

Review of Readiness to Implement Electronic Medical Records in Indonesian Hospitals: Literature Study

Suci Dwi Yanti ^{1,*}, Venia Oktafiani ¹, Marlina Gazali ², St Kuraedah ³, Asriani Asriani ¹

¹ Department of Hospital Administration, Faculty of Science Technology and Health, Institut Sains Teknologi dan Kesehatan (ISTEK) 'Aisyiyah Kendari, Kendari, 93116, Southeast Sulawesi, Indonesia

² Department of Madrasah Ibtidaiyah Teacher Education, Faculty of Tarbiyah, Institut Agama Islam Negeri (IAIN) Kendari, 93563, Southeast Sulawesi, Indonesia

³ Department of Arabic Language Education, Faculty of Tarbiyah, Institut Agama Islam Negeri (IAIN) Kendari, 93563, Southeast Sulawesi, Indonesia

* Correspondence: sucidwiyanti73@gmail.com

Received: June 23, 2023

Accepted: July 21, 2023

Published: July 30, 2023

Abstract: The rapid development of information technology in various sectors has become a common phenomenon in today's digital era. RME is a health information sub-system that is increasingly being adopted in Indonesia and is becoming a global trend in managing documents using computer/electronic based systems in the health sector. One form of progress in information technology in the health sector is the Electronic Medical Record (RME). The research method uses a literature review design, namely research that has been published. Strategy: using secondary data from the results of research that has been conducted by previous researchers. The source of the data obtained is in the form of articles or journals that are relevant to the topic of readiness to implement electronic medical records. The readiness to implement electronic medical records is still unprepared and some are quite ready. Based on the aspect of human resources it is not quite ready, based on the organizational work culture aspect it is quite ready, based on governance and leadership it is quite ready, and based on infrastructure it is not quite ready.

Keywords: Electronic medical records, hospitals, readiness, implementation

1. Introduction

The rapid development of information technology in various sectors has become a common phenomenon in today's digital era. Likewise in the health sector, where the use of information systems has become an important part of health services. The use of this information system is known to provide many benefits for service providers, including hospitals, clinics, and the like. (Tiorentap *et al*, 2020).

RME is a health information sub-system that is increasingly being adopted in Indonesia and is becoming a global trend in document management using computer/electronic based systems in the health sector (Rosalinda *et al*, 2021). One form of progress in information technology in the health sector is the existence of Electronic Medical Records (RME). This RME provides various benefits, including in economic aspects such as

cost savings, cost avoidance, increased revenue, contribution to profits, and increased productivity. On the clinical side, RME facilitates access to clinical information, reduces errors in service, improves patient safety, provides educational services in accordance with patient education, improves documentation, and facilitates good communication between doctors and patients. In addition, RME also assists in the clinical decision-making process based on guidelines and protocols, facilitates care coordination, and supports service quality measurement, reporting, and service quality improvement. (Rosalinda *et al*, 2018).

The results of the study Sudirahayu state that information technology (IT) does offer many advantages over the use of paper for storing and retrieving patient data. However, to implement Electronic Medical Records (RME), there are several challenges that need to be modified, including infrastructure and structural problems, information technology constraints, lack of needs assessment, cultural issues, and the high cost of software, hardware, and data exchange standards. Therefore, a readiness assessment needs to be carried out by the Southeast Sulawesi local government prior to the implementation of the RME. This action will help identify processes and priority scales, as well as support the establishment of operational functions to optimize RME implementation.

2. Methods

The research method uses a literature review design. The database used is Google Scholar, the keywords and operator used in this study are "Electronic medical records" and "Readiness to implement electronic medical records". So that 50 articles were obtained from Google Scholar. Then 5 articles were included in the literature review.

3. Results and Discussion

3.1 Results

Table 1. Results

Writer	Title	Results
Kori Puspita Ningsih, Suryo Nugroho Markus, Ngatoiatu Rahmani, Ida Nursanti (2023)	Readiness Analysis for the Development of Electronic Medical Records Using DOQ- IT at "X" Hospital Yogyakarta	The results of the analysis of RME development readiness from the components of human resources, leadership, organizational culture, and infrastructure at Yogyakarta "X" Hospital. The score analysis of the four components is 76.48 with an average value of 2.64. From the results of this assessment, Yogyakarta "X" Hospital is quite ready to develop RME. The readiness for strong RME

			development at Yogyakarta "X" Hospital is supported by strengths in organizational work culture, leadership and infrastructure, but also has weaknesses in HR.
Cordylia Jeannette Rohmadi (2021)	Amelinda Sulistya ,	Literature Review: Review of the Readiness to Implement Electronic Medical Records in Management Information Systems in Hospitals	1. Human Resources The readiness to implement electronic medical records based on the aspect of human resources is mostly not ready enough because currently there is no IT expert as a program maker (software) as well as the person in charge of developing the electronic medical record system. 2. Organizational Work Culture The readiness to implement electronic medical records

3.2 Synthesis Results

This research focuses on three important aspects of patient satisfaction with hospital quality management, including:

- 1) The importance of patient satisfaction with hospital quality management based on aspects of staff communication
- 2) The importance of patient satisfaction with hospital quality management based on aspects of hospital responsiveness
- 3) The importance of patient satisfaction with hospital quality management based on aspects of environmental cleanliness and comfort

3.3 Discussion

3.3.1 Readiness to Implement Electronic Medical Records Based on Human Resources Aspects

In a study conducted by Kori Puspita Ningsih, it was found that the component with the lowest score in the readiness to implement electronic medical records was Human Resources (HR)/users (score 2.60) (Ningsih *et al*, 2023). This shows the importance of paying attention to RME users in supporting the improvement of RME development readiness. HR,

which includes medical staff, administrative and managerial staff, plays a role as a user of the RME system and part of the policy maker, which plays an important role in determining the success of RME development. Previous research also shows that service quality can be improved with the support of a good work system and reliable human resources in the field of information technology. However, in this study, the data shows that most human resources are not yet ready enough to implement electronic medical records, due to a lack of IT experts as programmers (software) and people in charge of developing electronic medical record systems. This is not in accordance with the Regulation of the Minister of Health of the Republic of Indonesia Number 82 of 2013 which requires the existence of qualified information technology human resources in the fields of system analysis, programmers, hardware, and network maintenance. Other research shows that several organizations already have HR readiness in implementing electronic medical records.

It can be concluded that the readiness of human resources in implementing electronic medical records is still inadequate. Therefore, good planning related to human resources in organizations, including hospitals, is very important and needs to be properly documented and submitted to the personnel department. The ability of staff or employees to operate computers is also an important component in supporting the development and acceleration of the implementation of electronic medical records (Sulistya *et al*, 2021).

3.3.2 Readiness to Implement Electronic Medical Records Based on Organizational Work Culture Aspects

In Kori Puspita Ningsih's research, leadership support at Yogyakarta "X" Hospital is aligned with achieving the same score (score: 2.65) between achieving leadership scores and organizational work culture. With this high enough score, it shows that the leadership of Yogyakarta "X" Hospital has succeeded in motivating and organizing staff to achieve the same vision of developing RME (Ningsih *et al*, 2023). A good organizational work culture is also an important component in assessing readiness, because work culture illustrates the leadership's success in establishing regulations such as policies, Standard Operating Procedures and business processes related to user activities in using RME (Tiorentap *et al*, 2020). In general, in the early stages of RME implementation, it is necessary to adapt to cultural changes that will have physiological and physical impacts (Tiorentap *et al*, 2020). This is in line with research (Sulistya *et al*, 2021), (Wirajaya *et al*, 2020) and (Pratama & Darnoto, 2021). The readiness to implement electronic medical records based on aspects of organizational work culture is stated to be quite ready, but most of them do not have SOPs and flowcharts. unplanned electronic medical record work. However, it is different from (Faida *et al*, 2021), which states that the unavailability of instructions for running electronic medical records is 14% and there is no involvement of officers in planning electronic medical records by 10%.

So it can be concluded that the readiness to implement electronic medical records in the organizational work culture is quite ready. It is necessary to promote aspects of work culture in various stakeholder groups, improve conditions for cooperation in its implementation, create appropriate managerial processes, provide infrastructure and provide orientation and training according to the needs of user groups (Tiorentap *et al*, 2020)

3.3.3 Readiness to Implement Electronic Medical Records Based on Governance and Leadership Aspects

In Kori Puspita Ningsih's research the results of the assessment obtained an average value of 2.64. From the results of this assessment, Yogyakarta "X" Hospital is quite ready to

develop RME. Scores 2-3 show the meaning of sufficient readiness, the lower the score, the lower the readiness of the components, and vice versa if the score is higher, then the readiness for each component is also higher. Components of leadership and organizational culture (score: 2.65) occupy the highest score (Ningsih *et al*, 2023). This is interpreted as the important role of the Yogyakarta "X" Hospital Management to support the development of RME. This is in line with research (Sulistya *et al*, 2021), that the readiness to implement electronic medical records based on aspects of governance and leadership is quite ready, like leaders who already have discourse on implementing RME. However, this is different from (Faida *et al*, 2021), (Wirajaya *et al*, 2020) and (Pratama & Darnoto, 2021). WHO do not yet have a specific strategic plan regarding information systems and information technology. In addition, the development of RME has not been included in the planning process.

It can be concluded that the readiness to implement electronic medical records in the aspects of governance and leadership is quite ready, such as leaders who already have a discourse on implementing RME, but have not yet formed a special team to accelerate the implementation of RME.

3.3.4 Readiness to Implement Electronic Medical Records Based on Infrastructure Aspects

In Kori Puspita Ningsih's research, the infrastructure component got a score of 2.63. The results of this analysis show that the Yogyakarta "X" Hospital infrastructure is available as a form of commitment from the leadership. At the RME infrastructure development stage, it is necessary to pay attention to infrastructure development requirements to ensure data security, privacy and data interoperability (Ningsih *et al*, 2023). This is in line with (Wirajaya *et al*, 2020) and (Pratama & Darnoto, 2021). However, it is different. In research (Sulistya *et al*, 2021) (Faida *et al*, 2021), the readiness to implement electronic medical records based on aspects of the infrastructure is partly not ready enough, such as the unavailability of software and computers that are inadequate to meet the needs of officers.

It can be concluded that there is still a lack of readiness to implement electronic medical records in aspects of IT infrastructure such as the unavailability of software and inadequate computers. In addition to relying on human resources, an IS depends on hardware, software, databases and networks to perform input, processing, output, storage and control activities that transform data resources into information products.

Conclusions

The majority of the readiness to implement electronic medical records in the aspect of human resources is still inadequate because currently there are no IT experts who can create programs (software) and are also responsible for the development of electronic medical record systems. Even so, the readiness to implement electronic medical records in the organizational work culture aspect is considered quite ready, although there are still deficiencies in terms of SOPs and electronic medical record workflows that have not been well planned. Meanwhile, the readiness to implement electronic medical records in the aspects of governance and leadership is considered quite ready, because leaders already have the discourse to implement electronic medical records, but a special team has not been formed to accelerate the implementation of RME. While the readiness to implement electronic medical records in the infrastructure aspect is still partially unprepared, especially because adequate software and computers are not yet available.

Funding

This research received no external funding.

Acknowledgments

Authors would like to express their appreciation to the our team of Departement of Hospital Administration, ISTEK „Aisyiyah Kendari.

Conflicts of Interest

The authors declare no conflict of interest.

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