

IMPROVING THE IMPLEMENTATION OF ELECTRONIC MEDICAL RECORDS THROUGH ACCURACY, CONTENT, FORMAT, EASE OF USE, AND TIMELINESS IN THE EUCS METHOD AT THE OUTPATIENT DEPARTMENT OF DR. SOEDARSONO GENERAL HOSPITAL, PASURUAN

PENINGKATAN IMPLEMENTASI REKAM MEDIS ELEKTRONIK MELALUI AKURASI, ISI, FORMAT, KEMUDAHAN PENGGUNAAN, DAN KETEPATAN WAKTU DALAM METODE EUCS DI POLIKLINIK RUMAH SAKIT UMUM DR. SOEDARSONO, PASURUAN

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ABSTRACT

Medical records constitute one of the most essential types of hospital information. Pursuant to the Regulation of the Minister of Health of the Republic of Indonesia (PMK No. 24 of 2022) concerning Electronic Medical Records, electronic medical records are those created, stored, managed, and utilised through electronic media that meet predetermined standards, thereby ensuring authenticity, integrity, confidentiality, and availability for patients, healthcare professionals, and authorised parties. This study aimed to evaluate the electronic medical record (EMR) system from the user perspective in the Outpatient Department of Dr. R. Soedarsono Regional General Hospital, Pasuruan. A descriptive quantitative approach was applied, involving healthcare personnel employed in the Outpatient Department (n = 98). Data were collected using structured questionnaires administered through in-depth interviews. Descriptive statistical analysis was employed, with results categorised according to six evaluation dimensions. The findings demonstrated the following: (1) the content dimension obtained an average mean score of 3.33 (66.6%), categorised as high; (2) the accuracy dimension obtained a mean score of 3.248 (78.07%), categorised as very high; (3) the format dimension obtained a mean score of 3.29 (75.56%), categorised as very high; (4) the ease of use dimension obtained a mean score of 3.17 (73.85%), categorised as very high; and (5) the timeliness dimension obtained a mean score of 2.9 (72.55%), also categorised as very high. This research contributes to the growing body of literature regarding the application of the End-User Computing Satisfaction (EUCS) method in evaluating EMR implementation and provides valuable insights for the optimisation of EMR systems in hospital outpatient services.

Keywords: *Electronic Medical Record, EUCS*

ABSTRAK

Salah satu jenis informasi terpenting yang dimiliki rumah sakit adalah rekam medis. Menurut peraturan menteri kesehatan (PMK) No 24 Tahun 2022 tentang Rekam Medis Elektronik, rekam medis elektronik yakni yang diciptakan, di simpan, di kelola, dan digunakan dengan menggunakan media elektronik yang memenuhi kriteria tertentu, sehingga dapat menjamin keaslian, integrasi, kerahasiaan, dan ketersediannya untuk keperluan pasien, tenaga kesehatan, dan pihak yang berwenang. Penelitian ini bertujuan untuk mengevaluasi sistem rekam medis elektronik dari perspektif pengguna di Rawat Jalan RSUD Dr.R.Soedarsono Pasuruan. Metode penelitian yang digunakan adalah deskriptif dengan pendekatan kuantitatif. Sampel terdiri dari petugas kesehatan yang bekerja di Instalasi Rawat Jalan di RSUD Dr.R.Soedarsono Pasuruan (n=98). Instrumen pengumpulan data dilakukan dengan wawancara mendalam menggunakan kuesioner. Analisis data dilakukan menggunakan analisis statistik deskriptif dan rentang nilai yang terdapat dalam enam kriteria. Hasil penelitian menunjukkan : 1) Dimensi isi (content) memiliki rata – rata nilai mean 3,33 dengan prosentase 66,6% yang artinya masuk dalam kriteria tinggi. 2) Dimensi keakuratan (accuracy) rata – rata nilai mean 3,248 dengan prosentase 78,07% yang artinya masuk dalam kriteria sangat tinggi. 3) Dimensi tampilan (format) rata – rata nilai mean 3,29 dengan prosentase 75,56% yang artinya masuk dalam kriteria sangat tinggi. 4) Dimensi kemudahan pengguna (ease of use) rata – rata nilai mean 3,17 dengan prosentase 73,85% yang artinya masuk dalam kriteria sangat tinggi. 5) Dimensi ketepatan waktu (timeliness) rata – rata nilai mean 2,9 dengan prosentase 72,55% yang artinya masuk dalam kriteria sangat tinggi. Penelitian ini menjadi tambahan literatur dan tambahan informasi untuk penelitian yang berkaitan dengan Penggunaan RME dengan metode EUCS.

Kata Kunci: Rekam Medis Elektronik, EUCS.

INTRODUCTION

Medical records represent one of the most crucial types of information managed by hospitals. They comprise comprehensive patient data, whether in written or electronic form, including demographic details, clinical examination results, treatment plans, surgical procedures, and other healthcare services provided to patients. With the rapid development of information and communication technologies, coupled with regulatory directives from the Ministry of Health of the Republic of Indonesia, hospitals have increasingly transitioned from paper-based medical records to electronic medical records (EMR) (Izza and Lailiyah, 2024).

According to the Regulation of the Minister of Health (PMK) No. 24 of 2022 concerning Electronic Medical Records, electronic medical records are records that are created, stored, managed, and utilised through electronic media that meet specific criteria, thereby ensuring their authenticity, integrity, confidentiality, and availability for patients, healthcare professionals, and authorised parties. The primary objective of implementing Electronic Medical Records (EMR) is to enhance the quality of healthcare services by enabling faster and more accurate storage, processing, and exchange of information between healthcare providers and patients. Findings from previous research conducted at Cililin Regional General Hospital in 2024 indicate that, although EMR has the potential to accelerate and simplify work processes, its implementation has not been fully optimised due to limitations in the application's functionality. The introduction of EMR fundamentally transforms the medical recording process from a conventional paper-based system to a computerised, paperless

system, which is expected to expedite the provision of medical record documentation, particularly in outpatient services. However, at Dr. R. Soedarsono Regional General Hospital, the implementation has not yet achieved optimal performance. This limitation arises because the EMR system has only been in operation since August 2024, leaving several aspects requiring improvement, particularly from the user perspective, where various challenges remain in its practical application.

To ensure that the EMR system operates effectively and yields positive outcomes, it is necessary to conduct a systematic analysis and evaluation of its implementation. Therefore, this study aims to evaluate the suboptimal adoption of EMR within the outpatient service unit of Dr. R. Soedarsono Regional General Hospital in Pasuruan.

RESEARCH METHOD

This study employed a descriptive quantitative research approach. A hypothesis was used to assess the average level of user satisfaction among respondents. The study did not involve independent or dependent variables; rather, it focused on a single construct, namely End-User Computing Satisfaction (EUCS), which was operationalised into five sub-dimensions: content, accuracy, format, ease of use, and timeliness.

The research was conducted at Dr. R. Soedarsono Regional General Hospital, Pasuruan, between June and July 2025. The study population consisted of healthcare professionals and supporting staff working in the Outpatient Department of the hospital. A proportional stratified random sampling technique was employed to determine the sample. The final sample included physicians, nurses, and medical record

officers actively utilising the EMR system in their daily clinical practice when examining patients at the outpatient clinic.

RESULTS AND DISCUSSION

Content Dimension of EMR

Descriptive statistical analysis was performed on all attributes of the content dimension, including the calculation of the mean, median, mode, variance, and standard deviation. The assessment results of the content dimension using the EUCS method are presented in Table 1.

Table 1. Analysis of Content Variables

Item Content ©	Mean	Median	Modus	Variation	Std. Deviation
C1	3.14	3	3	0,198	0,445
C2	3.13	3	3	0,215	0,463
C3	3.32	3	3	0,527	0,726
C4	3.73	3	4	0,377	0,614

Source: Primary Data, 2025

Subsequent calculations using the value range formula were applied to

classify and summarise the results, as shown in Table 2.

Table 2. Results of Content Variable Analysis

Item Content ©	Mean	Highest Scale		Criteria
		Value	Percentage	
C1	3,14	5	62,8%	High
C2	3,13	5	62,6%	High
C3	3,32	5	66,4%	High
C4	3,73	5	74,6%	High

Source: Primary Data, 2025

Interpretation of the overall findings revealed a mean score of 3.33, corresponding to 66.6%, indicating that the content dimension of the EMR system was categorised as high.

Descriptive statistical analysis was also conducted for the accuracy dimension by calculating the mean, median, mode, variance, and standard deviation. The results of the EUCS method assessment for this dimension are presented in Table 3.

Accuracy Dimension of EMR

Table 3. Analysis of Accuracy Variables

Item accuracy	Mean	Median	Modus	Variation	Std. Deviation
A1	2,95	3	3	0,151	0,389
A2	3,13	3	3	0,215	0,463
A3	3,77	4	4	0,255	0,505
A4	3,47	4	4	0,329	0,574
A5	2,92	3	3	0,251	0,501

Source: Primary Data, 2025

Subsequent calculations of the accuracy variable employed a value range formula, enabling the results to be systematically grouped and interpreted

to draw appropriate conclusions regarding the variable.

Table 4. Results of Accuracy Variable Analysis

Item		Highest		
accuracy	Mean	Scale	Value	Percentage
A1	2,95	4	73,75%	High
A2	3,13	5	62,6%	High
A3	3,77	4	94,25%	Very High
A4	3,47	4	86,75%	Very High
A5	2,92	4	73%	High

Source: Primary Data, 2025

The overall interpretation demonstrated that the accuracy dimension achieved a mean score of 3.248, equivalent to 78.07%, thereby placing it within the category of very high.

Format Dimension of EMR

The format dimension was analysed through descriptive statistics, including mean, median, mode, variance, and standard deviation. The EUCS method evaluation for this variable is presented in Table 5.

Table 5. Analysis of Format Variables

Item					Std.
format	Mean	Median	Modus	Variation	Deviation
F1	3,18	3	3	0,250	0,500
F2	3,13	3	3	0,240	0,490
F3	3,80	4	4	0,292	0,540
F4	3,68	4	4	0,245	0,495
F5	3,41	3	3	0,270	0,519
F6	3,34	3	3	0,305	0,552
F7	2,90	3	3	0,220	0,469
F8	2,86	3	3	0,224	0,473

Source: Primary Data, 2025

The results were subsequently grouped using the value range formula, as summarised in Table 6.

Table 6. Results of Format Variable Analysis

Item		Highest		
format	Mean	Scale	Value	Percentage
F1	3,18	4	79,5%	Very High
F2	3,13	5	62,6%	High
F3	3,80	5	76%	Very High
F4	3,68	5	73,6%	Very High
F5	3,41	4	85,25%	Very High
F6	3,34	4	83,5%	Very High
F7	2,90	4	72,5%	Very High
F8	2,86	4	71,5%	Very High

Source: Primary Data, 2025

The interpretation of findings indicated that the format dimension had a mean score of 3.29, corresponding to

75.56%, which was categorised as very high.

Ease of Use Dimension of EMR

Descriptive calculations were similarly carried out for the ease of use dimension, with mean, median, mode,

variance, and standard deviation computed. The EUCS method assessment results for this variable are presented in Table 7.

Table 7. Analysis of Ease of Use Variables

Item ease of use	Mean	Median	Modus	Variaton	Std. Deviation
E1	3,00	3	3	0,103	0,320
E2	3,70	4	4	0,342	0,585
E3	3,81	4	4	0,258	0,508
E4	2,85	3	3	0,182	0,426
E5	2,90	3	3	0,246	0,496
E6	2,91	3	3	0,210	0,458
E7	3,01	3	3	0,090	0,299

Source: Primary Data, 2025

Subsequent calculations of the ease-of-use variable employed a value range formula, thereby allowing the

results to be systematically grouped and synthesized.

Table 8. Results of Ease-of-Use Variable Analysis

Item ease of use	Mean	Highest Scale Value	Percentage	Criteria
E1	3,00	4	75%	Very High
E2	3,70	5	74%	Very High
E3	3,81	5	76,2%	Very High
E4	2,85	4	71,25%	Very High
E5	2,90	4	72,5%	Very High
E6	2,91	4	72,75%	Very High
E7	3,01	4	75,25%	Very High

Source: Primary data from 2025 research

Based on the overall assessment of the ease of use variable, the mean score obtained was 3.17 with a corresponding percentage of 73.85%. Accordingly, it can be concluded that the ease of use variable falls within the category of very high.

Descriptive statistical analysis was also performed on all attributes of the timeliness dimension, including the calculation of the mean, median, mode, variance, and standard deviation. The results of the EUCS method evaluation of the timeliness variable are presented in Table 9.

Timeliness Dimension of EMR**Table 9. Analysis of Timeliness Variables**

Item timeliness	Mean	Median	Modus	Variation	Std. Deviation
T1	2,96	3	3	0,140	0,374
T2	3,00	3	3	0,256	0,506
T3	2,68	3	3	0,424	0,651
T4	2,87	3	3	0,189	0,435
T5	3,00	3	3	0,128	0,358

Source: Primary Data, 2025

Further calculations using the value range formula were applied to

classify and summarise the findings, as shown in Table 10.

Table 10. Results of Timeliness Variable Analysis

Item timeliness	Mean	Highest Scale Value	Percentage	Criteria
T1	2,96	4	74%	Very High
T2	3,00	4	75%	Very High
T3	2,68	4	67%	High
T4	2,87	4	71,75%	Very High
T5	3,00	4	75%	Very High

Source: Primary Data, 2025

Interpretation of the findings indicated that the timeliness dimension achieved a mean score of 2.9, corresponding to 72.55%, thereby placing it within the very high category.

Conclusion and Recommendations

CONCLUSION

1. The content dimension of the EMR, evaluated using the EUCS method in the Outpatient Department of Dr. R. Soedarsono Regional General Hospital, was categorised as high, indicating that the information provided by the EMR system is sufficiently complete, relevant, and aligned with user needs.
2. The accuracy dimension of the EMR was categorised as very high, reflecting that the information generated by the system is highly precise and reliable.
3. The format dimension of the EMR was categorised as very high, demonstrating that the system displays information in a clear, consistent, and user-friendly manner.
4. The ease of use dimension of the EMR was categorised as very high, signifying that users find the system convenient and efficient to operate in daily clinical practice.
5. The timeliness dimension of the EMR was also categorised as very high, suggesting that the system is effective in providing information within an

appropriate timeframe to support clinical decision-making.

Recommendations

1. For Hospitals
Hospitals are advised to provide continuous training and capacity-building programmes for healthcare personnel to enhance the utilisation of EMRs. Improvements should be carried out in accordance with Minister of Health Regulation No. 24 of 2022 on Electronic Medical Records and Law No. 27 of 2022 on Personal Data Protection, ensuring compliance with national health information management policies and data protection regulations.
2. For Health Education Institutions
Health education institutions may expand upon this research by exploring strategies to improve the implementation of EMRs, with particular attention to dimensions such as accuracy, content, ease of use, and timeliness within the EUCS framework.
3. For Future Researchers
Future studies are encouraged to build upon these findings, thereby enriching the literature on EMR evaluation using the EUCS method. Expanding research to include additional hospitals, broader populations, and advanced analytical models will provide deeper insights

into the optimisation of EMR systems in healthcare settings.

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