

ANALYSIS OF THE IMPLEMENTATION OF ELECTRONIC MEDICAL RECORDS IN THE INPATIENT ROOM OF DR. R. HARDJANTO HOSPITAL, BALIKPAPAN

Vip Paramarta¹, Tetty Hutagaol², Ayu Laili Rahmiyati³.

Magister Manajemen Rumah Sakit, Universitas Sangga Buana YPKP Bandung

E-mail: tettyhutagaol24@gmail.com, vip@usbypkp.ac.id, ayunasihin2@gmail.com.

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Abstract

Background: The implementation of Electronic Medical Records (EMR) at Dr. R. Hardjanto Hospital, Balikpapan aims to improve the effectiveness and quality of services. This study uses a qualitative approach with a case study, analyzing the implementation of EMR through the 5M framework: Man, Machine, Method, Money, Material. **Method:** Qualitative research with a case study approach was conducted in the inpatient ward. Data were collected through in-depth interviews with 16 key informants, direct observation, and documentation. Data analysis used Nvivo 15 software with data reduction, data presentation, and conclusion drawing techniques. Data validity was guaranteed through triangulation of sources and techniques. **Results:** The implementation of EMR has increased work efficiency and operational cost savings. However, there are still significant obstacles: (1) human resources are not fully competent, (2) network infrastructure is slow and unstable, (3) SOPs have not been fully implemented, (4) dualism of manual and electronic systems, and (5) budget limitations for device maintenance. **Conclusion:** The implementation of EMR provides positive benefits, but requires infrastructure improvements, intensive training, SOP revisions, and budget increases.

Keywords: *Electronic Medical Records, Implementation, 5M.*

INTRODUCTION

Digital transformation in the healthcare sector is a key requirement for improving the quality, efficiency, and safety of services. One of its key pillars is the implementation of Electronic Medical Records (EMR), which enables fast, accurate, and accessible medical documentation across units (Amin et al., 2021; Wahyuni et al., 2022). EMR also supports evidence-based clinical decision-making and the integration of hospital information systems (Darmiani et al., 2024). However, EMR implementation often faces obstacles, especially in secondary care facilities such as hospitals. Studies show that the success of EMR is determined not only by technology but also by human factors, procedures, and management (Risnawati & Purwaningsih, 2024; Zulhirsan & Aini, 2025). At Dr. R. Hardjanto Hospital in Balikpapan, EMR has been implemented since December 2024, but system duplication and complaints regarding network performance still occur. This study uses the 5M framework (Man, Machine, Method, Material, Money) and the Input-Process-Output (IPO) model to systematically analyze the implementation of RME. This approach allows for the identification of multidimensional barriers and the formulation of strategic recommendations. The focus of the study on inpatient units was chosen due to the high documentation intensity and complexity of the workflow. The objectives of this study are (1) to analyze the supporting factors and barriers to RME implementation in inpatient wards. (2) to assess RME performance based on input, process, and output aspects. (3) to provide recommendations for optimizing the RME system.

LITERATURE REVIEW

According to Minister of Health Regulation No. 24 of 2022, every healthcare facility is required to maintain electronic medical records. EMR is considered a crucial innovation for improving service quality, administrative efficiency, and patient data security. A study by Laila et al. (2023) found that the implementation of EMR in Indonesian hospitals still faces challenges, such as limited infrastructure, user resistance, and lack of training. The 5M theory (Man, Machine, Method, Money, Material) is used to analyze the success of technology implementation,

including EMR. A study by Hossain et al. (2024) also emphasized the importance of human resource readiness and management support for the successful implementation of EMR.

METHOD

This study uses a qualitative method with a case study approach that is suitable for understanding complex phenomena in real contexts (Sugiyono, 2021). This approach allows for in-depth exploration of the implementation of RME from the perspectives of various stakeholders. The research location is the Inpatient Ward of Dr. R. Hardjanto Hospital, Balikpapan. Research subjects were selected using purposive sampling with the following criteria: (1) at least 1 year of work experience in the inpatient ward, (2) having used RME, and (3) being involved in the implementation or evaluation of the system. The number of informants was 16 people, consisting of nurses, doctors, ward heads, medical records officers, the SIMRS team, and management. Data Collection Techniques: Data were collected through in-depth interviews, observations, and documents. Data analysis used the Miles and Huberman model (data reduction, presentation, conclusion) with the help of Nvivo 15 software. Data validity was tested through triangulation of sources and techniques.

RESULTS AND DISCUSSION

1. Input

Man (HR): Most staff have completed basic RME training. However, levels of understanding and skill vary. Some nurses expressed difficulty navigating the application, especially those less familiar with technology. Further training has been conducted, but its frequency remains limited. "Yesterday's training was quite helpful, but it needs to be expanded." (Nurse, 28)

Machines: Each room is equipped with computers and laptops. However, Wi-Fi connectivity is often slow and unstable, especially in the mornings during peak activity. Some devices are over 5 years old and require regular maintenance, but the budget for maintenance is limited. "When I use Wi-Fi, the connection is slow, ma'am, and it often comes and goes." (Nurse)

Method: The RME SOP has been socialized through morning roll calls and cross-unit meetings. However, its implementation is not yet consistent. Some officers still document manually, especially for forms requiring patient signatures (informed consent). "The documentation process through the RME is not fully in accordance with the SOP because some of it is still manual." (Head of Ward)

Material (Facilities): Availability of equipment is sufficient, but not yet optimal.

Money (Funds): RME's operational funds are assessed according to the results obtained, but are not sufficient for system development, periodic maintenance, and the addition of features such as digital signatures.

2. Process (Implementation)

The implementation of the EMR is still in a transitional phase, with a dual system of manual and electronic systems. This results in duplicate documentation, increasing the workload and potentially leading to data inconsistencies. The EMR workflow is generally appropriate, but integration with other systems such as BPJS and SIMRS is imperfect, leading to data discrepancies between units. The IT team is responsive but focuses on emergency repairs, not system development.

3. Output

Efficiency and Savings: RME has provided significant savings in paper, pens, and stationery costs. Patient data retrieval has become faster and more accurate.

Quality of Care: Documentation has become more structured, but evaluation of service quality remains hampered by incomplete data resulting from multiple systems. Nevertheless, rapid access to patient information supports better clinical decision-making.

Discussion: The results of this study indicate that the implementation of EMR at Dr. R. Hardjanto Hospital is still not optimal, despite initial benefits. This finding aligns with research by Risnawati & Purwaningsih (2024) and Siswati et al. (2024), which stated that human resources and infrastructure are the main obstacles in healthcare facilities. The resulting system dualism represents a paradox of digitalization, where new technologies actually increase the workload due to lack of proper integration. This is exacerbated by the absence of a digital signature feature in the EMR application, thus leaving the informed consent process manual (Pratiwi et al., 2022). Visualizations from Nvivo 15 reinforce the qualitative findings and provide a clear empirical picture. Mind maps demonstrate interrelationships between factors, word clouds reveal respondents' primary concerns, and matrix coding queries illustrate differences in perceptions across units.

CONCLUSION

The implementation of RME in the inpatient ward of Dr. R. Hardjanto Hospital, Balikpapan, has provided benefits in terms of efficiency and savings, but still faces significant obstacles in terms of technology, human resources, and procedures. The 5M and IPO approaches help identify the root causes holistically. To achieve full digitalization, management commitment, infrastructure improvements, continuous training, and better system integration are required. Suggestions: (1) Improve human resources training, (2) Strengthen network infrastructure, (3) Re-socialize SOPs, (4) Add a special RME budget.

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