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Analysis of Human Resources and IT Infrastructure Readiness in the Implementation of the Electronic Medical Record System at the UPT Puskesmas Rawat Inap Lolofitu Moi

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ABSTRACT

This study aims to analyze the readiness of human resources (HR) and information technology (IT) infrastructure in supporting the implementation of the Electronic Medical Record System (EMR) at the UPT Puskesmas Rawat Inap Lolofitu Moi. The background of this research is grounded in the importance of digital transformation in the healthcare sector and the obligation for health facilities to adopt EMR systems as stipulated in national regulations. Using a descriptive qualitative approach, data were collected through interviews, observations, and documentation with key informants, including the head of the health center, medical record officers, and the head of administration. The findings reveal that HR readiness is in the "moderately ready" category, characterized by motivation, positive attitudes, basic understanding, and confidence among staff in using the EMR. However, managerial support remains limited, as indicated by the lack of technical training, mentoring, and optimal digital system operational skills. The condition and availability of IT infrastructure are found to be highly inadequate, with only one laptop and printer (without a scanner), a damaged main computer, unstable internet connectivity, inactive software, and the absence of a data backup system. Furthermore, there are no technical SOPs or dedicated IT staff, exacerbating implementation challenges. The current manual, paper-based recording process results in slow services and higher risks of data errors. The success of EMR implementation depends on addressing urgent needs, such as regular training, hardware procurement, network upgrades, IT staff placement, SOP development, and coordination with the health office. These findings provide a concrete picture of the internal readiness challenges faced by health centers in the digital transformation of healthcare services.

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1. INTRODUCTION

In the digital era, the transformation of information technology (IT)-based systems has become essential across various sectors, including healthcare, to enhance service effectiveness and efficiency (Wood et al., 2021). One of the major steps in healthcare digitalization is the implementation of the Electronic Medical Record (EMR) system, which replaces manual paper-based

patient records with digital formats that allow faster, more accurate, and more secure data access (El Idrissi et al., 2023). In Indonesia, the urgency of adopting EMR has been reinforced by the Ministry of Health Regulation No. 24 of 2022, which mandates all healthcare facilities to implement EMR by December 31, 2023. The EMR system offers significant benefits, including improved service efficiency, reduced medical errors, and enhanced coordination among healthcare professionals (Zhen et al., 2021). However, its successful implementation depends heavily on the readiness of human resources (HR) and the adequacy of IT infrastructure (Nolte et al., 2020). In many developing regions, particularly rural or remote areas, these two factors remain critical challenges that hinder digital transformation (El Nsour, 2021).

Preliminary observations at the UPT Puskesmas Rawat Inap Lolofitu Moi revealed that EMR implementation had not yet been realized. The patient data recording process remains manual, leading to inefficiencies, delayed medical decisions, and increased risk of data errors (Manurung & Kurniawan, 2022). Key barriers include the lack of HR with a medical record background, limited staff skills in digital systems, minimal technical training, and the absence of clear Standard Operating Procedures (SOPs) for EMR usage. Additionally, IT infrastructure is severely inadequate, with unstable internet connectivity, damaged hardware, and no data backup systems in place. These limitations raise two critical research questions: What is the readiness level of HR in implementing EMR at UPT Puskesmas Rawat Inap Lolofitu Moi? And What is the condition and availability of IT infrastructure to support EMR implementation at the facility?

Previous studies have highlighted that HR competence and IT infrastructure quality are the two most influential factors in EMR adoption (Farooq et al., 2022). However, most research has focused on urban hospitals or well-resourced health facilities, overlooking rural contexts where resources are scarce. Moreover, while existing literature extensively discusses the benefits and technical aspects of EMR, fewer studies provide an in-depth readiness analysis combining HR and infrastructure perspectives in remote primary healthcare settings. This research addresses that gap by analyzing both HR and IT infrastructure readiness in a rural inpatient public health center. By focusing on the intersection of these two critical aspects, the study offers a more comprehensive understanding of EMR implementation barriers and opportunities in underserved regions.

The novelty of this study lies in its dual-assessment framework that evaluates readiness through both HR capacity and IT infrastructure quality, specifically in a rural Indonesian healthcare setting. This integrated approach provides practical insights for policymakers, healthcare administrators, and IT planners in designing targeted interventions such as capacity-building programs, infrastructure investments, and tailored SOP development to accelerate EMR adoption in similar contexts.

2. RESEARCH METHOD

This study employed a descriptive qualitative approach to analyze the readiness of human resources (HR) and information technology (IT) infrastructure in implementing the Electronic Medical Record (EMR) system at the UPT Puskesmas Rawat Inap Lolofitu Moi. The research location was selected purposively, considering that the facility had not yet implemented EMR despite national regulations mandating its adoption. Data sources consisted of primary and secondary data. Primary data were obtained through semi-structured interviews with key informants, including the head of the health center, the medical record officer, and the head of administration, to capture in-depth perspectives on readiness levels and existing constraints (Joiner, 2019). Secondary data were collected through document reviews, including facility profiles, organizational structures, and relevant operational reports. Observations were conducted to examine the availability and functionality of IT infrastructure, while documentation techniques were applied to strengthen the validity of findings.

Data collection took place over a two-month period, following ethical research procedures, including obtaining informed consent from all participants. The data were analyzed using Miles and Huberman's interactive model, which consists of three concurrent stages: data reduction, data display, and conclusion drawing/verification. Triangulation of sources and methods was applied to ensure the credibility and trustworthiness of the findings. The analysis focused on evaluating HR readiness using indicators such as appropriateness, management support, change efficacy, and personal valence (Linton & Klinton, 2019), as well as assessing IT infrastructure readiness based on

hardware, software, network stability, and technical support availability. This methodological design allowed for a comprehensive and contextual understanding of the internal readiness factors affecting EMR implementation in a rural healthcare setting.

3. RESULTS AND DISCUSSIONS

Human Resource Readiness. The analysis of human resource readiness at the UPT Puskesmas Rawat Inap Lolofitu Moi revealed that staff preparedness for EMR implementation falls into the "moderately ready" category. Interviews indicated that most personnel demonstrate motivation, a positive attitude toward technological adoption, and basic operational knowledge of computers. However, there is only one staff member with formal education in medical records, and even this individual requires further technical training to operate EMR systems effectively. The majority of medical record tasks are handled by staff with nursing or midwifery backgrounds, leading to competency gaps. Managerial support is limited, with minimal provision of regular training, technical assistance, or mentorship programs. These findings align with (Theodore et al., 2022), who emphasized that limited digital skills and inadequate managerial encouragement are significant barriers to EMR adoption in rural health facilities.

Infrastructure Readiness. The condition of IT infrastructure was found to be severely inadequate for EMR implementation. The medical record unit only has one laptop and a printer without scanning capabilities, while the main desktop computer is damaged. Internet connectivity is unstable, with frequent disruptions affecting online operations. No active EMR software is in use, and there is no data backup system in place, increasing the risk of data loss. Additionally, the facility lacks dedicated IT personnel to manage system operations or troubleshoot technical issues. This situation corroborates (Wood et al., 2021) assertion that stable network connections, reliable hardware, and technical support are essential prerequisites for successful EMR integration. Without these components, healthcare digitalization efforts are likely to face significant delays and inefficiencies.

Integrated Discussion. The findings indicate that both HR and IT infrastructure readiness are critical determinants of EMR implementation success. While HR readiness shows moderate potential due to positive attitudes and basic computer literacy, the lack of specialized skills, structured SOPs, and ongoing technical support undermines readiness. Similarly, the absence of robust IT infrastructure particularly in hardware reliability, network stability, and backup systems poses a serious challenge to operationalizing EMR. The interplay between these factors suggests that interventions must be holistic: investing solely in infrastructure without concurrent HR capacity building, or vice versa, will not yield sustainable results. Drawing from (El Nsour, 2021) readiness model, it is evident that improving management support and change efficacy through targeted training, policy commitment, and infrastructure upgrades can accelerate EMR adoption in rural healthcare settings.

4. CONCLUSION

This study concludes that the readiness of human resources at the UPT Puskesmas Rawat Inap Lolofitu Moi for implementing the Electronic Medical Record (EMR) system is in the moderately ready category, supported by positive attitudes and basic computer skills, but hindered by limited technical expertise, absence of structured SOPs, and minimal managerial support. IT infrastructure readiness is critically low, characterized by inadequate hardware, unstable internet connectivity, lack of data backup systems, and the absence of dedicated IT staff. To ensure successful EMR adoption, it is recommended that the facility prioritize comprehensive capacity-building programs, including routine technical training and mentorship, alongside strategic investments in reliable hardware, stable network systems, and secure data management solutions. Furthermore, the development of clear SOPs, the assignment of specialized IT personnel, and strengthened coordination with local health authorities are essential to achieve sustainable digital transformation in rural healthcare services.

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REFERENCES

El Idrissi, M., El Manzani, Y., Ahl Maatalah, W., & Lissaneddine, Z. (2023). Organizational crisis preparedness during the COVID-19 pandemic: an investigation of dynamic capabilities and organizational agility roles. *International Journal of Organizational Analysis*, *31*(1), 27–49. https://doi.org/10.1108/IJOA-09-2021-2973

El Nsour, J. A. (2021). Investigating the impact of organizational agility on the competitive advantage. *Journal of Governance and Regulation*, *10*(1), 153–157. https://doi.org/10.22495/JGRV10I1ART14

Farooq, K., Yusliza, M. Y., Muhammad, Z., & Mat, N. H. N. (2022). Make it their Decisions, not your Directives: Exploring Required Green Competencies for Employee Ecological Behaviour. *Organizacija*, *55*(2), 128–141. https://doi.org/10.2478/orga-2022-0009

Joiner, B. (2019). Leadership Agility for Organizational Agility. *Journal of Creating Value*, *5*(2), 139–149. https://doi.org/10.1177/2394964319868321

Linton, G., & Klinton, M. (2019). University entrepreneurship education: A design thinking approach to learning. *Journal of Innovation and Entrepreneurship*, *8*(1), 1–11. https://doi.org/10.1186/s13731-018-0098-z

Manurung, A. H., & Kurniawan, R. (2022). Organizational agility: do agile project management and networking capability require market orientation? *International Journal of Managing Projects in Business*, *15*(1), 1–35. https://doi.org/10.1108/IJMPB-10-2020-0310

Nolte, A., Pe-Than, E. P. P., Affia, A. O., Chaihirunkarn, C., Filippova, A., Kalyanasundaram, A., Angarita, M. A. M., Trainer, E., & Herbsleb, J. D. (2020). *How to organize a hackathon -- A planning kit*. http://arxiv.org/abs/2008.08025

Theodore, W., Kasali, R., Balqiah, T. E., & Sudhartio, L. (2022). The effects of task environment and organizational agility on perceived managerial discretion and strategy implementation in a pharmaceutical company. *International Journal of Pharmaceutical and Healthcare Marketing*, *16*(2), 204–221. https://doi.org/10.1108/IJPHM-11-2021-0116

Wood, B. P., Eid, R., & Agag, G. (2021). A multilevel investigation of the link between ethical leadership behaviour and employees green behaviour in the hospitality industry. *International Journal of Hospitality Management*, *97*(October 2020), 102993. https://doi.org/10.1016/j.ijhm.2021.102993

Zhen, J., Cao, C., Qiu, H., & Xie, Z. (2021). Impact of organizational inertia on organizational agility: the role of IT ambidexterity. *Information Technology and Management*, *22*(1), 53–65. https://doi.org/10.1007/s10799-021-00324-w