

ONLINE REGISTRATION IMPACT ON PATIENT SATISFACTION AT BHAYANGKARA BONDOWOSO HOSPITAL

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Abstrak

Inovasi teknologi informasi dalam layanan kesehatan telah mengubah pola perilaku pasien dan manajemen sistem kesehatan, aplikasi pendaftaran online di rumah sakit meningkatkan akses dan kepuasan pasien. Aplikasi registrasi online telah menjadi inovasi penting untuk meningkatkan aksesibilitas dan efisiensi dalam registrasi pasien. Penelitian ini berfokus pada aspek kualitas informasi, layanan, penggunaan, dan kualitas sistem aplikasi untuk memahami dampaknya terhadap kepuasan pasien. Penelitian ini adalah penelitian deskriptif analitik korelasional di Rumah Sakit Bhayangkara, Bondowoso, menggunakan purposive sampling untuk memilih 200 dari 1.152 pasien rawat jalan yang memakai aplikasi pendaftaran online. Analisis data dilakukan dengan Structural Equation Modelling (SEM) menggunakan Confirmatory Factor Analysis (CFA) dan Multiple Regression Analysis (MRA) untuk mengevaluasi pengaruh kualitas informasi, sistem, penggunaan, dan layanan terhadap kepuasan pasien. Hasil penelitian menunjukkan semua variabel independent berpengaruh positif dengan pengaruh terbesar pada variabel X4 (Kualitas Pelayanan) dengan koefisien regresi 0,44, disusul variabel X1 (Kualitas informasi) dengan koefisien regresi 0,376, variabel X3 (Penggunaan) dengan koefisien regresi 0,202 dan variabel X2 (Kualitas Sistem) dengan koefisien regresi 0,083. Penelitian ini memberikan implikasi untuk meningkatkan kepuasan pasien dan efisiensi pendaftaran pasien secara keseluruhan.

Kata kunci: analisis aplikasi, pendaftaran online, kepuasan pasien, rumah sakit

Abstract

Information technology innovations in healthcare have changed patient behavior patterns and health system management, online registration applications in hospitals improving patient access and satisfaction. Online registration applications has become a crucial innovation to improve accessibility and efficiency in patient registration. This study focuses on the aspects of information quality, service, usage, and application system quality to understand their impact on patient satisfaction. This research was a correlational analytical descriptive study at Bhayangkara Hospital, Bondowoso, using purposive sampling to select 200 from 1,152 outpatients who used the Online Registration Application. Data analysis was carried by Structural Equation Modeling (SEM) using Confirmatory Factor Analysis (CFA) and Multiple Regression Analysis (MRA) to evaluate the influence of information quality, systems, use and services on patient satisfaction. The findings showed all independent variables have a positive influence, with the greatest impact from variable X4 (Service Quality) with a regression coefficient of 0.44, followed by variable X1 (Information Quality) with a regression coefficient of 0.376, variable X3 (Usage) with a regression coefficient of 0.202, and variable X2 (System Quality) with a regression coefficient of 0.083. This research provides implications to improve overall patient satisfaction and efficiency of patient registration.

Keywords: application analysis, online registration, patient satisfaction, hospital

1. INTRODUCTION

Information technology innovations have transformed the landscape of healthcare services in the modern era, bringing significant changes in patient behavior patterns and healthcare system management (Stoumpos et al., 2023). Information technology supporting information

systems can add value when effectively designed, creating successful systems (Gaol et al., 2020). Facing the continuous increase in service demand, quick registration services are essential. One fundamental change is the adoption of online registration applications in hospitals, providing patients with easier and

faster access to plan outpatient visits (Gajarawala et al., 2021). Patient registration at hospitals is a crucial component in implementing information systems at hospitals (Farzandipour et al., 2020). Manual data management and services have many drawbacks, such as time-consuming processes, low accuracy, and precision, depending on human resources (Zhang, 2021). Online registration allows patients to register without queuing for a queue number, directly through the online registration application (Widianawati et al., 2021).

The speed and informativeness of the online registration application influence the level of customer complaints, which is one of the factors affecting customer satisfaction (Setyaning et al., 2020). Previously, registration was done directly (offline), where patients or their families had to come to healthcare facilities for examinations (Hägglund, et al., 2022). However, with technological advancements, indirect registration (online) is becoming more popular, where patients or their families can register through various technology platforms such as WhatsApp, the web, and others. Online registration affects customer satisfaction by reducing patient waiting times, thus increasing patient satisfaction and patient satisfaction indices (Santos-Jaén et al., 2022). However, the use of online registration also has negative impacts on some members of the society (Talwar et al., 2020). Online registration applications can reduce the quota of manually registered patients and can also disadvantage patients who still register manually. This can be disadvantageous for individuals who do not understand technology. Conversely, if registration is still done in a traditional way, patients will have difficulty obtaining information and registering quickly, spending a lot of time, effort, and cost. The Outpatient Registration Point (ORP) serves as an information center for outpatient patients and is one of the patient identity data recording units in the hospital (Riplinger et al., 2020). ORP is responsible for organizing the admission and registration of outpatient patients. The online registration application opens the door for patients to register, monitor doctor schedules, and obtain cost information more efficiently (Emes et al., 2019).

The online registration application has been utilized by Bhayangkara Bondowoso Hospital, a government hospital owned by the Indonesian National Police (Polri) that serves the

majority of patients from Bondowoso Regency, one of the underdeveloped regencies in East Java Province. Patient satisfaction is the result of an evaluation after comparing perceived performance or outcomes with expectations (Prakoeswa et al., 2022). The level of satisfaction is influenced by the difference between perceived performance and expectations. Creating patient satisfaction brings benefits, including establishing a harmonious relationship between the hospital and patients and enhancing consumer confidence in service quality (Liu et al., 2021). Customer satisfaction is considered an important aspect in maintaining business and dealing with competition.

The information system's success model includes six dimensions to measure information system success, including information quality, system quality, usage, user satisfaction, individual impact, and organizational impact (DeLone et al., 2003). Information quality and system quality are two key dimensions in the success of an information system. Information quality measures the level of quality of information generated by the information system, while system quality measures how well the information system itself performs (Putri et al., 2019). Usage reflects how often users use the information system, while service quality includes the support provided by the information system to the users (Kalankesh et al., 2020). Previous research findings indicate that system quality, information quality, and service quality do not positively influence the usage of the RS Darmo Surabaya website (Wulansari et al., 2021). However, visitor satisfaction on the website is influenced by system quality and service quality. In Bhayangkara Bondowoso Hospital, there has been no research conducted on this registration application.

A deep understanding of the factors influencing patient satisfaction through the online registration application is crucial to guide the development of a better system, improve services, and provide greater benefits to patients (Manzoor et al., 2019). This research will involve a comprehensive evaluation of information quality, system quality, usage, and service quality of the online registration application in the context of patient satisfaction, opening a window of insight for the development of a more effective and responsive healthcare system (Ferreira et al., 2023). The aim of this research is to comprehensively evaluate the

impact of online registration on patient satisfaction at Bhayangkara Bondowoso Hospital. This evaluation will focus on assessing the information quality, system quality, usage, and service quality of the online registration application in order to understand its influence on patient satisfaction. The research aims to provide insights that can guide the development of a more effective and responsive healthcare system, ultimately improving services and enhancing patient benefits.

2. RESEARCH METHOD

This research is a descriptive analytic correlational study based on positivist philosophy. The research method used is correlation research. The research series was conducted at Bhayangkara Hospital in Bondowoso Regency, East Java, during the month of July 2022. The population of this study is 1.152 outpatient patients of Bhayangkara Bondowoso Hospital who use the Online Registration Application. Participants were selected using purposive sampling with a sample size of 200 patients. The variables focused on as independent variables in this study include information quality, system quality, usage, and service quality. Meanwhile, the dependent variable in this research is patient satisfaction. Primary data in this research was obtained directly from the results of questionnaires in the field, while secondary data came from

related literature studies and was used to help analyze primary data. The results of validity testing carried out using the Product Moment correlation method obtained a Sig value. $(0.000) < 0.05 (\alpha)$ so the instrument is valid. Data analysis was performed using Structural Equation Modelling (SEM) technique with Confirmatory Factor Analysis (CFA) and Multiple Regression Analysis as analysis tools (Dash & Paul, 2021). Validity and reliability tests were also conducted to ensure data accuracy. This research has obtained permission from the Ethical Committee of Medical Research Faculty of Dentistry University of Jember with Ethical Approval Number 1852/UN25.8/KEPK/DL/2022.

3. RESULT AND DISCUSSION

Bhayangkara Bondowoso Hospital is a government hospital that primarily serves the residents of Bondowoso Regency, an underdeveloped regency in East Java Province. The main issues in this regency include human resources development, poverty, and infrastructure needs. Statistical data shows varying levels of literacy in specific age groups. Higher education among patients is associated with higher satisfaction levels towards medical services due to a better understanding of policies and medical knowledge. The majority of respondents in this research are outpatient visitors, with a significant proportion being female.

Table 1. Respondent Characteristics

No	Characteristics	Frequency (n=200)	Percentage (%)
1.	Gender		
	Man	78	39.00
	Woman	122	61.00
2.	Education		
	Elementary School	22	11.00
	Junior High School	48	24.00
	Senior High School	106	53.00
	Bachelor Degree	23	11.50
	Master Degree	1	0.50
3.	Occupation		
	PNS	26	13.00
	TNI/ POLRI	5	2.50
	Farmer	15	7.50
	Private	59	29.50
	Self-employed	53	26.50
	Other	42	21.00

Respondent characteristics are based on gender, education level, occupation, and age. Out of 200 respondents, 61% are female and 39% are male. A total of 53% of respondents have a high school education, and the majority of respondents work as private employees (29.5%) and entrepreneurs (26.5%). The average age of the respondents is 47 years, with the youngest being 16 years old and the oldest being 73 years old.

Regression Model of X1 and X2 on Y. The results of this study encompass classic

assumption tests and model feasibility in the regression of X1 and X2 on the Patient Satisfaction variable. Classic assumptions include tests for normality, heteroskedasticity, and multicollinearity. The test results show that the residual data is normally distributed and there are no signs of heteroskedasticity or multicollinearity in the model. From the One Sample Kolmogorov-Smirnov Test, it is known that the Sig. value (0.200) > 0.05, therefore it can be concluded that the data is normally distributed.

Table 2. Descriptive Statistics

Descriptive Statistics			
	Mean	Std. Deviation	N
Patient Satisfaction (Y)	19.91	3.732	200
Information Quality (X1)	29.58	6.000	200
System Quality (X2)	35.03	7.066	200
Usage (X3)	18.74	4.540	200
Quality Of Service (X4)	37.27	7.520	200

Model feasibility tests include the determination coefficient and simultaneous and partial significance tests. The determination

coefficient indicates that the independent variables have an influence of 81.3% on patient satisfaction.

Table 3. Determinacy Coefficient

Model Summary ^b									
					Change Statistics				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	F Change	df1	df2	Sig. F Change
1	0.901 ^a	0.813	0.809	1.632	0.813	211.401	4	195	0.000

a. Predictors: (Constant), Service Quality (X4), Users (X3), System Quality (X2), Information Quality (X1)

b. Dependent Variabel: Patient Satisfaction (Y)

Based the table 3, it can be seen that the correlation value (R) is 0.901. This indicates a very high correlation or relationship among the independent variables, namely information quality, system quality, usage, and service quality, with the dependent variable, patient satisfaction. Furthermore, the Adjusted R-Square value obtained is 0.813, indicating that the proportion of the influence of independent variables (information quality, system quality, usage, and service quality) on the dependent variable (patient satisfaction)

is 81.3%, while the remaining (100%-81.3% = 18.7%) is influenced by other variables not included in this study or in this linear regression model. Simultaneous and partial significance tests confirm that this regression model is suitable for use, and the variables of information quality, system quality, usage, and service quality have a positive and significant influence on patient satisfaction.

The result from the research hypothesis is that H0 if there is no significant influence of the independent variable on its dependent variable partially, and H1 if there

is a significant influence of the independent variable on its dependent variable partially, with the decision criteria if the Sig. value > 0.05 and the t-value < t-table value (1.972)

then H0 is accepted. If the Sig. value < 0.05 and the t-value > t-table value (1.972) then H1 is accepted.

Table 4. Significant Partial Test (t test)

Model	Coefficients ^a		Beta	T	Sig.
	Unstandardized Coefficients	Standardized Coefficients			
	B	Std. Error			
1 (Constant)	0.443	0.727		0.609	0.543
Information Quality (X1)	0.376	0.026	0.605	14.540	0.000
System Quality (X2)	0.083	0.021	0.157	4.023	0.000
Usage (X3)	0.202	0.029	0.246	6.896	0.000
Quality Of Service (X4)	0.044	0.019	0.090	2.314	0.022

A. Dependent Variabel: Patient Satisfaction (Y)

Thus, the resulting linear regression equation is Patient Satisfaction = 0.443 + 0.376 (Information Quality) + 0.083 (System Quality) + 0.202 (Usage) + 0.44 (Service Quality). These findings provide a deep understanding of the factors influencing the level of patient satisfaction and provide guidance for service providers to improve service quality by focusing on these significant variables.

The information quality of the online registration application of Bhayangkara Bondowoso Hospital provides information such as doctor practice schedules, queue numbers, and fees, helping to reduce queues and facilitate patient access to healthcare services. For patients, this feature provides convenience as they can monitor waiting and service times, thus making access to information about healthcare services easier and more comfortable. Good information quality can create services that meet the needs of information system users (Benmoussa et al., 2018). Other information features include participant registration, data updates, premium payment history, service history, bed availability, and surgical procedures. The quality of information provided is comprehensive, easy, and appropriate. Furthermore, quality is also influenced by the relevance, accuracy, timeliness, and trustworthiness of information (Jiang et al., 2021). Good information is useful, understandable, and delivered in a timely manner.

The service quality in the application is through socialization, application counters,

and educational videos. Socialization is conducted by placing banners at patient registration areas, distributing brochures via social media platforms such as WhatsApp, Instagram, Facebook, and others. Engaging educational videos are also produced to enhance service quality. Service quality is the quality of support provided by the information system to users, including responsiveness, accuracy, reliability, technical competence, and empathy (Davarpanah et al., 2013). The goal of this service quality improvement is to ensure that users understand how to use the application and utilize its features (Rita et al., 2019).

The research findings indicate a significant positive influence of online registration application usage on patient satisfaction, as evidenced by increased convenience, reduced waiting times, and improved access to healthcare services, ultimately contributing to enhanced overall satisfaction levels among patients. The user quality refers to how often users use the information system. Active application usage by patients affects their satisfaction. Patient satisfaction arises when users perceive the benefits and satisfaction from the system (Oppong, et al, 2021).

The system quality on the online registration application, characterized by user-desired features such as ease of use, reliability, system flexibility, features, and response time plays a crucial role in assessing the effectiveness of information systems. This system quality affects patient

satisfaction and helps improve the accessibility of the online registration application (Ojo, 2017). This application can be accessed through various platforms, increasing accessibility flexibility for users. The dependent variable that is the focus is patient satisfaction in using the online registration application at Bhayangkara Bondowoso Hospital. Satisfaction measurement includes various aspects, including user experience while using the application, services provided, staff behavior, costs or payments related to application usage, and promotions related to application usage.

The analysis results show that all independent variables have a significance value (Sig) of less than 0.05. The low sig value indicates that the variables of information quality (x1), system quality (x2), usage (x3), and service quality (x4) have a significant influence on patient satisfaction in using the online registration application. Therefore, the null hypothesis (H0) is rejected, and the alternative hypothesis (H1) is accepted, indicating a positive and significant one-way influence between the variables of information quality, system quality, usage, and service quality on patient satisfaction (Abbasi-Moghaddam et al., 2019). Regression analysis results show that variable x1 (information quality) has a high t-value (14.540) with a regression coefficient of 0.376, indicating that information quality has a significant influence on patient satisfaction (Abdulmutalib et al., 2022). This is followed by variable x3 (usage) with a t-value of (6.896) and a regression coefficient of 0.202, and variable x4 (service quality) with a t-value of (2.314) and a regression coefficient of 0.044. Variable x2 (system quality) also has a significant influence, although lower than the other variables, with a t-value of (4.023) and a regression coefficient of 0.083.

Based on the regression coefficients, the variable with the greatest influence on patient satisfaction is service quality (x4) with the highest regression coefficient of 0.44. This is followed by information quality (x1) with a regression coefficient of 0.376, usage (x3) with a regression coefficient of 0.202, and system quality (x2) with the lowest regression coefficient of 0.083. This study provides a deeper understanding of the

relationship between the factors of information quality, system quality, usage, and service quality on patient satisfaction in using the online registration application at Bhayangkara Bondowoso Hospital. These findings can provide guidance for hospitals to improve the quality of online registration application services, ensure patient satisfaction, and enhance overall patient registration efficiency (Al-Mhasnah et al., 2018).

The Service Quality variable is the most influential variable on patient satisfaction. Information quality has a positive and significant influence on patient satisfaction; the higher the information quality, the higher the patient satisfaction. System Quality also has a positive and significant influence on patient satisfaction; the higher the system quality, the higher the patient satisfaction. The user variable has a positive and significant influence on patient satisfaction; the higher the user quality, the higher the patient satisfaction. Service quality has a positive and most significant influence on patient satisfaction; the higher the service quality, the higher the patient satisfaction.

4. CONCLUSION AND SUGGESTION

The analysis of the online registration application's influence on patient satisfaction at Bhayangkara Bondowoso Hospital reveals significant correlations between information quality, system quality, usage, service quality, and overall patient satisfaction. The study, encompassing diverse demographic characteristics, underscores the pivotal role of education in shaping satisfaction levels and emphasizes the importance of information clarity and system functionality. The regression model's robustness, supported by classic assumption tests, establishes the suitability of the model, while the determination coefficient signifies a substantial 81.3% impact of independent variables on patient satisfaction. The study's detailed coefficients indicate that information quality plays the most influential role, followed by usage, service quality, and system quality. These findings offer actionable insights for service providers to enhance the quality of online registration services, ensuring improved patient satisfaction and registration efficiency at Bhayangkara Bondowoso Hospital.

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