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Relationship Between Service Quality, Service Satisfaction, and Outpatient Loyalty Following Electronic Medical Record Implementation at Dr. R. Soetijono Regional Hospital, Blora

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Abstract: The implementation of Electronic Medical Records (EMR) is expected to improve healthcare service quality and strengthen patient loyalty by enhancing service quality, and service satisfaction. This study aimed to analyze the relationship between service quality, and service satisfaction with outpatient loyalty after EMR implementation at RSUD dr. R. Soetijono Blora. **Method:** This study employed a quantitative cross-sectional design involving 100 outpatient respondents selected using accidental sampling. Data were collected through validated and reliable questionnaires and analyzed using univariate analysis and the Spearman Rank test with a significance level of 0.05. **Findings:** The results showed that most respondents perceived service quality (95%), and service satisfaction (76%) as being at a moderate level, while patient loyalty was categorized as high (100%). Statistical analysis indicated that service quality, hospital image, and service satisfaction were not significantly associated with patient loyalty ($p>0.05$). **Implications:** These findings suggest that maintaining patient loyalty after EMR implementation requires attention to additional factors beyond service quality, and service satisfaction, providing valuable input for hospital management in evaluating digital health service strategies. **Originality:** This study offers empirical evidence regarding outpatient loyalty following EMR implementation in a regional public hospital and demonstrates that high patient loyalty may persist despite the absence of significant relationships with the examined service-related factors.

Keywords: Electronic Medical Records; outpatient; patient loyalty; service quality

INTRODUCTION

Digital transformation in healthcare has become a crucial issue in hospital service delivery because patients increasingly expect services that are faster, safer, more accurate, and more integrated. One important form of this transformation is the implementation of Electronic Medical Records (EMR), which changes medical documentation from paper-based records to digital health information systems. In Indonesia, this transformation has been strengthened by the Regulation of the Minister of Health of the Republic of Indonesia

Number 24 of 2022 concerning Medical Records, which requires healthcare facilities to implement electronic medical records (Kementerian Kesehatan Republik, 2022). This regulation shows that EMR is no longer only a technological innovation, but also a mandatory component of healthcare governance. The implementation of EMR is expected to improve the accuracy of documentation, accelerate access to patient information, reduce repeated administrative procedures, and support continuity of care. Buntin reported that health information technology generally provides positive benefits for healthcare quality and efficiency (Buntin et al., 2011). Menachemi and Collum also explained that electronic health records may improve clinical documentation and service coordination, although their implementation can present organizational challenges (Menachemi & Collum, 2011).

In outpatient services, the implementation of EMR is especially relevant because this unit involves direct interaction between patients, registration officers, nurses, doctors, pharmacy services, and administrative systems. Patients do not only assess the hospital from the availability of digital systems, but also from waiting time, staff responsiveness, clarity of information, service flow, comfort, and perceived fairness during care. Parasuraman emphasized that service quality is formed through patient or customer perceptions of reliability, responsiveness, assurance, empathy, and tangible aspects of service (Parasuraman et al., 1988). In the hospital context, these dimensions become important because patients often associate good service with fast procedures, accurate information, polite communication, and trust in healthcare workers. However, digitalization does not automatically create patient loyalty. Oliver explained that satisfaction and loyalty are formed through repeated experiences and evaluations over time (Oliver, 1997). Therefore, outpatient loyalty after EMR implementation needs to be studied because the presence of digital systems must still be supported by service quality and patient satisfaction.

Previous studies have discussed the relationship between healthcare service quality and patient loyalty. Meesala and Paul found that hospital service quality affects patient satisfaction and loyalty, especially when patients perceive that healthcare services meet their expectations (Meesala & Paul, 2018). Zhang showed that empathy plays an important role in connecting hospital service quality with patient loyalty (Zhang et al., 2018). Arab also reported that service quality can influence patient loyalty in hospital services (Arab et al., 2012). In Indonesia, Laila and Paramarta examined service quality, patient satisfaction, and loyalty in hospital settings (Laila & Paramarta, 2024). Cahyati further showed that

patient satisfaction may mediate the relationship between service quality and patient loyalty (Cahyati et al., 2026). These studies indicate that service quality remains a key factor in maintaining patient relationships with healthcare institutions. However, most of these studies still place service quality in a general hospital service context and have not specifically focused on outpatient loyalty after EMR implementation in regional public hospitals.

Another group of studies emphasizes patient satisfaction as an important factor associated with loyalty. Patient satisfaction reflects the extent to which healthcare services meet patient expectations and perceived needs. Ferreira explained that patient satisfaction is widely used as an indicator for evaluating healthcare service performance (Ferreira et al., 2023). Liu found that patient satisfaction can influence patient loyalty through patient trust (Liu et al., 2021). Abekah-Nkrumah also showed that customer relationship management and patient satisfaction are related to loyalty in hospital services (Abekah-Nkrumah et al., 2020). Satyawati and Berlianto reported that service quality and patient satisfaction contribute to patient loyalty in a hospital setting (Satyawati & Berlianto, 2022). Alodhialah further confirmed that patient satisfaction is one of the key predictors of loyalty in healthcare facilities (Alodhialah et al., 2024). These findings show that satisfaction is an important psychological response that may encourage patients to return to the same healthcare provider. Nevertheless, satisfaction may not always directly lead to loyalty because patients' decisions can also be influenced by accessibility, referral systems, insurance mechanisms, and the availability of specialist services.

A third body of literature focuses on EMR and digital health implementation in relation to healthcare service improvement. Uslu explained that electronic medical records have value for hospital care because they can support information management and clinical processes (Uslu et al., 2021). Tapuria found that patient access to electronic health records may improve transparency and engagement, although system design and implementation quality remain important (Tapuria et al., 2021). Langingi and Pongantung reported that the quality of electronic medical records can support health service improvement and patient satisfaction (Langingi & Pongantung, 2025). In the Indonesian context, Nisa and Aristi found that outpatient loyalty is influenced by several service-related factors, showing that loyalty is a multidimensional outcome (Nisa & Aristi, 2023). The Ministry of Health regulation on medical records also confirms that electronic records are part of the national effort to strengthen health information management. However, there is still limited

empirical evidence regarding whether service quality and service satisfaction remain significantly related to outpatient loyalty after EMR implementation, especially in regional public hospitals such as Dr. R. Soetijono Regional General Hospital, Blora.

Based on this research gap, this study aims to analyze the relationship between service quality, service satisfaction, and outpatient loyalty following the implementation of Electronic Medical Records at Dr. R. Soetijono Regional General Hospital, Blora. This study focuses on outpatient services because patients in this unit directly experience administrative procedures, clinical services, waiting time, communication with health workers, and service coordination after EMR implementation. By examining these relationships, this study is expected to provide empirical evidence regarding patient loyalty in the context of hospital digital transformation. The findings are also expected to provide practical input for hospital management in improving outpatient service quality, optimizing EMR-based service processes, and strengthening patient-centered care in regional public hospitals.

This study is based on the argument that service quality and service satisfaction are positively related to outpatient loyalty. Better service quality may create a more positive patient experience, while higher service satisfaction may strengthen patients' willingness to return to the same hospital and recommend it to others. Therefore, this study proposes two hypotheses. First, service quality has a significant relationship with outpatient loyalty following EMR implementation. Second, service satisfaction has a significant relationship with outpatient loyalty following EMR implementation. However, because outpatient loyalty in regional public hospitals may also be affected by referral mechanisms, BPJS health insurance procedures, accessibility, continuity of care, and the availability of specialist services, the strength of these relationships may vary in the context of EMR-based hospital services.

RESEARCH METHOD

This study employed a quantitative observational analytical design with a cross-sectional approach. The study was conducted in May 2026 at the outpatient clinic of Dr. R. Soetijono Regional General Hospital in Blora, Central Java, Indonesia. The cross-sectional approach was chosen because it allows for the simultaneous measurement of independent variables namely, service quality and service satisfaction as well as the dependent variable outpatient loyalty at a specific point in time. This design is suitable for identifying

relationships between variables without manipulating the research setting and for describing patients' perceptions following the implementation of the Electronic Medical Record (EMR) system.

The unit of analysis in this study consisted of outpatient patients who had received health care services following the implementation of the Electronic Medical Record (EMR) system at Dr. R. Soetijono Regional General Hospital in Blora. The study population comprised 2,698 outpatient visits recorded during the study period. The minimum sample size was calculated using the Slovin formula, which yielded 97 respondents. To account for incomplete questionnaires or non-responses, the sample size was increased by approximately 10%, resulting in a final sample of 100 respondents. Respondents were selected using simple random sampling, which gives every member of the population an equal chance of being selected, thereby minimizing selection bias and enhancing representativeness.

The inclusion criteria were outpatients aged 17 years and older who had received health care following the implementation of the Electronic Medical Record (EMR) system, were able to communicate effectively, were willing to participate in this study by signing a consent form after receiving an explanation and were able to complete the questionnaire independently. Exclusion criteria include patients with impaired consciousness, patients with severe physical or psychological conditions that prevent them from completing the questionnaire, and respondents who return incomplete questionnaires.

Primary data were collected using a structured questionnaire consisting of three research variables, the independent variables consist of service quality and service satisfaction. The dependent variable in this study is patient loyalty. The service quality questionnaire was developed based on the SERVQUAL dimensions physical aspects, reliability, responsiveness, assurance, and empathy while the service satisfaction and outpatient patient loyalty questionnaires were developed in accordance with the research indicators presented in the conceptual framework. Prior to data collection, the research instruments underwent validity and reliability testing. Validity testing showed that all questionnaire items had corrected item-total correlation coefficients exceeding the minimum acceptable value ($r > 0.30$), indicating that all items were valid. Reliability testing using Cronbach's Alpha yielded values greater than 0.70 for all variables, confirming that the questionnaire possesses satisfactory internal consistency and is reliable for data collection. Secondary data were obtained from hospital records, institutional documents,

applicable regulations, and scientific literature related to the implementation of Electronic Medical Records and patient loyalty.

This study received ethical approval from the Health Research Ethics Committee of STIKES Adi Husada Surabaya, with Ethics Approval Number 195.C/Ket/PPM/STIKES-AH/IV/2026. Before participating, all respondents received an explanation of the study's objectives and procedures and voluntarily signed the informed consent form after receiving this explanation. The confidentiality and anonymity of all participants were maintained throughout the research process.

Data were analyzed using IBM SPSS Statistics. Univariate analysis was conducted to describe the characteristics of the respondents and the distribution of each research variable. Bivariate analysis was performed using Spearman's rank correlation test to examine the relationship between service quality, service satisfaction, and outpatient patient loyalty. The Spearman rank correlation test was chosen because the research variables were measured using ordinal data obtained from a Likert scale questionnaire, and the normality test indicated that the data were not normally distributed, thereby violating the assumptions required for parametric correlation analysis. Therefore, Spearman's rank correlation test was considered the most appropriate statistical method for analyzing the relationships among the study variables. Statistical significance was determined at a 95% confidence level ($\alpha = 0.05$).

RESULT

Characteristics of Responden

An analysis of demographic characteristics was conducted to provide an overview of the sample in this study. These characteristics included age, gender, occupation, and education. Table 1 below presents the results of the demographic characteristics

Table 1. Characteristics of Responden

Characteristics	Category	Frequency (n)	Percentage (%)
Age (years)	21-30	24	24%
	31-40	27	27%
	41-50	24	24%
	>50	25	25%
Sex	Male	47	47%
	Female	53	53%
Education	Elementary School	23	23%
	Junior High School	24	24%
	Senior High School	44	44%

Characteristics	Category	Frequency (n)	Percentage (%)
	Diploma/Bachelor	9	9%
Occupation	Civil servant	5	5%
	Private employee	32	32%
	Farmer	29	29%
	Housewife	34	34%

Table 1 presents the demographic characteristics of the 100 respondents. By age, the largest proportion of respondents was in the 31–40 age group (27.0%), followed by those over 50 years old (25.0%), while respondents aged 21–30 and 41–50 each accounted for 24.0%. By gender, the majority of respondents were women (53.0%). Regarding educational attainment, most respondents had completed high school (44.0%). In terms of occupation, homemakers constituted the largest group (34.0%), followed by private-sector employees (32.0%), farmers (29.0%), and civil servants (5.0%). Overall, these findings indicate that the respondents represent a diverse demographic background, thereby providing a broad overview of the characteristics of outpatient patients following the implementation of the Electronic Medical Record system.

Special Data

This analysis was conducted to determine the distribution of service quality following the implementation of the Electronic Medical Record in this study. Table 2 below presents the results of the distribution of service quality following the implementation of the Electronic Medical Record.

Table 2. Distribution of Service Quality Following Electronic Medical Record Implementation

Category	Frequency (n)	Percentage (%)
Moderate	95	95.0%
High	5	5.0%
Total	100	100.0%

Table 2 shows the distribution of respondents' perceptions regarding the quality of care following the implementation of the Electronic Medical Record system. Of the 100 respondents, 95 (95.0%) rated the quality of healthcare as moderate, while only 5 (5.0%) rated it as high. No respondents rated the quality of healthcare as low. These findings indicate that, although the implementation of the Electronic Medical Record has been well received, the majority of outpatients rated the quality of healthcare services as moderate rather than excellent. This suggests that improvements are still needed in several

dimensions of service quality including responsiveness, reliability, assurance, empathy, and tangible aspects of healthcare services to further enhance patients' perceptions of service quality. Table 3 below describes service satisfaction following the implementation of an electronic medical record system

Table 3. Distribution of Service Satisfaction Following Electronic Medical Record Implementation

Category	Frequency (n)	Percentage (%)
Low	8	8.0%
Moderate	76	76.0%
High	16	16.0%
Total	100	100.0%

As shown in Table 3, the majority of respondents reported a moderate level of satisfaction with the service, namely 76 respondents (76.0%). Meanwhile, 16 respondents (16.0%) reported a high level of satisfaction, while 8 respondents (8.0%) expressed low satisfaction with the health care services they received. These findings indicate that the majority of outpatients are generally satisfied with healthcare services following the implementation of the Electronic Medical Record, however, the predominance of moderate satisfaction levels suggests that patients' expectations have not been fully met. Therefore, ongoing efforts to improve healthcare delivery and optimize Electronic Medical Record implementation are necessary to increase patient satisfaction and increase the proportion of highly satisfied patients. Table 4 below describes the relationship between service quality, service satisfaction, and patient loyalty.

Table 4. Relationship Between Service Quality, Service Satisfaction, and Patient Loyalty

Independent Variable	Dependent Variable	Spearman Correlation Coefficient (r)	p-value	Interpretation
Service Quality	Patient Loyalty	0.129	0.200	No significant relationship
Sevice Satisfaction	Patient Loyalty	0.052	0.609	No significant relationship

Table 4 presents the results of a Spearman rank correlation analysis examining the relationship between service quality, service satisfaction, and outpatient loyalty following the implementation of the Electronic Medical Record system. The analysis shows that service quality has no significant relationship with patient loyalty (Spearman's rho = 0.129; p = 0.200). Although the correlation coefficient indicates a positive relationship, the

magnitude is very weak and does not reach statistical significance because the p-value exceeds the predetermined significance level of 0.05. Similarly, service satisfaction was not significantly associated with patient loyalty (Spearman's rho = 0.052; p = 0.609). The correlation coefficient was close to zero, indicating a negligible positive relationship between the two variables. Since both p-values were greater than 0.05, the null hypothesis could not be rejected. These findings indicate that neither service quality nor service satisfaction has a statistically significant relationship with outpatient patient loyalty following the implementation of the Electronic Medical Record system at Dr. R. Soetijono Regional General Hospital, Blora

DISCUSSION

The findings of this study indicate that most outpatients perceived the quality of healthcare services following the implementation of the Electronic Medical Record (EMR) system at Dr. R. Soetijono Regional General Hospital, Blora, as moderate. Similarly, the majority of respondents reported a moderate level of service satisfaction. The results of the Spearman rank correlation analysis showed that service quality was not significantly associated with outpatient loyalty (r = 0.129; p = 0.200), and service satisfaction was also not significantly associated with outpatient loyalty (r = 0.052; p = 0.609). These results indicate that, in this study, outpatient loyalty was not significantly related to patients' perceptions of service quality or service satisfaction after EMR implementation.

The absence of a significant relationship between service quality and outpatient loyalty suggests that perceived service quality alone may not be sufficient to encourage patients to return to the same hospital. Although EMR implementation may support administrative efficiency, documentation accuracy, and service coordination, patients may still evaluate hospital services based on broader experiences such as waiting time, clarity of information, communication with healthcare workers, ease of service flow, and access to specialist care. In this study, the predominance of moderate service quality indicates that outpatient services had not yet reached an optimal level from the patients' perspective. Therefore, the implementation of EMR should be understood not only as a digital administrative improvement, but also as part of a broader effort to improve the overall patient experience.

This finding is consistent with Laila and Paramarta, who reported that service quality was not always directly associated with patient loyalty (Laila & Paramarta, 2024). However, it differs from several previous studies that identified service quality as an

important determinant of patient loyalty. Meesala and Paul found that hospital service quality can influence patient satisfaction and loyalty (Meesala & Paul, 2018), while Zhang emphasized the role of empathy in strengthening the relationship between service quality and patient loyalty (Zhang et al., 2018). Arab also reported that better service quality can contribute to stronger patient loyalty in hospital services (Arab et al., 2012). The difference between this study and previous findings may be explained by variations in hospital type, patient characteristics, healthcare financing systems, referral mechanisms, and the stage of digital service implementation. In regional public hospitals, patients may return not only because of perceived service quality, but also because of referral pathways, BPJS Kesehatan procedures, distance from home, and the availability of specific health services.

The results also showed that service satisfaction was not significantly associated with outpatient loyalty. This finding indicates that although patients may feel moderately satisfied with the services received, satisfaction does not automatically lead to loyal behavior. This finding differs from Andriani, who found that patient satisfaction had a significant relationship with patient loyalty in outpatient pharmacy services. The difference may be explained by variations in service units, patient expectations, hospital characteristics, and the context of EMR-based outpatient services (Andriani et al., 2025). Patient loyalty is a behavioral outcome that is usually shaped by repeated experiences, trust, service continuity, and the availability of alternative healthcare providers. A patient who is satisfied with one service encounter may not necessarily continue using the same hospital if other facilities offer shorter waiting times, easier access, more complete services, or more convenient administrative procedures. Therefore, satisfaction should be interpreted as an important indicator of patient experience, but not as the only determinant of loyalty.

This result is in line with Liu, who found that patient satisfaction does not always directly influence patient loyalty (Liu et al., 2021). Kartika also explained that loyalty in public hospitals may be influenced by healthcare needs, referral systems, hospital accessibility, specialist availability, and health facilities (Kartika et al., 2023). However, this finding differs from Liu, who reported that patient satisfaction can influence loyalty through patient trust (Liu et al., 2021). It also differs from Oentara and Bernarto, who found that patient satisfaction can contribute to loyalty when healthcare services consistently meet or exceed patient expectations (Oentara & Bernarto, 2022). These differences show that the relationship between satisfaction and loyalty is contextual. In the setting of regional

public hospitals, loyalty may be more complex because patients' decisions are often shaped by structural factors, not only by individual satisfaction.

The meaning of these findings is that outpatient loyalty after EMR implementation should not be understood merely as a result of service quality or satisfaction. EMR may improve internal hospital processes, but its benefits must be clearly experienced by patients in the form of shorter waiting times, smoother registration, faster access to medical information, better communication, and more coordinated services. If digital transformation is only experienced by hospital staff as an administrative tool, while patients still face long queues, unclear information, or fragmented services, then EMR implementation may not significantly strengthen loyalty. Thus, the novelty of this study lies in showing that in an EMR-based regional public hospital setting, service quality and satisfaction may not be sufficient predictors of outpatient loyalty because patient loyalty is also influenced by institutional, administrative, and access-related factors.

From a reflective perspective, the findings have both functional and dysfunctional implications. Functionally, the results remind hospital management that service quality and satisfaction remain important aspects of quality improvement, even when they are not statistically associated with loyalty in this study. The moderate levels of service quality and satisfaction indicate that there is still room for improvement in outpatient services. Dysfunctionally, the findings also warn that digital transformation may not produce the expected impact on loyalty if it is not accompanied by improvements in patient-centered service delivery. Hospitals may invest in EMR systems, but if the implementation does not reduce waiting time, improve communication, or simplify patient flow, patients may not perceive meaningful improvement in their care experience.

Based on these findings, hospital management should adopt a comprehensive strategy to strengthen outpatient loyalty after EMR implementation. First, the hospital should conduct regular evaluations of outpatient waiting time, registration flow, pharmacy service time, and the integration of EMR with other service units. Second, healthcare workers and administrative staff should receive continuous training not only in EMR use, but also in patient communication, responsiveness, and service coordination. Third, the hospital should develop a periodic patient experience survey to identify service barriers that are not captured only through satisfaction scores. Fourth, EMR should be optimized to support patient-centered care, such as faster retrieval of patient history, better coordination between clinics and pharmacies, and clearer information for patients. Finally, future service

improvement should also consider other factors that may influence loyalty, including patient trust, accessibility, referral systems, BPJS procedures, continuity of care, and the availability of specialist services.

CONCLUSION

This study concludes that, following the implementation of the Electronic Medical Record system at Dr. R. Soetijono Regional General Hospital, Blora, most outpatient respondents perceived service quality and service satisfaction at a moderate level. The Spearman rank correlation analysis showed that neither service quality nor service satisfaction had a significant relationship with outpatient loyalty. These findings indicate that outpatient loyalty in the context of EMR-based hospital services cannot be explained only by patients' perceptions of service quality and satisfaction.

The main contribution of this study is its empirical evidence that patient loyalty in a regional public hospital after EMR implementation may be influenced by broader factors beyond service quality and satisfaction. This finding enriches the discussion on hospital digital transformation by showing that EMR implementation needs to be connected with patient-centered service improvement, including service accessibility, continuity of care, waiting time management, communication quality, and patient trust. Practically, the findings suggest that hospital management should not rely solely on improving service quality and satisfaction scores, but should also evaluate the overall outpatient experience and the effectiveness of EMR in supporting faster, more coordinated, and more responsive healthcare services.

This study has several limitations. First, the cross-sectional design measured the relationship between variables at a single point in time, so it cannot establish causal relationships. Second, the study was conducted in only one regional public hospital, which may limit the generalizability of the findings to other healthcare facilities. Third, this study examined only service quality and service satisfaction, while other factors that may influence patient loyalty were not included. Future studies are recommended to use longitudinal or multicenter designs and to examine other determinants of patient loyalty, such as patient trust, perceived value, waiting time, healthcare accessibility, referral systems, BPJS procedures, continuity of care, digital service quality, and patient experience.

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