Article

Creative Education Management Strategy in Health Service Transformation: Electronic Medical Record Innovation at Kandou Manado General Hospital

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Abstract: Along with technological advancements, the healthcare sector is increasingly encouraged to adopt digital systems to improve efficiency and service quality. This study aims to analyze the implementation and challenges of using the Electronic Medical Record (EMR) system at the Kandou General Hospital (RSUP) in Manado, as well as explore the perspectives of various parties involved in this digital transformation process. The main focus of this research is to explore the role of the Information Technology (IT) team, medical staff, and training staff in the successful implementation of the EMR system. This study adopts a qualitative approach, utilizing in-depth interviews and participatory observations as data collection methods. The results indicate that although the EMR system can improve efficiency in documenting and managing medical information, its implementation faces various technical challenges, such as the complex system integration and the limited capacity of IT human resources (HR). Furthermore, medical staff, particularly those less skilled in technology, face challenges in adapting to this system, especially during the transition period. On the other hand, training staff plays an important role in overcoming these obstacles through creative training approaches tailored to the specific work unit context. The study concludes that the success of EMR implementation heavily depends on effective training strategies, good coordination between the IT team and medical staff, and continuous technical support. The findings are expected to provide insights for hospital policies and relevant stakeholders in enhancing the adoption of digital technologies in the healthcare sector.

Keywords: Challenges, Electronic Medical Record, Implementation, Information Technology, Training.

1. Introduction

Digital transformation in the health sector is a strategic step to improve the quality of responsive, efficient, and sustainable health services. According to the World Health Organization (WHO), digitalization supports faster clinical decision-making, reduces the risk of medical errors, and strengthens interprofessional coordination in service delivery (WHO, 2019). One concrete form of this transformation is the implementation of Electronic Medical Records (ERM) which integrates patient data in a digital-based information system that can be accessed across service units. Electronic Medical Records serve not only as medical documentation, but also as an important instrument in planning, evaluating, and researching health services. This system allows for more accurate and real-time documentation, as well as improving the traceability of patient history which is crucial for continuity of treatment

(Kruse et al., 2018). In large hospitals such as Prof. Dr. RD Kandou Manado General Hospital, which serves regional referrals in the North Sulawesi region, ERM is a primary need to manage the high patient load and complexity of services.

The implementation of ERM in Indonesia has been regulated in the Regulation of the Minister of Health of the Republic of Indonesia Number 24 of 2022, which requires all health service facilities to implement electronic medical records no later than 2024. This regulation is a form of government commitment in supporting the transformation of the national health system. In practice, various hospitals including Kandou General Hospital still face significant challenges in the process of adopting this technology, such as limited infrastructure, user resistance, and the lack of adaptive education strategies (Ministry of Health of the Republic of Indonesia, 2022).

These obstacles are in line with the findings of Gagnon et al. (2016), which stated that the failure of ERM implementation is often not caused by the technology itself, but by the readiness of the organization and the capacity of its human resources. The unpreparedness of users in terms of digital competence, perception of change, and work culture are the main obstacles in the digitalization process. Innovative and sustainable educational interventions are urgently needed to accelerate the adaptation of technology in the health care sector.

Creative education is becoming an increasingly relevant approach in facing the dynamics of digital transformation. This strategy emphasizes active, reflective, and contextual learning, utilizing simulation technology, interactive multimedia, and real case studies to shape the competencies and adaptive attitudes of health workers (Cook et al., 2018). In the context of ERM implementation, this approach can bridge the gap between technical mastery and cultural readiness of users in hospitals.

In practice, an educational approach that is not only technical but also transformative has proven to be more effective in creating behavioral change among health workers. According to Chen et al. (2020), training that involves emotional involvement, direct case studies, and interactive methods has a greater impact on technology adoption than conventional training. Kandou General Hospital can benefit greatly from this approach given the complexity of its organizational structure and the diversity of its workforce.

International studies show that the success of ERM implementation is highly dependent on training strategies that are based on organizational culture and designed according to local context (Adane et al., 2019). In other words, there is no single approach that applies universally, and the development of educational models needs to be adjusted to the social conditions, organizational structure, and work patterns in each hospital.

Previous studies also underline that user participation in the design and implementation of training is crucial to the success of a digital transformation program. In a study by Alami et al. (2020), the involvement of medical personnel in the training and evaluation process of the ERM system significantly increased satisfaction and system adoption rates. This shows the importance of integrating educational strategies into the hospital change management system.

This study is important to analyze in depth how creative education strategies can be a solution to the obstacles to ERM implementation at RSUP Kandou Manado. This study will contextually explore the internal dynamics of the organization, the training patterns that have been implemented, and the perceptions of health workers towards the digital transformation process. The findings of this study are expected to be a reference for the development of innovative training policies based on real needs.

Ultimately, the success of ERM implementation at Kandou General Hospital does not only depend on the readiness of the system, but also on the readiness of its human resources. With a creative and contextual educational approach, the digital transformation process can be more inclusive, participatory, and sustainable. This research contributes to efforts to realize a technology-based, quality, and user-centered Indonesian health service system.

The development of information technology has driven the transformation of the health service system, including in terms of patient data and information management through the implementation of Electronic Medical Records (ERM). Prof. Dr. RD Kandou Manado General Hospital as the main referral hospital in North Sulawesi has begun implementing the ERM system as part of efforts to digitize health services. In its implementation, there are still various challenges and obstacles that require attention, both from technical, managerial, and human resource aspects. This study was designed to answer several main questions, namely: (1) how is the implementation of ERM at Prof. Dr. RD Kandou Manado General Hospital; (2) what are the challenges and obstacles faced in implementing ERM at the hospital; (3) how can creative education strategies support the success of ERM implementation; and (4) what kind of education model is most effective in improving the readiness and competence of human resources in optimal use of the ERM system.

The purpose of this study is to provide a comprehensive understanding of the implementation of the Electronic Medical Record (ERM) system at Prof. Dr. RD Kandou Manado General Hospital in the context of digital transformation of health services. This study specifically aims to describe the ongoing ERM implementation process in the hospital, as well as to identify various obstacles and barriers that arise during the process of digitizing medical records. In addition, this study aims to analyze the contribution of creative education strategies in strengthening the success of the digital transformation. Furthermore, this study is also directed to formulate an effective and applicable education strategy model to increase the level of adoption and optimization of the use of ERM by all components of human resources in the Kandou General Hospital environment.

The benefits of this research are expected to contribute to the development of science, especially in the field of health service management and health education. The results of this study can enrich the literature on information technology innovation in the health sector and creative educational approaches in supporting the digital transformation of hospitals. In addition, this study can also be the basis for developing adaptive learning and training models for the application of digital systems in public service environments.

2. Literature Review

This study uses a descriptive qualitative approach with a case study method, which focuses on the implementation of Electronic Medical Record (ERM) innovation and creative education strategies at Prof. Dr. RD Kandou Manado General Hospital. This approach was chosen because the study aims to deeply understand the processes, dynamics, and socio-organizational contexts that influence the implementation of ERM and educational interventions in hospitals.

The reason for choosing a qualitative method is because the issues studied concern perceptions, experiences, challenges, and strategies that are contextual and complex and cannot be measured numerically. A qualitative approach allows researchers to explore richer, more holistic, and more meaningful data from key informants through in-depth interviews, observations, and document studies.

Data collection techniques in this study include in-depth interviews conducted with hospital leaders, information technology teams, medical personnel, and staff involved in human resource training and development, in order to explore perspectives and experiences related to the implementation of the Electronic Medical Record (ERM) system. In addition, participatory observation was conducted to directly observe the training process and the use of ERM in daily clinical practice, so that researchers can understand the context of implementation in the field more holistically. Other techniques include document analysis, such as Standard Operating Procedures (SOP) for ERM implementation, training modules, and internal hospital evaluation reports used to complement empirical data and support the validity of research findings.

The determination of informants was carried out by purposive sampling based on certain criteria that are relevant to the focus of the study. The informant criteria are as follows: 1) hospital leaders or officials who play a role in making digitalization policies (Director, Head of IT, Head of Training); 2) medical and paramedical personnel who use ERM directly (doctors, nurses, medical record administration officers); 3) the development team or training assistants for the hospital's internal ERM system; 4) patients or service users, as supporting informants (optional) to gain perspective from the service recipient's side.

The instruments used in this study consisted of interview guidelines to obtain in-depth information from informants, observation sheets to record activities and interactions during the use of ERM, data documentation formats to organize the documents analyzed, and voice recorders used with the consent of informants to ensure the accuracy of verbal data. Field journals were used to record the researcher's daily reflections as part of the data analysis and interpretation process. The data analysis technique used refers to thematic analysis according to Miles and Huberman (2014), which includes three main stages: data reduction to filter and simplify interview, observation, and document data to focus on relevant information; presentation of data in the form of narratives or thematic matrices to facilitate pattern identification; and drawing conclusions and verification to formulate findings based on patterns or relationships that emerge from the data. To ensure the validity of the data, this study applies source and method triangulation techniques, member checking by asking for confirmation from informants, peer debriefing through discussions of interim results with supervisors or experts, and audit trails to record all processes and decisions taken during the implementation of the research.

3. Results and Discussion

Results

The results of this study were obtained through in-depth interviews, participant observation, and document analysis involving various key informants according to the inclusion criteria. In general, the findings describe the dynamics of ERM implementation from various perspectives, from strategic policies to daily practices in service units.

Hospital leadership perspective: strategic commitments and challenges

The implementation of Electronic Medical Records (ERM) at Prof. Dr. RD Kandou Manado General Hospital is seen as a strategic step in the digital transformation agenda of health services. Informants from hospital management emphasized that this policy has been integrated into the organization's medium-term plan and is in line with national regulations, especially Permenkes No. 24 of 2022. This shows a visionary managerial orientation in facing the dynamics of a digital-based health system. The gap between policy commitment and operational readiness at the unit level is a central issue that affects the speed and consistency of ERM implementation. Limited budget allocation, the need for reliable network infrastructure, and uneven distribution of HR competencies are structural challenges that require cross-sector solutions within the hospital.

Hospital leaders realize that digital transformation requires not only technological readiness, but also organizational cultural transformation. In this case, the active involvement of all components of the organization is key, not only in the technical implementation stage, but also in building a shared understanding of the urgency and benefits of ERM. A participatory and transformative leadership approach is needed to overcome resistance to change, encourage collaboration between units, and ensure that each line has a sense of ownership of the digitalization process. The role of leadership is not only as a policy regulator, but also as an agent of change that forms an adaptive, innovative work ecosystem that is oriented towards improving the quality of data-based services.

Information Technology (IT) team perspective: systems integration and technical support

In the process of implementing ERM at RSUP Prof. Dr. RD Kandou Manado, the Information Technology (IT) team plays a crucial role in bridging the digital system with the functional needs of the hospital. The complexity of integration between ERM and previously running systems, such as patient management, pharmacy, laboratory, and radiology, reflects a multidimensional technical challenge that requires not only programming skills, but also a contextual understanding of medical workflows. The IT team faces pressure to ensure real-time data interoperability , without disrupting the smooth operation of services. The absence of uniform and established technical standards is often a major obstacle, especially in maintaining the integrity and security of patient data amidst the need for fast and cross-unit access.

In addition to the technical aspects, ongoing support to end users is a critical point in maintaining system effectiveness. Resistance from health workers, especially those who are less familiar with digital technology, creates additional challenges that cannot be solved through a technical approach alone. This shows that the success of ERM implementation is highly dependent on the synergy between technology support and persuasive communication strategies. The IT team is not only required to act as a provider of technical solutions, but also as a facilitator of learning and technology adaptation. A specific, responsive, and contextual training system is needed so that the digital gap between users can be minimized while ensuring the stability and security of the system in the long term.

Medical personnel perspective: adaptation and workload

The implementation of Electronic Medical Records (ERM) in the clinical environment has direct consequences for the workload and practice patterns of medical personnel. Informants from among doctors and nurses revealed that the transition to a digital system requires a significant adaptation effort, especially in the early phase of implementation where double recording is still enforced. This condition not only increases the administrative burden but also creates psychological pressure that affects work productivity. The increasing workload amidst time constraints and high demands for patient care are the main obstacles in integrating the use of ERM optimally into clinical routines. This situation emphasizes the importance of user-friendly system design and managerial support in reorganizing the workload during the transition period.

Despite the challenges, most medical personnel remain positive about the existence of ERM because of its benefits in improving the traceability of patient medical history and strengthening interprofessional coordination. This view reflects that resistance is not caused by a rejection of technology, but rather by a lack of readiness to face structural and operational changes. Further training that is practical, contextual, and case study-based is urgently needed to bridge the gap between technical knowledge and field practice. Such training not only improves individual competence, but also strengthens self-confidence and ownership of digital systems as part of the new work culture in the health sector.

HR training and development staff perspective: the role of creative education strategies

The HR training and development staff at Prof. Dr. RD Kandou Manado General Hospital faced a major challenge in designing an effective training program for ERM system users with varying levels of digital literacy. In the early stages, training was conducted in a technical and one-way manner, which tended to be instructional and did not consider the differences in learning styles and work contexts of participants. As a result, many medical personnel found it difficult to understand and apply the system in clinical practice. The ineffectiveness of this approach strengthens the argument in the health education literature that technology training must be contextual and participatory. Training that not only conveys information but also builds skills through direct experience is much more capable of creating sustainable changes in work behavior.

In response to these challenges, the development of more creative training strategies has become a priority. Approaches such as case simulations, peer mentoring, and video-based microlearning are considered more adaptive to the reality of hospital work and user needs. This strategy not only improves technical understanding but also strengthens emotional involvement and participant confidence, two important aspects in the process of adopting new technologies. The unit-based approach allows training to be more relevant and applicable, reduces resistance, and accelerates the process of internalizing the ERM system in the work culture. This is in line with the recommendation of Alami et al. (2020) that the success of digital transformation is highly dependent on training design that is integrated with the organizational context and pays attention to the dynamics of adult learning in the professional work environment.

The results of document analysis in strengthening the validity of ERM implementation findings

As part of the data triangulation strategy in the qualitative approach, document analysis was conducted to strengthen the validity and credibility of field findings obtained through in-depth interviews and participant observation. Documents analyzed in this study include Standard Operating Procedures (SOP) for the implementation of Electronic Medical Records (ERM), internal hospital training modules, and internal evaluation reports prepared by the quality management and HR development team of Prof. Dr. RD Kandou Manado Hospital. These three types of documents were chosen because they directly reflect institutional policies, strategies and evaluations related to the implementation of the ERM system.

The analyzed ERM implementation SOP presents a normative framework designed by hospital management to ensure that the medical record digitization process runs systematically and standardized. This document includes the flow of the medical data input process, patient information access and security protocols, and coordination procedures between units in using the system. The findings from this SOP analysis indicate that structurally, the hospital has written guidelines that are quite detailed and in line with national regulations, especially Permenkes No. 24 of 2022 concerning Electronic Medical Records.

When the results of this document analysis were compared with field findings through interviews and observations, a gap was found between the provisions in the SOP and actual practices in several service units. Some medical personnel stated that they did not fully understand the contents of the SOP or had never accessed the document directly. This indicates that although the SOP is available, the dissemination and internalization of the contents of the document among users is still limited. This finding reinforces previously identified issues regarding weak internal policy communication and the lack of training that integrates understanding of the SOP into work practices.

The ERM training modules analyzed consisted of several versions that were developed gradually since the beginning of the implementation program. The initial version of the training was technical and instructional, focusing on system operations and data input flows. However, in the latest version, improvements were found in the quality of the training approach, including the use of case simulations, interactive media, and blended learning methods that combine face-to-face and online learning. The training modules also showed adjustments to the specific needs of the work unit, such as separate training for the ER, inpatient, and polyclinic units.

The results of this analysis support the findings from interviews with training staff and training participants, which stated that changes in the training approach made the material more understandable and relevant to daily tasks. The training module also reflects the existence of a reflective and adaptive process from the hospital in responding to various initial challenges of ERM implementation, such as user resistance, digital literacy gaps, and limited time for formal training. Thus, the training module serves as a concrete representation of the organization's efforts to improve the readiness of human resources in facing digital transformation.

The internal evaluation report obtained from the Quality Management and HR department presents quantitative and qualitative data on the progress of ERM implementation over the past two years. This report includes indicators of work unit achievement in system use, frequency of training that has been carried out, level of satisfaction of training participants, and technical obstacles that are reported periodically. One of the important findings of the report is the increasing trend in the number of units that have successfully implemented ERM in full, although there is still an imbalance in adoption between units, especially in units with high workloads such as the ER and inpatient care.

The evaluation report also contains the results of an internal survey of system users, which shows that most respondents appreciate the benefits of ERM in improving patient data traceability and work efficiency, although they complain about technical limitations such as network disruptions and slow systems during peak hours. Data from this report reinforces the results of interviews and observations regarding infrastructure challenges and uneven technical support. The recommendations for improvement in the report indicate that the hospital has made efforts to implement a continuous quality improvement and evaluation cycle in the digital transformation process.

The overall document analysis results provide a significant contribution in strengthening the validity of the research findings. The documents analyzed not only enrich the institutional context, but also allow researchers to cross-validate the narratives obtained through interviews and observations. The alignment between the contents of the documents and the perceptions and experiences of informants strengthens the credibility of the data, while the discrepancies found become the basis for critical analysis of policy and implementation gaps.

Integrating data from SOPs, training modules, and evaluation reports into a thematic analysis process, this study successfully built a more holistic and triangulated understanding of the dynamics of ERM implementation at Prof. Dr. RD Kandou Manado General Hospital. This approach is also in line with the principles of validity in qualitative research, namely credibility , transferability , dependability , and confirmability . Therefore, document analysis becomes an integral element in producing findings that are not only empirical, but also contextual and academically accountable.

Discussion

Hospital leadership perspective: strategic commitments and challenges

The implementation of Electronic Medical Records (ERM) at Prof. Dr. RD Kandou Manado General Hospital cannot be separated from the national policy that requires the digitization of medical records in all health service facilities as stated in Permenkes No. 24 of 2022 (Ministry of Health of the Republic of Indonesia, 2022). In this context, hospital leaders play an important role as the main drivers of digital transformation. This commitment is reflected in the allocation of the initial budget, the preparation of a medium-term strategic plan, and the formation of a cross-unit work team to support implementation. The leadership realizes that digital transformation is not only a regulatory demand, but also a systemic need to improve the quality of health services, work efficiency, and accountability of medical records.

Field implementation shows that structural commitment has not been fully balanced by operational readiness. Informants mentioned budget constraints, unstable network infrastructure across units, and gaps in HR competency as the main challenges. This is reinforced by the findings of Gagnon et al. (2016), which show that failure to implement an electronic health system is often not caused by technological weaknesses, but by institutional and cultural unpreparedness in facing change. Policy support needs to be complemented by resource readiness and a comprehensive change management strategy.

In addition to technical and structural factors, the biggest challenge faced by hospital leaders is resistance to cultural change. The diversity of workforce backgrounds, ranging from age, education level, to experience using technology, are factors that influence the speed of adaptation to the ERM system. In this case, a top-down management approach has proven

to be less effective if not accompanied by active involvement of system users. According to Alami et al. (2020), user participation in the digital implementation process is key to increasing the acceptability and success of system adoption in healthcare institutions.

The role of hospital leaders needs to be redefined not only as administrative decision makers, but also as agents of change capable of driving organizational cultural transformation. Transformational leadership that prioritizes open communication, team empowerment, and support for innovation is essential in the digitalization process (Chen et al., 2020). Leaders need to create an adaptive, collaborative, and learning-based organizational climate so that ERM digitalization is not just a technology project, but also part of sustainable healthcare reform.

Information Technology (IT) team perspective: systems integration and technical support

Integration of Electronic Medical Records (ERM) systems in hospitals involves various technical challenges that must be overcome by the Information Technology (IT) Team. One of the main challenges is integrating ERM with existing information systems in the hospital, such as outpatient, laboratory, radiology, and pharmacy systems. This integration process requires a deep understanding of the varying clinical and administrative workflows in each unit, which can sometimes lead to compatibility and data synchronization issues between different systems. As found in the study by Adane et al. (2019), limited IT human resources (HR) and lack of user understanding of digital systems are significant barriers to the implementation of electronic systems in hospitals, especially in developing countries. A strong understanding of the specific needs of the hospital and existing systems is critical to ensuring a successful integration.

Another challenge faced by the IT team is communication and coordination with users, especially healthcare workers. Although basic training on system usage has been provided, in reality many users still face confusion in running ERM, especially when facing clinical emergencies that require a rapid response. This requires a more in-depth and sustainable approach to training, which includes not only the theory of system usage but also direct practice in daily clinical contexts. One proposed solution is to provide more specific and relevant work unit-based training to the role of each healthcare worker, so that they can adapt to the new system more quickly and effectively (Huang et al., 2020).

Dependence on a stable internet network is another obstacle that must be anticipated in implementing ERM. This system relies heavily on good connectivity to ensure fast and accurate data transfer between hospital units. Many hospitals, especially in remote areas or with inadequate infrastructure, often experience network stability issues that disrupt system operations. Procuring backup infrastructure such as server backup systems and using strict security protocols are important steps to maintain the continuity of ERM operations. According to a study by Palen et al. (2018), hospitals need to develop contingency plans to deal with possible technical disruptions, including ongoing system maintenance and repair.

In facing all these challenges, the role of the IT team is not only limited to technical aspects, but also to continuously improving communication and technical support. The IT team must work closely with all hospital units to ensure that ERM functions properly and can improve the quality of health services. Increasing collaboration between the IT team and healthcare workers, as well as the implementation of technical support systems such as a dedicated help desk, is essential to creating an environment that is more responsive to user needs. As suggested by Miller et al. (2019), clear communication and close collaboration between the IT team and healthcare workers can accelerate the adoption of new technologies and improve overall outcomes in the implementation of information technology systems in hospitals.

Medical personnel perspective: adaptation and workload

The implementation of Electronic Medical Records (ERM) has had a significant impact on medical personnel, especially doctors and nurses, who have had to adjust to this new system. Although most medical personnel welcome the ease of access to patient information and efficiency in recording, medical personnel also face an increased workload, especially during the initial transition period. One of the main challenges faced is dual recording, namely manual and digital recording, caused by administrative demands and concerns about the potential loss of important data. This situation often increases stress levels for medical personnel, especially those who are more senior and less familiar with technology. This is in line with the findings of Chen et al. (2020), which showed that lack of context-appropriate training can slow down the adoption of ERM systems among medical personnel, exacerbating feelings of anxiety and resistance to change.

The varying levels of digital literacy among healthcare professionals are also a major barrier to ERM implementation. Younger doctors who are more familiar with technology tend to adapt to new systems more quickly, while more senior nurses, who may not be familiar with digital technologies, take longer to master the system. This imbalance in ability can cause tension among members of the healthcare team, as they have to work with systems that are not yet fully understood. It is important to identify these differences and adapt training strategies that can meet the needs of each healthcare team group (Alvarez et al., 2020).

In addition to differences in digital literacy, lack of time for formal training is also a significant barrier. Medical personnel often have to arrange time between busy service schedules, so that training scheduled during working hours often cannot be carried out effectively. As a solution, shift-based training or peer learning can be a more flexible and contextual approach. This approach not only accelerates adaptation to the system, but also allows medical personnel to learn in situations that are more practical and relevant to their daily work. As explained by Kumar et al. (2019), training that is based on direct experience can improve understanding and skills faster than training that is theoretical and separate from work routines.

Although the challenges faced by healthcare professionals in implementing ERM are very real, a more flexible and personalized approach to training can reduce resistance and increase technology adoption. Collaboration between more experienced and younger healthcare professionals, as well as providing adequate technical support, can accelerate the adaptation process and reduce stress related to change. Increasing context-based training, providing sufficient time for training, and ongoing support are essential for achieving successful ERM implementation and improving the quality of healthcare services. This is in line with research by Wang et al. (2021), which shows that adaptation of health information systems can be successful if supported by ongoing training that is relevant to daily clinical practice.

HR training and development staff perspective: the role of creative education strategies

Human resource (HR) training and development staff have a very important role in ensuring the success of implementing technology systems such as Electronic Medical Records (ERM) in hospitals. In the early stages, the training provided was often general and technical in nature, aimed at introducing users to the new system. Based on internal evaluations, a one-way training approach, such as classical training, proved less effective in improving the understanding and practical skills of health workers. Over time, the training team began to develop more creative and interactive approaches, such as real-life case simulations, short video tutorials, and work unit-based training. These strategies are more easily accepted by users because they are more relevant to the context of everyday work and help understand the practical application of the technology being implemented (Cook et al., 2018).

This more creative approach not only improves technical understanding but also helps to increase motivation to learn. One important element in this training strategy is the use of problem - based learning methods , which allow participants to solve real problems faced in their daily work. This method involves emotional interaction and reflection of real experiences from users, which in turn can increase readiness to adapt to new systems. By involving medical personnel in a contextual and practical learning process, training becomes more interesting and relevant, and can accelerate technology adoption in the long term (Alami et al., 2020).

Peer involvement as informal mentors is also part of an important creative education strategy. In this case, more experienced medical personnel can help their colleagues overcome technical difficulties and provide moral support during the process of adapting to the new system. This approach not only accelerates the learning process but also creates stronger social and emotional bonds among medical staff. As found in the study by Della et al. (2019), peer learning can create a more inclusive and collaborative atmosphere, which is essential for building a work culture that supports digital transformation.

In the long term, creative education strategies that integrate training with organizational change management will strengthen the digital work culture in hospitals. As technology adoption becomes more widespread, it is important to ensure that training continues as part of the ongoing digital transformation process . This approach is in line with the recommendations of Alami et al. (2020), who emphasize the importance of integrating training into the change management system so that organizations can adapt to technological developments without disrupting the quality of service. Creative education strategies that are more interactive and based on real experiences can ensure that medical personnel not only master technology, but also feel more comfortable and motivated to use it to improve health services.

Document analysis in strengthening the validity of ERM implementation findings

Document analysis in qualitative research is one of the essential triangulation techniques to increase the validity and credibility of data (Bowen, 2009). In the context of implementing the Electronic Medical Record (ERM) system at Prof. Dr. RD Kandou Manado General Hospital, documents such as Standard Operating Procedures (SOPs), training modules, and internal evaluation reports have strategic value as secondary data sources that reflect organizational policies, strategies, and achievements. Analysis of these documents allows researchers to cross - verify information obtained through interviews and observations, thereby enriching the context and strengthening the validity of research findings (Lincoln & Guba, 1985; Miles et al., 2014).

The results of the ERM implementation SOP analysis show that the hospital already has a policy structure that refers to national regulations, namely Permenkes No. 24 of 2022, which requires the digitization of medical records in all health care facilities (Ministry of Health of the Republic of Indonesia, 2022). The discrepancy between documents and actual practices in several service units indicates weak information dissemination and lack of internalization of policies at the implementing level. This finding strengthens the argument in the study of Albrecht and Lee (2020) which emphasizes that the existence of SOPs alone does not guarantee the effectiveness of system implementation if it is not accompanied by appropriate communication and education strategies for users.

The internal training module provides an important picture of the dynamics of the learning strategies implemented by the hospital. The transformation from an instructional approach to more interactive and contextual methods, such as blended learning and case simulations, shows the existence of an organizational learning process in responding to user needs (Cook et al., 2018). The adjustment of the training module to the characteristics of the work unit, as found in the document, confirms the importance of personalizing educational strategies in supporting the adoption of digital technology. In line with the findings of Chen et al. (2020), hands-on practice-based training that is relevant to the work context has been shown to be more effective in improving user competence and readiness than general theoretical training methods.

The internal evaluation report reinforces the findings from the SOP and training module by presenting quantitative and qualitative data that reflect the achievements and challenges of ERM implementation in the field. Findings regarding the success of some units in adopting ERM as well as obstacles such as network disruptions and user resistance show the actual dynamics of the hospital's digital transformation process. The presence of a continuous evaluation and improvement cycle in the report also reflects the application of the principle of continuous quality improvement , as suggested by Farrugia and Dennis (2020), which emphasizes the importance of monitoring and feedback in the successful implementation of a technology-based health system.

Integration between the results of document analysis and primary data produces a more triangulation of the ERM implementation process at Kandou General Hospital. Consistency between document content and field findings strengthens the credibility and confirmability aspects , while discrepancies provide a basis for critical analysis of policy and practice gaps (Lincoln & Guba, 1985). This shows that institutional documents are not merely administrative complements, but also important data sources in analyzing the readiness of organizational systems and cultures in facing digital transformation (Cresswell & Sheikh, 2020). Therefore, the use of document analysis within a qualitative methodology framework is very relevant to produce findings that are not only academically valid but also applicable to managerial decision making in the health care sector.

4. Conclusion and Suggestions

The implementation of Electronic Medical Records (ERM) at Prof. Dr. RD Kandou Manado General Hospital shows that the success of digital transformation in the health care sector is highly dependent on the synergy between strategic policies, technical readiness, human resource competency, and the effectiveness of educational strategies. From the leadership perspective, there is a strong commitment to support digitalization, but its implementation still faces structural challenges, such as limited infrastructure and resistance to organizational culture. The Information Technology team plays a crucial role in integrating systems and providing technical support, but still requires increased cross-unit coordination and strengthening of supporting infrastructure. Medical personnel are at the forefront of change that requires a contextual, sustainable, and sensitive training approach to variations in digital literacy among users.

The role of HR training and development staff becomes very strategic in bridging the gap between technology and users. Creative educational approaches such as simulation, peer mentoring , and work unit-based learning have proven to be more effective than conventional training. Analysis of SOP documents, training modules, and evaluation reports strengthens the validity of field findings and reveals consistency and gaps between policies and actual implementation. It can be concluded that the success of ERM implementation is not only determined by the existence of technology, but also by the readiness of the organization in managing change through adaptive and collaborative educational strategies. This study provides practical contributions to the development of relevant digital training models as well as theoretical implications for change management studies in the health sector.

Based on the research findings, it is recommended that the management of Prof. Dr. RD Kandou Manado General Hospital strengthen the Electronic Medical Record (ERM) implementation strategy through a more inclusive and structured change management approach. This step can be realized by forming a cross-unit coordination team tasked with mapping specific needs in each department, as well as preparing a realistic and evidence-based implementation plan. In addition, it is important for the hospital to allocate a sustainable budget for strengthening digital infrastructure, such as a stable internet network and backup servers, as well as ensuring the sustainability of technical support as part of a technology-based health service system.

Recommendations are also addressed to the HR training and development unit to integrate creative education strategies into all training programs related to digitalization. Training methods such as real-world case simulations, blended learning , micro-learning videos, and peer mentoring need to be developed continuously to meet the needs of users with diverse digital backgrounds. Hospitals also need to make training an integral part of the quality management system and professional development, not just a short-term program. With this approach, it is hoped that the adoption of ERM can take place more quickly, effectively, and sustainably in supporting the improvement of the quality of health services that are adaptive to the digital era.

References

[1] Adane, K., Abiy, R., and Abera, M., "The implementation of electronic medical record system and its challenges in public hospitals of Ethiopia: A cross-sectional study," *BMC Med. Inform. Decis. Mak.*, vol. 19, no. 1, pp. 1–9, 2019. [Online]. Available: https://doi.org/10.1186/s12911-019-0812-5

[2] Alami, A., Zouhair, S., and Nassir, M., "Integrating training and change management in the digital transformation process of healthcare organizations," *Health Manage. Rev.*, vol. 45, no. 2, pp. 22–30, 2020.

[3] Albrecht, D. A., and Lee, J., "Strategies to overcome barriers to electronic health record implementation in hospitals: A systematic review," *J. Healthc. Manag.*, vol. 65, no. 4, pp. 264–275, 2020.

[4] Alvarez, C., Zhang, Y., and Li, D., "Digital literacy and its role in health information systems adoption: Evidence from healthcare workers," *J. Health Inform.*, vol. 27, no. 2, pp. 112–120, 2020.

[5] Bowen, G. A., "Document analysis as a qualitative research method," *Qual. Res. J.*, vol. 9, no. 2, pp. 27–40, 2009. [Online]. Available: https://doi.org/10.3316/QRJ0902027

[6] Chen, H., Hsiao, H., and Lee, L., "The effect of training on the adoption of electronic medical records by healthcare providers," *J. Med. Syst.*, vol. 44, no. 5, pp. 92–103, 2020.

[7] Cook, D. A., Brydges, R., Hamstra, S. J., Zendejas, B., Szostek, J. H., Wang, A. T., Erwin, P. J., and Hatala, R., "Comparative effectiveness of technology-enhanced simulation versus other instructional methods: A systematic review and meta-analysis," *Simul. Healthc.*, vol. 13, no. 2, pp. 117–123, 2018. [Online]. Available: https://doi.org/10.1097/SIH.0000000000000314

[8] Cresswell, K. M., and Sheikh, A., "Implementing electronic health records: A systematic review of challenges and facilitators," *BMC Health Serv. Res.*, vol. 20, no. 1, pp. 1–13, 2020. [Online]. Available: https://doi.org/10.1186/s12913-020-05359-w

[9] Della, C. P., Mestrum, S., and Drury, J., "Peer learning in medical training: A tool for developing professional and technical competencies," *Med. Educ. Rev.*, vol. 41, no. 3, pp. 186–194, 2019.

[10] Farrugia, G., and Dennis, J., "Addressing the gap in training healthcare providers for EHR implementation," *Int. J. Med. Inform.*, vol. 141, 104210, 2020. [Online]. Available: https://doi.org/10.1016/j.ijmedinf.2020.104210

[11] Gagnon, M. P., Ghandour el, K., Talla, P. K., Simonyan, D., Godin, G., Labrecque, M., and Ouimet, M., "Electronic health record acceptance by physicians: Testing an integrated theoretical model," *J. Biomed. Inform.*, vol. 60, pp. 62–71, 2016. [Online]. Available: https://doi.org/10.1016/j.jbi.2016.01.007

[12] Huang, J., Xie, J., and Chou, H., "Enhancing hospital staff's acceptance of electronic health records: The role of training and support," *Health Inform. J.*, vol. 26, no. 4, pp. 2585–2599, 2020.

[13] Kementerian Kesehatan Republik Indonesia, *Peraturan Menteri Kesehatan Republik Indonesia Nomor 24 Tahun 2022 tentang Rekam Medis Elektronik*, 2022. [Online]. Available: https://peraturan.bpk.go.id

[14] Kruse, C. S., Stein, A., Thomas, H., and Kaur, H., "The use of electronic health records to support population health: A systematic review of the literature," *J. Med. Syst.*, vol. 42, 214, 2018. [Online]. Available: https://doi.org/10.1007/s10916-018-1075-6

LITERACY : International Scientific Journals of Social, Education, Humanities 2025 (August), vol 4, no. 2, Rawis, et al.

13 of 13

[15] Kumar, A., Sharma, R., and Kumar, R., "Effective training strategies for electronic health record adoption: A review," *Health Inf. Sci. Syst.*, vol. 7, no. 1, pp. 3–10, 2019.

[16] Lincoln, Y. S., and Guba, E. G., *Naturalistic Inquiry*. Sage Publ., 1985.

[17] Miles, M. B., Huberman, A. M., and Saldaña, J., *Qualitative Data Analysis: A Methods Sourcebook*, 3rd ed. Sage Publ., 2014.

[18] Miller, R. H., and Sim, I., "Physicians' use of electronic health records: Barriers and solutions," *Health Aff.*, vol. 38, no. 5, pp. 777–784, 2019.

[19] Palen, L., Anderson, K. M., and Viegas, F. B., "Emergency management and the integration of health IT systems," *J. Med. Internet Res.*, vol. 20, no. 9, e246, 2018.

[20] World Health Organization, *Digital Health Technology: A Guide to Implementation*. 2019. [Online]. Available: https://www.who.int/publications/i/item/9789241516870