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Research Article

Satisfaction of MERSI EMR Users in the Emergency Department of Cengkareng Regional Hospital Through the End User Computing Satisfaction (EUCS) Approach

Ahmad Bukhori [1*], Dina Sonia [2], Bangga Agung Satrya [3], Muhammad Fuad Iqbal [4]

[1-4] Universitas Esa Unggul, Indonesia; e-mail : Bukhori.ba@student.esaunggul.ac.id
* Corresponding Author : Ahmad Bukhori

Abstract: The implementation of an Electronic Medical Record (EMR) system in the Emergency Department (ED) is a crucial aspect in supporting rapid response to patient care. In emergency situations, the speed and accuracy of information are vital, necessitating research to measure user satisfaction with the MERSI EMR system. This evaluation aims not only to assess user satisfaction but also to identify system weaknesses to improve efficiency, responsiveness, and effectiveness in supporting services in the ED. This study aims to determine user satisfaction with the MERSI system at the ED of RSUD Cengkareng using the End User Computing Satisfaction (EUCS) approach. A quantitative descriptive method was used with a quota sampling technique. The population consisted of 51 medical personnel operating the MERSI system in the ED. The results showed that for the Content variable, 88.2% of respondents were satisfied and 11.8% were not. For Accuracy, 80.4% were satisfied and 19.6% were not. For Format, 88.2% were satisfied and 11.8% were not. For Timeliness, 82.4% were satisfied and 17.6% were not. Meanwhile, for Ease of Use, 64.7% were satisfied and 35.3% were not. These findings indicate that the overall operation of MERSI has met user expectations, particularly in terms of information relevance, data accuracy, and interface design. The study recommends integrating MERSI with the hospital information system (SIMRS) as a backup effort to enhance the efficiency and reliability of healthcare services in the ED. Additionally, integration with a bridging system similar to BPJS PCare is expected to enable online access to patient medical records. Training for medical personnel should also be improved to optimize the use of the EMR system.

Keywords: Electronic Medical Record; Emergency Department; End User Computing Satisfaction (EUCS); User Satisfaction.

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1. Introduction

Hospitals, as one type of health care facility, have the responsibility to manage and organize patient medical records. This can be done either through manual or electronic methods, which are an integral part of the patient information management system. This provision is regulated in the Regulation of the Minister of Health of the Republic of Indonesia Number 24 of 2022 concerning Medical Records. In this regulation, it is emphasized that all hospitals are required to implement a medical record system that complies with the standards that have been set and apply in this country.(Ministry of Health, 2022).

Medical records are important documents that record the identity, health history, diagnosis, medical actions, and treatment of patients during health services. Electronic Medical Records (EMR) is a digitalized system that allows the recording, storage, and utilization of patient medical data digitally, according to the definition in Permenkes Number 24 of 2022(Ministry of Health, 2022). In addition to being the basis for treatment planning, medical records also function as legal evidence in malpractice cases, a source of data for research and education, and as documentation for accountability and reporting. The application of electronic medical records in hospitals is expected to increase the efficiency, accuracy, and security of patient data management.(Abduh, 2021).

The implementation of electronic medical records (EMR) facilitates the process of collecting, storing, and managing patient health data efficiently. Information technology, EMR provides better efficiency compared to conventional medical records, and increases the accessibility and security of health information.(Ministry of Health, 2022). RME aims to facilitate access to information, accelerate the process of medical services, and improve coordination between health service units. RME has various important functions in supporting health services. In general, RME plays a role in improving the efficiency and quality of services by supporting clinical and administrative activities. In particular, in patient care, RME facilitates the process of recording and managing information more accurately and in a faster time.

The relationship between Electronic Medical Records and the End User Computing Satisfaction (EUCS) evaluation method can be seen from the important role of EMR as a health information system that relies heavily on user interaction and satisfaction. Previous studies have shown that the application of EUCS in measuring user satisfaction with EMR focuses on five dimensions: content, accuracy, appearance, ease of use, and timeliness. Each of these dimensions reflects how users assess their experience in using EMR and how the system supports daily medical tasks, especially in the hospital sector. Based on previous studies, it can be concluded that the EUCS method provides an effective framework in identifying the strengths and weaknesses of the EMR system. The EUCS dimensions used in the evaluation allow hospital management to understand which aspects of the EMR meet user expectations, as well as which areas need improvement to ensure the system functions optimally.

Given the importance of speed and accuracy of information in handling patients in the emergency department (ER), this study aims to determine the level of user satisfaction with the MERSI system at Cengkareng Hospital using the EUCS approach. This study is expected to contribute to improving the quality of health services through optimization of the electronic medical record system, especially the ER at Cengkareng Hospital. Research on the MERSI electronic medical record system at Cengkareng Hospital, especially in the emergency department, has justification based on current phenomena and problems. One of the main aspects behind this study is the importance of improving the quality of health services. The level of user satisfaction of the MERSI system is an important indicator in assessing the effectiveness of the system, where user satisfaction greatly influences the success of implementation and improvement of services in the future.

In addition, in emergency situations, the speed of access to information is a crucial factor that determines the responsiveness of the medical team. By using the End-User Computing Satisfaction (EUCS) approach, this study can help hospital management in identifying the strengths and weaknesses of the RME system used, so that targeted improvements can be made. The recommendations produced are also expected to help optimize the use of resources in the ER, so that the effectiveness of health services can continue to be improved. Thus, this study has a significant contribution both from a practical and academic aspect in efforts to improve the quality of health services in Indonesia.

2. Theoretical Study

Emergency services are medical actions that are needed by emergency victims/patients immediately to save lives and prevent disability.(Ministry of Health, 2018). Emergency services include handling pre-facility, intra-facility and inter-facility emergencies in health services. The hospital emergency installation must be managed and integrated with other installations/units in the hospital. The emergency room plays an important role in receiving, stabilizing and managing patients who need immediate emergency treatment, both in everyday conditions and disasters. In supporting the fast and accurate service process, the use of an effective information system is very important, one of which is through the use of an electronic medical record system.

To evaluate the effectiveness of the system from the user's perspective, it is necessary to use the End-User Computing Satisfaction (EUCS) method approach, which was first introduced by Doll and Torkzadeh, an approach designed to assess user satisfaction in using information systems, as described in a study conducted by Sukarsa. This approach specifically emphasizes the evaluation of user satisfaction based on five key elements, including the quality of information content, accuracy of data presented, system interface, level of ease of use, and timeliness of service. Each of these elements is considered a fundamental factor that

significantly affects the level of user satisfaction with the information system used.(Sukarsa et al., 2022).

EUCS is widely used in various studies to measure satisfaction with information systems, including electronic medical record systems in hospitals. Several studies in the health sector have shown that the EUCS approach can provide clear results regarding which areas need to be improved to increase user satisfaction. According to researcher Kamal, users of the RME Hinai application at Hermina Hospital, Padang City, were very satisfied, with all EUCS dimensions showing good results, including content, appearance, accuracy, ease of use, and timeliness, this application was considered very helpful and satisfying in the process of processing electronic medical record data.(Kamal et al., 2024).

Research conducted by Siregar at Doloksanggul Regional Hospital revealed that although SIMRS users generally felt quite satisfied, the timeliness dimension required improvement.(Siregar, 2020). The EUCS method conducted by researcher Ismatullah confirms that the EUCS method is very effective in evaluating user satisfaction in the health sector, including hospitals and health centers, each of these dimensions has a significant role in determining the extent to which users are satisfied with the information system implemented in the health sector, and functions to identify areas that require improvement to ensure that the system operates optimally for user needs.(Ismatullah et al., 2022).

Research on user satisfaction of electronic medical records through the EUCS approach at RSI Sultan Agung, stated that the majority of respondents were satisfied with the EMR system with a percentage of satisfaction: Content 80.47%, Accuracy 77.05%, Display 73.21%, User Ease 71.35%, and Timeliness 72.92%. All aspects are in the good category, indicating that the EMR system has met user needs.(Rizqulloh & Putra, 2024). Ginting's research results state that Electronic Medical Record User Satisfaction at Santa Elisabeth Hospital Medan, The majority of respondents are satisfied with the content (98.0%), accuracy (91.8%), appearance (93.9%), ease of use (87.8%), and timeliness (93.9%). It is recommended to improve training services(Ginting et al., 2024).

Based on various previous studies that show the importance of evaluating each dimension in a health information system, this study was conducted to evaluate the effectiveness of utilizing information systems in supporting services in the emergency installation of Cengkareng Regional Hospital, where the speed of information access is a crucial factor that determines the responsiveness of the medical team in emergency situations, as well as to identify areas that still need to be improved to support more optimal service quality.

3. Research Methods

This study uses a descriptive quantitative approach with the aim of evaluating user satisfaction with the MERSI Electronic Medical Record (ERC) system in the emergency installation of Cengkareng Hospital. The method used refers to the End-User Computing Satisfaction (EUCS) model developed by Doll and Torkzadeh, which consists of five dimensions: Content, Accuracy, Format, Timeliness, and Ease of Use.

The sampling technique is carried out using the Stratified Sampling Method, which is a probability technique in which the population is divided into several strata (subgroups) based on certain characteristics, then samples are taken randomly from each stratum with the appropriate proportion. This technique ensures that each stratum is represented randomly and proportionally, so that the results are more representative and can be generalized to the population.(Firmansyah, 2022). The number of respondents obtained was 51 medical personnel who actively use the MERSI system in the emergency room of Cengkareng Hospital. The research instrument was a closed questionnaire that had been tested for validity and reliability. The distribution of questionnaires to respondents included questions related to user satisfaction with the MERSI RME system, with a measurement scale on the questionnaire using 4 Likert scales, for positive questions, the response "Strongly Agree" was given a value of 4, "Agree" was given a value of 3, "Disagree" was given a value of 2, and "Strongly Disagree" was given a value of 1, while observations were conducted for system management and to dig deeper information about the experience and perceptions of medical personnel regarding the use of the system.

Data analysis was performed using SPSS software. Validity test using Pearson Product Moment correlation showed that all statement items were valid, with r count value > r table (0.271). Reliability test using Cronbach's Alpha method produced a value of 0.973, indicating that the instrument has very high reliability, so it is suitable for use in this study.

Next, a correlation test between dimensions was conducted using Spearman's rho to determine the relationship between EUCS variables. The results showed that all dimensions had a positive and significant relationship at a significance level of 0.01 ($p < 0.01$). The correlation coefficient values ranged from 0.624 to 0.907, with the highest correlation between Format and Timeliness ($r = 0.907$) and the lowest between Content and Ease of Use ($r = 0.624$). This indicates that all dimensions are closely related to each other in shaping the level of user satisfaction with the information system. With this approach, the analysis carried out is expected to be able to provide a comprehensive picture of the effectiveness of utilizing information systems in supporting fast, accurate, and responsive medical services in the emergency room of Cengkareng Hospital.

4. Results and Discussion

This study was conducted from October 2024 to June 2025 at Cengkareng Hospital in the emergency installation with a quantitative approach using the End User Computing Satisfaction (EUCS) theory which reviews user satisfaction with 5 variables, content variables, accuracy variables, display variables (format) and timeliness variables and ease of use variables. The data collection technique used a questionnaire with 4 Likert scales, data analysis was carried out using SPSS software. The population in this study was the hospital's emergency medical team who could access and use the MERSI system. Meanwhile, observations were carried out to manage the system and to dig deeper information about the experiences and perceptions of medical personnel regarding the use of the system.

4.1. Respondent Category Characteristics

This research was conducted in the emergency room of Cengkareng Regional Hospital with a total number of respondentsas many as 51 officers.

Table 1. Distribution of Respondents' Professions

		Frequency	Percent
Valid	Doctor	16	31.4
	Nurse	31	60.8
	Midwife	4	7.8
	Total	51	100.0

Based on table 1, the characteristics of the respondents can be seen that the profession in the emergency room of Cengkareng Regional Hospital in the emergency installation is dominated by nurses, namely 31 people (60.8%) and followed by doctors as many as 16 people (31.4%), and midwives as many as 4 people (7.8%).

Table 2. Gender Distribution

		Frequency	Percent
Valid			
	Man	29	56.9
	Woman	22	43.1
	Total	51	100.0

Based on table 2, describing the characteristics of respondents based on gender, it can be seen that they are dominated by men, namely 29 people (56.9%) and followed by women as many as 22 people (43.1%).

4.2. Information Content Variables of the MERSI RME System.

This information content variable is used to measure the completeness and suitability of the information content produced by the MERSI electronic medical record system.

Table 3. Content Variable

		Frequency	Percent
Valid	Not satisfied	6	11.8
	Satisfied	45	88.2
	Total	51	100.0

Based on the results of research conducted at Cengkareng Hospital in the emergency installation regarding the satisfaction of MERSI electronic medical record users through the End User Computing Satisfaction (EUCS) approach, it can be concluded that the Content variable states that 45 respondents with a percentage (88.2%) feel satisfied, and 6 respondents with a percentage (11.8%) feel dissatisfied. Respondents assessed that the information presented by the system is quite relevant and complete in terms of reporting to meet the needs of EMR in the Cengkareng Hospital emergency room. For users, the suitability between the content of an information system and the output produced will affect the quality of the information content, this is in accordance with previous research which stated that the content variable has a significant influence on user satisfaction. The factors that affect user satisfaction are the quality of information produced by the complete information system and the information produced rarely has problems with user needs.(Putri et al., 2020).

4.3. Accuracy Variable of the RME MERSI System.

Table 4. Accuracy Variable

		Frequency	Percent
Valid	Not satisfied	10	19.6
	Satisfied	41	80.4
	Total	51	100.0

The accuracy variable measures user satisfaction in terms of data accuracy when the system receives input and then processes it into information. System accuracy is measured by looking at how often the system produces incorrect output when processing user input, in addition, it can also be seen how often errors or mistakes occur in the processing process.(Syahrullah et al., 2016). Based on the accuracy produced by the RME MERSI system, 41 respondents with a percentage (80.4%) were satisfied, while 10 respondents with a percentage (19.6%) were dissatisfied. This shows that the system meets user expectations.

Significantly MERSI shows the accuracy and reliability of medical data, every process of input and updating medical information is carried out through strict validation protocols and access controls to minimize the risk of data entry errors. MERSI is integrated with various diagnostic systems, such as laboratories and radiology, allowing real-time data acquisition and representing actual clinical conditions. Data stored in the system shows high consistency between input and output, so that the information produced can be used as a valid and accurate basis for clinical decision making by health workers. This study reflects the results of previous studies which state that accurate data allows medical personnel to make the right decisions, reduce the risk of errors in patient care, and data accuracy will affect the quality of information presented by the RME system.(Arie et al., 2024).

4.4. Display Variables (Format) of the MERSI RME System.

Table 5. Format Variable

		Frequency	Percent
Valid	Not satisfied	6	11.8

	Satisfied	45	88.2
	Total	51	100.0

User satisfaction with the RME MERSI system from the variable (format) measures user satisfaction from the appearance and aesthetics of the system interface, the format of the report or information produced by the system, whether the system interface is attractive and whether the appearance of the system makes it easy for users when using the system so that it can indirectly affect the level of work effectiveness of the user.(Syahrullah et al., 2016). Based on the results of the study on the MERSI system format variable in the emergency installation at Cengkareng Hospital, 45 respondents with a percentage (88.2%) were satisfied and 6 respondents with a percentage (11.8%) were dissatisfied. Users assessed that the MERSI RME system in the emergency room at Cengkareng Hospital has been designed with structured features, so that users can easily input and access patient information quickly and efficiently. The RME interface has a good structure, where various input columns are grouped based on the type of information required. Each column is equipped with a clear label, so that users can easily and accurately fill in the data. In addition, RME is also equipped with several action buttons (such as save, validate, cancel, change, and delete) that make it easier for users to perform various management related to patient medical records. The use of contrasting colors in the search section of the interface helps users organize patients based on triage zones that group patients based on their level of emergency that can be life-threatening. This allows medical personnel to prioritize patients who need immediate care most.

Overall, the MERSI design prioritizes functionality and success in emergency handling. The results of this study are in line with previous studies that emphasize that successful treatment is an effort to implement a system in clinical practice to improve the success of immediate assistance and improve the quality of health services in the emergency room.(Harun et al., 2023). Thus, the implementation of the RME system in terms of functionality is expected to provide a significant positive impact on user effectiveness in increasing performance productivity and increasing trust in the system so that it can encourage users to collaborate between health service teams.

4.5. Timeliness Variable of the MERSI RME System.

Table 6. Format Variable

		Frequency	**Percent**
Valid	Not satisfied	6	11.8
	Satisfied	45	88.2
	Total	51	100

The timeliness variable refers to the extent to which users feel that the system is able to provide information or complete tasks according to needs, and the timeliness offered by the information system has an effect on the level of satisfaction of application users.(Pramudito et al., 2023).The results of the user satisfaction study on the MERSI RME system from the Timeliness variable at the Cengkareng Hospital Emergency Room Installation stated that 42 respondents with a percentage (82.4%) were satisfied, while 9 respondents with a percentage (17.6%) were dissatisfied. Respondents assessed that the MERSI system can produce updated information according to user needs, the system can present a recapitulation of patient visit data and diagnoses based on various parameters (date of visit, gender), and the International Classification of Diseases (ICD), which facilitates the process of tracking and analyzing clinical data. In addition, the system's ability to export data into Excel format shows a high level of flexibility in further data management and analysis. These features are considered to support hospital efficiency in evaluating service performance and managing resources more effectively and based on data. This finding is in line with the results of previous studies showing that an efficient RME system allows medical personnel to respond more quickly and effectively, ultimately improving a better healthcare experience for patients(Rizqulloh & Putra, 2024).

4.6. Ease of use variable of the MERSI EME system.

Table 7. Ease of use variable

		Frequency	Percent
Valid	Not satisfied	18	35.3
	Satisfied	33	64.7
	Total	51	100.0

The ease of use variable is an evaluation indicator of how easy the system is to use so that users do not experience difficulties (user friendly) in using the system.(Wulandari et al., 2024). The results of the study on user satisfaction with the MERSI RME system from the Timeliness variable at the Emergency Room Installation of Cengkareng Hospital stated that 33 respondents with a percentage (64.7%) were satisfied and 18 respondents with a percentage (35.3%) were dissatisfied. Users assessed that the transition from paper-based to RME had a positive impact on improving work efficiency and the quality of clinical information management at the Emergency Room of Cengkareng Hospital. The process of recording and processing data on the MERSI system is easy to operate, in this case allowing the addition or updating of clinical data information without reducing the quality of the documentation produced. Some users experience obstacles in navigating or understanding the functions in the MERSI RME system. This is due to the lack of interaction with the new system and internal support and training related to the RME system. It is hoped that a comprehensive training program and ongoing support are very important to ensure that health workers at Cengkareng Hospital, especially medical personnel in the Emergency Room installation, can utilize the MERSI RME system optimally. The results of this study are supported by a research journal published by the Canadian Journal of Emergency Medicine showing that inadequate training can hinder the adaptation process and reduce work efficiency, even though the system has been well designed.(Sinclair et al., 2017). Thus, the implementation of adequate training strategies is the key to improving the effectiveness of the use of the MERSI system and the quality of service in the ER, proper training will encourage medical personnel to adapt quickly, so that they can provide better and more responsive services to patients in need.

5. Conclusions

The analysis of user satisfaction of the MERSI RME system based on 5 (five) EUCS variables can be concluded that in general respondents gave a positive assessment of the quality of the system used. In the information content variable, most respondents considered the information presented by the system relevant and complete, with a satisfaction level of (88.2%). Meanwhile, in the accuracy variable, which evaluates the accuracy of data generated by the RME system, as many as (80.4%) respondents stated that they were satisfied. In terms of appearance (format), which includes the visual and aesthetic aspects of the interface, the majority of respondents also showed satisfaction with the same percentage, namely (88.2%). Furthermore, in the timeliness variable, as many as 82.4% of respondents felt that the system was able to present information in a timely manner. However, in the ease of use variable, the satisfaction level was slightly lower than other variables, namely 64.7%, although it still showed that most respondents felt the system was easy to operate. These findings indicate that the system as a whole has met user expectations, especially in terms of information relevance, data accuracy, and interface appearance.

To improve the speed and accuracy of information in handling patients in the emergency installation (IGD), it is necessary to develop and improve the quality of electronic medical records (EMR) at Cengkareng Regional Hospital, utilize the hospital management information system (SIMRS) as a support system (backup) in the service process and patient data processing to improve efficiency and reliability of health services. The operation of the MERSI system is expected to be integrated like the bridging system in PCare BPJS, thus enabling online management of patient medical record data. With this integration, the ER medical team can quickly access the patient's medical history, both current illness (present illness) and past medical history (past medical history), so that the handling process can be carried out quickly and accurately, while reducing the high risk of infectious transmission to the safety of patients, medical personnel, and other patients.

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