# Quality of Electronic Medical Record Information and Satisfaction of Electronic Medical Record Users at Pandan Arang Boyolali Regional Hospital

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**Abstract.** Information Quality can be defined as how well the function concerning the value of the output of information produced or managed by the application/ system for users can meet everyone's expectations and will help complete their work. Information Quality measurement indicators (Riskinanto, 2016) are information quality based on accuracy value, information quality based on timeliness of delivery, and information quality based on relevance. This study aims to explaining the quality of information and user satisfaction of electronic medical records at the Pandan Arang Regional General Hospital. This study is descriptive with the aim of describing the quality of information and satisfaction of electronic medical record users. The sample was 77 people consisting of doctors, nurses and medical record officers. Primary data were collected using questionnaires. Data analysis using descriptive analysis. Results: of the information quality variable have a mean of 17.5. With a mean of 17.5, it can be concluded that the quality of information is included in the very high-quality category with an interval of 16.8-20. information satisfaction variable have a mean of 8.4. With a mean of 8.4, it can be concluded that information satisfaction falls into the satisfied category with an interval of 8.4-10. Although information satisfaction has an average value that falls into the satisfied criteria, there are still respondents who choose to be quite satisfied regarding the information satisfaction received by system users. Conclution: Electronic medical record (EMR) information quality and user satisfaction are closely related, impacting the effectiveness and adoption of EMR systems in healthcare settings. Research shows that while EMRs can improve perceived medical record quality.

**Keywords:** Electronic medical record, quality information, Information Satisfaction.

## I. BACKGROUND

Every hospital is required to implement a Hospital Information System (HIS). SIRS is a process of collecting, processing and presenting hospital data. SIRS is a hospital reporting system application to the Ministry of Health which includes: hospital identity data, data on personnel working in the hospital, data on recapitulation of service activities, disease/morbidity compilation data for inpatients, and disease/morbidity compilation data for outpatients[1]. Along with technological developments, Electronic Medical Records (RME) are an integral part of SIRS. Based on Permenkes No. 1171 of 2011 Article 1 paragraph 1 states that every hospital is required to implement SIRS [2]. The display design of the SIRS application is designed to be user friendly with a fast response time to optimize employee performance in providing health services to the community [3]. SIRS applications will store, retrieve, transform, process and communicate information received using information imaging systems or other system equipment [4].

Information technology in the health sector is a special concern of the government, through the Ministry of Health (2021) in the 2024 Health digital transformation strategy blueprint making health technology transformation a priority activity.[1] Where the focus of the first part of the health technology transformation is the integration of health data systems and the development of a health big data analysis system. In the activity of documenting medical data, medical records which are usually documented in paper form, then with the transformation of technology and information, medical records are expected to be converted into Electronic Medical Records (EMR).

Pandan Arang Boyolali Regional Hospital has developed EMR in both outpatient, emergency, and inpatient services. The problems or obstacles that occur in EMR include the quality of information. High-quality information in EMR is essential for improving clinical decision making, improving patient care, and increasing user satisfaction. However, challenges such as system compatibility and user needs must be addressed to optimize these benefits.

Information Quality can be defined as how well the function concerning the value of the output of information produced or managed by the application/system for users can meet everyone's expectations and will help complete their work. Information Quality measurement indicators are information quality based on accuracy value, information quality based on timeliness of delivery, and information quality based on relevance.

Given the importance of EMR in determining data quality in providing health services to patients and is the basis for digital health transformation to integrate health data into national big data, an evaluation is needed that can analyze the factors that influence the success of EMR implementation at Pandan Arang Bayolali Hospital. EMR has been shown to reduce errors and improve clinical decision- making by providing universal access to real- time information. This improves the quality of care across patient populations.

EMR users, such as family physicians, report higher satisfaction with the quality of medical records compared to those using paper records, indicating a perceived improvement in information quality.

Information quality is intrinsically linked to two paradigms: intrinsic and contextual approaches. Concerning the intrinsic paradigm, the quality of information is profoundly connected to the quantification or evaluation of its quality (Nelson et al., 2005). This quantification encompasses the alignment of data, which includes elements such as actuality, accuracy, consistency, and timeliness. Conversely, the contextual paradigm posits that the quality of information must be articulated in relation to the specific needs of users, the tasks they undertake, and the applications they utilize. The contextual paradigm expands the dimensions of information quality by incorporating additional dimensions such as relevance, completeness, and currency of information, which collectively shape perceptions of quality within the context of usage. In this investigation, the quality of information was assessed through five variables: completeness, accuracy, format, currency, as well as the examination of the influence of the information system, and availability [2].

Completeness evaluates whether the information disseminated on the website encompasses all requisite details and all conceivable states pertinent to users (Nelson et al., 2005). The clarity, completeness, and conciseness of information constitute critical factors that must be meticulously considered when delivering information. Websites capable of providing a diverse array of information requisite for various purposes are deemed high-quality websites [3].

Accuracy pertains to the manner in which users conceptualize the website, particularly regarding the veracity of the information provided. Furthermore, accuracy is associated with the extent to which all situations relevant to the user are contextually represented in the information provided. Trustworthy and precise information sources can significantly affect decision-making processes and bolster an individual's confidence in their decisions. Additionally, established that individuals exhibit greater trust in more accurate information sources compared to those that are less accurate. [4]

Format examines whether the information is presented in a comprehensible manner that facilitates proper interpretation by the user, thereby assisting users in the completion of tasks. The evaluation of format is contingent upon the user's perception, which is shaped by their experiences in completing various tasks using the system over time (Nelson et al., 2005). [5]

Currency assesses user perceptions concerning whether the information provided is sufficiently current and aligned with contemporary issues. Moreover, currency pertains to the recency of the information and the extent to which it accurately reflects the current state of affairs. identified that online media bear the responsibility to furnish information that is timely, precise, consistent, and comprehensible for readers. Individual evaluations of information currency may vary significantly based on the specific tasks undertaken and personal perceptions.[6]

Availability scrutinizes whether the website offers efficient services in terms of providing information or other documents without encountering obstacles[7]. High availability is fostered by effectively managing and fulfilling user requests for expected services. The measure of availability is also influenced by the time required for users to access the information they seek[8].

**Satisfaction**

Information quality is intricately connected to two distinct paradigms: intrinsic and contextual. Regarding the intrinsic paradigm, the quality of information is closely linked to the quantification or evaluation of said quality[9]. This quantification encompasses the congruence of data, which includes its timeliness; the quality of information, in conjunction with system quality, significantly influences user satisfaction, particularly in relation to governmental websites[6]. User satisfaction is defined as the degree of contentment derived from the interaction with an information system. Furthermore, satisfaction is

also associated with an emotional appraisal, typically characterized by positive affect, which remains stable over time as a result of the experience gained from utilizing a service or product[10]. Within the context of technology, the satisfaction derived from prior media usage experiences may incentivize users to persist in their media engagement. It is anticipated that once users attain a specific threshold of satisfaction with the media, their intentions to reuse the media will be fostered articulated that satisfaction is regarded as a favorable reaction stemming from the experience of utilizing a product, and some scholars posit that measures of satisfaction should be viewed as a holistic assessment grounded in the acquisition and utilization of a product or service[11]. According to the framework of customer satisfaction theory, when consumers acknowledge their satisfaction with a product, they are also likely to cultivate behavioral intentions. In this investigation, the satisfaction in question pertains to the gratification derived from accessing the kemenag.go.id website[12]. It is imperative that online media uphold the obligation to furnish information that is current, precise, consistent, and comprehensible for its audience. The assessment of information currency may vary among users depending on their specific tasks and subjective perceptions[7].

Availability examines the extent to which the website provides efficient service in relation to the dissemination of information or other documents without encountering obstacles. Optimal availability is established through the effective management and fulfillment of user requests for the anticipated services. Furthermore, availability is also contingent upon the duration required for users to procure the information they seek[13].

This study aims to explaining the quality of information and user satisfaction of electronic medical records at the Pandan Arang Regional General Hospital[14].

## II. METHOD

This study is descriptive with the aim of describing the quality of information and satisfaction of electronic medical record users. The sample was 77 people consisting of doctors, nurses and medical record officers. Primary data were collected using questionnaires. Data analysis using descriptive analysis[15].

## III.RESULTS AND DISCUSSION

Based on cases reported in the period January 2023 to May 2024, dengue fever cases in Jepara district are listed in Table 1.

**Table 1.** Information Quality Interval

| Value | Criteria |
|---|---|
| 4 - 7.2 | Very Poor Quality |
| 7.2 - 10.4 | Poor Quality |
| 10.4 -13.6 | Fair Quality |
| 13.6- 16.8 | Quality |
| 16.8 -20 | Very High Quality |

**Table 2.** Information Quality

| No. | Criteria | Item 1 | Item 2 | Item 3 | Item 4 | N | NxSkor |
|---|---|---|---|---|---|---|---|
| 1 | strongly agree | 37 | 33 | 33 | 35 | 138 | 690 |
| 2 | agree | 39 | 44 | 37 | 26 | 146 | 584 |
| 3 | neutral | 1 | 0 | 7 | 16 | 24 | 72 |
| 4 | disagree | 0 | 0 | 0 | 0 | 0 | 0 |
| 5 | strongly disagree | 0 | 0 | 0 | 0 | 0 | 0 |
| | | | | Mean = 17,5 | | | |

Based on table 2, the research results of the information quality variable have a mean of 17.5. With a mean of 17.5, it can be concluded that the quality of information is included in the very high-quality category with an interval of 16.8-20. Although the quality of information has an average value that falls into the very high- quality criteria, there are still respondents who choose the fairly high-quality criteria regarding the quality of the information produced.

**Identification of Information Satisfaction Variables**

The information satisfaction variable has 2 questions. In determining the assessment criteria for descriptive analysis, the researcher uses an interval where the highest value is multiplied by
5 and the lowest value is multiplied by 1, so that: The highest value is 2 x 5 = 10
The lowest value is 2 x 1 = 2
Then the interval class is ((10-2) / 5) = 1.6, then the researcher determines the following criteria:

**Table 3.** Information Satisfaction Variable Interval

| Value | Criteria |
|---|---|
| 2 - 3.6 | Very Dissatisfied |
| 3.6-5.2 | Dissatisfied |
| 5.2-6.8 | Quite Satisfied |
| 6.8-8.4 | Satisfied |
| 8.4-10 | Very Satisfied |

Based on table 4, the results of the study of the information satisfaction variable have a mean of 8.4. With a mean of 8.4, it can be concluded that information satisfaction falls into the satisfied category with an interval of 8.4-10. Although information satisfaction has an average value that falls into the satisfied criteria, there are still respondents who choose to be quite satisfied regarding the information satisfaction received by system users.

**Table 4.** Information Satisfaction Variable

| No. | Criteria | Item 1 | Item 2 | N | NxSkor |
|---|---|---|---|---|---|
| 1 | strongly agree | 19 | 27 | 46 | 230 |
| 2 | agree | 51 | 44 | 95 | 380 |
| 3 | neutral | 7 | 6 | 13 | 39 |
| 4 | disagree | 0 | 0 | 0 | 0 |
| 5 | strongly disagree | 0 | 0 | 0 | 0 |
| | | | Mean = 8,4 | | |

The results of the study indicate that the quality of information has a significant effect on information satisfaction. The results of this study are in line with the research of  which shows that if the information generated from an information system is of high quality, it will increase user satisfaction with the information. According to respondents, the information generated by SIMRS is informative and helpful in carrying out daily work. However, some respondents felt that the information generated was still not presented in a format that was in accordance with user desires [8], [6].

Electronic medical record (EMR) information quality and user satisfaction are closely related, impacting the effectiveness and adoption of EMR systems in healthcare settings. Research shows that while EMRs can improve perceived medical record quality, user satisfaction is influenced by a variety of factors, including system design, usability, and the quality of information provided [9], [10].

A study evaluating physician satisfaction with EMR systems found that user satisfaction was highly correlated with screen design and layout, not system response time. This suggests that the visual and interactive aspects of EMR systems play a significant role in user satisfaction. In nursing information systems, satisfaction was associated with ease of use, information quality, and interface quality. Systems that aligned with user needs and provided high-quality information were rated more favorably, highlighting the importance of user-centered design in EMR systems.[11]

## IV.CONCLUSIONS AND SUGGESTIONS

The study concludes that the quality of information significantly influences user satisfaction in the context of Electronic Medical Record (EMR) systems at Pandan Arang Regional General Hospital. The findings indicate that the EMR system's information quality falls within the "very high quality" category, with a mean score of 17.5, while user satisfaction was categorized as "satisfied" with a mean score of 8.4. These results underscore the pivotal role of high-quality information in fostering user satisfaction, aligning with prior research suggesting that the relevance, accuracy, and presentation of information significantly impact user perceptions. However, the persistence of neutral or moderately satisfied responses highlights the need for ongoing refinement in system design, particularly in information format and usability. Implications suggest prioritizing user-centered approaches and iterative feedback mechanisms to enhance EMR adoption and utility. Future research should explore longitudinal impacts of improved information quality on clinical outcomes and investigate the role of system interoperability in enhancing user experiences.

## V. ACKNOWLEDGMENT

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