International Journal of Health Science and Technology e-ISSN 2685-8673
Vol. 6, No. 3 (2025), pp. (193-204)
https://doi.org/10.31101/ijhst.v6i3.3897

Original Research Paper

Evaluation of electronic medical records implementation in outpatient services at the Hospital using MMUST Framework

Dinda Isnaini Asri*, Savitri Citra Budi
Health Information Management, Vocational College, Universitas Gadjah Mada, Yogyakarta, Indonesia
dinda.isnaini.asri@mail.ugm.ac.id

Submitted: October 16, 2024 Revised: February 25, 2025 Accepted: March 10, 2025

Abstract
The implementation of electronic medical records (EMR) is mandatory in Indonesia to improve efficiency and service quality. However, challenges remain in information quality and facility conditions. This study employed a mixed-methods approach with a concurrent embedded design, conducted from June to September 2024. Quantitative data were collected through a survey of 116 outpatient EMR users and analyzed using Partial Least Square-Structural Equation Modeling (PLS-SEM) with SmartPLS 4.1.0.6. Qualitative data gathered through interviews, were analyzed thematically. The result showed that five out of six hypotheses were accepted. Information quality significantly influenced information satisfaction, performance expectations, attitude, overall satisfaction, and net benefits. However, facility conditions did not significantly affect attitude. Qualitative findings confirmed these results and emphasized the importance of information quality, ease of access, efficiency, and infrastructure improvements in ensuring system effectiveness. EMR implementation is beneficial but requires improvements in system usability, facility support, and periodic evaluation are necessary.

Keywords: electronic medical records (EMR); hospital information system; health services; technology adoption; usability

1. Introduction

Advances in information technology have significantly influenced the healthcare sector, offering numerous benefits for healthcare providers (Cholik, 2021). Research by Moller et al., (2017) indicates that information technology in healthcare enhances service accessibility, expands service access, facilitates digital health interventions, and opens up new research opportunities for developing health service theories and concepts. One of its key applications is the adoption of electronic medical records (EMR), replacing traditional paper-based systems and enhancing data documentation. Medical records serve as a vital tool for recording patient identity, diagnoses, treatments, procedures, and other essential healthcare services (Ministry of Health of the Republic of Indonesia, 2022).

(Government of Indonesia, 2014) mandates the implementation of EMR in all healthcare facilities, including hospitals. This mandate was reinforced by the Indonesian Minister of Health Regulation Number 24 of 2022, which set a deadline of December 31, 2023, for all healthcare facilities to implement EMR. Further emphasizing this requirement, Circular Letter Number HK.02.01/MENKES/1030/2023 mandates EMR integration with SatuSehat, with non-compliance resulting in administrative sanctions, including the removal of accreditation status for healthcare facilities failing to meet the July 31, 2024 deadline (Ministry of Health of the Republic of Indonesia, 2023). The urgency of EMR implementation is also reflected in The Directorate of Referral Health Services Strategic Plan 2020-2024, which targets 100% EMR adoption by referral hospitals by 2024 (Directorate of Referral Health Services, 2023). However, the Directorate of Referral Health Services

Government Agency Performance Accountability Report (LAKIP) in 2022 indicates that only 60% of referral hospitals have reached this stage (Directorate of Referral Health Services, 2022).

Along with these developments, the application of EMR has begun to feel its benefits and is considered to be able to improve the efficiency and quality of services. This aligns with the findings of Ariani, (2023), which states that EMR implementation can enhance service quality efficiency, improve work effectiveness, boost user satisfaction, facilitate more effective patient case management, and better collaboration between healthcare professionals. In addition, the implementation of EMR also offers many benefits for health service providers, such as increasing cost savings, effectiveness, and efficiency; facilitating access to clinical information; reducing the potential for errors in providing services to improve patient safety; improving data readability, strengthening continuity of care and reporting; maintaining patient data confidentiality; and supporting improved communication between healthcare professionals (Tiorentap, 2020).

Despite its benefits, several challenges hinder the full optimization of EMRs in hospitals. One key challenge is the quality of recorded information, often characterized by incompleteness, inaccuracy, and delays in data entry (Dewi et al., 2024). This needs attention because information quality is a crucial factor affecting the success of EMR implementation (Fitri et al., 2017). Another major challenge lies in facility conditions, including the readiness of equipment, user skills, and technological infrastructure support (Abbad, 2021). Research by Risdianty and Wijayanti (2019) underscores that proper facility conditions are essential for supporting users in operating EMR effectively. Insufficient facility conditions, such as unstable network systems, frequent system errors, and limited computer availability, can hinder EMR usage. Furthermore, the lack of user training and understanding presents additional obstacles, as limited familiarity with the EMR system can reduce their effectiveness of using EMR (Ariani, 2023).

Although EMRs have been widely adopted, most previous studies have primarily focused on adoption rates and user acceptance, often using models such as the Technology Acceptance Model (TAM) and the Unified Theory of Acceptance and Use of Technology (UTAUT), which emphasize voluntary adoption and user intention. However, research on EMR effectiveness in mandatory settings, particularly in Indonesia, remains limited. Given the challenges related to information quality, technological infrastructure, and user readiness, a more comprehensive evaluation is necessary.

Understanding user perceptions is essential for optimizing EMR systems, as these insights help identify practical issues faced by healthcare professionals in real-world settings. Thus, evaluating EMR implementation from a user-centered perspective can enhance system effectiveness and improve overall healthcare service quality (Burhan & Nadjib, 2023).

Based on these considerations, this study aims to evaluate the implementation of outpatient EMR at Bethesda Yogyakarta Hospital, a type B hospital that has implemented EMR in its outpatient unit since January 2016. Preliminary studies and fieldwork practices that have been carried out by researchers reveal persistent issues such as incomplete EMR data entry, the absence of regular review to ensure data completeness, and infrastructure constraints, including an insufficient number of computers relative to personnel. Additionally, the recorded information in outpatient EMRs is primarily designed to meet minimum regulatory standards and lacks specialized clinical details. These challenges highlight the need for a comprehensive evaluation to assess EMR effectiveness and identify areas for improvement.

To systematically evaluate EMR implementation, this study employs the Model for Mandatory Use of Software Technologies (MMUST) as its evaluation framework. Unlike other models, such as TAM and UTAUT, which primarily focus on voluntary adoption, MMUST is specifically designed for evaluating mandatory systems. It eliminates the intention variable and emphasizes factors such as attitudes toward the system and post-usage satisfaction. Furthermore, MMUST highlights the

importance of information quality in decision-making and net benefits to evaluate the overall impact of EMR implementation. By applying this framework, the study aims to generate accurate and comprehensive insights into the success of outpatient EMR implementation and identify key areas that require improvements.

2. Research Methods

This study used a mixed method with a concurrent embedded model to obtain a comprehensive understanding of the phenomenon under study (Creswell & Clark, 2018). The research was conducted from June to September 2024 at Bethesda Yogyakarta Hospital with a population of outpatient EMR users, namely doctors, nurses, pharmacists, medical recorders, psychologists, physical therapists, health analysts (medical laboratory technologists), and radiographers.

Quantitative data, as the main component, were collected through questionnaires with a minimum sample requirement of 72 respondents based on the Slovin calculation. A total of 156 questionnaires were distributed, and 116 questionnaires were analyzed. The sample was selected using purposive sampling. The research instrument referred to the Mandatory Use of Software Technologies (MMUST) model that had been modified by (Andriani et al., 2017) and had been tested for validity and reliability. Independent variables included information quality and facility conditions, while dependent variables comprised information satisfaction, performance expectations, attitudes, overall satisfaction, and net benefits. Data analysis was conducted using Partial Least Square-Structural Equation Modeling (PLS-SEM) with SmartPLS, which allowed testing of complex relationships between variables (Hair Jr et al., 2021).

Qualitative data, as a secondary component, were obtained through in-depth interviews with seven informants who were purposively selected based on their outpatient EMR use experience. The inclusion criteria included at least one year of EMR experience, different roles in EMR use, and willingness to provide information openly. Informants consisted of doctors, nurses, medical recorders, psychologists, physical therapists, health analysts (medical laboratory technologists), and radiographers. Data were analyzed using thematic analysis, and integration was performed during interpretation to deepen and explain the quantitative results.

This study was approved by the Research Ethics Committee of Bethesda Hospital Yogyakarta No.33/KEPK-RSB/V/2024. Participants were given complete information about the purpose and procedures of the study and signed informed consent. Data confidentiality was maintained with an anonymous code in analysis and reporting.

3. Results and Discussion

3.1.Results

Based on the initial estimation using the Slovin formula, the sample size determined for this study was 72 participants. However, to obtain more comprehensive data and minimize the risk of incomplete data, researchers distributed 156 questionnaires. Of these, 116 questionnaires were returned and could be processed. The following presents the characteristics of the respondents in this study.

Table 1a. Gender Characteristics of EMR Users

Characteristics	Frequency	Percentage (%)
Gender		
Male	30	26
Female	86	74

Source: Primary Data, 2024

Table 1b. Demographic and Professional Characteristics of EMR Users

Characteristics	Frequency	Percentage (%)
Age		
17-35	34	29
36-55	66	57
>55	16	14
Education		
High School	4	3
Diploma	57	49
Bachelor's Degree	29	25
Master's Degree/Doctorate	26	22
Position		
Doctor	21	18
Nurse	40	34
Medical Recorder	13	11
Pharmacist	15	13
Others	27	24
Working Period		
<1 Years	3	3
1-3 Years	7	6
>3 Years	106	91
Experience in using EMR		
<1 Year	5	4
1-3 Years	15	13
>3 Years	96	83

Source: Primary Data, 2024

Tables 1a and 1b present the characteristics of 116 EMR user respondents, with the majority of respondents being female (74%) and aged 36-55 years (57%). Most had a diploma educational background (49%) and work experience of more than 3 years (91%). The dominant professions were nurses (34%) and doctors (18%), with 83% of respondents having more than 3 years of EMR experience. This data indicates widespread EMR adoption but highlights the importance of considering the specific needs of each profession for optimal EMR effectiveness.

The data analysis process using PLS-SEM includes two stages of measurement model evaluation, which are as follows.

3.1.1. Measurement Model

This stage consists of a convergent validity test, a discriminant validity test, and a reliability test.

a. Convergent Validity Test.

Convergent validity is used to ensure that each indicator is able to explain the latent variable well. Based on the analysis results, all indicators have an outer loading above 0.708, indicating that the indicator can accurately measure the variable. In addition, the average variance extracted (AVE) value for all variables is above 0.50, meeting the convergent validity criteria. Thus, it can be concluded that all indicators and variables in this study meet the requirements of convergent validity.

b. Discriminant Validity Test

In this study, discriminant validity is tested to ensure that each latent variable is unique and does not overlap with other variables. The test was conducted using two methods, namely cross-loading analysis and Fornell-Larcker criteria.

Based on the analysis results, discriminant validity has been met. Cross-loading analysis shows that each indicator has a higher correlation with the variable it measures. Meanwhile, the Fornell-Larcker criterion confirms that the AVE square root value of each variable is greater than the correlation between variables. Thus, it can be concluded that all variables in this study meet the requirements of discriminant validity.

c. Reliability Test

In this study, a reliability test was conducted to ensure the consistency of indicators in measuring latent variables. The test results show that all latent variables have composite reliability and Cronbach's Alpha values greater than 0.70, which indicates acceptable reliability. Thus, the research instrument proved to be consistent and reliable in measuring the construct under study, so that all variables meet the reliability requirements and are suitable for further analysis.

3.1.2. Structural Model

Before evaluating the structural model, multicollinearity between variables was checked using the Inner Variance Inflation Factor (VIF). The analysis results show that all VIF values in this study are below 5, which indicates that there is no high correlation between predictor variables. This ensures that each variable contributes uniquely to the model, so the analysis remains valid and robust without distortion or instability caused by excessive correlation between variables.

After ensuring the absence of multicollinearity problems, the next step is to evaluate the significance and strength of the relationship between variables. In this study, significance is tested using the path coefficient, t-statistic, and p-value. A relationship is considered significant if the t-statistic value is greater than 1.658 (at the 5% significance level) and the p-value is less than 0.05.

Based on the analysis results presented in Table 2, 5 out of 6 hypotheses are accepted. The following are details of the hypothesis testing results:

Table 2. Hypotheses Result

	Hypotheses	Path Coefficient	T-Statistic	P-Value	Conclusion
H1:	Information Quality → Information Satisfaction	0.822	20.305	0.000	Accepted
H2:	Information Satisfaction → Performance Expectations	0.696	13.793	0.000	Accepted
H3:	Performance Expectations → Attittudes	0.736	11.604	0.000	Accepted
H4:	Facility Conditions → Attittudes	0.138	1.8933	0.058	Rejected
H5:	Attittudes → Overall Satisfaction	0.827	23.532	0.000	Accepted
H6:	Overall Satisfaction → Net Benefit	0.792	19.017	0.000	Accepted

Source: Primary Data, 2024

Based on the Table above, it can be concluded that most of the relationships between variables in this model are significant and support the proposed hypothesis. Only hypothesis 4 (Facility Condition → Attitude) is rejected because it is not statistically significant.

Based on the results of the hypothesis test shown in Table 2, the following is an explanation of the effect and significance of the relationship between variables.

a. Hypotheses 1

The results of the quantitative analysis show that information quality has a positive and significant effect on information satisfaction. This indicates that the better the quality of information received, the higher the level of information satisfaction felt by users. This finding is supported by the interview

results, where most informants revealed that the information produced by EMR is sufficient to meet their needs, and they are satisfied with its quality. One respondent stated, *"For now, it fulfills our daily operational needs."* (Informant 6).

The thematic analysis revealed that the completeness and accuracy of input data are key factors in improving user satisfaction. In addition, adapting the system to user's specific needs as well as updating the system and adopting more advanced technology are also considered important to sustainably improve user satisfaction.

b. Hypotheses 2

The results of quantitative analysis show that information satisfaction has a positive and significant effect on performance expectations. This indicates that the higher the perceived information satisfaction, the higher the performance expectations. The interview results support this finding. Most informants stated that EMR provides convenience, such as quick access to laboratory results and medical history, which improves work efficiency. As stated by Informant 3, *"EMR makes it easy for us to know previous medical history, it really helps the objectivity of the service."*

Nonetheless, some informants emphasized the need for further improvement, especially on system integration for laboratory and radiology orders, so that performance expectations can be achieved more optimally.

c. Hypotheses 3

The results of quantitative analysis show that performance expectations have a positive and significant effect on attitudes. This indicates that the higher the performance expectation, the better the attitude shown by users. This finding is supported by the interview results, where most informants stated that EMR makes their work easier, increases efficiency, and supports service objectivity. As stated by Informant 3, *"EMR makes it easy for us to know previous medical history, it really helps the objectivity of services."*

However, some informants emphasized the need for further improvement, especially on the integration of radiology photos into the EMR. Ast stated by Informant 4, *"The process of integrating radiology photos into the EMR needs to be improved so that clinicians can view x-rays directly in the EMR."*

Thus, high performance expectations can encourage positive attitudes towards the EMR. However, continuous improvements to the system and its integration are needed to further strengthen positive attitudes and maximize the benefits of the EMR.

d. Hypotheses 4

The results of quantitative analysis show that the condition of the facilities had no significant influence on user attitudes. However, the interviews revealed some specific issues that need to be improved. Informant 2 stated, *"Hardware and software are adequate, but some old devices need revitalization."* Meanwhile, Informant 7 added, *"The devices often hang, maybe because the RAM is lacking."* In addition, although IT staff support was rated as good, Informant 6 emphasized the need for a faster response to dynamic system changes. Thus, although facilities were rated as adequate, improvements in IT infrastructure and responsiveness are needed to optimize EMR usage and improve user satisfaction.

e. Hypotheses 5

The results of quantitative analysis show that attitude has a positive and significant effect on overall satisfaction. This finding indicates that the better the user's attitude, the higher the perceived

satisfaction. The interview results reinforced this finding. For example, Informant 3 stated, *"I strongly agree because it is now the era of digitalization, so electronic medical records are a must."* This positive attitude is also driven by the benefits of EMR in improving services, as stated by Informant 4, *"Agree because it supports services in the Radiology Installation."*

Most informants expressed satisfaction with the current system but remained open to further development. Some informants suggested improvements to the system's interface. For example, Informant 6 stated, *"The interface could be further developed as needed,"* while Informant 7 added, *"It would be even better if the design could be made more visually appealing."*

f. Hypotheses 6

The results of quantitative analysis show that overall satisfaction has a positive and significant effect on net benefits. This suggests that the higher the overall satisfaction users feel, the greater the net benefits. Interview results confirmed this, with informants highlighting the benefits of EMR such as improved service quality, time efficiency, resource savings, and patient safety. Informant 2 stated, *"EMR improves data quality and documentation, and minimizes medication errors,"* while Informant 4 added, *"EMR reduces patient identity and medication administration errors."* The ease of communication between health workers was also highlighted by Informant 5.

Nonetheless, Informant 3 stated, *"We are satisfied, but open to system changes,"* indicating an expectation of continuous improvement. Therefore, although user satisfaction contributes significantly to the net benefits of EMR, continuous system development is still required.

After evaluating the significance of the relationship between variables, the next step is to check the R-Square (R^2) and Predictive Relevance (Q^2) values. The R^2 value indicates the ability of the independent variables to explain the dependent variable, with the results of information satisfaction (0.675), attitude (0.678), overall satisfaction (0.684), and net benefits (0.628) being in the medium category, while performance expectations (0.484) are weak. This indicates that the model can explain the dependent variable, although there are still contributions from other factors.

In addition, the Q^2 values for all dependent variables exceed 0 and are above the 0.35, indicating that the PLS-SEM model has good predictive ability. Thus, this model is relevant and reliable in this study.

Furthermore, the effect size (f^2) analysis provides deeper insights into the contribution of each independent variable. All variables fall into the large category, with information satisfaction (2.08), attitudes (2.11), overall satisfaction (2.16), net benefits (1.69), and performance expectations (0.94) showing strong influences. This confirms that each predictor significantly contributes to the model, reinforcing its robustness.

3.2. Discussion

3.2.1. Hypothesis 1

This study confirms the positive and significant effect of information quality on outpatient EMR user satisfaction, in line with the findings of Deharja et al., (2023) dan Afkarina et al., (2021). User perceptions at Bethesda Yogyakarta Hospital indicate that EMR information quality has met daily operational needs, contributing to user satisfaction. In the MMUST framework, good information quality plays a role in increasing satisfaction and encouraging continued use of the system. However, user feedback indicated potential for improvement through improvements in data completeness and presentation format.

Therefore, periodic audits of the outpatient EMR following MRMIK standards, as outlined in Regulation No. 1596/2024 (Ministry of Health of the Republic of Indonesia, 2024), are recommended to identify data gaps and improve the recording process. Improving the format of EMR entries is also

essential to increase the effectiveness of using the system (Hadiyanto et al., 2020). In addition, system updates and the adoption of advanced technology can improve the quality of information and the efficiency of data management (Hermawan et al., 2024). Continuous efforts in improving data completeness, presentation format, system updates, and technology adoption are essential to optimize outpatient EMR user satisfaction.

3.2.2. Hypothesis 2

This study proves that information satisfaction has a positive and significant effect on the performance expectations of outpatient EMR users (Alfathia et al., 2021; Deharja et al., 2023; Pongmakamba & Tambotoh, 2023). Users at Bethesda Yogyakarta Hospital are satisfied with the ease of access to laboratory results, disease history, and the efficiency of radiology management which reduces manual workload. This finding strengthens the research of Deharja et al., (2023) which states that ease of access and completeness of patient data are key factors in improving the quality of health services.

Within the MMUST framework, information quality plays a significant role in increasing information satisfaction, which in turn impacts performance expectations. However, users still face barriers in system efficiency, especially in the integration of laboratory and radiology orders. Therefore, improving system integration is a crucial step to make EMR data management more effective and support the optimization of user performance (Hermawan et al., 2024).

3.2.3. Hypotheses 3

This study shows that performance expectations have a positive and significant effect on attitudes, in line with Deharja et al. (2023) and Alfathia et al. (2021). High-performance expectations encourage a positive attitude towards EMR. At Bethesda Yogyakarta Hospital, the ease of access to medical information and the efficiency of EMR in reducing manual workload created high-performance expectations that shaped user's positive attitudes (Deharja et al., 2023). However, users still expect better integration of radiology photos to improve system efficiency (Hermawan et al., 2024). Continuous optimization of EMR is needed to maintain positive attitudes and maximize the potential of the system.

3.2.4. Hypotheses 4

This study shows that facility conditions do not have a significant effect on attitudes, in contrast to the findings of Afkarina et al. (2021) and Faida et al. (2022). Although the condition of the facilities at Bethesda Yogyakarta Hospital is considered adequate, improvements are still needed in network stability, hardware revitalization, and software updates because limited facilities can hinder the maximum use of EMR (Putra et al., 2023). IT staff support was rated as good, but improvements in the speed of response to problems and system changes are needed. This is important given the need to consider innovation, facility conditions, and stability of EMR systems that are responsive to the needs of medical practitioners in the provision of health services, to ensure the effectiveness of EMR (Almarzouqi et al., 2022). Therefore, continuous infrastructure improvements, including improved network stability, hardware and software updates, and increased responsiveness of IT staff, are needed to support more effective EMR implementation and improve user satisfaction.

3.2.5. Hypotheses 5

This study shows that attitude has a positive and significant effect on overall satisfaction, in line with Deharja et al. (2023) and Afkarina et al. (2021). Positive user attitudes increase satisfaction because EMR makes work easier and faster (Afkarina et al., 2021). EMR users at Bethesda Yogyakarta Hospital

support digitalization and feel the benefits of EMR in improving services. Nonetheless, an attractive and user-friendly interface improvement is expected to optimize the experience (Hamdanuddinsyah et al., 2023). Therefore, maintaining a positive attitude through the development of a responsive system is essential to increase satisfaction with EMR.

3.2.6. Hypotheses 6

This study shows that overall satisfaction has a positive and significant effect on net benefits, in line with the findings of Deharja et al. (2023), Afkarina et al. (2021), and Pongmakamba & Tambotoh, (2023). The use of outpatient EMR at Bethesda Yogyakarta Hospital was shown to increase perceived net benefits in various aspects, including improved quality of care through data accuracy and diagnosis support, accelerated documentation, and improved quality of health workers (Deharja et al., 2023). Other benefits include improved communication, ease of service planning, and increased patient safety. Therefore, maintaining and improving user satisfaction through periodic evaluation and active participation (Dewi et al., 2021) is an important step to optimize the net benefits of outpatient EMR.

4. Conclusion

This study confirms that the quality of information in the outpatient EMR system at Bethesda Yogyakarta Hospital significantly enhances user satisfaction, which subsequently shapes performance expectations and cultivates positive attitudes toward the system. While facility conditions do not directly influence user attitudes, infrastructure optimization remains crucial to fully support EMR functionality. A favorable user attitude not only boosts overall satisfaction but also reinforces the system's benefits, including greater work efficiency, improved coordination among healthcare workers, and enhanced patient safety.

To further elevate system performance, strategic interventions are necessary such as implementing regular data audits, expediting laboratory and radiology integration, refining the user interface, and upgrading network infrastructure alongside IT team responsiveness. Continuous evaluation and user feedback mechanisms are equally vital to ensure the system's long-term relevance and effectiveness.

Theoretically, this study strengthens the MMUST model by highlighting the role of information satisfaction in shaping performance expectations and user attitudes. However, the study is limited to a single hospital. Future research should expand to multi-hospital settings, consider patient perspectives, and explore organizational factors such as culture, training, policies that influencing EMR adoption.

Acknowledgements

The researcher would like to thank the leadership of Bethesda Yogyakarta Hospital for the opportunity given to carry out this research. Our gratitude also goes to all outpatient officers who have been willing to take the time and provide valuable information as respondents and informants in this study. Your active participation is very meaningful for the success of this research.

Reference

Abbad, M. M. M. (2021). Using the UTAUT model to understand students usage of e-learning systems in developing countries. *Education and Information Technologies*, *26*(6), 7205–7224. https://doi.org/10.1007/s10639-021-10573-5

Afkarina, V. S. I., Wibowo, R., & Bukhori, S. (2021). Analisis kinerja SIMRS RSU Bhakti Husada Banyuwangi menggunakan IT Balanced Scorecard dan Model for Mandatory Use of Software Technologies. *Multidisciplinary Journal*, *4*(1), 14–20.

Afkarina, V. S. I., Wibowo, R., & Bukhori, S. (2021). Success analysis of hospital management information system using MMUST and IT Balanced Scorecard (Case study of Bhakti Husada General Hospital Banyuwangi). *Health Notions*, *5*(12), 419–425. https://doi.org/10.33846/hn51202

Alfathia, N., Ruliansyah., & Dalafranka, M. L. (2021). Analisis penerimaan dan penggunaan aplikasi E-LKP UIN Raden Fatah Palembang menggunakan Model for Mandatory Use of Software Technologies. *Journal of Computer and Information Systems Ampera*, *2*(3), 190–207.

Almarzouqi, A., Aburayya, A., & Salloum, S. A. (2022). Determinants predicting the electronic medical record adoption in healthcare: A SEM-artificial neural network approach. *PLOS ONE*, *17*(8), 1–29. https://doi.org/10.1371/journal.pone.0272735

Andriani, R., Kusnanto, H., & Istiono, W. (2017). Analisis kesuksesan implementasi rekam medis elektronik di RS Universitas Gadjah Mada. *Tesis.* Fakultas Kedokteran, Kesehatan Masyarakat, dan Keperawatan, Yogyakarta.

Ariani, S. (2023). Analisis keberhasilan implementasi rekam medis elektronik dalam meningkatkan efisiensi dan mutu pelayanan [Analysis of successful implementation of electronic medical records in improving efficiency and quality of services]. *Jurnal Kesehatan dan Kedokteran*, 2 (2), 7-14.

Burhan, L., & Nadjib, M. (2023). Hubungan persepsi pengguna terhadap keberhasilan implementasi rekam medis elektronik; Tinjauan literatur [The relationship of user perception to the successful implementation of electronic medical records; A literature review]. *Jurnal Kesehatan Tambusai*, *4*(2), 1532-1545.

Cholik, C. A. (2021). Perkembangan teknologi informasi komunikasi/ICT dalam berbagai bidang [Development of information communication technology/ICT in various fields]. *Jurnal Fakultas Teknik*, *2*(2), 39-46.

Creswell, J. W. & Clark, V. L. P. (2018). *Designing and conducting mixed methods research* (3rd ed). Los Angeles: SAGE Publications.

Dewi, T. S., Prahesti, R., & Markus, S. N. (2024). Hambatan implementasi rekam medis elektronik dengan metode HOT-Fit di RST Tk. II dr. Soedjono Magelang. *Jurnal Indonesia Sehat*, *3*(2), 62-73.

Dewi, W. S., Ginting, D., & Gultom, R. (2021). Evaluasi sistem informasi manajemen rumah sakit di instalasi rekam medis RSUP H. Adam Malik dengan Metode Human Organization Technology Fit (HOT-FIT) tahun 2019. *Jurnal Ilmiah Perekam Dan Informasi Kesehatan Imelda (JIPIKI)*, *6*(1), 73–82.

Direktorat Pelayanan Kesehatan Rujukan [Directorate of Referral Health Services]. (2022). *Laporan akuntabilitas kinerja instansi pemerintah tahun 2022* [Government agency performance accountability report 2022]. Jakarta: Direktorat Pelayanan Kesehatan Rujukan.

Direktorat Pelayanan Kesehatan Rujukan [Directorate of Referral Health Services]. (2023). *Rencana aksi kegiatan Direktorat Pelayanan Kesehatan tahun 2020-2024* [Action plan of the Directorate of Referral Health Services for 2020-2024]. Jakarta: Direktorat Pelayanan Kesehatan Rujukan.

Deharja, A., Waskito, D. Y., Rachmawati, E., Vestine, V. (2023). Electronic medical records implementation at Soeradji Tirtonegoro Hospital, Klaten, Indonesia. *Unnes Journal of Public Health*, *12*(2), 104–115. https://doi.org/10.15294/ujph.v12i2.67972

Faida, E. W., Supriyanto, S., Haksama, S., Markam, H., & Ali, A. (2022). The acceptance and use of electronic medical records in developing countries within the Unified Theory of Acceptance and Use of Technology framework. *Open Access Macedonian Journal of Medical Sciences*, *10*(E), 326–336. https://doi.org/10.3889/oamjms.2022.8409

Fitri, A. R. A., Suprapto., & Aknuranda, I. (2017). Analisis kesuksesan implementasi rekam medis elektronik (RME) pada klinik pratama menggunakan model Human Organisation Technology-Fit. *Jurnal Pengembangan Teknologi Informasi dan Ilmu Komputer*, *8*(10).

Hadiyanto, M., Purnami, C. ., & Mawarni, A. (2020). Hubungan kualitas informasi sistem informasi rekam medis rawat jalan elektronik dengan kepuasan pengguna di RSUD Dr. (H.C) Ir. Soekarno. *Jurnal Kesehatan Masyarakat (e-Journal)*, *8*(6), 739–745.

Hair Jr, J. F., Hult, G. T. M., Ringle, C. M., Sarstedt, M., Danks, N. P., & Ray, S. (2021). *Partial least squares structural equation modeling (PLS-SEM) using R.* Springer Nature.

Hamdanuddinsyah, M. H., Hanafi, M., & Sukmasetya, P. (2023). Perancangan UI/UX aplikasi buku online mizanstore berbasis mobile menggunakan user centered design. *Journal of Information System Research (JOSH)*, *4*(4), 1464–1475.

Hermawan, P., Abdussalaam, F., & Sari, I. (2024). Perancangan sistem informasi pengolahan data rekam medis elektronik guna menunjang tata kelola pelaporan rawat jalan [Design of electronic medical record data processing information system to support outpatient reporting governance]. *Jurnal Indonesia: Manajemen Informatika Dan Komunikasi*, *5*(3), 2158–2169.

Kementerian Kesehatan Republik Indonesia [Ministry of Health of the Republic of Indonesia]. (2022). *Peraturan Menteri Kesehatan Republik Indonesia Nomor 24 Tahun 2022 tentang rekam medis* [Regulation of the Minister of Health of the Republic of Indonesia Number 24 of 2022 concerning medical records]. Jakarta: Kementerian Kesehatan Republik Indonesia.

Kementerian Kesehatan Republik Indonesia [Ministry of Health of the Republic of Indonesia]. (2023). *Surat Edaran Nomor HK.02.01/MENKES/1030/2023 tentang penyelenggaraan rekam medis elektronik di fasilitas pelayanan kesehatan serta penerapan sanksi administratif dalam rangka pembinaan dan pengawasan* [Circular Letter Number HK. 02. 01/MENKES/1030/2023 concerning the implementation of electronic medical records in healthcare facilities and the application of administrative sanction in the context of guidance and supervision]. Jakarta: Kementerian Kesehatan Republik Indonesia.

Kementerian Kesehatan Republik Indonesia [Ministry of Health of the Republic of Indonesia]. (2024). *Keputusan Menteri Kesehatan Republik Indonesia Nomor HK.01.07/MENKES/1596/2024 tentang standar akreditasi rumah sakit* [Regulation of the Minister of Health of the Republic of Indonesia Number HK.01.07/MENKES/1596/2024 concerning hospital accreditation standards]. Jakarta: Kementerian Kesehatan Republik Indonesia.

Moller, A. C., Merchant, G., Conroy, D. E., West, R., Hekler, E., Kugler, K. C., Michie, S. (2017). Applying and advancing behavior change theories and techniques in the context of a digital health revolution: Proposals for more effectively realizing untapped potential. *Journal of Behavioral Medicine*, *40*, 85–98. https://doi.org/10.1007/s10865-016-9818-7

Pemerintah Republik Indonesia [Government of Indonesia]. (2014). *Peraturan Pemerintah Nomor 46 Tahun 2014 tentang sistem informasi kesehatan* [Government Regulation Number 46 of 2014 concerning health information systems]. Jakarta: Kementerian Hukum dan Hak Asasi Manusia.

Pongmakamba, C. Y. & Tambotoh, J. J. C. (2023). Evaluasi sistem informasi akademik Satya Wacana menerapkan Model for Mandatory Use of Software Technologies. *JURIKOM (Jurnal Riset Komputer)*, *10*(2), 387–395. https://doi.org/10.30865/jurikom.v10i2.5837

Putra, N. G. D., Nurdin., & Handri (2023). Analysis of e-medical record utilization with UTAUT method to perceive behavioral intentions and behavioral use. *Jurnal Bisnis dan Manajemen*, *3*(1), 120–135.

Risdianty, N. & Wijayanti, C. D. (2019). Evaluasi penerimaan sistem teknologi rekam medik elektronik dalam keperawatan [Evaluation of electronic medical record technology system acceptance in nursing]. *Carolus Journal of Nursing*, *2*(1), 28-36.

Tiorentap, D. R. A. (2020). Evaluasi manfaat penerapan rekam medis elektronik di negara berkembang: Systematic literature review [Evaluation of the benefits of electronic medical record implementation in developing countries: A systematic literature review]. *Indonesian Of Health Information Management Journal (INOHIM)*, *8*(2), 69-79.