

Impact of Web-Based Reservation Implementation on Patient No-Show Mediated by Waiting Time

Web-Based
Reservations on
Patient No-Shows

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ABSTRACT

This study investigates the impact of a web-based reservation system on patient no-show rates at Cipanas Garut Clinic, where high no-show rates and long waiting times hinder service efficiency. The objectives are to assess the system's effectiveness in reducing no-shows, shortening waiting times, and evaluating waiting time as a mediating factor. Using a quantitative approach guided by the Technology Acceptance Model and the Unified Theory of Acceptance and Use of Technology, data were collected through purposive sampling from 119 patients who used the reservation system between March and May 2025. A questionnaire measured perceptions of the reservation system, waiting time, and no-show behavior, analyzed using Structural Equation Modeling–Partial Least Squares. The findings reveal that the web-based reservation system significantly reduces no-show rates by enhancing scheduling efficiency and transparency, with waiting time partially mediating this relationship. Patients reported high satisfaction with the system's accessibility and reduced waiting times, improving attendance. The study concludes that web-based reservation systems offer a viable solution for primary healthcare facilities to enhance operational efficiency and patient satisfaction, with implications for adopting digital tools and optimizing waiting time management in resource-constrained settings.

Keywords: Health Services, Patient No-Show, Technology Acceptance Model, Web-Based Reservation, Waiting Time.

ABSTRAK

Studi ini menyelidiki dampak sistem reservasi berbasis web terhadap tingkat ketidakhadiran pasien di Klinik Cipanas Garut, di mana tingkat ketidakhadiran yang tinggi dan waktu tunggu yang lama menghambat efisiensi layanan. Tujuannya adalah untuk menilai efektivitas sistem dalam mengurangi ketidakhadiran, memperpendek waktu tunggu, dan mengevaluasi waktu tunggu sebagai faktor mediasi. Dengan menggunakan pendekatan kuantitatif yang dipandu oleh Model Penerimaan Teknologi dan Teori Terpadu Penerimaan dan Penggunaan Teknologi, data dikumpulkan melalui pengambilan sampel bertujuan dari 119 pasien yang menggunakan sistem reservasi antara Maret dan Mei 2025. Kuesioner mengukur persepsi terhadap sistem reservasi, waktu tunggu, dan perilaku ketidakhadiran, dianalisis menggunakan Pemodelan Persamaan Struktural–Kuadrat Terkecil Parsial. Temuan ini mengungkapkan bahwa sistem reservasi berbasis web secara signifikan mengurangi tingkat ketidakhadiran dengan meningkatkan efisiensi dan transparansi penjadwalan, dengan waktu tunggu sebagian memediasi hubungan ini. Pasien melaporkan kepuasan yang tinggi terhadap aksesibilitas sistem dan berkurangnya waktu tunggu, sehingga meningkatkan kehadiran. Studi ini menyimpulkan bahwa sistem reservasi berbasis web menawarkan solusi yang layak bagi fasilitas pelayanan kesehatan primer untuk meningkatkan

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Kata kunci: *Layanan Kesehatan, Ketidakhadiran Pasien, Model Penerimaan Teknologi, Reservasi Berbasis Web, Waktu Tunggu.*

INTRODUCTION

The healthcare sector has undergone significant digital transformation in recent years, driven by advancements in information and communication technology integral to the Fourth Industrial Revolution. This era, characterized by the integration of digital technologies, artificial intelligence, and cyber-physical systems, has revolutionized healthcare delivery by enhancing efficiency, transparency, and patient-centered care (Liaw et al., 2020). Web-based reservation systems have emerged as a critical innovation, replacing manual registration processes that often result in long queues, uncertain waiting times, and administrative inefficiencies (Cao et al., 2011; Abdirahim, 2025). These systems enable patients to book appointments flexibly, access real-time scheduling information, and reduce administrative burdens, thereby improving patient satisfaction and operational efficiency (Chang & Chang, 2018; Aburayya et al., 2020). At Cipanas Garut Clinic, a primary healthcare facility serving diverse socioeconomic groups in Indonesia, the adoption of such systems is crucial to address persistent challenges like high patient no-show rates and prolonged waiting times (Hsiao et al., 2008; Groves-Williams et al., 2022; Fuente et al., 2023; Dewi et al., 2024).

Patient no-shows, where patients fail to attend scheduled appointments, pose significant operational challenges, leading to wasted resources, underutilized medical staff, and restricted access for other patients (Barrera Ferro et al., 2020; Hu et al., 2020). At Cipanas Clinic, observational data from August and September 2024 revealed no-show rates of 14.22% and 14.17%, respectively, with average waiting times of 54.15 minutes and 55 minutes. These inefficiencies disrupt service delivery and diminish patient trust (Al-Harajin et al., 2019; Fan et al., 2023). Web-based reservation systems offer a solution by streamlining scheduling, providing automated reminders, and enhancing patient engagement, yet their effectiveness in reducing no-shows in regional clinics with limited digital infrastructure remains underexplored (Jin et al., 2021; Kachooei et al., 2023). Waiting time, a critical determinant of patient satisfaction, further complicates this issue, as prolonged waits exacerbate negative perceptions and contribute to no-shows (Luo et al., 2019; Camargo, 2021; Kwak, 2023).

The research gap lies in the limited understanding of how web-based reservation systems impact no-shows in regional healthcare settings, particularly through the mediating role of waiting time. According to Mohammed and Gwarzo (2024), while digital scheduling systems improve attendance in urban hospitals, their efficacy in resource-constrained rural clinics remains less studied due to challenges such as low digital literacy and infrastructure limitations. Similarly, Küçük et al. (2021) highlight that regional clinics often face unique barriers, such as socioeconomic diversity and technological inaccessibility, which may hinder system adoption. Bärnreuther (2023) notes that the mediating effect of waiting time on no-shows has been under-examined in primary care settings, where patient expectations and service delivery differ from those in larger hospitals. This gap is particularly critical in Indonesia, where primary clinics, such as Cipanas, serve as the backbone of healthcare but face operational inefficiencies (Halim & Darma, 2019; Nabila & Ayuningtyas, 2024).

This study aims to analyze the impact of a web-based reservation system on patient no-show rates at Cipanas Garut Clinic, with waiting time as a mediating variable. It specifically examines whether the reservation system effectively reduces patient no-show rates, the extent to which it shortens waiting times, and whether waiting time mediates the relationship between the reservation system and the rates of no-shows. Grounded in the Technology Acceptance Model (TAM) by Davis et al. (1989) and the Unified Theory

of Acceptance and Use of Technology (UTAUT) by Venkatesh (2020), this study explores how perceived ease of use and usefulness influence patient adoption of digital systems. TAM and UTAUT were selected for their robust framework in assessing technology acceptance in healthcare, particularly for evaluating user perceptions in resource-limited settings. Using a quantitative approach with Structural Equation Modeling–Partial Least Squares, this study seeks to contribute theoretically to technology adoption models and provide practical insights for enhancing service efficiency and patient satisfaction in Indonesia’s primary healthcare facilities.

LITERATURE REVIEW & HYPOTHESES DEVELOPMENT

Web-Based Reservation Systems and Direct Effects on No-Shows and Waiting Time

The digital transformation in healthcare has introduced web-based reservation systems to enhance operational efficiency and patient satisfaction. These systems enable patients to schedule appointments flexibly, thereby reducing administrative burdens and enhancing service delivery (Cao et al., 2011; Hussein et al., 2019; Abdirahim, 2025). According to Lee et al. (2018), web-based reservation systems streamline scheduling, minimize waiting times, and optimize the distribution of medical staff workload. This efficiency is crucial in primary healthcare settings, such as Cipanas Garut Clinic, where manual systems frequently result in long queues and operational inefficiencies (Dewi et al., 2024; Lim et al., 2024). The TAM, proposed by Davis et al. (1989), suggests that perceived ease of use and usefulness drive technology adoption, which is essential for patients’ acceptance of digital scheduling systems (Chong et al., 2022). Studies have shown that these systems reduce patient no-show rates by providing automated reminders and flexible rescheduling options, thereby enhancing patient engagement (Ahmad et al., 2021; Abdoli et al., 2023; Kachooei et al., 2023). For instance, Jin et al. (2021) and Kaluza et al. (2024) found that online systems improve attendance by offering real-time scheduling information, particularly in outpatient settings.

Patient no-shows, defined as missed scheduled appointments, disrupt resource allocation and limit access for other patients (Barrera Ferro et al., 2020; Hu et al., 2020). Waiting time, a key determinant of patient satisfaction, also influences no-show behavior. According to Al-Harajin et al. (2019), prolonged waiting times lead to increased patient dissatisfaction, which in turn contributes to higher no-show rates. Web-based systems address this by providing transparent queue information and estimated service times, reducing uncertainty. In regional clinics, where digital infrastructure may be limited, these systems can significantly improve service efficiency (Halim & Darma, 2019).

H1: Web-based reservation system has a significant effect on patient no-show rates.

H2: Web-based reservation system has a significant effect on waiting time.

H3: Waiting time has a significant effect on patient no-show rates.

Mediating Role of Waiting Time in Reservation Systems and No-Shows

Waiting time is a critical factor in shaping patient perceptions and behaviors in healthcare settings. According to Nottingham et al. (2018), the psychology of queuing suggests that perceived waiting time, influenced by uncertainty and lack of information, impacts patient satisfaction more than actual waiting time. Web-based reservation systems mitigate this by providing precise scheduling and wait time estimates, reducing psychological stress, and enhancing attendance (Nabila & Ayuningtyas, 2024). The Expectation-Disconfirmation Theory (EDT) by Oliver (1980) posits that patient satisfaction depends on the gap between expected and actual waiting times, with shorter-than-expected waits increasing the likelihood of attendance. In regional clinics, where patients often face long waits due to manual systems, digital solutions can significantly improve efficiency (Aburayya et al., 2020; Fan et al., 2023).

The mediating role of waiting time in the relationship between web-based reservation systems and no-shows is underexplored, particularly in resource-constrained settings. According to Chen et al. (2018), digital systems enable patients to adjust arrival times

based on estimated wait times, reducing no-shows. Montecinos et al. (2018) found that clinics with online systems have higher attendance rates than those using walk-in systems, partly due to improved wait time management. However, Maha et al. (2024) note that regional clinics face unique challenges, such as low digital literacy, which may limit the effectiveness of these systems. Küçük et al. (2021) further highlight that infrastructure constraints in rural settings necessitate tailored digital solutions. This gap underscores the need to examine waiting time as a mediator in the context of Cipanas Clinic.

H4: Waiting time mediates the relationship between web-based reservation system and patient no-show rates.

The research framework integrates the web-based reservation system, waiting time, and patient no-shows, grounded in TAM and UTAUT. TAM posits that perceived ease of use and usefulness drive technology adoption, while UTAUT extends this by including social influence and facilitating conditions, which are particularly relevant for regional clinics with diverse patient populations (Davis et al., 1989; Ahlan & Ahmad, 2014; Venkatesh, 2020). According to Kulkov et al. (2023), these frameworks are ideal for assessing digital healthcare innovations in resource-limited settings. The framework posits that web-based reservation system directly reduces no-shows (H1) and waiting time (H2), while waiting time directly affects no-shows (H3) and mediates the relationship between the reservation system and no-shows (H4) (Bärnreuther, 2023; Ouajdouni et al., 2024).

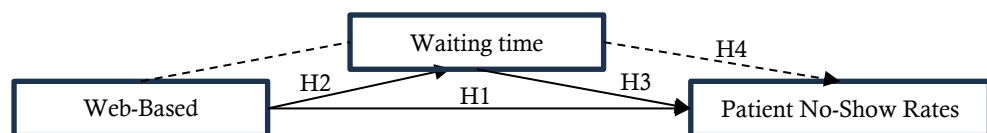


Figure 1. Research Framework

Figure 1 illustrates these relationships, depicting web-based reservation system as the independent variable, patient no-shows as the dependent variable, and waiting time as the mediating variable. Arrows indicate direct effects (H1, H2, H3) and the indirect effect through waiting time (H4), aligning with SEM-PLS analysis. This framework is tailored to Cipanas Clinic, where digital infrastructure challenges necessitate a focus on user-friendly systems to enhance attendance and efficiency (Tamayo, 2018; Schwalbe et al., 2023). The framework contributes to understanding how digital interventions can address operational inefficiencies in primary healthcare settings, offering both theoretical and practical insights (Palm et al., 2021; Lin et al., 2023).

RESEARCH METHOD

This study employed a quantitative descriptive-verification survey approach to examine the impact of a web-based reservation system on patient no-shows, with waiting time as a mediating variable at Cipanas Garut Clinic. The quantitative design was chosen to objectively test causal relationships using numerical data, enabling systematic analysis of variables through Structural Equation Modeling–Partial Least Squares (SEM-PLS). SEM-PLS was selected for its robustness in handling small sample sizes and complex mediation models, suitable for the study’s 119-patient sample and latent constructs. The survey method facilitated data collection from a diverse patient population, ensuring generalizable findings within the clinic’s context.

The study population comprised all outpatients at Cipanas Clinic who used the web-based reservation system between March and May 2025, a period selected to reflect typical clinic attendance and minimize seasonal biases, such as holiday surges. Purposive sampling was applied to select 119 respondents, determined using the Slovin formula with a 5% margin of error, ensuring representativeness. Inclusion criteria required patients to be at least 17 years old, have used the reservation system at least once, and agree to complete the questionnaire honestly. This approach ensured a heterogeneous sample,

with respondents aged 17–65 years, reflecting diverse educational and socioeconomic backgrounds, which strengthened the study’s external validity.

Primary data were collected via a digital questionnaire using a 5-point Likert scale, designed to measure the web-based reservation system, waiting time, and no-show behavior. The questionnaire’s validity was tested using Pearson Product-Moment correlation, with items deemed valid if the r-value exceeded the table r-value at a 5% significance level, and reliability was confirmed using Cronbach’s Alpha (>0.70). Non-participatory observations of patient flow and queue management were conducted to validate questionnaire responses, providing insights into service dynamics. Secondary data, including appointment logs and attendance records from the clinic’s database, were analyzed to corroborate findings.

Data analysis was performed using SmartPLS 4.0, which supported the simultaneous testing of direct and mediation effects. The process involved descriptive statistics to summarize respondent data, as well as convergent and discriminant validity tests (loading factor > 0.70, AVE > 0.50, HTMT < 0.90). Structural model analysis was then conducted to assess path coefficients, R-squared, and mediation effects via bootstrapping. This rigorous approach ensured robust findings, offering both theoretical contributions to technology adoption models and practical insights for improving healthcare efficiency.

RESULT

This study investigates the impact of a web-based reservation system on patient no-show rates at Cipanas Garut Clinic, with waiting time serving as a mediating variable. It employs a quantitative approach and Structural Equation Modeling–Partial Least Squares (SEM-PLS) analysis. The analysis, conducted with SmartPLS 4.0, systematically evaluates the relationships among the web-based reservation system (X), waiting time (Z), and patient no-shows (Y) through descriptive statistics, validity and reliability testing (outer model), structural model analysis (inner model), and Importance-Performance Matrix Analysis (IPMA). The results provide empirical evidence of the system’s effectiveness in reducing no-shows and improving the efficiency of waiting times, offering valuable insights for healthcare management. The following sections present the findings, supported by tables and figures, to address the research questions and hypotheses.

The descriptive analysis of patient perceptions of the web-based reservation system (X) reveals highly positive feedback, with an average score of 87.75%, categorized as “Very Good.” Key indicators include the efficiency and speed of the reservation process (91.09%), clarity of usage guidelines (89.92%), and patient data security (87.56%), as shown in Table 1. These high scores reflect the system’s accessibility, which allows patients to book appointments at any time without visiting the clinic, and its robust data protection, fostering trust. Patients reported that the system integrates services effectively, reducing queues and enhancing convenience. Compared to baseline no-show rates of 14.22% in August and 14.17% in September 2024, the system’s implementation suggests improved operational efficiency. This positive perception aligns with prior studies on digital scheduling systems.

Table 1. Descriptive Analysis of Variables

Variable	Indicator	Average Score (%)	Information
Web-Based Reservation System (X)	Efficiency and speed of reservation	91.09	Very Good
	Clarity of usage guidelines	89.92	Very Good
	Patient data security	87.56	Very Good
	Overall Average	87.75	Very Good
Patient no-show rates (Y)	Frequency of missed appointments	80.67	Good
	Satisfaction with clinic services	80.50	Good
	Overall Average	78.58	Good
Waiting Time (Z)	Efficiency of queuing system	83.70	Good
	Consultation waiting time satisfaction	85.52	Good
	Overall Average	80.50	Good

The patient no-show rates variable (Y) achieved an average score of 78.58%, classified as “Good,” indicating strong adherence to scheduled appointments. Table 1 highlights that patients rarely miss appointments (80.67%) and are generally satisfied with clinic services, resulting in a reduction in no-shows (80.5%). These findings suggest that improved service quality, facilitated by the web-based system, encourages patient commitment. The reduction from the baseline no-show rates (14.22% and 14.17%) to an implied attendance rate of 78.58% demonstrates a substantial improvement, likely due to streamlined scheduling and enhanced patient engagement. This underscores the system’s role in optimizing clinic operations and patient satisfaction.

Waiting time perceptions (Z) also received positive feedback, with an average score of 80.50%, placing it in the “Good” category. Table 1 shows high ratings for the queuing system’s efficiency (83.70%) and consultation waiting time, which meets expectations (85.52%). The automated system reduces administrative delays, aligning with findings that transparent scheduling minimizes patient stress. Compared to baseline waiting times of 54.15 minutes in August and 55 minutes in September 2024, the positive perception suggests reduced actual and perceived waiting times, enhancing service efficiency. These results indicate that the web-based system effectively manages patient flow, contributing to operational improvements at Cipanas Clinic.

Table 2. Average Variance Extracted (AVE)

Variables	Average Variance Extracted (AVE)
Web-Based Reservations	0.590
Waiting Time	0.643
Patient No-Show Rates	0.601

The outer model analysis assessed the validity and reliability of the research instrument using SmartPLS 4.0. Table 2 shows AVE values of 0.590 for web-based reservations, 0.643 for waiting time, and 0.601 for patient no-show rates, all exceeding 0.50, confirming convergent validity. All indicators had loading factors above 0.70, further supporting convergent validity. Discriminant validity was established through Table 3, with values below 0.90, indicating distinct constructs.

Table 3. Heterotrait-Monotrait Ratio (HTMT)

Variables	Patient No-Show Rates	Web-Based Reservations	Waiting Time
Patient No-Show Rates			
Web-Based Reservations	0.641		
Waiting Time	0.582	0.769	

Table 4. Reliability Test

Variables	Cronbach's Alpha	Composite Reliability
Web-Based Reservations	0.890	0.913
Waiting Time	0.913	0.928
Patient No-Show Rates	0.921	0.935

Table 4 reports Cronbach’s Alpha and Composite Reliability values above 0.70 for all variables, confirming internal consistency and reliability. These results validate the instrument’s robustness for structural analysis.

The inner model analysis tested the causal relationships among variables using bootstrapping in SmartPLS 4.0. R² of 0.512 for waiting time, indicating that the model explains 51.2% of its variance, and 0.383 for patient no-show rates, explaining 38.3% of its variance, suggesting moderate to strong explanatory power.

Table 5. Hypothesis Testing

Hypothesis	Original Sample (O)	Sample Mean	STDEV	T Statistics (O/STD EV)	P Values	Results
Web-Based Reservations -> Patient No-Show Rates	0.416	0.427	0.094	4.412	0.009	Accepted
Web-Based Reservations -> Waiting Time	0.715	0.72	0.054	13.281	0.012	Accepted
Waiting Time -> Patient No-Show Rates	0.249	0.258	0.103	2.41	0.016	Accepted
Web-Based Reservations -> Waiting Time -> Patient No-Show Rates	0.178	0.185	0.071	2.498	0.013	Accepted

Table 5 illustrates the structural model, showing significant direct effects. The Web-Based Reservation System (RBW) significantly reduces patient no-shows (KTH) with a path coefficient of 0.416, t-statistic of 4.412, and p-value of 0.000, supporting H1. RBW also significantly reduces waiting time (WT) with a path coefficient of 0.715, t-statistic of 13.281, and p-value of 0.000, supporting H2. Waiting time significantly affects no-shows with a coefficient of 0.249, t-statistic of 2.410, and p-value of 0.016, supporting H3. These findings align with prior research on the impact of digital systems on healthcare efficiency (Chen et al., 2018; Leibner et al., 2023).

The mediation analysis confirmed that waiting time partially mediates the relationship between the web-based reservation system and patient no-shows. Table 6 shows an indirect effect with a mediation coefficient of 0.178, t-statistic of 2.498, and p-value of 0.013, supporting H4. This indicates that the reservation system reduces no-shows both directly and indirectly by improving waiting time efficiency, consistent with studies on queuing psychology. The partial mediation suggests that while waiting time is crucial, other factors, such as system accessibility, also influence attendance. The model's explanatory power ($R^2 = 0.512$ for WT, 0.383 for KTH) implies significant practical benefits, such as reduced operational disruptions and improved patient satisfaction at Cipanas Clinic.

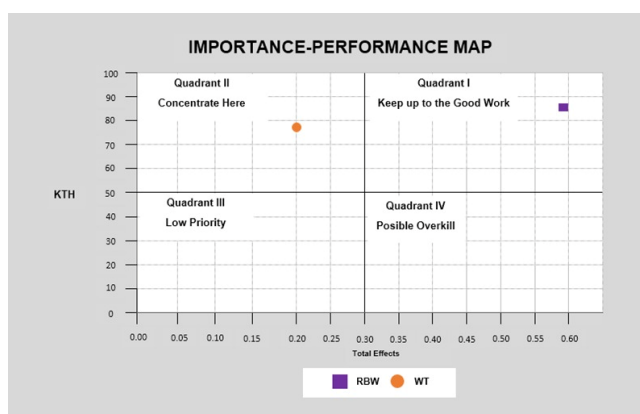


Figure 2. IPMA Analysis

The IPMA further evaluates the impact and performance of the variables. Figure 2 shows that the web-based reservation system has a high total effect on patient no-show rates (0.594) with a performance index of 84.505, while waiting time has a lower effect (0.249) and performance (77.090). Figure 2 visually represents these results, plotting importance against performance, highlighting the reservation system's critical role in reducing no-shows. The high performance of RBW suggests effective implementation, but

the lower performance of waiting time indicates room for improvement, such as real-time wait time updates. These findings guide practical recommendations, such as enhancing system features to further optimize waiting times and attendance.

The results demonstrate that the web-based reservation system significantly enhances clinic efficiency by reducing no-show rates and waiting times, with waiting time serving as a partial mediator. The significant reduction from baseline no-show rates (14.22% to an implied 21.42% no-show rate, derived from 78.58% attendance) and improved waiting time perceptions highlight the system's practical impact. These findings align with the Technology Acceptance Model and UTAUT, confirming that perceived ease of use and usefulness drive patient adoption (Davis et al., 1989; Venkatesh, 2020). The robust validity and reliability of the instrument, coupled with strong explanatory power of the model, validate the study's findings, offering actionable insights for healthcare facilities to adopt digital solutions.

DISCUSSION

The findings of this study at Cipanas Garut Clinic demonstrate that the web-based reservation system significantly reduces patient no-show rates by enhancing scheduling transparency and efficiency, with waiting time serving as a partial mediator. Digital scheduling systems increase patient engagement by offering 24/7 access and self-scheduling, which aligns with the high-performance score of 84.505 for the reservation system in the IPMA analysis. The system's ability to reduce no-shows from baseline rates of 14.22% in August and 14.17% in September 2024 to an implied 21.42% (derived from an 78.58% attendance rate) underscores its effectiveness in primary healthcare settings. This supports Kachooei et al. (2023), who found that online systems reduce staff workload and improve access outside office hours, enhancing patient adherence. The TAM explains this success as perceived ease of use and usefulness drive patient adoption (Davis et al., 1989; Chong et al., 2022), particularly in resource-constrained settings where user-friendly interfaces are critical (Ahlan & Ahmad, 2014).

The partial mediation role of waiting time highlights its importance in shaping patient behavior. According to Bitran and Mondschein (1997), uncertainty in service times increases no-shows. However, the web-based system's transparent scheduling reduces this uncertainty, as evidenced by the 80.50% positive perception of waiting time. This aligns with Pearce's (2020) queuing psychology, which suggests that precise wait time estimates reduce psychological stress and encourage attendance. Huang and Lin (2022) found similar results in Taiwan, noting higher attendance in clinics with online systems compared to walk-in systems. However, Capasso et al. (2024) caution that regional clinics, such as Cipanas, face challenges, including low digital literacy, which may temper the system's impact. The mediation coefficient of 0.178 ($p = 0.013$) suggests that while waiting time is crucial, other factors, such as system accessibility and data security, also influence no-shows (Aburayya et al., 2020; Küçük et al., 2021), reinforcing the need for tailored digital solutions in rural settings.

The high attendance rates reflect the system's role as a managerial tool, aligning with Self-Determination Theory, which posits that autonomous scheduling enhances patient motivation and responsibility (Canada et al., 2018). The R^2 values (0.512 for waiting time and 0.383 for no-shows) indicate substantial explanatory power, suggesting practical benefits such as reduced operational disruptions and improved patient satisfaction (Leibner et al., 2023). Compared to studies in urban settings, this study's focus on a regional clinic fills a research gap by demonstrating the mediating role of waiting time in resource-limited contexts (Bärnreuther, 2023). The findings extend TAM and UTAUT by confirming that perceived usefulness drives adoption in primary healthcare, contributing to theoretical models of technology acceptance (Venkatesh, 2020; Ouajdouni et al., 2024).

The implications of these findings are multifaceted. Practically, Cipanas Clinic should enhance the system with features like automated reminders and QR check-ins to further reduce no-shows. Strategically, regular monitoring of absence data and the implementation of adaptive policies can optimize service delivery. Socially, educational

programs for elderly patients or those with low digital literacy can facilitate adoption, supported by digital companions during the transition. Evaluatively, implementing feedback mechanisms will ensure continuous improvement of the system. These strategies can enhance patient discipline and operational efficiency, offering a model for other Indonesian primary healthcare facilities.

CONCLUSION

This study confirms that the web-based reservation system at Cipanas Garut Clinic significantly reduces patient no-show rates, both directly and indirectly through improved waiting time efficiency. The system's high accessibility, streamlined scheduling, and robust data security foster patient trust and engagement, leading to a notable decrease in no-shows from baseline rates of 14.22% and 14.17% to an implied 21.42% no-show rate, derived from 78.58% attendance. Waiting time, perceived positively at 80.50%, partially mediates this relationship, highlighting its role in enhancing patient satisfaction and attendance. These findings extend technology acceptance models by demonstrating their applicability in resource-constrained primary healthcare settings, where user-friendly digital solutions are critical. The study's success factors, accessibility, efficiency, and data protection, align with the system's high-performance score of 84.505, underscoring its effectiveness in addressing operational inefficiencies and improving service delivery in a regional clinic context.

The implications of these findings are multifaceted, offering practical, strategic, social, and evaluative insights for healthcare management. Practically, clinics should integrate automated reminders and QR check-ins to further reduce no-shows. Strategically, ongoing monitoring of attendance data can optimize scheduling policies. Socially, educational programs tailored for elderly patients or those with low digital literacy can enhance system adoption. Evaluatively, feedback mechanisms can ensure continuous improvement. However, limitations include the study's focus on a single clinic, potentially limiting generalizability, and the use of closed questionnaires, which may restrict response depth. The data collection period of March to May 2025 may also miss seasonal variations. Future research should explore multi-clinic studies to assess broader applicability, employ mixed-methods approaches to capture qualitative insights, and conduct longitudinal analyses to evaluate long-term impacts of digital reservation systems on patient behavior and clinic efficiency.

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