatan Sistem Informasi Manajemen Rumah Sakit (SIMRS) Pada RRSUD DOK II Jayapura (Analysis of the Utilization of Hospital Management Information Systems (SIMRS) at RRSUD DOK II Jayapura). *Journal-SEA*, 2(2), 95–101. Doi: 10.51519/JOURNALSEA-V2I2.127
- Mudiono DRP, Roziqin MC (2019). Evaluasi Penerapan SIMRS Ditinjau Dari Aspek Kualitas Informasi, Penggunaan Sistem dan Organisasi di RSUD Dr. H. Koesnadi Bondowoso (Evaluation of SIMRS Implementation in terms of Information Quality, System Use and Organization at Dr. RSUD. H. Koesnadi Bondowoso). *Jurnal Kesehatan*. 7(3), 103–110. Doi: 10.25047/J-KES.V7I3.94
- Puspitasari SM, Wahyudi I (2020). Penilaian manfaat sistem informasi manajemen rumah sakit (simrs) terhadap individu dan organisasi dengan model delone & mclean pada rsud Dr. Hardjono kab. Ponorogo (Assessment of the benefits of the Hospital Management Information System (SIMRS) for individuals and organizations using the Delone & Clean model at the Dr. Hardjono General Hospital, Kab. Ponorogo). *J Public Health*, 4(1), 9–17. Doi: 10.22146/JISP-H.24341
- Setiawan D, Siswanto M (2016). Kualitas Sistem Informasi dan Kualitas Layanan Terhadap Kepuasan Pengguna Sistem Informasi Manajemen Rumah Sakit Daerah Kalisat Kabupaten Jember (Quality of Information System and Quality of Service on User Satisfaction of Information System Management at Kalisat Regional Hospital, Jember Regency). *J. ilm. inov*, 16(2). Doi: 10.25047/jii.v16i2.291.
- Setyawan D (2016). Analisis Implementasi Pemanfaatan Sistem Informasi Manajemen Rumah Sakit (SIMRS) Pada RSUD Kardinah Tegal (Analysis of the Implementation of the Utilization of Hospital Management Information Systems (SIMRS) at Kardinah Hospital Tegal). *Indonesian J. Comput. Cybern. Syst.*, 1(2). Doi: 10.31294/IJCIT.V1I2-1503
- Wendimagegn NF, Bezuidenhout MC (2019). Integrating promotive, preventive, and curative health care services at hospitals and health centers in Addis Ababa, Ethiopia. *JJ. Multidiscip. Healthc.*, 12, 243. Doi: 10.2147/JMDH.S193370
- Yusof MM, Kuljis J, Papazafeiropoulou A, Stergioulas LK (2008). An evaluation framework for Health Information Systems: human, organization and technology-fit factors (HOT-fit). *Int. J. Med. Inform.* 77(6), 386–398. Doi: 10.1016/J.IJMEDINF.2007.08.011