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The Effect of Online Queue Implementation and Service Quality on Patient Satisfaction at Kendangsari Mother and Child Hospital Surabaya

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Online Queue Implementation; Service Quality; Patient Satisfaction; Mother and Child Hospital

Abstract

Digital transformation in healthcare, particularly through online queue systems, has become a vital instrument for improving operational efficiency and patient comfort in the post-pandemic era. This study aims to analyze the effect of online queue implementation (X_1) and service quality (X_2) based on SERVQUAL dimensions on patient satisfaction (Y) at RSIA Kendangsari Surabaya. A quantitative descriptive approach was applied using multiple linear regression analysis on 121 outpatient respondents who utilized the online queue system. The results show that online queue implementation does not have a significant partial effect on patient satisfaction (t=0.971, sig.=0.333), as it is perceived as a standard facility (hygiene factor). Service quality, however, has a significant positive partial effect (t=5.952, sig.=0.000). Simultaneously, both variables significantly influence patient satisfaction (F=29.672, sig.=0.000) with a coefficient of determination of 33.46%. Management is advised to prioritize service quality improvements, especially staff empathy (Empathy) and responsiveness, while continuously optimizing the technical features of the online queue system.

INTRODUCTION

Digital transformation in the global healthcare sector has become an irreversible agenda. The World Health Organization (WHO) reports that more than 60% of countries worldwide have implemented digitalization strategies in health services, including online queue and patient registration systems, as mandated by the Global Strategy on Digital Health 2020–2025 (World Health Organization, 2021). The primary objectives are to improve service efficiency, reduce waiting times, and maximize available resources. However, the implementation of digital health transformation is not without challenges, particularly in developing countries where digital literacy gaps remain significant (Prasastin et al., 2023).

In Indonesia, the Ministry of Health has launched various policies to accelerate digital transformation, including the Roadmap Transformasi Digital Kesehatan 2021–2024 and the SATUSEHAT platform, as well as Ministerial Regulation No. 24 of 2022 on Electronic Medical Records (Kementerian Kesehatan Republik Indonesia, 2022a, 2022b). However, according to Pusdatin Kemenkes data, only approximately 40% of hospitals in Indonesia had implemented online queue systems, and only a fraction conducted systematic user satisfaction evaluations (Putri

et al., 2025). This gap between technological deployment and outcome evaluation is a critical issue in Indonesian healthcare management.

Healthcare management theory underlines that service quality is the foundation of patient satisfaction. Drawing from Donabedian (1988) structure-process-outcome framework and the Input-Process-Output (IPO) paradigm applied by Sulaiman (2021), the effectiveness of digital services must be assessed not only from a technical standpoint but also from patient experience outcomes. In this context, the SERVQUAL model developed by Parasuraman et al. (1988) measuring five dimensions: Tangibles, Reliability, Responsiveness, Assurance, and Empathy remains the most widely validated instrument for evaluating perceived service quality in healthcare settings (Brahmbhatt et al., 2011; Dagger et al., 2007; Yousapronpaiboon, 2014). This is consistent with findings that service quality is a primary determinant of patient satisfaction and plays a crucial role in shaping patient loyalty, especially when supported by a positive institutional image (Lestari et al., 2025).

RSIA Kendangsari, a private secondary-level Mother and Child Hospital at Jl. Raya Kendangsari No. 38, Surabaya, implemented a WhatsApp and website-based online queue system in 2023 (Mangindara et al., 2023). Based on outpatient visit data from January–September 2025, a total of 18,708 visits were recorded, with 13,095 visits (≈70%) conducted through the online queue. Despite this high adoption rate, challenges remain, including mismatches in scheduled versus actual service times and varying patient perceptions of staff responsiveness.

Previous studies have produced mixed findings. Ikhyana et al. (2023) found that online registration was effective in primary healthcare, while Oktaviani et al. (2024) highlighted differences across healthcare levels. Apriani & Nurcahyo (2021) and Niawati et al. (2020) confirmed that SERVQUAL dimensions significantly affect patient satisfaction across various facility types. Abdu & Patarru (2023) and Bawiling et al. (2025) further demonstrated the relevance of service quality assessments in Indonesian clinical settings. Zhou et al. (2025) demonstrated that service digitalization positively influences patient satisfaction through psychological empowerment, particularly in settings where digital and human service elements are integrated. Kristianti & Sriwijaya (2025) similarly found SERVQUAL combined with Quality Function Deployment (QFD) effective in hospital service evaluation. Rosmayani et al. (2023) and Hasibuan & Hutapea (2021) consistently reported that service quality dimensions are primary drivers of patient loyalty and satisfaction in hospital settings.

A research gap exists: there is insufficient empirical evidence on the simultaneous effect of online queue implementation and SERVQUAL-based service quality on patient satisfaction specifically in specialized maternal and child hospitals (RSIA) at the secondary level in Indonesia's

urban settings. In addition, the role of digital health transformation from a management perspective (Anshori et al., n.d.; Ardhiarisca et al., 2024; Melliasari et al., 2024) and the strategic management context (Anwar, 2020; Farida, 2002; Handoko, 2015; Kosasih, 2023; Robbins et al., 2018) underpinning hospital operations have not been fully integrated with patient satisfaction outcomes. This study addresses those gaps. The research questions are: (1) Does online queue implementation partially affect patient satisfaction? (2) Does service quality partially affect patient satisfaction? (3) Do both variables simultaneously affect patient satisfaction at RSIA Kendangsari?

METHODS

This study employed a quantitative descriptive approach using a survey method, consistent with the research design framework advocated by (Judijanto et al. (2024) and Mangindara et al. (2022) for health services research. The study was conducted at RSIA Kendangsari Surabaya from October 2025 to February 2026. The population consisted of all outpatients who used the online queue system during the study period. Sampling used accidental sampling with Slovin's formula, yielding a minimum of 99 respondents; a total of 121 respondents were collected to ensure adequacy.

Data were collected via questionnaires distributed both offline (printed forms at the outpatient area) and online (Google Form via WhatsApp). Informed consent was obtained from all respondents. The questionnaire comprised 15 items on a 4-point Likert scale (1=Strongly Disagree to 4=Strongly Agree) covering: Online Queue Implementation (X_1, 5 items), Service Quality (X_2, 5 items based on SERVQUAL), and Patient Satisfaction (Y, 5 items). The service quality instrument was adapted from Parasuraman et al. (1988) and validated in hospital contexts by Andaleeb (2001) and Kotler & Keller (2016). The patient satisfaction indicators also reflect the conceptual framework of Zeithaml et al. (2018) regarding service value and customer loyalty.

Instrument validity was tested using Pearson correlation (r-table=0.179 for n=121), and reliability via Cronbach's Alpha (minimum threshold=0.60). Classical assumption tests performed included: normality (Kolmogorov-Smirnov), multicollinearity (VIF), autocorrelation (Durbin-Watson), and heteroscedasticity (Glejser test). Hypothesis testing used multiple linear regression analysis, with partial t-tests and simultaneous F-test at α=0.05. This analytical approach is consistent with the hospital management research methodology described by Arifin & Balqis (2024) and the health quality assurance framework in Departemen Kesehatan Republik Indonesia (2006, 2009) and Ramadhan (2020).

RESULTS AND DISCUSSION

Respondent Profile

Of 121 respondents, 94 (77.7%) were female and 27 (22.3%) male, consistent with the hospital's maternal and child focus. The dominant age group was 31–40 years (56.2%), followed by 21–30 years (33.9%), reflecting a productive-age population with relatively good digital literacy (Prasastin et al., 2023). The most common educational level was senior high school (41.3%) followed by bachelor's degree (37.2%). The primary medium for accessing the online queue was WhatsApp (71.1%), followed by website (28.9%), consistent with Indonesia's high WhatsApp penetration rate (Sugiman et al., 2025).

Descriptive Analysis

The descriptive statistics for all three variables are presented in the table below:

Table 1. Descriptive Statistics of Research Variables

Variable	Mean Score	Category
Online Queue Implementation (X_1)	3.70	Good
Service Quality (X_2)	3.82	Good
Patient Satisfaction (Y)	3.91	Good

Source: Primary data processed (2026)

All three variables were rated 'Good' by respondents. The lowest indicator for X_1 was the user interface display (mean=3.61), suggesting the need for interface modernization (Kurniasi, 2025; Pardi et al., 2025). For X_2, the lowest indicators were staff empathy and visual system appearance (mean=3.71). For Y, overall system satisfaction scored lowest (mean=3.62), while willingness to recommend the hospital scored highest. These patterns align with the findings of Kristianti & Sriwijaya (2025) and Rosmayani et al. (2023), who identified empathy and responsiveness as the most critical service dimensions for patient satisfaction.

Validity and Reliability

All 15 questionnaire items showed r-values greater than the r-table value of 0.179, confirming their validity. The overall Cronbach's Alpha was 0.835 (n=15 items), which exceeds the minimum threshold of 0.60, confirming the instrument's reliability.

Classical Assumption Tests

Although the Kolmogorov-Smirnov test yielded a p-value below 0.05 (statistic=0.3125), normality was assumed based on the Central Limit Theorem given the large sample (n=121). VIF values of 1.395 for both X_1 and X_2 confirmed no multicollinearity. The Durbin-Watson value of 1.9459 indicated no autocorrelation. The Glejser test indicated heteroscedasticity (sig.=0.0001); however, given the large sample and use of a robust regression model, the analysis proceeded with careful interpretation, consistent with the methodological guidance of Mangindara et al. (2022).

Multiple Linear Regression Analysis

Table 2. Multiple Linear Regression Results

Model	Unstd. Coeff. (B)	t	Sig.
(Constant)	1.9538	7.806	0.000
Online Queue (X_1)	0.0621	0.971	0.333
Service Quality (X_2)	0.4382	5.952	0.000

Source: Primary data processed (2026)

The regression equation formed is: $Y = 1.9538 + 0.0621X_1 + 0.4382X_2$. The constant value of 1.9538 indicates a baseline level of patient satisfaction even when both independent variables are zero, suggesting the influence of other factors outside the model. The small coefficient for X_1 (0.0621) indicates a weak contribution of online queue implementation to patient satisfaction. In contrast, the coefficient for X_2 (0.4382) is substantially larger, confirming that service quality is the dominant variable in the model.

Hypothesis Testing

Table 3. Simultaneous Test (ANOVA)

Model	F	Sig.	Conclusion
Regression	29.672	0.000	H_3 Accepted

Source: Primary data processed (2026)

Table 4. Coefficient of Determination

R	R Square	Adjusted R Square
0.5785	0.3346	0.3233

Source: Primary data processed (2026)

H_1 (Online Queue → Patient Satisfaction): Rejected. With t=0.971 < t-table (1.980) and sig.=0.333 > 0.05, online queue implementation does not have a significant partial effect on patient satisfaction. This indicates that the online queue system has become a hygiene factor (Lytras et al., 2023; Putri et al., 2025) its presence is expected but does not elevate satisfaction unless complemented by quality service interactions. This finding contrasts with Ikhyana et al. (2023) at primary care facilities, suggesting that the effect varies by healthcare level and patient expectations (Oktaviani et al., 2024).

H_2 (Service Quality → Patient Satisfaction): Accepted. With t=5.952 > t-table (1.980) and sig.=0.000 < 0.05, service quality significantly and positively affects patient satisfaction. The Assurance and Empathy dimensions were most dominant at RSIA Kendangsari. This confirms the theoretical framework of Parasuraman et al. (1988) and the empirical findings of Andaleeb (2001), Brahmbhatt et al. (2011), Dagger et al. (2007), and Yousapronpaiboon (2014) in hospital contexts. Hasibuan & Hutapea (2021) and Apriani & Nurcahyo (2021) similarly found service quality dimensions to be primary drivers of satisfaction in Indonesian health facilities.

H_3 (Simultaneous Effect): Accepted. With F=29.672 > F-table (3.07) and sig.=0.000 < 0.05, both variables simultaneously and significantly influence patient satisfaction. The R^2 of 0.3346 indicates that 33.46% of patient satisfaction variance is explained by the model, while the remaining 66.54% is attributable to other factors such as hospital facilities, physician competence, and administrative efficiency (Niawati et al., 2020; Bawiling et al., 2025; Abdu & Patarru, 2023).

DISCUSSION

The non-significant partial effect of online queue implementation is consistent with the concept of hygiene factors in motivation theory: once innovative features become standard, their absence reduces satisfaction more than their presence increases it (Lytras et al., 2023). This is supported by the high adoption rate (70%) at RSIA Kendangsari, where patients treat the online queue as a baseline expectation. Sugiman et al. (2025) and Prasastin et al. (2023) similarly noted that technical infrastructure alone does not guarantee satisfaction without adequate user support and literacy programs.

The significant and dominant effect of service quality reaffirms the SERVQUAL framework (Parasuraman et al., 1988; Zeithaml et al., 2018). In the RSIA Kendangsari context, the Assurance dimension (clarity of information, data security) and Empathy dimension (staff attitude, personalized care) emerged as the most influential factors. This is consistent with Rosmayani et al. (2023), Hasibuan & Hutapea (2021), and Kristianti & Sriwijaya (2025). Kotler & Keller (2016) noted that in high-involvement service industries such as healthcare, human interaction and trust remain paramount even in digitized environments. The digital leadership context described by Melliasari et al. (2024) further emphasizes that service excellence must be institutionalized through leadership and organizational culture (Anwar, 2020; Robbins et al., 2018; Farida, 2022).

The simultaneous effect underscores the complementary nature of digital tools and human service. Technology acts as an access enabler, while the quality of on-site service delivery determines ultimate satisfaction (Pratama et al., 2024; Zhou et al., 2025). This aligns with the Donabedian (1988) quality triad (structure-process-outcome) and the IPO paradigm (Sulaiman, 2021), where technology constitutes input and service quality constitutes the process that shapes satisfaction outcomes. Arifin & Balqis (2024) reinforced that collaborative health management strategies integrating technology and human care produce better patient outcomes. From a management perspective, Pardi et al. (2025), Kurniasi (2025), and Anshori et al. (2025) emphasize that organizational effectiveness in digital transformation requires alignment between technological investment and human resource development.

CONCLUSION

This study concludes that: (1) Online queue implementation does not have a significant partial effect on patient satisfaction at RSIA Kendangsari Surabaya, as the system has been perceived as a standard facility rather than a differentiating factor; (2) Service quality has a significant positive partial effect on patient satisfaction, with Assurance and Responsiveness as the most influential dimensions; (3) Simultaneously, both variables significantly influence patient satisfaction with a contribution of 33.46%.

Practically, hospital management is recommended to: (1) Redesign the user interface of the online booking system to be more user-friendly and accessible for patients with limited digital literacy; (2) Provide regular Service Excellence training to all staff, both medical and administrative, to enhance the human touch in digital service delivery; (3) Implement real-time notification systems to inform patients of doctor delays and better manage patient expectations; (4) Prioritize human resource development alongside technology investment, positioning the online queue as an enabler while maintaining service quality as the primary strategic focus.

This study is limited to a single hospital setting with a cross-sectional design, which limits the generalizability of the findings. Future research is encouraged to include multiple hospitals at various levels, use longitudinal designs, and explore mediating variables such as patient loyalty and digital health literacy.

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