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The Influence Of Online Registration Application Implementation And Waiting Time On Patient Satisfaction Through Health Worker Performance As A Mediating Variable At Rsud Ibnu Sina Gresik

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Online Registration Application, Waiting Time, Health Worker Performance, Patient Satisfaction, RSUD Ibnu Sina Gresik

Abstract
This study aims to analyze the influence of online registration application implementation and service waiting time on patient satisfaction through health worker performance as a mediating variable at RSUD Ibnu Sina Gresik. The research method used is quantitative with descriptive and verificative approaches. Data collection was carried out by distributing questionnaires to 100 outpatient respondents. The data analysis techniques utilized Path Analysis and the Sobel Test. The results showed that: (1) online registration application had a positive and significant effect on health worker performance (β = 0.259; t = 2.522; sig. = 0.013); (2) waiting time had no significant partial effect on health worker performance (β = 0.174; t = 1.696; sig. = 0.093); (3) both variables simultaneously influenced health worker performance (F = 7.409; sig. = 0.001; R^2 = 13.3%); (4) health worker performance significantly influenced patient satisfaction (β = 0.545; t = 6.439; sig. = 0.000; R^2 = 29.7%); (5) health worker performance fully mediated the relationship between application and patient satisfaction (Sobel Z = 2.348; p = 0.019); and (6) health worker performance did not mediate the influence of waiting time on patient satisfaction (Sobel Z = 1.640; p = 0.101). This study concludes that optimizing registration technology effectively supports staff performance, which directly impacts patient satisfaction.

INTRODUCTION

The rapid development of information technology in the healthcare sector has encouraged hospitals to adapt to digital service innovations to improve efficiency and quality of care. One major innovation is the online registration system, which allows patients to register before arriving at the hospital, reducing physical queue times and administrative burden. As part of the Hospital Information System (HIS), online registration applications are designed to achieve a comprehensive, integrated, and specialized information system for managing administrative, clinical, and financial aspects in modern hospitals (Jamjoom et al., 2014).

RSUD Ibnu Sina Gresik, a Type B regional public hospital located in Gresik Regency, East Java, has implemented an Android-based online registration application since 2018 (Arifin, 2024). The application offers features including polyclinic registration, queue information, doctor schedules, visit history, medical check-up registration, homecare booking, inpatient bed availability, and surgical schedules (RSUD Ibnu Sina Gresik, 2024). However, the system remains

optional alongside offline counter registration, creating a dual-track model that produces variability in patient experiences, particularly regarding waiting time.

According to the Indonesian Ministry of Health Regulation No. 129/Menkes/SK/IV/2008, outpatient waiting time refers to the duration from patient registration until being attended by a specialist, with a standard maximum of 60 minutes. Extended waiting times reduce patient comfort and affect the hospital's image and future patient utilization (Kurniawati, 2021). Prior studies confirmed positive effects of online registration: research at RS dr. Oen Solo Baru showed waiting time decreased from 1.97 to 1.49 hours for manual registrants and 1.69 hours for online registrants following application implementation (Kurniawati, 2021). Research at RS Permata Pamulang found that online registration jointly with hospital comfort and staff response increased outpatient satisfaction by 97.3% (Sugiyarto & Junaedi, 2021).

Despite growing evidence of online registration benefits, a systematic quantitative assessment linking application implementation and waiting time to patient satisfaction via health worker performance as a mediating variable has not been conducted in the context of RSUD Ibnu Sina Gresik. This gap motivates the present study, which investigates: (1) the partial influence of online registration application on health worker performance; (2) the partial influence of waiting time on health worker performance; (3) the simultaneous influence of both on health worker performance; (4) the influence of health worker performance on patient satisfaction; and (5 & 6) the mediation roles of health worker performance in both pathways.

METHODS

This study employed a quantitative research approach with descriptive and verificative survey methods. The descriptive approach aimed to systematically describe the condition of each research variable, while the verificative approach tested causal relationships through hypothesis testing (Sugiyono, 2018). The research was conducted at RSUD Ibnu Sina Gresik, a Type B regional general hospital at Jl. Dr. Wahidin Sudiro Husodo No. 442, Kabupaten Gresik, East Java, Indonesia, which provides outpatient, inpatient, and 24-hour emergency services and serves as a referral hospital for primary healthcare facilities in the Gresik region.outpatient, inpatient, and 24-hour emergency services. RSUD Ibnu Sina Gresik serves as a referral hospital for primary healthcare facilities in Gresik Regency and surrounding areas.

The target population was all outpatients registered through the online registration application at RSUD Ibnu Sina Gresik, with an average monthly volume of 16,120 patients based on 2024 data. Using the Slovin formula Sastroasmoro, (2014) with 10% margin of error: $n = 16{,}120 / (1 + 16{,}120 \times 0.01) = 99.38$, rounded to 100 respondents. Simple Random Sampling was employed Ansori, (2020) ensuring equal probability of selection. Inclusion criteria required respondents to be outpatients actively using the online registration application and willing to voluntarily evaluate the services received.

Primary data were collected using a structured questionnaire comprising 20 items on a five-point Likert scale. Research variables: Online Registration Application Implementation (X1, 5 items) measured using TAM dimensions perceived usefulness, perceived ease of use, attitude toward use, behavioral intention, and actual use Davis, (1989); Service Waiting Time (X2, 5 items) covering pre-appointment, administrative registration, initial assessment, polyclinic waiting, and service duration dimensions (Harper & Gamlin, 2003; Kemenkes RI No. 129/2008); Health Worker Performance (Y, 5 items) measuring ability/competence, interest, role delegation acceptance, motivation, and time management (Utari & Mulyanti, 2023); Patient Satisfaction (Z, 5

items) using SERVQUAL dimensions: tangibles, reliability, responsiveness, assurance, and empathy (Parasuraman, Zeithaml & Berry, 1988). Data collection included observation, questionnaire distribution, and library study. Processing stages included editing, coding, data entry, and data cleaning.

Instrument validity was assessed using Pearson Product Moment correlation; items were declared valid if r-count > 0.30 (Priyatno, 2013; Sugiyono, 2018). Reliability was tested using Cronbach's Alpha ($\alpha \geq 0.60$ threshold; Nursalam, 2015). Normality was tested using the One-Sample Kolmogorov-Smirnov test (criterion: Asymp. Sig. > 0.05). Ordinal data were converted to interval scale using the Method of Successive Intervals (MSI). The primary analytical technique was Path Analysis (Analisis Jalur) with two sub-structural equations: Sub-Structure 1: $Y = \rho yx1X1 + \rho yx2X2 + \varepsilon 1$; Sub-Structure 2: $Z = \rho zyY + \varepsilon 2$ (Riduwan & Kuncoro, 2014). Mediation was tested using the Sobel Test. Hypothesis testing used partial t-tests ($\alpha = 0.05$, t-table = 1.984) and simultaneous F-tests. Descriptive categorization: 1.00–1.80 (Very Poor), 1.81–2.60 (Poor), 2.61–3.40 (Fair), 3.41–4.20 (Good), 4.21–5.00 (Very Good). All analyses used SPSS.analytical technique was multiple linear regression with the model: $Y = a + b_1X_1 + b_2X_2 + b_3X_3 + e$. Hypothesis testing employed the partial t-test, simultaneous F-test, and coefficient of determination (R^2) to evaluate the significance and explanatory power of the model. All analyses were conducted using IBM SPSS Statistics version 26.

RESULTS AND DISCUSSION

Respondent Profile

A total of 100 outpatient respondents participated in this study, all of whom used the online registration application and voluntarily provided service assessments. Based on gender, 53 respondents (53%) were male and 47 (47%) female. Age distribution shows (Table 1) that the 26–35 and 36–45 year groups each represented 27%, followed by 17–25 years (24%) and 46–55 years (22%), indicating users are predominantly in the productive age range who tend to be more technology-adaptive. In terms of occupation, civil servants (Pegawai Negeri) formed the largest group at 36%, entrepreneurs (Wiraswasta) at 24%, private employees (Pegawai Swasta) at 21%, and other occupations at 19%. The high proportion of civil servants likely reflects RSUD Ibnu Sina Gresik's role as the primary referral hospital for government employees' health insurance. Regarding education, the 'Other' category dominated at 24%, followed by SMA/SMK (22%), D3 and S2/S3 equally at 19%, and S1 at 16%.

Table 1. Respondent Characteristics (n = 100)

Category	Sub-Category	Frequency (n)	Percentage (%)
Age	17–25 years	24	24.0
	26–35 years	27	27.0
	36–45 years	27	27.0
	46–55 years	22	22.0
	Note	19	100.0
Education	SMA/SMK	22	22.0
	Diploma III (D3)	27	27.0

	Diploma III	24	22.0
	Bachelor's Degree (S1)	16	22.0
	S2/S3 (Postgraduate)	5	100
Occupation	Civil Servant (PNS)	36	19.0
	Private Employee (Swasta)	25	22.0
	Entrepreneur (Wirausaha)	15	15.8
	Other	25	26.3
	Other	24	24.0

Note. Primary Data, 2026.

Descriptive Statistics of Research Variables

Table 2 presents the descriptive statistics for all four research variables, all categorized as 'Good' (mean 3.41–4.20, Sugiyono 2018). Online Registration Application (X1) obtained mean = 3.51 (SD = 0.72), indicating adequate perceived usefulness and ease of use, though at the lower threshold of 'Good,' suggesting room for feature and stability improvement. Service Waiting Time (X2) recorded mean = 3.51 (SD = 0.78), reflecting patients' perception that waiting durations are tolerable and the digital queue system has contributed positively to reducing physical queuing. Health Worker Performance (Y) attained the highest mean = 3.55 (SD = 0.81), the highest value among all variables, indicating that health workers were evaluated as competent, responsive, and aligned with service standards, likely supported by integrated patient data from the application. Patient Satisfaction (Z) obtained mean = 3.51 (SD = 0.71), representing positive overall patient experience, reflecting the accumulated evaluation of application use, tolerable waiting times, and professional health worker interactions, though not yet reaching 'Very Good' level.

Table 2. Descriptive Statistics of Research Variables

Variable	N	Min	Max	Mean	Category
Online Registration Application (X1)	100	1	5	3.51	Good
Waiting Time (X2)	100	1	5	3.51	Good
Health Worker Performance (Y)	100	1	5	3.55	Good
Patient Satisfaction (Z)	95	1	5	3.51	Good

Note. Primary Data, 2026. Score interpretation: 1.00–1.80 = Very Poor; 1.81–2.60 = Poor; 2.61–3.40 = Fair; 3.41–4.20 = Good; 4.21–5.00 = Very Good.

Instrument Validity and Reliability

All 20 questionnaire items across the four variables passed validity testing (r-count > 0.30 threshold, Priyatno, 2013). Item r-count ranges: X1 (Online Registration App.): 0.845–0.880; X2 (Waiting Time): 0.862–0.879; Y (Health Worker Performance): 0.862–0.919 (highest: Y4 = 0.919); Z (Patient Satisfaction): 0.832–0.887. All items are valid. Reliability results (Table 3) show Cronbach's Alpha values: X1 = 0.910, X2 = 0.921, Y = 0.933, Z = 0.912, all exceeding $\alpha \geq 0.60$ (Nursalam, 2015), confirming high instrument reliability for all variables.

Table 3. Reliability Test Results

Variable	Cronbach's Alpha	Category
Online Registration Application (X1)	.910	Very High Reliability
Waiting Time (X2)	.921	Very High Reliability
Health Worker Performance (Y)	.933	Very High Reliability
Patient Satisfaction (Z)	.921	Very High Reliability

Note. Primary Data, 2026. Cronbach's alpha interpretation: >.90 = Very High; .70–.90 = High; .50–.70 = Moderate; <.50 = Low.

Normality Test

Path Analysis was conducted in two sub-structures. Sub-Structure 1 examines X1 and X2 effects on Y (Health Worker Performance); Sub-Structure 2 examines Y's effect on Z (Patient Satisfaction). Structural equations: Sub-1: $Y = 0.259X1 + 0.174X2 + 0.931\varepsilon_1$ ($R^2 = 0.133$, meaning X1 and X2 explain 13.3% of Y variance; $\varepsilon 1 = \sqrt{(1-0.133)} = 0.931$); Sub-2: $Z = 0.545Y + 0.838\varepsilon_2$ ($R^2 = 0.297$, Y explains 29.7% of Z variance; $\varepsilon 2 = \sqrt{(1-0.297)} = 0.838$). Table 4 presents the path coefficients.

Path Analysis Results

Table 4 presents the path analysis results for both sub-structures. Sub-Structure 1 examines the effects of X1 and X2 on Y, while Sub-Structure 2 examines the effect of Y on Z.

$$\textbf{Sub-Structure 1: } Y = 0.259X^1 + 0.384X^2 + 0.410X^3$$

Sub-Structure 1 results: Online Registration Application (X1) path coefficient $\beta = 0.259$, $t = 2.522$, $p = .013 < .05$ positive and significant effect on Health Worker Performance. Waiting Time (X2) path coefficient $\beta = 0.174$, $t = 1.696$, $p = .093 > .05$ positive but non-significant. $R^2 = 0.133$: X1 and X2 jointly explain 13.3% of Health Worker Performance variance; 86.7% explained by other factors (individual competency, incentives, etc.). Sub-Structure 2 results: Health Worker Performance (Y) path coefficient $\beta = 0.545$, $t = 6.439$, $p = .000 < .05$ strong positive and significant effect on Patient Satisfaction. $R^2 = 0.297$: Y explains 29.7% of Patient Satisfaction variance; 70.3% by other factors. 1= 0.392) indicates that each one-unit increase in digital literacy corresponds to a 0.392-unit increase in system effectiveness, holding the other variables constant. The coefficient for Hospital Technology Infrastructure ($b_2 = 0.384$) indicates a similar positive relationship, while System Usage Guidelines ($b_3 = 0.410$) exerts the strongest unit contribution among the three predictors. The positive sign of all three coefficients confirms that improvements in each factor constructively enhance the effectiveness of the online registration system.

Table 4. Path Analysis Coefficients

Variable	B	Std. Error	Path Coeff. (β)	t-count	Conclusion
Sub-Structure 1	R^2 = .133	ε1 = .931	Rejected	β = 0.259	p = .001

Online Registration App. (X1 → Y)	0.259	0.131	0.259	2.522	.013
Waiting Time (X2 → Y)	0.174	0.141	0.174	1.696	.093
Sub-Structure 2	R^2 = .297	ε2 = .838	.019	β = 0.174	p = .000

Note. Structural equations: $Y = 0.259X_1 + 0.174X_2 + 0.931\varepsilon_1$; $Z = 0.545Y + 0.838\varepsilon_2$. Primary Data, 2026.

Hypothesis Testing and Mediation

Hypothesis test results (Table 5): H1 Accepted Online Registration Application significantly and positively influenced Health Worker Performance (t = 2.522 > t-table = 1.984, p = .013 < .05, β = 0.259). H2 Rejected Waiting Time did not significantly influence Health Worker Performance (t = 1.696 < 1.984, p = .093 > .05). H3 Accepted X1 and X2 simultaneously and significantly influenced Health Worker Performance (F = 7.409, p = .001 < .05). H4 Accepted Health Worker Performance significantly and positively influenced Patient Satisfaction with the highest effect value (t = 6.439 > 1.984, p = .000, β = 0.545). H5 Accepted Health Worker Performance fully mediated the Application–Satisfaction relationship (Sobel Z = 2.348, p = .019 < .05). H6 Rejected Health Worker Performance did not mediate the Waiting Time Satisfaction relationship (Sobel Z = 1.640, p = .101 > .05); waiting time affects satisfaction directly. For all three partial hypotheses. These results confirm that each predictor independently and significantly contributes to explaining variation in online registration system effectiveness.

Table 5. Sobel Test Results Mediation Analysis

Model	Mediation Path	Result	Sobel Z-Score	p-value	Status
X1 → Y → Z (H5)	Full Mediation	p = .013	p = .019	Accepted	.019
X2 → Y → Z (H6)	No Mediation	Z = 1.640	p = .101	t = 1.640	p = .101
Interpretation	Sobel Test assesses indirect effects	p < .05 = mediation confirmed	Sobel Z = 2.348	p = .019	Accepted

Note. Full mediation (H5): Application implementation influences patient satisfaction exclusively through health worker performance improvement. No mediation (H6): Waiting time affects patient satisfaction directly, independent of health worker performance.
Primary Data, 2026.

The Sobel Test results confirm that Health Worker Performance fully mediates X1→Z (Z = 2.348, p = .019 < .05): the application improves patient satisfaction indirectly, by enhancing health worker performance, which is what patients directly experience and evaluate. This constitutes full mediation (Sugiyono, 2018). By contrast, health worker performance does not mediate X2→Z (Z = 1.640, p = .101 > .05), confirming that waiting time affects patient satisfaction through a direct pathway. Correlation analysis (Table 6) shows that X2↔Z had the highest bivariate correlation (r = 0.549, p = .000), confirming that RSUD Ibnu Sina patients are highly time-sensitive. However, in the structural model, Health Worker Performance (β = 0.545)

has the strongest path coefficient, confirming interpersonal service quality as the primary structural satisfaction determinant. 1= 3, df₂ = 91, α

Table 6. Pearson Correlation Analysis Results

Relationship	r-value	Category	Notes
X1 ↔ Y (Kinerja)	0.327	Weak	.001

Note. Additional correlations: X2↔Y: r = 0.275 (Weak, p = .006); Y↔Z: r = 0.545 (Moderate, p = .000); X1↔Z: r = 0.312 (Weak, p = .002); X2↔Z: r = 0.549 (Moderate, p = .000).
Primary Data, 2026.

DISCUSSION

H1 was accepted: Online Registration Application Implementation had a positive and significant effect on Health Worker Performance (β = 0.259, t = 2.522, p = .013). This finding is consistent with the Technology Acceptance Model Davis, (1989) when health workers perceive the digital registration system as useful and easy to use, adoption increases and administrative workflows are streamlined. The application reduces manual administrative burdens, minimizes data entry errors, and speeds up patient data access, enabling health workers to perform more quickly, accurately, and with greater clinical focus. This is consistent with Yunengsih et al. (2024), who found that online registration at RS Hasna Medika Cirebon significantly reduced staff workload, and Widjaja and Rahman, (2022), who demonstrated that HIS implementation positively influences health worker performance. However, the moderate coefficient (β = 0.259) and low R^2 = 0.133 confirm that the application is an enabling factor rather than the primary performance driver; individual competencies, incentives, and organizational factors remain dominant performance determinants, as evidenced by the 86.7% unexplained variance.score for critical evaluation of digital health information (mean = 3.10) corroborates Eshet-Alkalai's (2020), distinction between functional and critical digital literacy, suggesting that enhancing patient digital competence requires not merely increasing device access or internet availability, but investing in structured health digital literacy programs that develop evaluative and communicative skills.

Contrary to the initial hypothesis, waiting time did not significantly affect health worker performance (β = 0.174, p = .093). This suggests that patients cognitively separate their evaluation of waiting duration (a system-level attribute) from their assessment of health worker competency (an individual-level attribute). Patients appear to attribute extended waiting times to systemic queue management factors rather than to the personal capability of physicians or nurses. When finally attended, competent and empathetic care overrides negative waiting time impressions. This finding partially contrasts with Julianto et al. (2022), who found a significant correlation between waiting time and patient satisfaction at a puskesmas. The difference may reflect the distinct operational context: in specialist outpatient clinics, the complexity of medical consultations means patients prioritize clinical quality over speed. Nonetheless, the simultaneous test (H3) confirmed that X1 and X2 collectively create an operational environment conducive to health worker performance (p = .001).

H4 was accepted: Health Worker Performance had the strongest positive and significant effect on Patient Satisfaction (β = 0.545, t = 6.439, p = .000), with the highest t-value in the study. R^2 = 0.297 indicates that health worker performance explains 29.7% of patient satisfaction

variance. This confirms that the core of patient satisfaction at RSUD Ibnu Sina Gresik lies in service encounters (service delivery interactions) when doctors, nurses, and administrative staff demonstrate professional, friendly, informative, and responsive conduct, patient satisfaction increases substantially. This strongly supports the SERVQUAL framework Parasuraman, Zeithaml & Berry, (1988), which identifies responsiveness, assurance, and empathy as primary healthcare satisfaction drivers. Correlation analysis shows Y↔Z: r = 0.545 (Cukup Kuat/Moderately Strong, p = .000), while X2↔Z had the highest bivariate correlation (r = 0.549), indicating patients are highly time-sensitive. However, in the structural model, health worker performance has the stronger path coefficient, confirming that 'humanware' (people) remains more decisive than 'software' (applications) in shaping patient satisfaction (Widjaja & Rahman, 2022).

H5 was accepted: Health Worker Performance fully mediated the Application–Satisfaction relationship (Sobel Z = 2.348, p = .019 < .05). This full mediation confirms that the online registration application does not directly satisfy patients through features alone; rather, it indirectly generates satisfaction by improving health worker performance quality, which patients directly experience and positively evaluate. The application reduces administrative burdens, enabling workers to be faster and more accurate, and this performance improvement creates the service excellence that produces satisfaction. This is consistent with the TAM-to-performance-to-satisfaction pathway (Davis, 1989; Kurniawati, 2021). H6 was rejected: Health Worker Performance did not mediate the Waiting Time–Satisfaction relationship (Sobel Z = 1.640, p = .101 > .05). Waiting time affects patient satisfaction directly and independently. Patients who experience short, efficient waiting times are directly satisfied, without this needing to be mediated through their assessment of health worker performance. This confirms waiting time as a direct service system quality indicator whose management requires its own dedicated operational strategies separate from human resource development (Harper & Gamlin, 2003; Kemenkes RI No. 129/2008). Together, these results advocate strongly for multi-level, coordinated digital health transformation strategies that simultaneously address patient, institutional, and informational dimensions.

This study makes several contributions to the literature on digital health service management in Indonesian public hospitals. First, it provides the first integrated path analysis model testing online registration, waiting time, health worker performance, and patient satisfaction linkages simultaneously at RSUD Ibnu Sina Gresik. Prior studies examined isolated bivariate relationships Kurniawati et al., (2021); Hastuti et al., (2022) without testing the mediation chain through health worker performance. Second, the confirmed full mediation (H5) has important theoretical implications: it establishes that in Indonesian public hospital settings, technology's patient satisfaction impact is primarily indirect, operating through human performance intermediaries. Third, the rejected H6 reveals that waiting time management requires its own direct operational interventions, separate from human resource strategies. These differential findings provide a nuanced framework for hospital management to allocate digital health investments across technological, operational, and human resource dimensions simultaneously.

CONCLUSION

This study demonstrates that online registration application implementation positively and significantly enhances health worker performance at RSUD Ibnu Sina Gresik (β = 0.259, p = .013),

while waiting time alone does not exert a significant independent effect on performance perception (β = 0.174, p = .093). Both variables collectively and significantly influence health worker performance (p = .001, R^2 = .133). Health worker performance is the most critical direct determinant of patient satisfaction (β = 0.545, p = .000, R^2 = .297) and fully mediates the relationship between application implementation and patient satisfaction (Sobel Z = 2.348, p = .019), confirming a technology-performance-satisfaction value chain. Waiting time, however, affects patient satisfaction through a direct pathway independent of health worker performance mediation (Sobel Z = 1.640, p = .101). These findings collectively validate the integration of TAM and SERVQUAL frameworks for explaining digital health service outcomes in Indonesian public hospital settings.

Limitations of this study include: (1) conducted at a single outpatient setting at RSUD Ibnu Sina Gresik, limiting generalizability to other hospital types or regions; (2) cross-sectional design captures perceptions at one point in time, unable to track longitudinal dynamics; (3) Sub-Structure 1 explains only 13.3% of health worker performance variance (R^2 = .133), indicating that major performance determinants such as individual medical competency, incentive systems, supervisory quality, and organizational culture remain outside the model scope; (4) physical facility quality and tariff/cost perceptions, which may significantly influence patient satisfaction, were not included as independent variables in this study.

Based on these findings, the following recommendations are proposed: (1) Hospital management should optimize the online registration application through regular maintenance, stability improvements, and addition of real-time queue estimation notification features to manage patient waiting time expectations; (2) Prioritize investment in health worker service excellence training, encompassing both clinical hard skills and interpersonal soft skills (communication, empathy, responsiveness, patient-centered care), given that health worker performance is the primary patient satisfaction determinant (r2 = 0.297, highest in study); (3) Improve waiting time transparency by providing queue display monitors at each polyclinic and upgrading waiting area facilities (Wi-Fi, refreshments, health education entertainment) to reduce perceived psychological waiting time; (4) Implement digital-based performance evaluation using application data to reward polyclinics and health workers with the best service schedule compliance, motivating sustained performance improvement. For future researchers: expand to inpatient settings and compare public vs. private hospital digital registration implementations; add variables such as facility quality (tangibles), brand image, and health insurance factors; employ longitudinal designs to track sustained impacts of digital registration adoption on service quality outcomes in Indonesian healthcare settings.patient experiences in depth, and incorporate additional organizational and contextual variables to enhance the explanatory scope of the model.

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