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EVALUATION OF USER SATISFACTION WITH ELECTRONIC MEDICAL RECORDS AMONG OFFICERS OF BINAUS COMMUNITY HEALTH CENTER UPTD: CONTEXTUAL ANALYSIS AND RESEARCH DESIGN BASED ON EUCS

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Abstract

Background: The use of electronic medical records (EMRs) in primary health care requires user-centered evaluation to connect digital implementation with information quality and efficient workflows. Objective: This paper examines the preliminary context of EMR use at Binaus Public Health Center, East Nusa Tenggara, Indonesia, and develops an evaluation protocol using the End-User Computing Satisfaction (EUCS) framework. Methods: A documentary review and narrative synthesis were conducted using a thesis proposal, facility information, preliminary observations, and cited literature. A cross-sectional survey framework was developed for a target population of 65 EMR users. Preliminary findings: The source describes EMR implementation since 2023 and identifies reported challenges involving connectivity, data synchronization, training, and interface complexity, alongside perceived benefits for accessing patient histories. No completed questionnaire dataset or hypothesis-test results were available. The original measurement plan also risks circular regression if overall satisfaction is calculated directly from the five EUCS predictors. Conclusion: EUCS provides a relevant framework, but an independent measure of global satisfaction and actual survey data are required for predictive analysis. The paper proposes practical and methodological steps for a subsequent empirical evaluation.

Keywords: Electronic Medical Records; User Satisfaction; EUCS; Primary Health Care; Health Information Systems.

INTRODUCTION

The digital transformation in healthcare is changing the way healthcare facilities record, manage, and use patient information. Electronic medical records (EMRs) are no longer understood simply as a replacement for paper forms, but rather as an information infrastructure that supports continuity of care, coordination between staff, decision-making, and administrative accountability. In primary healthcare facilities, these benefits are directly related to the repetitive, multidisciplinary, and community-facing nature of services. However, the existence of an application does not in itself guarantee that users will be able to obtain information quickly, accurately, and appropriately for their work needs. Successful implementation remains influenced by the system's suitability to clinical processes and the experience of the staff operating it daily (Ariani, 2023; Kesuma, 2023; Sulistya, 2021). In Indonesia, the management of electronic medical records has a regulatory basis through Minister of Health Regulation Number 24 of 2022 concerning Medical Records. This regulation provides a normative context for the digitization of service recording, information processing, storage, and data exchange within healthcare facilities. At the same time, the implementation of EMRs requires the readiness of devices, networks, work procedures, and staff competency. A technically sound system can still present operational challenges if information is incomplete, application response is slow, or users have to input the same information into multiple different applications. Therefore, RME evaluations need to consider both the technology and user experience dimensions simultaneously (Ministry of Health Regulation, 2022; Tarigan et al., 2022). For community health centers (Puskesmas), user satisfaction is crucial because RMEs are at the intersection of clinical and administrative tasks. Doctors, nurses, midwives, laboratory analysts, pharmacists, and administrative staff use interrelated information but have different interface and output requirements. One staff member's experience when entering visit data may not be the same as another staff member's experience when checking medications, preparing reports, or reviewing patient histories.

Therefore, satisfaction evaluations need to examine concrete aspects of the system, rather than simply asking whether users are generally satisfied.

Previous research findings show variations in user satisfaction with EMR. At Sungai Panas Community Health Center, Farhansyah and Alfiansyah (2025) reported high average scores for the content (4.68), accuracy (4.60), and display (4.75) dimensions. In contrast, Andini et al.'s (2022) study at Siloam Hospital Balikpapan reported that 47.4% of users were dissatisfied overall. Rizqulloh and Putra (2024) also found varying levels of satisfaction across dimensions at Sultan Agung Islamic Hospital, ranging from 71.35% for ease of use to 80.47% for information content. These differences indicate that EMR performance cannot be generalized based solely on its implementation status. The different percentages of facilities, instruments, and respondent characteristics also cannot be treated as directly comparable measures.

The Binaus Community Health Center (Puskesmas Binaus) is located in Mollo Tengah District, South Central Timor Regency, East Nusa Tenggara Province. According to the source thesis, this facility was established on July 1, 2014, as a result of the expansion of the Mollo Selatan Community Health Center and serves six villages: Binaus, Oelbubuk, Kualeu, Pika, Oelekam, and Nekemunifeto, covering an administrative area of approximately 103 km². The RME has been in use since 2023 as part of the digitization of services. The geographic scope and diversity of service types make information coordination and system operational sustainability relevant managerial requirements in evaluating the use of the RME. The thesis documents initial observations and informal interviews with several officers. This preliminary information describes unstable network disruptions, delays in synchronization with the national system, uneven training, and the use of manual recording as a backup when the application is problematic. Some officers reportedly found the RME to be helpful in tracking patient histories and preparing reports, while others found the filling process too long or the menus inadequate for service needs. These initial notes are important as a reason for research, but they are not yet measurable survey results and cannot be used to conclude the level of satisfaction of all officers.

To systematically map user experiences, the study utilized the End-User Computing Satisfaction (EUCS) framework. The model developed by Doll and Torkzadeh (1988) encompasses five dimensions: content, accuracy, format, ease of use, and timeliness. These five dimensions explain how information content, data accuracy, display, ease of interaction, and speed of information presentation shape users' assessments of the system. This framework enables community health center managers to identify relatively strong components and aspects that need to be prioritized in digital service improvements. The research gaps to be addressed are contextual and methodological. Contextually, evidence of EMR user satisfaction at community health centers with specific infrastructure challenges and primary care needs, such as the Binaus Community Health Center, still needs to be directly documented. Methodologically, the thesis design needs to ensure that general satisfaction measurements do not use the exact same scores as the five EUCS dimensions when these dimensions are included as predictor variables. Without operational separation, influence testing risks producing tautological mathematical relationships rather than informative empirical ones.

This article aims to compile a preliminary evaluation of the need for EMR use at the Binaus Community Health Center (UPTD), synthesize previous evidence on the five EUCS dimensions, and formulate a consistent quantitative survey design to assess the relationship between EUCS dimensions and user satisfaction. The article's main contributions lie in reading the primary care context, mapping variables and instruments, identifying measurement specification issues, and developing evaluation steps that can be implemented when respondent data are available. Because the source document does not yet include the results of questionnaire collection or hypothesis testing, this article is positioned as a contextual analysis and evaluation protocol, not a final survey report.

LITERATURE REVIEW

2.1 Electronic medical records in primary care management

Medical records contain information regarding the identity, examination, treatment, procedures, and services provided to patients. When managed electronically, this information is available to authorized users according to their roles and supports administrative and service processes. Amran et al. (2022) emphasize the importance of complete medical records as part of the quality of service documentation, while Tarigan et al. (2022) discuss the governance of medical records in community health centers. From a community health center management perspective (Sofyandi, 2024), a good system must maintain continuity between data input, validation, storage, retrieval, and utilization of information, including error correction mechanisms.

In primary care practice, electronic record-keeping serves a cross-functional purpose. Clinical staff require examination histories, pharmacy requires medication data, and visit and service type information is used in reporting.

Integration across functions has the potential to reduce data duplication, but also increases the need for standardization of terminology, access rights management, and workflow consistency. Kesuma (2023) identifies administrative efficiency and coordination as key benefits of EMR, but also identifies vulnerabilities related to system disruptions, information security risks, and dependence on energy sources and technological infrastructure.

EMR evaluation, therefore, cannot simply stop at device availability. Three domains must be considered as a whole: the quality of the information generated by the system, the quality of the interaction between staff and the interface, and the organization's ability to maintain continuity of use. When one domain is weak, the benefits of others can be diminished. For example, accurate information remains less helpful if it is only available after it is needed for care, while a fast system can still potentially cause problems if its content is not aligned with clinical processes. The EUCS framework provides sufficiently operational categories for assessing these domains from the end-user perspective.

2.2 End-User Computing Satisfaction Model

EUCS is an approach to measuring end-user satisfaction with computer-based applications. In Doll and Torkzadeh's (1988) conception, user experience is evaluated through the characteristics of the information and interactions they actually encounter when using the system. This approach differs from infrastructure readiness assessments that focus solely on hardware or procedural compliance. EUCS positions user perceptions as a source of information about system performance within the context of daily work. Oktavia (2016) demonstrated the use of EUCS in evaluating the quality of information technology services, and various EMR studies in Indonesia have applied it to healthcare facilities.

Content refers to the relevance, scope, and completeness of the information displayed. In community health center services, appropriate information must support the recording of patient identity, complaints, examinations, diagnoses, procedures, medications, and other service components according to user authority. Content discrepancies can arise if a menu only accommodates part of the service process or requires staff to re-enter data into another application. Satisfaction with information content is ultimately related to the EMR's ability to meet user work needs, not just the number of columns provided (Doll & Torkzadeh, 1988; Rizqulloh & Putra, 2024).

Accuracy encompasses the accuracy of the information produced and user confidence that the stored data corresponds to the correct input. Accuracy also relates to the application's ability to minimize mistaken identity, duplicate recordings, and inconsistent results. However, errors do not always originate from the system: service load, validation design, staff understanding, and correction procedures can interact. Therefore, accuracy assessments need to distinguish perceptions of the reliability of application output from operational errors caused by other factors.

Format (appearance) describes readability, menu organization, information grouping, and how output is presented. An organized format can speed up the discovery of important information; conversely, a cluttered display and inconsistent navigation increase the user's cognitive load. For service facilities with diverse professions, format assessment should consider whether forms and menu options align with the needs of each staff group. This aspect is important because a display that appears simple to one group may not be easy to use for another.

Ease of use assesses the ease of learning, navigating, and operating a system. Officers who can complete routine tasks with clear steps tend to have a better work experience than officers who require constant assistance with similar processes. While related, ease of use is not a synonym for format. Format primarily refers to presentation, while ease of use emphasizes the ease of completing actions or processes using the application. Officers' training, availability of guidance, and digital experience can influence this dimension without being directly part of the EUCS items.

Timeliness relates to a system's ability to provide information when needed. In EMR, timeliness concerns patient data access, storage of input results, record updates, and output required for reporting. Network disruptions or synchronization delays can degrade perceptions of this dimension, even though the technical source of the problem may lie outside the application interface. User judgment remains important as a sign of process disruption, but technical diagnosis requires supporting data such as system logs and connectivity information.

The five EUCS dimensions are interrelated and not entirely independent. Confusing displays can make a system difficult to use; slow access can reduce usability; and delayed information output can be perceived as less useful, even if accurate. Therefore, interpretation of each dimension requires consideration of interscale correlations, professional variation, and context of use. In predictive research, researchers must also ensure that dependent indicators do not simply repeat indicators of the dimensions.

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2.3 Previous research evidence and empirical gaps

The literature compiled in this thesis indicates that EMR satisfaction levels vary by location, user, method, and indicators. Ginting et al. (2024) reported high satisfaction rates across five EUCS dimensions at Santa Elisabeth Hospital in Medan, including 98.0% for content and 87.8% for ease of use. Farhansyah and Alfiansyah (2025) obtained high average scores across three dimensions reported at Sungai Panas Community Health Center. In contrast, Andini et al.'s (2022) findings illustrated the proportion of dissatisfied users in their evaluations of EMR at different hospitals. Kamal et al. (2024) and Muhlizardy et al. (2024) also addressed EMR use and satisfaction in the hospital context. Overall, the results indicate variations in experience, not objective ratings of system quality across organizations.

Table 1. Summary of research related to RME user satisfaction

Study	Context / method	Reported results
Andini et al. (2022)	Siloam Hospital Balikpapan; RME satisfaction survey	47.4% of users in the category were dissatisfied overall
Farhansyah & Alfiansyah (2025)	Sungai Panas Community Health Center; cross-sectional	Average content 4.68; accuracy 4.60; 4.75 format
Rizqulloh & Putra (2024)	Sultan Agung Islamic Hospital; EUCS	Content 80.47%; accuracy 77.05%; format 73.21%; ease 71.35%; timeliness 72.92%
Ginting et al. (2024)	Santa Elisabeth Hospital Medan; EUCS	Content 98.0%; accuracy 91.8%; format 93.9%; ease 87.8%; timeliness 93.9%
Fauziyah et al. (2025)	private hospitals; cross section	Correlation between RME usage and satisfaction r = 0.609
Astuti & Fahyudi (2023)	Tugurejo Regional Hospital; system model, information, services	R^2 = 0.748 in the studied user satisfaction model

Note: Figures are the results of another study, as summarized in the source thesis, not data from the Binaus Health Center. Percentages and average scores are not directly comparable.

In addition to the EUCS study, Astuti and Fahyudi (2023) showed that system quality, information quality, and service quality explained 74.8% of the variation in user satisfaction in their model at Tugurejo Regional General Hospital. Fauziyah et al. (2025) reported a positive relationship between EMR use and user satisfaction in a private hospital context, with a correlation coefficient of 0.609. These findings are useful for arguing that user experience and system quality are related to satisfaction, but do not prove that a similar coefficient will be found at the Binaus Community Health Center. Differences in instruments and designs require careful comparison of numerical values between studies.

A prominent gap is the lack of specific empirical information regarding the perceptions of EMR users at the Binaus Community Health Center. The initial manuscript addressed connectivity issues, duplication of filling, and training needs, but did not provide a distribution of responses across all staff, EUCS dimension scores, or test the relationships between variables. Therefore, field research is needed to measurably assess the frequency, variation, and priority of these issues. Using the results of another hospital study as a substitute for local data would remove the organizational context, which is the focus of the research.

2.4 Conceptual framework and testable hypotheses

The initial design of the thesis placed content (X1), accuracy (X2), format (X3), ease of use (X4), and timeliness (X5) as predictors of user satisfaction (Y). Theoretically, the quality of experience in each dimension is expected to be related to the overall satisfaction assessment. If overall satisfaction is measured through separate items, five partial hypotheses can be formulated: H1 for content, H2 for accuracy, H3 for format, H4 for ease of use, and H5 for timeliness. Hypothesis H6 states that all five dimensions are jointly related to overall satisfaction. The formulation of relationships is more appropriate than causal claims because the data collection was designed cross-sectionally.

Figure 1. Evaluation framework for the relationship between EUCS dimensions and global satisfaction

FIVE DIMENSIONS OF EUCS (PREDICTOR)		GLOBAL SATISFACTION (Y)
Content (X1) | Accuracy (X2)		Measured by additional items
Format (X3) | Ease of use (X4)	→	which is separate from the 29 EUCS items
Timeliness (X5)		(not the sum of X1–X5)

Source: processed from the EUCS framework and thesis variable design; this model is a revised measurement proposal.

A key conceptual issue lies in the definition of the Y variable. The thesis's operationalization table lists 4 content items, 5 accuracy items , 8 format items, 7 ease of use items, and 5 timeliness items, for a total of 29 items. The overall satisfaction score in the table has a range of 29–116, which is the same as the sum of the scores of all the EUCS dimensions. If Y is truly calculated as the sum of X1 through X5, then entering all five dimensions as predictors of Y through regression merely reproduces the arithmetic equation Y = X1 + X2 + X3 + X4 + X5. Such a relationship should not be interpreted as evidence that a dimension empirically causes satisfaction.

To address this issue, the evaluation design is divided into two analytical options. The first option is to treat the EUCS as a multidimensional satisfaction instrument; the research output is descriptive-comparative, consisting of overall and individual dimension scores, without regression tests of dimensions against totals composed of the same dimensions. The second option is to maintain the relationship analysis design by adding a completely separate global satisfaction measure to the 29 EUCS items, such as a general statement about total satisfaction, system conformity to expectations, and overall user experience. These additional items should be tested for validity and reliability before being used as Y. This article recommends the second option if the primary objective remains to assess partial and simultaneous relationships.

METHOD

3.1 Type of research and location

The research design used a quantitative approach with a cross-sectional, descriptive-analytical survey. The descriptive component aimed to assess the distribution of scores for each EUCS dimension and global satisfaction, while the analytical component was used to test the relationship between variables when measurement and statistical requirements were met. The unit of analysis was the individual staff who directly used EMR in their work. The study took place at the Binaus Community Health Center (Puskesmas), Mollo Tengah District, South Central Timor Regency, East Nusa Tenggara.

The source proposal lists the research as being conducted in 2025 with a data collection window of December to January 2026. In this article, this information is understood to refer to the planned period of December 2025 to January 2026; the available documents do not provide evidence of the actual survey date. Statements regarding the schedule, techniques, and measurement tools in the methods section therefore refer to the design, not to a report of the procedures that have been demonstrated. If the survey has been conducted, the author will need to update the dates, actual number of participants, and the procedures actually implemented.

3.2 Population, respondent criteria, and sampling strategy

The population included in this thesis is 65 EMR user personnel. The sample comprises general practitioners, nurses in dental and general practice, midwives, nutritionists, pharmacists, laboratory analysts, environmental health, health promotion, and health administration. Due to the relatively limited population, the design employed saturation sampling, as discussed by Sahir (2021), which involves inviting all members of the population who meet the criteria to be respondents. The number 65 represents the target population, not the number of valid questionnaires collected. The final analysis should distinguish between the target population, participating respondents, and analyzable responses.

Table 2. Composition of the target population of RME users (N = 65)

Group of officers	Number of people)	Proportion (%)
General practitioners	1	1.54
Dental poly nurse	3	4.62
General poly nurse	18	27.69
Midwife	24	36.92
Nutrition officer	6	9.23
Pharmacist	3	4.62
Laboratory analyst	4	6.15
Environmental health officer	4	6.15
Health promotion officer	1	1.54
Health administration officer	1	1.54
Target population size	**65**	**100.00**

Note: The population composition is taken from the thesis draft; it is not the distribution of respondents who completed the questionnaire. Proportions are calculated from N = 65.

Inclusion criteria that need to be explicitly defined include active personnel who use EMR in their routine duties and are willing to participate in the survey based on informed consent. Personnel who have never used EMR or are unable to provide answers regarding their experience with it should be treated according to the exclusion criteria agreed upon before data collection. Any absences or refusals should be reported as non-responses, rather than being replaced with respondents from other professions without a sampling basis.

A census approach increases the opportunity to obtain information from diverse professional groups within a single facility, but does not guarantee the absence of bias. Respondents who interact most frequently with the app may have different experiences than those who use it less frequently. Therefore, it is necessary to collect minimal respondent characteristics, such as professional category, length of service, length of RME use, frequency of use, and training history. These background variables primarily serve to examine group variation and aid interpretation, not as automatic predictors of causality.

3.3 Data sources and collection procedures

Primary data is planned to be obtained through a closed-ended Likert-scale questionnaire assessing staff experiences across the five EUCS dimensions and a separate global satisfaction measure. Researchers can also use structured observation to describe the user flow, such as registration, clinical recording, patient history retrieval, and reporting. Secondary data includes health center profiles, human resource composition, service standard operating procedures (SOPs), and legally obtainable system operational information. Observations and documentation are used as contextual data, not as a substitute for individual questionnaire responses.

Survey collection should maintain uniformity in instructions, reference period definitions, and confidentiality of responses. Respondents should be asked to assess their user experiences over the same time period to avoid misinterpreting past and current situations. Officers should be given the opportunity to complete the questionnaire without direct supervision from their superiors to reduce social pressure. The questionnaire should provide unambiguous statements and consistent response options for each construct.

3.4 Operational definition and instrument refinement

The operational design uses five EUCS dimensions as indicator groups: content, accuracy, format, ease of use, and timeliness. The thesis table displays 29 items with possible scores of 1–4 per item. The raw score range for each dimension is 4–16 for content, 5–20 for accuracy, 8–32 for format, 7–28 for ease of use, and 5–20 for timeliness.

Summing all dimensions yields a total score of 29–116. This range is derived from the item structure in the proposal, not from respondent measurements.

Table 3. Variables and scope of research indicators

Variables / codes	Items in the proposal	Theoretical score	Meaning of measurement
Content (X1)	4	4–16	Suitability and completeness of information
Accuracy (X2)	5	5–20	Accuracy and reliability of information
Format (X3)	8	8–32	Appearance, presentation, readability
Ease of use (X4)	7	7–28	Ease of carrying out tasks
Timeliness (X5)	5	5–20	Speed and accuracy of presentation
Global satisfaction (Y)	Separate instruments are proposed	Determined after finalization	Overall satisfaction rating

Note: The number of items X1–X5 and the score range refer to the thesis operationalization table. The separate Y measures represent proposed research improvements.

Raw scores across dimensions are not directly comparable due to the different number of items. For example, a format with eight items will have a larger total range than content with four items, even if the mean rating per item is identical. To fairly compare dimensions, each dimension should be reported using the mean of the items on a 1–4 scale or a predefined standard score. The categories “satisfied” and “dissatisfied” mentioned in the thesis can be presented as additional indicators, but these cutoff points need to be conceptually grounded and tested for sensitivity. The analysis should not rely solely on dichotomization of scores, which eliminates variation in information.

To measure global satisfaction (Y), an independent instrument based on the 29 EUCS items is required. As a refinement option, researchers could adapt three or four concise statements assessing overall satisfaction with the RME, general user experience, and system fit with job expectations. This suggestion does not imply that these items were used in the initial survey. The final content should undergo expert review, readability testing with potential users, and empirical testing to demonstrate that Y can be differentiated from the five predictor dimensions.

3.5 Data quality and measurement quality checks

Prior to the main analysis, the questionnaire should be evaluated for content appropriateness, language clarity, and internal consistency. Expert assessments can include health information managers and staff familiar with community health center workflows. The readability test aims to ensure that terms such as "accurate," "timely," and "easy to use" are understood consistently by different professionals. If items are adapted from previous instruments, changes in wording, number of items, and the rationale for these adjustments should be documented.

Item validity can be tested using corrected item-total correlations based on scale characteristics and data adequacy. Internal reliability can be evaluated using Cronbach's alpha for each dimension, with interpretation taking into account the number of items and the nature of the construct. Proposals use an alpha threshold above 0.60; for publication, researchers need to justify the chosen threshold and should aim for stronger internal consistency. A high alpha value alone does not prove that an instrument measures the correct construct, so content validity and potential overlap between variables must still be examined.

Data checks include response completeness, detection of anomalous entries, score distribution, and consistent response patterns across items. If missing data are present, the number and pattern must be reported. Treatment should be determined based on the proportion and suspected mechanism of missing data, rather than using automatic value replacement without explanation. Extreme values should also be checked to determine whether they represent actual experience or entry errors. These steps support traceability of the results processing once the survey is completed.

3.6 Statistical analysis plan

Referring to the principles of quantitative analysis (Sugiyono, 2019), descriptive analysis will present respondent characteristics, the number of valid responses, the mean, standard deviation, median, and the distribution of responses for each dimension. Percentages in satisfaction categories can be presented as supplementary information after the classification basis is established. Comparative group analysis, for example between officers who have and have not received training, is only conducted if the group size is sufficient and aligns with the stated exploration objectives. All results should include a denominator, especially when reporting percentages in small populations.

If global satisfaction Y is measured independently, the simultaneous relationship of the five dimensions can be analyzed using multiple linear regression with the equation $Y = \beta0 + \beta1X1 + \beta2X2 + \beta3X3 + \beta4X4 + \beta5X5 + \varepsilon$. Testing of individual coefficients can use the t test, testing the overall model with the F test, and the proportion of explained variation through the adjusted R^2. Results should be reported with coefficients, 95% confidence intervals, and p values, along with interpretation of effect sizes. A significance threshold of 0.05 can be used as designed, but is not the sole basis for assessing practical significance.

Prior to regression, researchers should check for linearity, independence of residuals, proportional normality of residuals, heteroscedasticity, and multicollinearity between predictors. The test for homogeneity of variance between groups listed in the proposal does not directly replace the test for heteroscedasticity of residuals in regression. If key assumptions are not met, a robust approach or appropriate nonparametric method can be considered with explicit statistical considerations. With a target population of 65 individuals and five primary predictors, modeling should be parameter-parsimonious and avoid overinterpretation of imprecise estimates.

All hypotheses must be tested against actual survey results. This article does not present regression coefficients, t-test results, F-test results, reliability values, or satisfaction levels at the Binaus Community Health Center because individual response data has not been included in the source document. Inferential tables or graphs can only be completed after a valid database is available. This separation is part of reporting transparency and prevents mixing research design, informal observations, and empirical findings.

3.7 Ethical considerations

The survey targets healthcare workers within a relatively small organization, making confidentiality paramount. Completion of the questionnaire must be based on voluntary consent, and refusal to participate must not affect employment relationships. Personal identifiers should not be included in the analysis dataset; very rare professional variables, such as single-person categories, should be handled carefully to prevent individuals from being easily identified in published tables. Access to survey files and RME documents should be restricted to authorized parties.

User satisfaction research does not require disclosure of patient identities or the contents of patient medical records in the manuscript. If system flow observations require access to areas containing clinical information, information security procedures and institutional approvals must be followed. Ethics approval and data collection permission must be obtained in accordance with applicable institutional regulations; because the source document does not include evidence of approval, the article does not state that specific ethics approvals have been issued.

RESULTS AND DISCUSSION

4.1 Limitations of evidence and initial conditions for RME implementation

The results discussed at this stage include the results of reading research documents, facility profiles, and syntheses of previous studies. The available materials do not yet include the 65 completed questionnaires, statistical software output, or hypothesis testing results. Therefore, the term "results" in this section refers to the findings of document analysis and interpretation of implementation issues noted in the proposal. The study cannot yet determine the satisfaction level of Binaus Community Health Center staff, compare local EUCS averages, or conclude the significant influence of any one dimension on global satisfaction.

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Table 4. Status of evidence available for article preparation

Component	Status of information in the source text	Conclusions that can be drawn
Target population	65 RME users, profession details available	The basis for survey/census design; not n responses
Initial observations	Notes on network constraints, synchronization, training, and RME benefits	Working hypothesis/evaluation needs; frequency not yet measured
EUCS Instrument	Five dimensions; theoretical scores of 29 items are listed	Measurement scheme available; validity not reported
Local survey results	Questionnaire data and statistics are not included.	Local satisfaction and the relationship between variables are unknown.

Note. Analysis based on CHAPTERS I–III of the thesis proposal and its bibliography; does not include survey datasets.

Based on the initial description in the thesis, RME has been used at the Binaus Community Health Center (Puskesmas) since 2023. Implementation took place at a facility serving six villages with a diverse range of healthcare professionals. Initial observation notes identified connection and synchronization challenges, varying user adaptations, training needs, and manual recording when the system was unusable. Conversely, some staff considered RME helpful in tracking patient histories and preparing reports. This contrasting perception provided a strong basis for the EUCS survey, but was insufficient to quantify a dimension's weakest.

Context analysis shows that evaluations need to be conducted at specific points of use. Access disruptions during the registration process have different consequences than delays in synchronizing reports at the end of the day. An error in identity data differs from difficulty finding a menu or visiting history file. If all complaints are lumped into one general question, the results are difficult to translate into management actions. Therefore, questionnaire design and observation notes should be able to connect staff perceptions to the type of work they perform.

4.2 Content: match of information with service needs

The content dimension assesses whether the system output contains the information needed for staff work. In primary care, these needs can vary by unit. Registration staff require easily traceable identity and visit status, clinical staff require information on examinations and procedures, and units related to public health programs require more specific reporting elements. The thesis noted concerns that some EMR menus do not adequately address all service needs and may encourage re-entry into other systems. This claim still requires structured fieldwork to determine the types of missing data and the frequency of the problem.

Farhansyah and Alfiansyah (2025) reported content as the dimension with the highest average score at Sungai Panas Community Health Center, while Rizqulloh and Putra (2024) recorded 80.47% satisfaction with content at the facility they studied. These findings do not imply that users at Binaus Community Health Center would provide similar ratings. A more informative indicator for local evaluation is whether the questionnaire items represent the primary tasks at the facility and whether the completeness of the information meets the practical needs of each profession. Examination of workflows can help explain why content scores are high or low after the survey is conducted.

In managerial improvement, data needs mapping is ideally conducted with the involvement of users from different units. The menu list or application output can be compared with the service activity list, then sections that are irrelevant, missing, or result in duplication of work can be highlighted. The mapping findings can then be used to coordinate with the application manager or system provider. This approach avoids the assumption that the solution to content problems is always adding columns, when in fact, too many columns can actually prolong the filling process.

4.3 Accuracy: quality of information and correction procedures

Accuracy is a prerequisite for utilizing EMR as a source of service information. Incomplete or incorrect information can disrupt continuity of record keeping, while misidentification or duplication of entries can complicate patient tracking. The source text mentions the possibility of errors resulting from repeated input, limited service time, and storage failures when the system or network is disrupted. These statements should be understood as issues that need to be tested, not as measured error frequencies at the Binaus Community Health Center.

Belrado et al. (2024) described human resource, server, and network constraints in the implementation of EMR in the hospitals they studied. These findings strengthen the case for examining the relationship between technological processes and information quality, but do not provide evidence for the extent of input errors in other facilities. Accuracy measurements through user perceptions should be complemented, where feasible and institutionally valid, with anonymous reviews of the types of system glitches or correction procedures that frequently occur. Such verification provides more robust interpretations than simply relying on answers to the question "is the information accurate?"

Initial recommendations for accuracy include standardization of clinical identities and terminology, proportional input validation, training in correction procedures, and a mechanism for reporting errors without blaming individuals. Improvements should consider the balance between error control and speed of service. Too many verification steps can reduce efficiency, while too lax validation increases the risk of inconsistencies. User evaluation should be combined with data flow analysis to accurately identify the causes of errors.

4.4 Format and ease of use: user interface experience

Format and ease of use are closely related dimensions, but they don't always require the same intervention. Format relates to how an application organizes information and forms, while ease of use relates to the ease of completing specific tasks. The thesis cited initial complaints about the perceived lack of simplicity of the interface, fields that weren't always as needed, and the multi-step process. These notes suggested the need for task-based testing, such as calculating the steps required to open a new visit or review a patient's history. However, the number of steps and the time required for these tasks were not measured in the source documents.

Research by Rizqulloh and Putra (2024) showed a satisfaction rate of 71.35% for ease of use, lower than the content rate at the same facility. Ginting et al. (2024) also found ease of use to be the dimension with the lowest percentage among the five dimensions they reported, although the score remained high. This pattern suggests that the availability of adequate information does not necessarily equate to ease of use. However, these cross-facility results still require local testing before being prioritized as an intervention at the Binaus Community Health Center.

Format improvements can be directed at label consistency, menu grouping, placement of important information, and form readability. For ease of use, interventions can include brief task guides, structured peer mentoring, scenario-based training, and streamlining work sequences where possible. Evaluations should examine whether challenges occur across all users or are concentrated among groups with varying digital experience and usage intensity. Interventions based on specific needs are more appropriate than general training that repeats material already mastered by most staff.

To assess improvement, health centers can design simple process indicators: the proportion of tasks completed without assistance, the number of user support requests, or the frequency of repeated input during a single visit. These indicators are proposed follow-up measures, not results from this study. Process data complements satisfaction scores because improved perceptions do not necessarily indicate a reduction in administrative workload. A combination of experience and task performance measures provides a more robust basis for decision-making.

4.5 Timeliness: speed of access and continuity of service

In community health center services, delays in data access can impact workflows from registration to reporting. The thesis cites network connection issues, delayed storage, and synchronization of information to other systems as key issues. These barriers are relevant to timeliness because staff assess the system based on the actual time it takes to complete tasks. However, delays can stem from the local network, server, device configuration, application load, or external integrations. Perception scores alone cannot isolate all of these technical causes.

Managerial analysis needs to distinguish temporary disruptions from recurring problems. Records of the time and type of disruption, if available, help clarify whether the disruption primarily occurred during specific service hours or with specific processes. When a system is unusable, the existence of continuity of service procedures is crucial. The thesis mentions manual recording as a backup solution by some staff, but does not describe standard

protocols for data transfer and duplication control. Therefore, disruption management guidelines could be one of the outcomes of the follow-up evaluation.

Timeliness also has implications for reporting governance. Late data synchronization can lead to discrepancies between local records and reports sent to other systems. Improvements should address who monitors the synchronization queue, when checks are performed, and how failed cases are recorded and resolved. Clear responsibilities can potentially reduce user uncertainty, although not all network issues can be resolved directly by community health center managers.

4.6 Synthesis of literature findings and relevance at the Binaus Health Center

Variations in previous research findings indicate that the quality of the RME experience is influenced by the context of use. In some studies, user satisfaction rates were high across nearly all dimensions; in others, dissatisfaction persisted. These differences could stem from application configuration, organizational readiness, intensity of use, respondent characteristics, or the way the instruments and satisfaction categories were structured. Because these factors were not controlled for across studies, comparisons should be used to interpret potential variations in issues, not to make ranking judgments between facilities.

The context of the Binaus Community Health Center demonstrates the importance of aligning EUCS dimensions with operational actions. Data completeness issues are explored through content; validation and correction through accuracy; layout through format; step complexity and training requirements through ease of use; and access and synchronization through timeliness. Network constraints, technical support, and training are contextual factors that should be reported separately to avoid the assumption that all implementation issues are fully represented by the five EUCS scores.

The initial analysis also showed that improvement priorities cannot be determined solely by the intensity of complaints mentioned in informal interviews. Complaints that are easily recalled are not necessarily the most frequent, and less frequent issues can have a greater impact on information security or service continuity. Once the survey is complete, managers can combine dimension scores, the frequency of barriers, the impact on work processes, and the organization's ability to intervene. This approach produces a more managerially sound priority list.

4.7 Recommendations for further governance and evaluation indicators

Based on the issues identified in the document and previous research findings, the follow-up plan can be divided into three horizons. In the immediate phase, the community health center can compile a log of disruptions and map user difficulties by work unit. In the strengthening phase, managers can clarify the standard operating procedures (SOPs) for data correction, mentoring, and handling connection disruptions. In the periodic evaluation phase, the EUCS survey is repeated using consistent instruments and compared against relevant process indicators. These phases are practical recommendations, not activities that have been implemented or proven successful.

Table 5. Priorities for follow-up of RME evaluation

Priority	Recommended action	Follow-up indicators
System availability	Access and synchronization outage logs; SOP when the system is unavailable	Frequency/duration of recorded disturbances
Information quality	Important field mapping and data correction guide	Types of error/duplication cases resolved
User experience	Navigation reviews, quick guides, profession-based training	Proportion of tasks completed independently; need for assistance
Periodic evaluation	EUCS survey, unit feedback, and documented follow-up	Average trend of dimensions and action progress

Note: Actions and indicators are the author's recommendations based on the initial issues, not findings of intervention effectiveness.

To ensure that improvement plans are not merely administrative, each activity should have a responsible person, resources, implementation timeline, and reviewable outcome indicators. For example, competency improvement

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activities can be monitored by the number of staff members who receive mentoring and their ability to complete sample tasks independently. Network management can be monitored by the frequency and duration of recorded outages, not simply by the perception of "the network is improving." Such indicators can help distinguish between successful process changes and changes in user perceptions.

The main implication for community health center management is the need to position EMR as an organizational process, not simply an application handed over to staff. Managers need to ensure that user complaints are entered into the improvement system, identified issues are addressed, and procedural changes are communicated back to all units. Thus, EUCS evaluation has the potential to become part of the service quality improvement cycle, as long as the results are interpreted within the method's limitations and integrated with operational information.

4.8 Methodological contributions and limitations of the article

The most important methodological contribution is the separation between multidimensional measurement of satisfaction and predictive analysis of global satisfaction. In its original form, the five dimensions of the EUCS can be legitimately used to describe satisfaction profiles and compare service aspects. However, when total satisfaction is the exact sum of the five dimensions, regression on that total becomes a definitional relationship. The corrective option is not to eliminate the EUCS but to change the analysis's purpose to descriptive or to measure global satisfaction with additional, independent items.

This article has limitations that must be clearly stated. First, the analysis is based on Chapters I–III and the thesis's bibliography; there is no respondent questionnaire data, statistical results, or reporting of the survey implementation. Second, the initial observation notes have not been supplemented with sampling procedures, transcripts, or systematic qualitative coding. Third, previous studies in the thesis used diverse designs, contexts, instruments, and outcome measures, making direct quantitative comparisons impossible. Fourth, the study's location in a single community health center with a relatively small target population limits the breadth of generalization beyond local conditions.

To develop a research article, authors need to provide data on respondent characteristics, response rates, instrument evaluations, a score table for the five dimensions, results of the global satisfaction analysis, assumption checks, model coefficients, and a discussion based on actual observed figures. If only the 29 EUCS items are available without a separate global satisfaction measure, the article can still be published as a descriptive multidimensional satisfaction study with an appropriate analysis, rather than forcing a tautological regression. The choice of analysis should be based on the actual data available and the stated research objectives.

CONCLUSION

The evaluation design for the use of electronic medical records at the Binaus Community Health Center (Puskesmas) demonstrates the relevance of the End-User Computing Satisfaction approach in assessing staff experience in terms of content, accuracy, format, ease of use, and timeliness. The initial conditions in the thesis identified connectivity issues, data synchronization, training needs, interface adjustments, and the benefits of EMR for patient history tracking and reporting. These issues provide a reasonable basis for the evaluation, but do not yet demonstrate the level of staff satisfaction or which dimensions statistically most determine satisfaction.

The target population of this study was 65 EMR users from various professions at the Binaus Community Health Center, using a saturated sampling design. The planned EUCS instrument consists of 29 items spread across five dimensions. To accurately interpret partial and simultaneous correlation tests, global satisfaction as the dependent variable must be measured using separate items from the scores comprising the five dimensions. If separate instruments are not yet available, descriptive analysis of satisfaction profiles is a more valid option than regression on a total score identical to the sum of the predictor scores.

For community health center managers, evaluation is recommended to begin with streamlining procedures for recording disruptions, mapping user needs by unit, checking the quality of data input and correction, strengthening technical support, and providing workflow-based training. After data collection, EUCS survey results should be interpreted alongside operational information to ensure recommendations lead to measurable actions. Further research should report actual observation and survey results, maintain staff confidentiality, and avoid causal inferences based on cross-sectional designs.

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Editorial note: The bibliography is aligned with the thesis sources. Incomplete bibliographic details should be verified against the original publications before the manuscript is submitted to the intended journal.

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