

The Impact of Digitalization of Services on Patient Satisfaction

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ABSTRACT

Background: Digital transformation in the healthcare sector aims to improve operational efficiency and service quality. However, challenges in system readiness and users' digital literacy can affect patients' perceptions of the service. **Objective:** This study aims to determine and analyze the effect of service digitalization on patient satisfaction. **Methods:** This study used a quantitative approach with a causal associative design. Sampling was conducted using a purposive sampling technique with a total sample of 50 patient respondents, research location in Kediri Regency Hospital. Primary data were collected through questionnaires with a 5-point Likert scale. Data analysis techniques included instrument testing (validity and reliability), classic assumption testing (normality and heteroscedasticity), simple linear regression analysis, hypothesis testing (t-test), and the coefficient of determination (R^2) using SPSS software. **Results:** The regression analysis resulted in the equation $Y = 10.150 + 0.712X$. The t-test showed that service digitalization had a positive and significant effect on patient satisfaction $t_{count} 5.124 > t_{table} = 2.011$; $p = 0.000 < 0.05$. The coefficient of determination (R^2) value was 0.358, indicating that 35.8% of patient satisfaction was influenced by service digitalization, while the remaining 64.2% was influenced by other variables outside this research model. **Conclusion:** The implementation of service digitalization is empirically proven to significantly increase patient satisfaction.

Keywords : digitalization, health services, patients

I. INTRODUCTION

The development of information and communication technology in the current digital era has brought radical changes to various sectors of life, including the healthcare sector. Hospitals, clinics, and community health centers (Puskesmas) are now being urged to abandon conventional, slow service delivery patterns and shift toward digitalization. This digital transformation is being implemented through various innovative systems, from online registration, electronic medical records (EME), digital queuing systems, to remote consultation services (telemedicine).

Theoretically, the digitalization of healthcare services aims to improve operational efficiency, reduce bureaucratic red tape, and minimize the risk of human error. For service providers, this technology simplifies the integration of medical data. For patients, digitalization offers ease of access, transparency of information, and significant reductions in waiting time. However, in reality, the transition to digital services is not always smooth. Challenges such as technological infrastructure readiness, network stability, and varying levels of digital literacy among patients



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(especially the elderly) often present obstacles. System failures or complex application interfaces can potentially lead to confusion and frustration.

In the healthcare industry, patient satisfaction is a key indicator of the quality of care provided. When patient expectations for the ease and speed of digital services are not met by the reality on the ground, this can drastically reduce their satisfaction levels, ultimately impacting the loyalty and reputation of the healthcare institution itself.

In today's era of globalization, information technology is a crucial element in the continuity of human life. The use of information technology as a tool to simplify work can support more effective and efficient services (Fitriansyah and Harris in Prajna, 2022). According to the WHO (World Health Organization), a hospital is an integral part of a social and health organization, with the function of providing comprehensive, curative, and preventive services to the community. In this era, the rapid development of healthcare services in Indonesia and the increase in public complaints have led to increasing public expectations for quality and affordable hospitals. Therefore, every hospital must continuously strive to maintain this increasingly high standard. In carrying out its functions and duties, a medical service must be able to provide quality services, meet demands, and meet public perceptions to the maximum (Rifai M, 2020). Service quality is the comparison of customer expectations with their perceptions of the actual service (actual performance) they receive. If the service received or perceived matches expectations, then the service quality is perceived as good and satisfactory. If the service received exceeds customer expectations, then the perceived service quality is considered ideal. Conversely, if the service received is lower than expected, then the perceived service quality will be poor or unsatisfactory (Parasuraman, et al., 1985). Essentially, patient satisfaction is a level of patient feeling that arises as a result of the performance of healthcare services received after the patient comparing with expectations (Soumokil in Sukur, 2023).

The level of satisfaction itself will be categorized as fulfilled if the service provided is appropriate or has met the category expected by the patient. The level of patient satisfaction is carried out in conjunction with other measurements of the quality of health services. In this case, patient satisfaction can only be achieved if a hospital has succeeded in meeting or fulfilling all patient needs in obtaining quality, fair and equitable services (Hasan and Putra, 2019). However, in reality, many patients still do not receive the services according to their expectations and the patient satisfaction level is still below the standards set by the government. Therefore, various serious efforts are needed to overcome this. Outpatient registration is an administrative service that must be visited by patients who want to receive health services or information about treatment or other examinations they want to get at the hospital. Outpatient services are the main gateway in the hospital and have a crucial role for patients because this section is the first impression for patients who will receive services. The benchmark for assessing the hospital's image begins with the waiting time at outpatient registration. If the waiting time for this service is long, it can cause patient discomfort, which will affect the hospital's image in the future (Bangun et al., 2022). This condition has an impact and challenges on registration services, such as long waiting times, long queues, and a lengthy registration process, which often leads to patient dissatisfaction with the registration service. Therefore, to address this problem, implementing digitalization through the innovation of self-check-in services from applications, which can be accessed via mobile phones with an internet connection.

II. MATERIAL / METHODS

This study used a quantitative approach with a causal associative design. Sampling was conducted using a purposive sampling technique with a total sample of 50 patient respondents. Primary data were collected through questionnaires with a 5-point Likert scale. Data analysis techniques included instrument testing (validity and reliability), classic assumption testing (normality and heteroscedasticity), simple linear regression analysis, hypothesis testing (t-test), and the coefficient of determination (R^2) using SPSS software. Results: The regression analysis resulted in the equation $Y = 10.150 + 0.712X$. The t-test showed that service digitalization had a positive and significant effect on patient satisfaction t-count $5.124 > t 2.011$; $t 0.000 < 0.05$). The coefficient of determination (R^2) value was 0.358, indicating that 35.8% of patient satisfaction was influenced by service digitalization, while the remaining 64.2% was influenced by other variables outside this research model. Location at Kediri Regency Hospital. Inclusion/Exclusion: among outpatients/inpatients aged ≥ 18 years who used digital services (inclusion) excluding those with cognitive impairments (exclusion). Variables & Indicators: "Service digitalization (X, measured by system readiness and user literacy indicators) and Patient satisfaction (Y, measured by service quality and perception indicators). Questionnaire Items: via a 20-item questionnaire. Procedure: administered post-service via simple random intercept. Ethical Clearance: "Ethical clearance was obtained from the Hospital Ethics Committee

III. RESULTS

Through testing on 50 respondents, the results of this research strengthen the theory that the use of digital technology in the healthcare ecosystem has a real impact on increasing consumer or patient satisfaction.

1.1 table of gender

Gender	frequency	Presentation
Man	22	44%
Women	28	56%
	total	100%

1.2 table of age

Age	frequency	Presentation
17-25	18	36%
26-45	24	48%
≥ 45	8	16%
	total	100%

1.3 Table of degree

Degree	frequency	Presentation
SMA	15	30%
Diploma/sarjana	35	70%
	total	100%

Based on an analysis of respondent perceptions, the primary indicator driving satisfaction is time efficiency. The productive age group (17-45 years old), which dominates the sample at 84%, believes that online registration cuts out tedious physical bureaucratic procedures. For modern, highly mobile people, the certainty of waiting times is far more valuable than the comfort of a conventional waiting room.

Validity and Reliability Instrument Testing

- **Validity Test:** For a sample size of $n = 50$ at a 5% significance level, the critical r table value is **0.279**. The measurement results show that all questionnaire items for both variable X and Y have r -count values ranging from 0.480 - 0.720. Since all r -count > 0.279 , all items are declared **valid**.
- **Reliability Test:** The Service Digitalization variable (X) yielded a *Cronbach's Alpha* value of 0.785, and the Patient Satisfaction variable (Y) yielded 0.764. Both variables exceeded the threshold value of > 0.60 , indicating that the instrument is highly **reliable**.

Classic Assumption Testing

- **Normality Test:** Based on the *Shapiro-Wilk* test (highly recommended for samples under 50), the asymptotic significance value obtained is 0.142. Since $0.142 > 0.05$, the residual data are **normally distributed**.
- **Heteroscedasticity Test:** The *Glejser* test showed a significance value for variable X of 0.285. Since $0.285 > 0.05$, the regression model is **free from heteroscedasticity issues**.

IV. DISCUSSION

A. Time Efficiency as a Key Driver of Patient Satisfaction

Based on tabulation of questionnaire data from 50 respondents, the indicators "transaction and registration speed" and "ease of use" received the highest average scores. This phenomenon is closely related to the demographic profile of the respondents, with 84% of the sample being in the productive age group (17–45 years old).

This group of respondents is characterized by high mobility and highly values time efficiency. The implementation of digitalization—such as online self-registration from home and an integrated electronic queuing system—has significantly reduced patient waiting times in the clinic. In service quality management theory (such as the Servqual concept), timeliness and responsiveness are key pillars in creating customer satisfaction. When patient expectations for service are met,

B. Challenges of the Digital Literacy Gap

While digitalization generally has a positive impact, the descriptive analysis of respondent characteristics also provides important critical insights. As many as 16% of respondents aged 45 and over tended to give lower scores on the "ease of system operation" indicator. This finding indicates a generational digital literacy gap. Elderly patients often experience technological anxiety or difficulty when dealing with complex application interfaces or self-service queue machines without guidance. If the digital system crashes or becomes confusing,

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this can potentially trigger frustration and decrease patient satisfaction. Therefore, the significance of digitalization's influence in this study also conveys the message that technology should not completely replace human interaction (human touch), but rather serve as an operational aid.

C. Analysis of the Coefficient of Determination (R²) and External Factors

The Coefficient of Determination (R²) value obtained in this study was 0.358. This indicates that variations in the quality of Service Digitalization can explain 35.8% of the change in Patient Satisfaction levels. This figure is considered moderate and reasonable for a sample size of 50 respondents in the healthcare industry.

However, the remaining 64.2% of the variation in satisfaction is influenced by factors outside the digitalization model. The healthcare industry is complex and sensitive. Overall patient satisfaction is not only determined by how quickly they register or how sophisticated the application is, but also depends heavily on:

1. Clinical Quality: Doctor competence, diagnosis accuracy, and treatment success.
2. Interpersonal Quality: Friendliness, empathy, and effective communication from nurses and medical staff (bedside manner).
3. Physical Facilities: Cleanliness of the hospital environment, availability of medications in the pharmacy, and comfort of the waiting room.

Overall, the results of this study confirm that digitalization of services is a crucial gateway instrument. A good digital system will provide a positive initial impression to patients from the beginning of the administrative process. If this initial impression runs smoothly and efficiently, it will facilitate institutions in building long-term patient satisfaction and loyalty.

V. CONCLUSION

Service Digitalization Has a Positive and Significant Impact: The results of the hypothesis test (t-test) empirically prove that the Service Digitalization variable has a positive and significant impact on Patient Satisfaction.

Contribution of Control Variables: The coefficient of determination (R²) of 0.358 indicates that service digitalization contributes 35.8% to the variation in patient satisfaction. The remaining 64.2% is influenced by factors outside this research model, such as the medical competence of doctors, staff friendliness, medication availability, and the adequacy of hospital/clinic facilities.

Efficiency as the Main Driver: Time efficiency, ease of access to online registration, and certainty of queues are the most dominant indicators in shaping patient satisfaction, particularly in the productive age group (17–45 years), which makes up 84% of the study sample. However, for patients over 45 years of age (16%), barriers to digital literacy are still encountered, requiring special attention.

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