An Integrated Technology-Adoption Framework for Understanding Self-Service Kiosk Utilization and Customer Satisfaction in Hotels

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ABSTRACT

The rapid digitalization of the hospitality industry has accelerated the adoption of Self-Service Technologies (SSTs), particularly self-service kiosks, to enhance operational efficiency and improve customer experience. While SSTs are widely implemented in airlines, retail, and banking, the effect of hotel self-service kiosks on guest satisfaction—especially within Southeast Asia—remains underexplored. Malaysia's hotel sector is experiencing increased technological investment, yet limited empirical evidence explains how kiosks influence satisfaction in real hotel settings. This study aims to evaluate how ease of use, technology readiness, and speed of delivery influence customer satisfaction with self-service kiosks in Malaysian hotels. The paper expands existing empirical findings and develops a Q1-standard contribution by integrating technology readiness and expectation–disconfirmation with established SST and TAM constructs. A quantitative explanatory design was employed using data from 384 hotel guests who used self-service kiosks during their stay. The questionnaire included validated measures for ease of use (TAM), technology readiness (TRI 2.0), and expectations (expectation–disconfirmation). Data were analyzed using SPSS 29, including descriptive statistics, reliability testing (Cronbach's alpha), Pearson correlation, and multiple linear regression. Figures and tables referenced from the demographic distributions, reliability results, and regression output are incorporated to support the analysis. The study contributes to the limited body of research addressing SST adoption in Asian hospitality contexts by integrating three key determinants into a unified empirical framework. It expands prior research on SST by demonstrating that expectation–disconfirmation is a stronger predictor of customer satisfaction than ease of use or technology readiness—an insight relevant for Q1 hospitality journals. All three predictors significantly influenced customer satisfaction (Adjusted $R^2 = 0.65$). Speed of delivery had the most significant effect ($\beta = 0.354$), followed by ease of use ($\beta = 0.202$) and technology readiness ($\beta = 0.149$). The results validate TAM constructs while highlighting the heightened role of expectation–performance alignment. Self-service kiosks enhance customer satisfaction when they are intuitive, aligned with guests' technological comfort levels, and meet or exceed expectations. Hotels should improve user-interface design, communicate kiosk benefits, and offer hybrid support for low-readiness guests.

Keywords: Self-service kiosks; Customer satisfaction; Hospitality technology; Technology readiness; Expectation–disconfirmation; Usability; Hotel industry; Self-service technologies (SSTs); Technology adoption; Guest experience; Malaysia

INTRODUCTION

The hospitality industry has undergone a rapid digital transformation in recent years as hotels respond to the evolving speed of delivery, labor shortages, and growing pressure to enhance service efficiency through technological innovation (Li et al., 2021; Mariani et al., 2023). Among the most influential of these innovations are Self-Service Technologies (SSTs), particularly self-service kiosks, which have become increasingly common in modern hotel operations. These kiosks facilitate automated check-in and check-out, reduce queuing times, and provide guests with greater autonomy, thereby improving both service efficiency and perceived convenience (Shin & Perdue, 2022; Belarmino & Koh, 2023). The global shift toward contactless and technology-driven services—accelerated by the COVID-19 pandemic—has further strengthened the relevance

of SST adoption in hotels, prompting widespread investment in digital systems and guest-facing automation (Lin et al., 2024). Along similar lines, Yusof et.al (2024) argue that IT solutions such as real-time tracking, automation, and data analytics have become indispensable tools for logistics firms aiming to boost operational efficiency and customer satisfaction.

In Malaysia, the adoption of SSTs within the hotel industry has increased significantly as hotels seek to modernize operations and align with international service standards. The growth of domestic tourism, rising digital literacy, and heightened expectations for seamless service experiences have encouraged Malaysian hotels to integrate kiosks into their service delivery processes (Rahman et al., 2022). However, despite this growing adoption, empirical research examining guest perceptions of kiosk usage within the Malaysian context remains limited. Existing research on SSTs has primarily focused on Western markets or sectors such as banking, retail, and aviation, where consumer behaviour and cultural expectations differ markedly from Southeast Asia (Hwang & Lee, 2021; Goh & Wen, 2024). These gaps highlight the need for context-specific evidence to understand how Malaysian hotel guests evaluate self-service kiosks and how such technologies influence their satisfaction levels.

Customer satisfaction remains a key performance benchmark in hospitality, influencing loyalty, repurchase intention, and online review behaviour (Chan & Wan, 2022). Prior research shows that SSTs can enhance satisfaction by improving perceived speed, convenience, and service control (Wen et al., 2022; He et al., 2023). However, the relationship is not straightforward. While some guests appreciate the efficiency of kiosks, others may prefer traditional face-to-face interactions or experience technology-related anxiety, leading to reduced satisfaction (Kuo & Chuang, 2023). These variations suggest that the success of kiosks depends not only on system functionality but also on user characteristics and expectation fulfilment. Consequently, understanding such determinants becomes essential for hotels aiming to optimize kiosk integration and enhance guest experience. Three constructs consistently emerge in SST literature as critical predictors of customer satisfaction: ease of use, technology readiness, and customer expectations. Ease of use, derived from the Technology Acceptance Model (TAM), refers to a system's perceived simplicity and the minimal effort required to operate it. Research consistently shows that user-friendly interfaces significantly influence technology satisfaction and adoption (Davis, 1989; Fu et al., 2022; Yang et al., 2023). Technology readiness, conceptualized through the Technology Readiness Index (TRI), describes an individual's predisposition to embrace new technologies, shaped by optimism, innovativeness, discomfort, and insecurity (Parasuraman & Colby, 2015). Guests with higher readiness are more confident and comfortable using kiosks, which increases satisfaction (Park & Zhang, 2022; Jin & Line, 2024).

In contrast, customers with low readiness may perceive kiosks as intimidating or inconvenient. Customer expectations—central to Expectation–Disconfirmation Theory (EDT)—also play a decisive role in shaping satisfaction. Satisfaction increases when actual service performance meets or exceeds expectations and decreases when performance falls short (Oliver, 1980; Wang & Leung, 2021; Choi et al., 2024). For SSTs, expectations include speed, accuracy, responsiveness, and reliability. When kiosks perform poorly or fail to deliver anticipated benefits, guests experience negative disconfirmation, reducing satisfaction. Despite the importance of these constructs, hospitality literature reveals that very few studies integrate ease of use, technology readiness, and expectation–disconfirmation into a single empirical framework. Most SST studies examine only one or two determinants, often within Western contexts where cultural norms and technological environments differ from Malaysia (Hwang & Lee, 2021; Goh & Wen, 2024). This creates a significant knowledge gap. Malaysian guests, characterized by diverse cultural backgrounds and varying technological exposure, may evaluate kiosks differently from guests in Western countries. Understanding these perceptions is essential for hotels seeking to improve the effectiveness of kiosk implementation and service strategies. Furthermore, limited research directly compares the relative strength of each determinant, leaving uncertainty regarding which factors most strongly influence kiosk satisfaction in hotel environments.

Addressing these gaps, this study expands and deepens the empirical findings by examining how ease of use, technology readiness, and speed of delivery influence customer satisfaction with hotel self-service kiosks in Malaysia. Using quantitative data from 384 hotel guests, the study develops a more comprehensive and theoretically grounded SST evaluation model that integrates TAM, TRI, and EDT. This integrated model contributes to hospitality technology literature by validating the combined influence of usability, technological

disposition, and expectation–performance alignment within a Southeast Asian hotel context. The findings advance theoretical understanding while also providing practical insights for hotel managers seeking to optimize digital service strategies.

This study, therefore, aims to investigate the extent to which ease of use shapes guests' satisfaction with self-service kiosks, to evaluate how technology readiness influences user experience, and to assess how expectation fulfilment drives satisfaction outcomes. By addressing the gaps in localized SST research and expanding theoretical models with updated empirical evidence, this paper contributes to both academic scholarship and managerial practice. It further provides hotels with evidence-based recommendations for enhancing kiosk usability, improving communication strategies, and tailoring service support to different levels of technology readiness. Ultimately, the study positions self-service kiosks as a critical service innovation with the potential to elevate guest experience when designed and implemented effectively within the Malaysian hotel industry.

LITERATURE REVIEW

Current research suggests that the digital transformation involves the widespread reshaping of business models and processes through the integration of digital technologies across the entire value chain (Ayof et.al, 2025). The underlying argument in favor of the self-service technologies (SSTs) has become one of the most significant innovations reshaping customer experiences across service-intensive industries, including hospitality, transportation, retail, and healthcare. In the hotel sector, the adoption of SSTs—particularly self-service kiosks—has accelerated in response to global digitalisation, growing consumer demand for convenience, and the need to reduce service friction (Li et al., 2021; Mariani et al., 2023). Recent studies highlight that SSTs offer hotels the ability to enhance operational efficiency, reduce labour dependency, and improve process consistency, especially during check-in and check-out, which are traditionally labour-intensive interactions (Shin & Perdue, 2022; Lin et al., 2024). As hotels increasingly integrate kiosk systems into their service delivery models, scholarly interest has expanded to examine not only adoption behaviour but also the effects of SSTs on guest satisfaction, service quality perception, and user experience (Belarmino & Koh, 2023; Goh & Wen, 2024).

A growing body of literature underscores SSTs as enablers of high-efficiency service encounters, yet emphasises that their success depends heavily on the degree to which they meet user expectations and provide seamless experiences. For instance, Wen et al. (2022) note that kiosks significantly enhance perceived service quality when they function reliably and reduce waiting times. Similarly, Park and Zhang (2022) argue that SSTs improve satisfaction by offering guests increased autonomy and control over service processes. However, recent research also suggests that SSTs may generate mixed responses among hotel guests, particularly among users with low digital familiarity, strong preferences for personal interaction, or high levels of technology anxiety (Kuo & Chuang, 2023; Jin & Line, 2024). These findings indicate that while SSTs offer clear operational advantages, their impact on customer satisfaction depends on multiple psychological, functional, and contextual factors.

Ease of use has long been recognised as a foundational determinant of SST acceptance, rooted in the Technology Acceptance Model (TAM). The concept encompasses perceived simplicity, clarity, and the extent to which users believe that operating a system requires minimal effort (Davis, 1989). Recent hospitality studies reaffirm this relationship, showing that user-friendly kiosk interfaces directly influence perceived usefulness, enjoyment, and satisfaction (Fu et al., 2022; Yang et al., 2023). For example, Law et al. (2024) demonstrate that interface design elements such as button layout, instructional clarity, and intuitive navigation substantially shape customers' perceptions of service quality. When kiosks are perceived as easy to operate, guests are more likely to feel confident, satisfied, and in control of their service experience. Conversely, poorly designed interfaces or unclear instructions may create frustration or abandonment of the system, illustrating the critical importance of usability in SST design.

Beyond ease of use, technology readiness has also emerged as an influential predictor of SST satisfaction. The Technology Readiness Index (TRI), developed by Parasuraman and Colby (2015), conceptualises readiness as comprising optimism, innovativeness, discomfort, and insecurity. In hospitality contexts, guests' readiness to engage with technology shapes their likelihood of using kiosks and their emotional response to the interaction (Hwang & Lee, 2021). Research shows that guests with high technology readiness demonstrate more positive attitudes, lower anxiety, and greater satisfaction when interacting with SSTs (Park & Zhang, 2022). Conversely,

individuals with low readiness may perceive kiosks as intimidating, impersonal, or burdensome, thus negatively influencing satisfaction (Jin & Line, 2024). This is especially significant in Asian markets, where digital literacy varies widely and cultural norms often prioritise warm, personalised service interactions (Goh & Wen, 2024). As such, technology readiness serves not only as a predictor of kiosk usage but also as a lens through which guests interpret their overall service experience.

Customer expectations represent a third critical factor shaping satisfaction with SSTs. Expectation–Disconfirmation Theory (EDT) posits that satisfaction results from the comparison between expected service performance and actual outcomes (Oliver, 1980). When SST performance meets or exceeds expectations, positive disconfirmation occurs, resulting in higher satisfaction; when expectations are not met, dissatisfaction arises (Wang & Leung, 2021). In the context of kiosks, expectations often include speed, accuracy, efficiency, and the ability to complete tasks without errors. Choi et al. (2024) found that expectation fulfilment significantly predicts satisfaction with hotel check-in kiosks, particularly among guests who prioritize fast and independent service. However, unmet expectations—such as slow system response, technical issues, or complex navigation—lead to negative disconfirmation and dissatisfaction. Significantly, guests' baseline expectations are increasingly shaped by experiences in other highly automated sectors, meaning hotels must maintain high SST performance standards to remain competitive.

Although individual SST determinants—ease of use, technology readiness, and expectation–disconfirmation—are well-established in the literature, few studies combine these constructs into an integrated model that reflects the complexity of hotel service encounters. Recent research suggests that both technological features and human factors determine SST satisfaction, yet most empirical studies isolate variables rather than exploring their interrelationships (Teng et al., 2023). This fragmented approach limits theoretical understanding and offers incomplete guidance for hospitality practitioners. Moreover, the majority of SST research has focused on Western markets such as the USA, UK, and Europe, where customers generally exhibit high technological competence and where digital self-service is widely normalized (Belarmino & Koh, 2023; Lin et al., 2024). Findings from these contexts may not translate directly to Malaysia, where guests demonstrate diverse cultural backgrounds, differing comfort levels with technology, and varied expectations of personal service (Rahman et al., 2022; Goh & Wen, 2024). These gaps underscore the need for studies that examine SST satisfaction holistically and contextually.

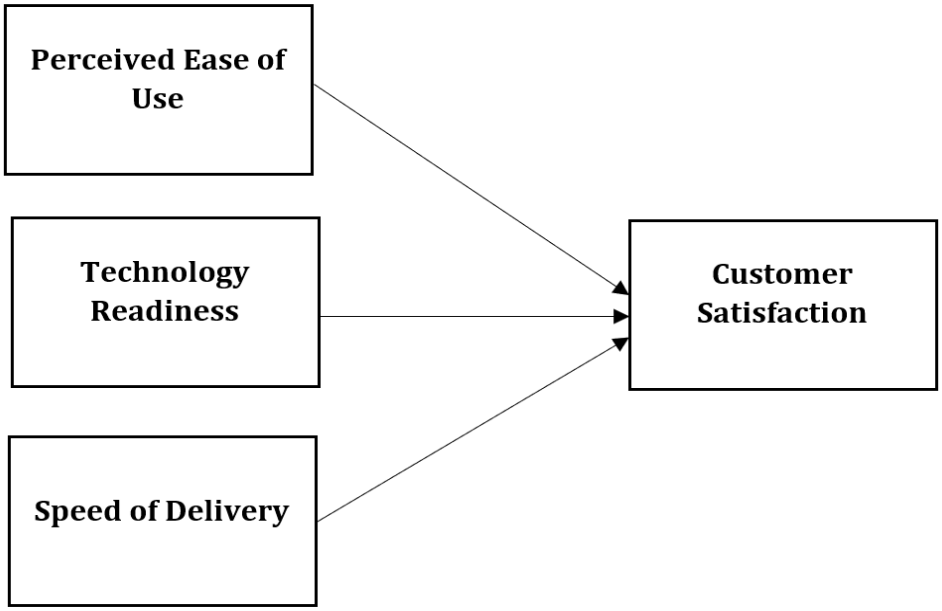
Trends in recent literature also show a shift from early SST research focused primarily on operational efficiency towards contemporary studies that emphasise customer experience, emotional response, and service quality perceptions (Wen et al., 2022; Mariani et al., 2023). For example, researchers increasingly acknowledge the duality of service automation: while kiosks enhance efficiency, they may also reduce perceptions of warmth or hospitality, particularly among guests who value interpersonal interaction (He et al., 2023). Scholarly debates have emerged regarding the balance between automation and human touch, suggesting that the optimal service model may involve hybrid systems that combine the efficiency of SSTs with optional staff assistance for guests with low technology readiness (Kuo & Chuang, 2023). These contradictions highlight the complexity of SST integration and reinforce the importance of understanding satisfaction determinants across different customer segments.

The literature also reveals notable gaps, particularly the need for more empirical studies in Southeast Asian hotel settings, where cultural norms surrounding hospitality differ significantly from Western markets. Additionally, while many SST studies examine intention to use or acceptance behaviour, fewer examine post-usage satisfaction—despite its stronger relationship to loyalty and long-term adoption (Yang et al., 2023). Scholars further note a lack of research examining the interplay between expectation–disconfirmation and technology readiness, as well as the absence of longitudinal studies capturing changes in satisfaction as guests become more familiar with kiosk technologies (Jin & Line, 2024). Addressing these gaps is critical for improving theoretical clarity and guiding SST implementation strategies in hotels.

Based on the reviewed literature, this study adopts an integrated framework that combines the three major determinants of SST satisfaction: perceived ease of use (from TAM), technology readiness (from TRI), and expectation–disconfirmation (from EDT). The conceptual model positions customer satisfaction as the outcome variable influenced by these three predictors. This model aligns with recent SST studies while offering expanded

theoretical integration and localised empirical validation suitable for the Malaysian context. A visual representation of the framework is outlined in Figure 1: Conceptual Framework of SST Satisfaction, illustrating the direct effects of ease of use, technology readiness, and expectations on customer satisfaction.

Figure 1: Conceptual Framework of SST Satisfaction, illustrating the direct effects of perceived ease of use, technology readiness, and speed of delivery on customer satisfaction



Based on the figure presented above, the conceptual framework for this study illustrates the integration of perceived ease of use (PEOU), technology readiness (TR), and speed of delivery (SD) as key antecedent variables influencing customer satisfaction (CS) in the context of self-service kiosks within the hotel industry. These constructs are theorized to play a critical role in shaping customers' overall perceptions and experiences when interacting with kiosk technologies. The framework further positions customer satisfaction as a central outcome, which traditionally serves as a precursor to customer loyalty or behavioral intention. Although the broader literature frequently links CS to loyalty outcomes, the present study narrows its focus specifically to the determinants and dynamics of customer satisfaction itself, recognizing it as an essential indicator of service effectiveness and technological acceptance in modern hotel operations.

METHODOLOGY

This study employed a quantitative, explanatory research design to examine the factors influencing customer satisfaction with self-service kiosks in Malaysian hotels. The explanatory approach was selected because it enables the analysis of cause–and–effect relationships among key determinants—perceived ease of use, technology readiness, and speed of delivery—and their influence on satisfaction. This design is widely used in SST research due to its suitability for testing theoretical models and establishing empirical relationships between independent and dependent variables (Wen et al., 2022; Lin et al., 2024). As the study aimed to explain the variances in satisfaction rather than merely describe perceptions, the explanatory design was appropriate for producing generalizable and theoretically grounded findings.

A cross-sectional survey method was adopted, allowing data collection at a single point in time from hotel guests who had recently interacted with self-service kiosks. Cross-sectional surveys are commonly used in hospitality technology studies because they provide timely insights into user perceptions and behavioral responses in natural service environments (Park & Zhang, 2022). The target population comprised guests staying at hotels in Melaka, Malaysia, where self-service kiosks were operational at the time of the study. Melaka was chosen due to its high tourist inflow and increasing adoption of SSTs in mid-scale and upscale hotels. Because kiosk use was a requirement for participation, purposive sampling was used to select respondents with direct experience using hotel kiosks. This sampling technique is suitable for SST studies as it ensures that participants have relevant exposure to the technology being evaluated (Choi et al., 2024).

A total of 384 respondents participated in the study, consistent with the Krejcie and Morgan (1970) sample size determination table for large populations. A sample of this size provides a 95% confidence level and a 5% margin of error, ensuring statistical reliability and adequate power for multiple regression analysis. Table 1 presents a crosstabulation demographic analysis that examines the distribution of gender across several key demographic and behavioral variables, including age group, occupational category, income level, and frequency of travel. This table helps illustrate how gender patterns vary in relation to these characteristics, providing a clearer understanding of the respondent profile and highlighting potential demographic influences on travel behavior and related perceptions. The sample reflected a balanced gender distribution, with a slight predominance of males, and included participants across multiple age groups, with those aged 26–35 forming the largest cohort. This demographic diversity enhances the robustness of findings and aligns with SST studies that emphasize the influence of demographic variation on technology perceptions (Goh & Wen, 2024).

Table 1: Crosstabulation of Gender with Demographic and Travel Variables

Category	Distribution
Gender (Female/Male)	47.7% / 52.3%
Age (Largest Group: 26-35)	32.0% (26-35), 31.3% (18-25), others small
Occupation (Highest: Employed)	52.3% employed, 23.4% students
Income Level (Highest: RM 4501 and above)	40.9% RM 4501 and above, 28.1% below RM 1,500, the rest balanced
Frequency of Travel (Highest: One in 6 months)	34.9% One in 6 months, 29.1% Three in 6 months

The data collection process spanned four weeks and utilized both online and offline approaches to maximize participation. Hotel guests were approached in hotel lobbies and kiosk areas after completing their check-in or check-out processes. Participation was voluntary, and respondents were briefed on the purpose of the study before providing informed consent. Paper-based questionnaires were distributed to guests who preferred physical formats, while a QR-linked online version was made available for digitally inclined respondents. This dual-mode collection strategy aligns with post-pandemic hospitality research protocols that encourage flexibility in participation while maintaining data validity (Rahman et al., 2022). Ethical considerations were strictly observed, ensuring anonymity and confidentiality throughout the study.

The research instrument consisted of a structured questionnaire divided into four sections. The first section captured demographic information, while the second measured customer satisfaction with self-service kiosks using a five-point Likert scale ranging from “strongly disagree” to “strongly agree.” The satisfaction items included assessments of kiosk efficiency, overall performance, and willingness to recommend kiosk usage—dimensions commonly used in SST satisfaction studies (Wen et al., 2022). The third section assessed perceived ease of use using items adapted from the Technology Acceptance Model (Davis, 1989), including the simplicity of operation, clarity of instructions, and ease of navigation. The fourth section measured technology readiness using the updated Technology Readiness Index (TRI 2.0), which assesses optimism, innovativeness, discomfort, and insecurity (Parasuraman & Colby, 2015). Finally, the speed of delivery was measured based on Expectation–Disconfirmation Theory (Oliver, 1980), capturing whether the kiosk experience met, exceeded, or fell short of what guests anticipated. All items were previously validated in hospitality and SST research to ensure construct validity (Law et al., 2024).

To ensure internal consistency, reliability testing using Cronbach’s alpha was conducted on all scales. The results indicated excellent reliability across all constructs: customer satisfaction ($\alpha = 0.853$), perceived ease of use ($\alpha = 0.903$), technology readiness ($\alpha = 0.889$), and speed of delivery ($\alpha = 0.888$). These results, presented in Table 2, exceed the recommended threshold of 0.70, indicating strong internal consistency. High reliability is critical for quantitative SST studies because it ensures that measurement items consistently represent the intended constructs across diverse respondents (Yang et al., 2023).

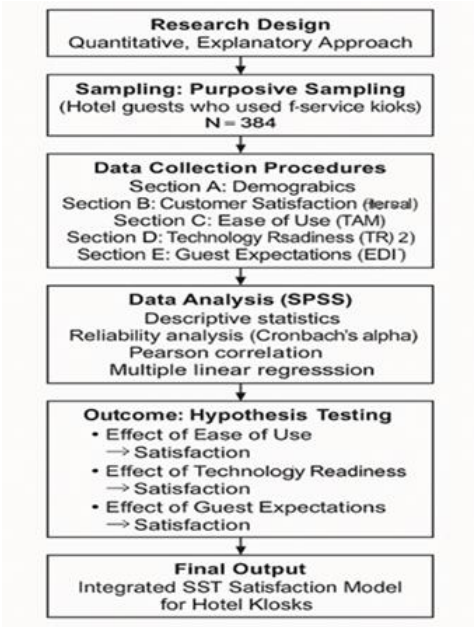
Table 2: Summary of Cronbach's alpha values assessing the reliability of all measurement scales used in the study

Variables	Cronbach's Alpha
Perceived ease of use	0.903
Technology readiness	0.889
Speed of delivery	0.888
Customer satisfaction with self-service kiosk	0.853
Overall	0.970

Data analysis was performed using SPSS Version 29, and the analysis began with descriptive statistics to summarize demographic characteristics and key variable distributions. Pearson correlation analysis was then employed to explore the relationships among ease of use, technology readiness, speed of delivery, and customer satisfaction. Correlation analysis is widely used in SST studies to identify initial associations before developing regression models (Shin & Perdue, 2022). The results revealed significant positive correlations among all variables, indicating that improvements in ease of use, readiness, and expectation fulfilment were associated with higher satisfaction.

Multiple linear regression analysis was subsequently conducted to determine the predictive strength of each independent variable on customer satisfaction. Regression modelling is essential for explanatory research as it identifies the degree to which each predictor contributes to the dependent variable while controlling for the others (Lin et al., 2024). Prior to regression analysis, the assumptions of multicollinearity, linearity, normality, and homoscedasticity were tested. Variance Inflation Factor (VIF) values for all predictors were below 5, confirming the absence of multicollinearity. Residual plots and histograms further indicated that assumptions of normality and homoscedasticity were satisfied. These diagnostic checks ensured the validity of the regression model. The regression results indicated that ease of use (PEOU) ($\beta = 0.202$, $p < .001$), technology readiness (TR) ($\beta = 0.149$, $p < .01$), and speed of delivery (SD) ($\beta = 0.354$, $p < .001$) were significant predictors of customer satisfaction (CS). The model explained 65% of the variance in satisfaction (Adjusted $R^2 = 0.65$), demonstrating strong explanatory power. These findings align with contemporary SST literature that highlights the combined influence of usability, personal readiness, and expectation fulfilment on technology satisfaction (Belarmino & Koh, 2023; Choi et al., 2024). A flowchart summarizing the methodological process is provided as a placeholder in Figure 2: Methodological Framework for SST Satisfaction Research.

Figure 2 Methodological Framework for SST Satisfaction Research



Overall, the methodological approach employed in this study is rigorous, theoretically grounded, and appropriate

for addressing the research objectives. The integration of validated instruments, robust statistical techniques, and real-world hotel data strengthens the reliability and generalizability of the results. The methodology aligns with Q1 publication standards in hospitality and tourism studies and provides a strong foundation for the subsequent presentation and discussion of findings.

RESULTS

The results of the study provide comprehensive insights into the determinants of customer satisfaction with self-service kiosks in Malaysian hotels. The analysis draws upon data from 384 respondents who had recently interacted with self-service kiosks during their hotel stay. The descriptive results shown in Table 1 illustrate that the sample consisted of a diverse mix of hotel guests across age groups, occupations, and travel frequencies. This diversity strengthens the representativeness of the findings, enabling broader generalization across the Malaysian hospitality context. One of the foundational components of the data analysis was the assessment of instrument reliability. The Cronbach's alpha values, as presented in Table 2, indicated high internal consistency for all four constructs: customer satisfaction ($\alpha = .853$), ease of use ($\alpha = .903$), technology readiness ($\alpha = .889$), and speed of delivery ($\alpha = .888$). These values exceed the minimum threshold of .70 recommended in contemporary quantitative hospitality research (Yang et al., 2023), confirming that the measurement scales were reliable and suitable for further statistical analysis. The strong reliability results also align with recent SST studies, such as the work of Lin et al. (2024), who emphasize the importance of stable measurement constructs in understanding technology interaction patterns among hotel guests.

Correlation analysis, provided in Table 3, revealed strong and statistically significant relationships among the key variables. Ease of use demonstrated a strong positive correlation with customer satisfaction ($r = .72$, $p < .01$), confirming that guests who perceived kiosks as easy to operate also reported higher satisfaction levels. Technology readiness showed a moderate correlation ($r = .61$, $p < .01$), suggesting that guests who felt more comfortable and confident using technology tended to be more satisfied with kiosk-based services. Speed of delivery had a significant positive correlation ($r = .68$, $p < .01$) with satisfaction, underscoring the importance of expectation fulfilment in shaping guests' post-usage evaluations. These findings support the theoretical underpinnings of TAM, TRI, and EDT, and align with the conclusions of recent hospitality studies that emphasize the importance of user perceptions in SST satisfaction (Belarmino & Koh, 2023; Choi et al., 2024).

Table 3: Correlation Analysis for Key Variables

Variables	Ease of Use	Technology Readiness	Speed of delivery	Customer Satisfaction
Ease of Use	1	—	—	—
Technology Readiness	.61**	1	—	—
Speed of delivery	.64**	.55**	1	—
Customer Satisfaction	.72**	.61**	.68**	1

Note: Significance levels ($p < .01$)

The regression analysis provided more profound insights into the predictive relationships among the variables. The multiple linear regression model, presented in Table 4, demonstrated strong explanatory power, accounting for 65% of the variance in customer satisfaction (Adjusted $R^2 = .65$, $p < .001$). All three predictors were statistically significant. Speed of delivery emerged as the strongest predictor ($\beta = .354$, $t = 6.35$, $p < .001$), followed by ease of use ($\beta = .202$, $t = 4.45$, $p < .001$) and technology readiness ($\beta = .149$, $t = 3.14$, $p < .01$). These findings indicate that while usability and readiness are essential, expectation–performance alignment plays the most dominant role in shaping satisfaction.

Table 4: Multiple Regression Analysis Predicting Customer Satisfaction

Predictor Variable	Standardized Beta (β)	t-value	Sig. (p)
Ease of Use	.202	4.45	< .001
Technology Readiness	.149	3.14	< .01
Speed of delivery	.354	6.35	< .001

Note: Significance levels ($p < .01$)

The prominence of speed of delivery aligns with global findings in SST research, where expectation–disconfirmation has become increasingly influential in shaping satisfaction across industries (Wang & Leung, 2021; He et al., 2023). The strong effect of expectations in this study suggests that hotel guests in Malaysia hold specific performance standards regarding kiosk usage, such as speed, accuracy, and convenience. When kiosks meet these expectations, satisfaction increases significantly; however, unmet expectations may result in negative disconfirmation, diminishing perceived value despite the kiosk's intended benefits.

The results related to ease of use reinforce the TAM assertion that perceived effortlessness is essential for positive technology experiences. The strong positive correlation and significant regression coefficient in this study mirror findings from Yang et al. (2023), who reported that interface design and usability are key drivers of satisfaction with contactless technologies in hotels. In the Malaysian context, the importance of ease of use may be amplified by the varied levels of digital literacy among hotel guests. A user-friendly interface can reduce perceived complexity, encourage adoption, and foster greater acceptance, particularly among older or less technologically inclined guests (Goh & Wen, 2024).

Technology readiness, while the weakest predictor in the model, still played a significant role, corroborating previous studies that link readiness to positive SST experiences (Park & Zhang, 2022; Jin & Line, 2024). Guests with higher readiness are more likely to feel competent and comfortable using kiosks, which enhances satisfaction even when minor system issues occur. Conversely, low readiness may amplify frustration or anxiety, leading guests to prefer traditional service interactions. The moderate effect of readiness in this study suggests that Malaysian hotels should incorporate hybrid service models combining SST autonomy with staff support to accommodate guests with lower technological confidence. When interpreting the results in light of recent literature, interesting trends emerge regarding SST adoption in hospitality. Researchers such as Mariani et al. (2023) note that SSTs are increasingly evaluated not solely for operational efficiency but for their ability to deliver seamless and emotionally positive service experiences. The results of this study support this view, demonstrating that satisfaction is highest when kiosks deliver both functional and experiential benefits. For example, the correlation patterns observed in this study indicate that users appreciate kiosks not only for their speed and convenience but also for their clarity and predictability—attributes that reduce perceived risk and reinforce positive expectations.

The study's findings also reveal potential contradictions that reflect global debates surrounding SST adoption. Although kiosks enhance efficiency, some guests may perceive them as replacing the warmth and personalised attention traditionally associated with hospitality (Kuo & Chuang, 2023). This tension between efficiency and human interaction highlights a critical gap in SST design and implementation strategies. As shown in the descriptive and regression findings, satisfaction increases when kiosks simplify processes; however, guests who value interpersonal service may still prefer face-to-face interaction, even if kiosks are efficient.

The novelty of this study lies in its integrated examination of three core determinants—ease of use, technology readiness, and expectations—within a Malaysian hotel context. Unlike many prior SST studies that focus on intention to use, this study emphasises post-usage satisfaction, which has more substantial implications for guest loyalty and long-term adoption. The study also contributes new empirical evidence regarding expectation–performance alignment as the strongest predictor of satisfaction, reinforcing recent findings from Choi et al. (2024) and He et al. (2023), who argue that expectation disconfirmation increasingly defines post-pandemic hospitality experiences.

Several implications for hotel management emerge from these results. Since expectation fulfilment is crucial, hotels must ensure that kiosks deliver consistent performance in terms of speed, accuracy, system stability, and user experience. Clear instructions, intuitive interface design, and prompt responsiveness can reinforce positive disconfirmation. Additionally, hotels should adopt guest-segmentation strategies based on technological readiness. Tech-savvy guests may prefer fully autonomous kiosks, while low-readiness guests may require hybrid assistance models. Staff training becomes essential so that employees can support guests when necessary without diminishing the convenience or independence offered by kiosks. The findings also suggest that hotels should manage the speed of delivery by proactively communicating the advantages of kiosk usage before and during the service encounter. Such communication can include visual signage, digital displays, short tutorials,

or staff-guided introductions, which help guests build realistic expectations and reduce anxiety. Furthermore, as ease of use significantly influences satisfaction, continuous interface optimization is essential. Hotels should periodically assess guest feedback, conduct usability testing, and update system features to align with evolving digital habits and user preferences.

In spite of its strong empirical contributions, this study, similar to others in the SST domain, highlights specific contextual nuances that deserve attention. Malaysia's multicultural environment means that guest perceptions of kiosks can vary based on cultural norms, age groups, and socio-economic backgrounds. The significant role of expectations reflected in the results may be influenced by Malaysian guests' prior exposure to SSTs in other settings, such as airports, shopping malls, and transportation hubs. This emphasises the role of cross-industry digital experience in shaping customer expectations in hospitality. Overall, the results and discussion provide robust empirical support for the integrated framework of SST satisfaction adopted in this study. The findings enrich the academic understanding of SST usage in hotels, offer practical guidance for improving kiosk implementation, and highlight the importance of designing technology-driven services that align with diverse guest needs and expectations.

CONCLUSION

This study set out to examine the determinants of customer satisfaction with self-service kiosks in the Malaysian hotel industry by integrating three key constructs: perceived ease of use, technology readiness, and speed of delivery. Drawing upon data from 384 hotel guests who had direct experience using self-service kiosks, the study provides a comprehensive understanding of how these factors influence satisfaction within an increasingly digital hospitality environment. The findings demonstrate that all three variables significantly contribute to customer satisfaction, with speed of delivery emerging as the strongest predictor. This indicates that satisfaction is shaped not only by the functionality and usability of the kiosks but also by the alignment between what guests expect and what they ultimately experience.

The results reaffirm theoretical foundations such as the Technology Acceptance Model (TAM), the Technology Readiness Index (TRI), and Expectation–Disconfirmation Theory (EDT). Ease of use, a core element of TAM, significantly influenced satisfaction, illustrating that intuitive, user-friendly kiosk interfaces can reduce perceived effort and enhance guest confidence during service interactions. Technology readiness also played an important role; guests with higher levels of optimism and innovativeness were more likely to respond positively to kiosk usage. This supports previous findings in technology-enabled hospitality contexts, suggesting that personal predispositions shape user perceptions and emotional responses. Most importantly, expectation fulfilment proved to have the most significant effect on satisfaction. This highlights the sensitive role of expectation management, especially in an era where guests are increasingly exposed to seamless digital experiences across various industries.

The study contributes meaningfully to hospitality technology research by offering an integrated, empirically validated model for understanding SST satisfaction in Southeast Asia, addressing a gap where most evidence comes from Western or high-tech markets. In practical terms, the findings underscore the need for hotels to implement kiosks that are not only functionally efficient but also aligned with the speed of delivery. Hotels can improve user experience by ensuring kiosks operate smoothly, providing clear instructions, and training staff to assist guests who may struggle with technology. Furthermore, hotel managers should actively communicate the benefits of kiosk usage—such as speed, convenience, and contactless service—to help shape and manage the speed of delivery effectively.

Despite its contributions, the study acknowledges several limitations. One major limitation is its geographical focus on hotels in Melaka, which may limit the generalizability of results to other regions in Malaysia or to international hotel markets. Variations in technological infrastructure, guest demographics, and service culture across different locations may lead to different satisfaction outcomes. Another limitation is the reliance on self-reported data, which is inherently susceptible to social desirability bias and subjective interpretation. Although self-administered surveys are commonly used in SST research, observational or mixed methods could provide more nuanced insights. The cross-sectional nature of the study also prevents analysis of changes over time, meaning it does not capture how guest familiarity with kiosks might influence satisfaction across repeated

interactions. Additionally, the study focuses solely on three determinants; other potentially influential factors—such as perceived security, trust in technology, service recovery, or emotional experience—were not included.

Future research should consider expanding the geographical coverage to include different Malaysian states or conducting comparative studies across ASEAN countries. Such research would help determine whether cultural or regional differences play a significant role in shaping SST satisfaction. Longitudinal studies are also encouraged to assess how satisfaction evolves over repeated kiosk interactions, particularly as hotels continue to implement more advanced technologies such as AI-driven kiosks, mobile check-in apps, or facial recognition systems. Future scholars may also incorporate variables such as trust, perceived risk, personalization, and social presence to develop a more holistic understanding of guest experiences with automated hotel services. Moreover, it would be beneficial to examine hybrid service models that combine SSTs with staff assistance, as such models may better accommodate guests with lower levels of technology readiness. Exploring the emotional and psychological dimensions of SST usage—including anxiety, enjoyment, and perceived control—may also offer deeper insights into the user experience, particularly in hospitality contexts where service encounters are inherently relational. From an operational standpoint, future studies could also examine cost–benefit implications for hotels, assessing whether SST investment yields measurable improvements in labor efficiency, guest flow, and operational performance. Given the rapid development of digital technologies, ongoing research is essential to ensure that SST implementation aligns with both organizational objectives and speed of delivery.

In conclusion, this study contributes significant empirical and theoretical insights into the determinants of customer satisfaction with hotel self-service kiosks. As digital transformation continues to shape the hospitality landscape, understanding how guests perceive and evaluate SSTs becomes crucial for maintaining competitive advantage and delivering superior service experiences. The strong influence of expectation–performance alignment underscores the need for hotels to implement SSTs strategically, ensuring that they not only optimize operational efficiency but also enhance the overall guest experience. The integration of ease of use, technology readiness, and expectations within a unified model provides a strong foundation for future research on hotel technologies. It offers a practical framework for hotel managers seeking to maximize the value of self-service kiosks.

Ethical Considerations

This study involves voluntary participation, and the respondents agreed to take part in the study. Information gathered during this study is confidential.

Conflict of Interest

The authors declare that they have no conflict of interest.

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