

The Effect of Electronic Medical Record Implementation on the Work Efficiency of Medical Record Officers at Sitti Khadijah Mother and Child Hospital, Gorontalo

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ABSTRACT

The implementation of Electronic Medical Records (EMR) is intended to improve the quality of health services and the work efficiency of medical records officers. However, implementation may still encounter technical barriers, including unstable networks and application errors. This study aimed to determine the effect of EMR implementation on the work efficiency of medical records officers at Sitti Khadijah Mother and Child Hospital, Gorontalo. A quantitative analytic study with a cross-sectional design was conducted in May 2026. The population consisted of 30 EMR users, and total sampling was applied. Data were collected using a questionnaire that had undergone validity and reliability testing and were analyzed using descriptive statistics and simple linear regression. All 30 questionnaire items were valid, with item correlations ranging from 0.498 to 0.865, and the instrument demonstrated high internal consistency (Cronbach's $\alpha = 0.954$). Descriptively, 76.7% of respondents rated EMR implementation as very appropriate, while 70.0% rated work efficiency as very appropriate. Simple linear regression produced a positive coefficient ($B = 0.174$), $t = 4.781$, and $p < 0.001$, indicating a statistically significant positive association between EMR implementation and work efficiency. The findings indicate that strengthening technological infrastructure, network stability, and user competence may support more effective EMR utilization.

INTRODUCTION

Hospitals are health service institutions that are required to provide effective, efficient, and quality services, including appropriate management of patient health information. The increasing use of information technology has encouraged health facilities to move from paper-based documentation toward Electronic Medical Records (EMR). EMR provides a digital mechanism for recording, storing, retrieving, and managing patient information and is expected to improve the efficiency and quality of health services (Ariani, 2023; Wahyuni & Oktavia, 2022).

EMR can support structured data management, faster retrieval of patient information, integration across service units, and more timely access to health information. Previous studies cited in the source document indicate that EMR may accelerate registration processes, reduce data-entry errors, and improve productivity among medical records personnel. Nevertheless, implementation is not automatically free from barriers. Network instability, application errors, inadequate infrastructure, limited training, and organizational readiness may reduce the practical benefits of digital systems (Alfitasari et al., 2025; Salsabila & Sari, 2026).

The Indonesian health system has also strengthened the implementation of EMR through national policy, including Minister of Health Regulation No. 24 of 2022 on Medical Records. In practice, the benefits of EMR depend not only on the availability of software and hardware but also on human resources, organizational support, usability, and environmental pressures. These dimensions are consistent with the Technology–Organization–Environment (TOE) framework used in the source study (Tornatzky & Fleischer, 1990).

Preliminary observations at Sitti Khadijah Mother and Child Hospital, Gorontalo, identified unstable internet connections and occasional EMR application errors during service delivery. Under normal conditions, registration was reported to take approximately 3–5 minutes per patient, whereas network or application problems could extend the process to approximately 10–15 minutes. Such interruptions can increase queues and create repeated work for medical records officers. Therefore, this study examined whether EMR implementation is associated with the work efficiency of medical records officers at the hospital.

METHODS

This study used a quantitative analytic approach with a cross-sectional design. Data collection was conducted at Sitti Khadijah Mother and Child Hospital, Gorontalo, in May 2026. The population comprised 30 personnel using EMR in the hospital, and all 30 were included through total sampling. The independent variable was EMR implementation, while the dependent variable was the work efficiency of medical records officers.

EMR implementation was assessed using indicators derived from the study framework: technological readiness, human resources, organizational support, ease of use, and environmental pressure. Responses were measured using a five-point Likert scale. Work efficiency was defined as the ability of medical records officers to complete their work quickly, accurately, and effectively after EMR implementation.

The questionnaire contained 30 items. Validity was assessed using Pearson Product Moment correlation, and reliability was assessed using Cronbach's alpha. Data analysis included descriptive analysis, normality testing, multicollinearity and heteroscedasticity assessment as reported in the source study, and simple linear regression. Statistical significance was evaluated at $\alpha = 0.05$.

RESULTS

Instrument Validity and Reliability

All 30 questionnaire items were declared valid. The calculated correlation coefficients ranged from 0.498 to 0.865, exceeding the reported r-table value of 0.463. The highest correlation was observed for items P09 and P24 ($r = 0.865$), while the lowest was P13 ($r = 0.498$). Cronbach's alpha was 0.954, indicating a high level of internal consistency and supporting the use of the instrument for the study.

Assumption Testing

The One-Sample Kolmogorov-Smirnov test produced an Asymp. Sig. (2-tailed) value of 0.515, which was greater than 0.05, indicating normally distributed residuals. Tolerance values ranged from 0.340 to 0.651 and VIF values from 1.536 to 2.938, meeting the criteria reported in the source study and indicating no multicollinearity problem. The scatterplot assessment also indicated no systematic residual pattern, supporting the homoscedasticity assumption.

Descriptive Findings

Table 1. EMR Implementation

Category	n	%
Very appropriate	23	76.7
Appropriate	6	20.0
Less appropriate	1	3.3
Total	30	100.0

Most respondents (76.7%) rated EMR implementation as very appropriate, 20.0% rated it appropriate, and 3.3% rated it less appropriate. Overall, the distribution indicates that EMR implementation was perceived positively by the respondents, while a small proportion still identified room for improvement.

Table 2. Work Efficiency of Medical Records Officers

Category	n	%
Very appropriate	21	70.0
Appropriate	7	23.3
Less appropriate	2	6.7
Total	30	100.0

Regarding work efficiency, 70.0% of respondents rated their efficiency as very appropriate, 23.3% as appropriate, and 6.7% as less appropriate. The results therefore show that most respondents perceived their work as efficient following EMR implementation.

Regression Analysis

Table 3. Simple Linear Regression of EMR Implementation on Work Efficiency

Variable	B	t	p
Constant	3.382	0.838	0.409
EMR implementation	0.174	4.781	<0.001

The regression coefficient for EMR implementation was positive ($B = 0.174$), with $t = 4.781$ and $p < 0.001$. The regression equation reported in the study was $Y = 3.382 + 0.174X$. Thus, within the model, a one-unit increase in the EMR implementation score was associated with a 0.174-unit increase in the work-efficiency score, assuming

other conditions remained constant. The statistical test reported in the source study therefore supported a significant positive effect of EMR implementation on work efficiency.

Indicator-Level Findings

The source study also reported separate analyses of the EMR implementation dimensions. Technological readiness had a positive and statistically significant relationship with work efficiency ($B = 0.550$; $p = 0.006$). The overall discussion further reported that environmental pressure was statistically significant, whereas human resources, organizational support, and ease of use were not statistically significant in the partial analysis. These findings suggest that the contribution of individual EMR implementation dimensions was not uniform.

DISCUSSION

The descriptive findings indicate that EMR implementation was generally perceived as very appropriate. This result is consistent with the intended role of EMR in facilitating digital storage, retrieval, and exchange of patient information. When digital records are available in a structured form, medical records officers can reduce dependence on physical files and access information more directly. The source document relates these benefits to improved efficiency in documentation and service processes (Ariani, 2023; Wahyuni & Oktavia, 2022).

At the same time, the study identified technical interruptions as an important practical consideration. Preliminary observations documented slow network connections, long application loading, failed data saving, automatic logout, and access difficulties when many users accessed the system simultaneously. These problems illustrate that the existence of an EMR system does not by itself guarantee uninterrupted efficiency. Infrastructure reliability and technical support remain important conditions for realizing the intended benefits of digitalization.

The significant positive regression result indicates that higher EMR implementation scores were associated with higher work-efficiency scores among the 30 respondents. The positive coefficient is consistent with the conceptual expectation that electronic access to patient information can shorten administrative processes and facilitate coordination. The finding also corresponds with studies cited in the source document reporting improvements in service speed, productivity, and management of medical records following EMR implementation.

The indicator-level findings provide additional detail. Technological readiness was significant, with $B = 0.550$ and $p = 0.006$. This result is consistent with the observed importance of computers, applications, networks, and technical infrastructure. The study also reported environmental pressure as significant, suggesting that external demands associated with digital health transformation and service expectations may contribute to EMR use. In contrast, human resources, organizational support, and ease of use were not statistically significant in the partial analysis. These non-significant results should not be interpreted as meaning that such factors are unimportant in general; rather, within this sample and measurement framework, they did not show statistically significant partial effects.

The findings can be interpreted through the Technology–Organization–Environment framework. The framework emphasizes that technology adoption is shaped by technological characteristics, organizational conditions, and environmental influences. In this study, the significant role of technological readiness and environmental pressure supports the relevance of considering both internal technical capacity and external conditions when evaluating EMR implementation. The source study therefore recommends continued infrastructure improvement, network stabilization, user training, and periodic system evaluation.

LIMITATIONS

Several limitations should be considered. First, the study was conducted at a single hospital with 30 respondents, so the findings describe the conditions at that setting and should not automatically be generalized to other hospitals. Second, the study used questionnaire-based measurements, making the findings dependent on respondent perceptions and potentially subject to response bias. Third, the cross-sectional design captures conditions during one period and cannot establish how the relationship may change over time. Fourth, the independent variables were limited to selected EMR implementation dimensions; other factors such as workload, experience, motivation, leadership, organizational culture, internet quality, and technical support were not examined in the reported model.

CONCLUSION

EMR implementation at Sitti Khadijah Mother and Child Hospital, Gorontalo, was generally rated as very appropriate, with 76.7% of respondents in that category. Work efficiency was also predominantly rated as very appropriate, at 70.0%. The instrument demonstrated strong validity and reliability, with all 30 items meeting the reported validity criterion and Cronbach's alpha of 0.954. Simple linear regression showed a positive and statistically significant relationship between EMR implementation and work efficiency ($B = 0.174$; $t = 4.781$; $p < 0.001$). At the indicator level, technological readiness and environmental pressure were reported as significant, whereas human resources, organizational support, and ease of use were not statistically significant in the partial analysis.

The hospital may use these findings as an evaluation basis for maintaining and improving EMR infrastructure, particularly network stability and system reliability, while continuing user training and periodic system evaluation. Future studies may involve larger samples, multiple hospitals, longitudinal designs, and additional variables such

as workload, user satisfaction, system quality, information quality, organizational culture, and management support.

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