

Self-Service Kiosks and Customer Satisfaction in the Fast-Food Industry: Evidence from India and Malaysia

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ABSTRACT

The fast-food industry has increasingly adopted digital technologies to enhance service quality and customer satisfaction, with self-service kiosks becoming an important part of the customer ordering experience. This study examines the effects of self-service kiosks on customer experience and satisfaction at McDonald's in Malaysia and India, focusing on waiting time reduction, ease of use, order accuracy, and service quality. Using convenience sampling, data were collected from 206 respondents with prior experience using self-service kiosks and analyzed using IBM SPSS Statistics. The results showed that ease of use significantly influenced customer experience ($\beta = 0.150$, $p < .05$). Waiting time reduction ($\beta = 0.049$, $p < .05$), ease of use ($\beta = 0.088$, $p < .01$), order accuracy ($\beta = 0.151$, $p < .001$), and service quality ($\beta = 0.171$, $p < .001$) significantly influenced customer satisfaction. Customer experience also significantly influenced customer satisfaction ($\beta = 0.614$, $p < .001$). The models explained 81.9% and 84.4% of the variance in customer experience and customer satisfaction, respectively. These findings suggest that fast-food operators should prioritize user-friendly interfaces, order accuracy, service quality, and efficient service processes to enhance customer experience and satisfaction.

Keywords: Convenience; Customer Satisfaction; Ease of Use; India; Malaysia; Order Accuracy; Service Quality

INTRODUCTION

In today's rapidly evolving digital service environment, the fast-food industry increasingly adopts digital technologies to improve operational efficiency and customer experience. One of the most widely implemented technologies is the self-service kiosk, particularly among global fast-food chains such as McDonald's. Self-service kiosks can enhance operational efficiency, reduce labor costs, streamline the ordering process, improve service reliability and consistency, and provide customers with a more convenient dining experience. These kiosks enable customers to place orders independently through interactive digital interfaces. As consumer expectations shift toward faster, more convenient, and personalized services, understanding how self-service technologies influence customer satisfaction has become increasingly important for both researchers and practitioners.

Self-service kiosks enable customers to place orders independently through interactive touch-sensitive displays, potentially reducing waiting time, improving order accuracy, and providing customers with greater control over the ordering process. [Meuter et al. \(2000\)](#) suggested that technology-based self-service can improve service delivery by enabling customers to participate directly in service production. Similarly, [Dabholkar \(1996\)](#) emphasized that customer perceptions of technology-based services are influenced by factors such as ease of use, reliability, and enjoyment. These perspectives are also consistent with the Technology Acceptance Model (TAM), which highlights perceived usefulness and perceived ease of use as important determinants of technology acceptance (Davis, 1989). More recent research has confirmed the continued relevance of these factors in shaping consumer experiences with self-service technologies ([Blut et al., 2022](#)).

In developing and diverse markets such as India and Malaysia, the implementation of self-service kiosks presents both opportunities and challenges. Although both countries are experiencing significant digital transformation, differences in technological familiarity, cultural preferences, and consumer behavior may influence customers' responses to self-service technologies. Consumers who are familiar with mobile applications and digital services may be more receptive to digital ordering, whereas others may continue to prefer interpersonal service because of trust, familiarity, or usability concerns. [Edeh et al. \(2021\)](#) found that the implementation of food safety measures, delivery services, contactless transactions, and digital technologies contributed to customer satisfaction in the Malaysian fast-food context. Their findings demonstrate the growing importance of technology-enabled services in responding to changing consumer expectations.

Despite the increasing implementation of self-service technologies, their effectiveness may vary across different consumer and market contexts. Previous studies have examined the relationship between self-service technologies and customer satisfaction; however, much of the existing research has been conducted within single-country settings. Consequently, limited evidence is available regarding differences in customer perceptions of self-service kiosks across national contexts, particularly between Malaysia and India. This limitation is important because differences in technological familiarity, consumer behavior, and service preferences may shape how customers evaluate technology-enabled services. [Liljander et al. \(2006\)](#) further indicated that consumers may experience anxiety or resistance when interacting with unfamiliar technologies, highlighting the importance of considering contextual factors when examining self-service technology.

Furthermore, existing studies have generally examined the overall effectiveness of self-service technologies, while comparatively less attention has been given to how specific service attributes contribute to customer satisfaction across different national contexts. Characteristics such as service quality, speed, convenience, ease of use, and order accuracy may shape consumers' evaluations of self-service kiosks and their overall service experiences. Examining these factors simultaneously may provide a more comprehensive understanding of how consumers evaluate self-service kiosks and which aspects of technology-enabled services are particularly relevant to customer satisfaction. Accordingly, this study aims to compare the impact of self-service kiosks on customer satisfaction in the fast-food industry in Malaysia and India, focusing on service quality, speed, convenience, ease of use, and order accuracy. It also examines whether customer perceptions differ between the two national contexts. By adopting a cross-country comparative approach, this study seeks to provide a deeper understanding of customer satisfaction with technology-enabled services in different market environments.

The significance of this study is both theoretical and practical. Theoretically, it contributes to the literature on self-service technology and customer satisfaction by providing comparative evidence from Malaysia and India and examining multiple kiosk-related service attributes within a single analytical framework. The study also extends existing research by considering how customer evaluations of self-service technologies may differ across national contexts. Practically, the findings may assist fast-food and quick-service restaurant operators in improving kiosk interfaces, enhancing customer experiences, and adapting digital service strategies to different market conditions. Therefore, the study contributes to a more context-sensitive understanding of how self-service technologies can support customer satisfaction in the rapidly evolving fast-food industry.

LITERATURE REVIEW

Waiting Time Reduction

Waiting time is an important factor influencing customer evaluations of service, particularly in the fast-food industry. [Abdul Hamid et al. \(2021\)](#) emphasized the importance of time efficiency in improving productivity for both customers and service providers. Customers generally expect fast and efficient service, while excessive waiting time may negatively affect their service experience and satisfaction. Self-service kiosks are designed to streamline the ordering process by allowing customers to place orders independently, thereby potentially reducing queues and waiting time.

Previous research has demonstrated that waiting time can influence customers' perceptions and evaluations of service encounters. Longer waiting times may negatively affect customer perceptions, whereas shorter waiting times can contribute to more favorable service evaluations ([Davis & Heineke, 1998](#)). Moreover, customers' responses to waiting are influenced not only by the actual duration but also by their perceptions and experiences during the waiting process ([Hui & Tse, 1996](#)). Therefore, reducing waiting time may contribute to a more efficient customer experience and higher customer satisfaction. Accordingly, the following hypotheses are proposed:

H1: Waiting time reduction positively influences customer experience.

H5: Waiting time reduction positively influences customer satisfaction.

Ease of Use

Ease of use refers to the extent to which customers perceive a self-service kiosk as simple and effortless to operate. Davis (1989) defined perceived ease of use as the degree to which an individual believes that using a particular system requires minimal effort. In the context of self-service kiosks, ease of use includes the ability to navigate the interface, select products, customize orders, and complete transactions efficiently.

When customers perceive a self-service system as easy to use, they may complete their orders more confidently and efficiently, resulting in a smoother service experience. Previous studies on self-service technologies have demonstrated that ease of use can enhance customer experience by reducing effort and increasing customers' perceived control over the service process (Curran & Meuter, 2005; Meuter et al., 2000). Similarly, an intuitive and user-friendly system can facilitate positive interactions between customers and technology, which may subsequently enhance customer satisfaction (Dabholkar, 1996). Therefore, the following hypotheses are proposed:

H2: Ease of use positively influences customer experience.

H6: Ease of use positively influences customer satisfaction.

Order Accuracy

Order accuracy refers to the extent to which customers receive the items they have selected and ordered correctly. Self-service kiosks allow customers to enter and review their orders directly before completing a transaction, potentially reducing errors and miscommunication during the ordering process. Wang (2022) suggested that self-service kiosks can improve customer experience by reducing human error, while Stanley & Sebastine, (2023) indicated that allowing customers to enter orders directly can reduce miscommunication between customers and employees.

Self-service kiosks may also facilitate the ordering process for customers who experience communication barriers. Shahril (2021) suggested that customers with hearing impairments or language barriers may benefit from technology-enabled ordering because it reduces their dependence on verbal communication with employees. Consequently, greater order accuracy and control over the ordering process may contribute to a more positive customer experience and higher satisfaction. Therefore, the following hypotheses are proposed:

H3: Order accuracy positively influences customer experience.

H7: Order accuracy positively influences customer satisfaction.

Service Quality

Service quality reflects customers' evaluations of the quality and performance of services provided during a service encounter. Travis (2021) associated service quality with customer perceptions and satisfaction, while Johnson (2024) highlighted its importance in encouraging customer satisfaction and repeat patronage. In the context of self-service kiosks, service quality may be reflected in system reliability, responsiveness, transaction speed, and overall performance.

A reliable and efficient self-service system can contribute to a more positive customer experience by enabling customers to complete transactions with fewer disruptions (Rastegar et al., 2021). Furthermore, service quality remains important in shaping customer perceptions of fast-food restaurants and their overall service experiences. Rumagit et al. (2022) emphasized the importance of maintaining high service standards in strengthening customer perceptions and relationships. Therefore, the quality of

technology-enabled services may influence both the customer experience and overall satisfaction. Accordingly, the following hypotheses are proposed:

H4: Service quality positively influences customer experience.

H8: Service quality positively influences customer satisfaction.

Customer Experience and Customer Satisfaction

Customer experience refers to customers' overall perceptions and responses arising from their interactions with a service provider across the service process. [Stanley et al. \(2023\)](#) described customer experience as the cumulative outcome of multiple interactions between customers and service providers, which may subsequently influence customer outcomes. Customer satisfaction, meanwhile, represents customers' evaluations of whether a service experience meets their expectations. Information regarding customer satisfaction can assist businesses in evaluating and improving their products and services ([Waebuesar et al., 2022](#)).

In the context of self-service kiosks, customer experience may be shaped by waiting time reduction, ease of use, order accuracy, and service quality. A smooth, efficient, and convenient ordering process may create a favorable experience that subsequently contributes to greater customer satisfaction. Previous research has demonstrated that customer experience plays an important role in shaping satisfaction and subsequent behavioral responses ([Lemon & Verhoef, 2016](#); [Verhoef et al., 2009](#)). Therefore, the following hypothesis is proposed:

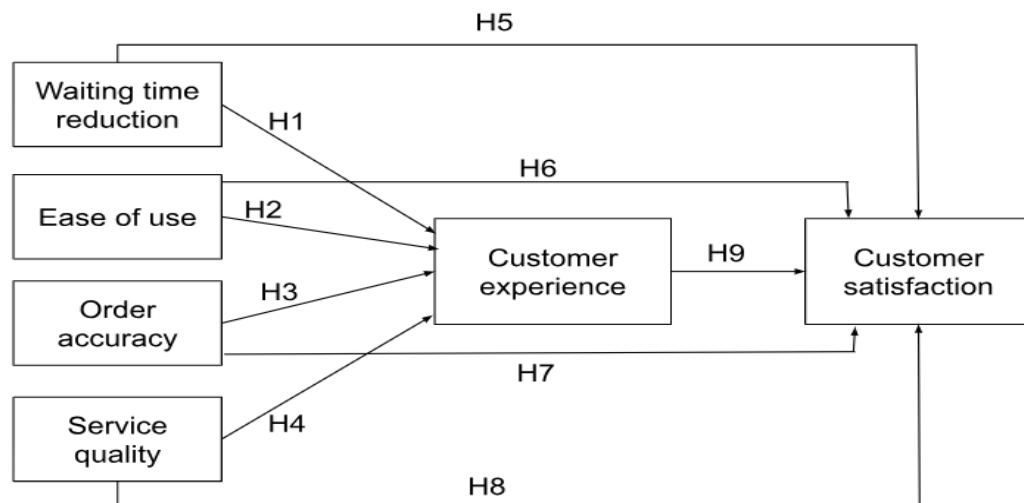
H9: Customer experience positively influences customer satisfaction.

Conceptual Framework

The conceptual framework of this study is developed based on the Technology Acceptance Model (TAM) and previous literature on self-service technology. The framework proposes that waiting time reduction, ease of use, order accuracy, and service quality positively influence customer experience and customer satisfaction. Furthermore, customer experience is proposed to positively influence customer satisfaction. Accordingly, customer experience serves as a mediating variable in the relationships between the four kiosk-related factors and customer satisfaction.

The proposed conceptual framework is presented in [Figure 1](#).

Figure 1. Research Framework



RESEARCH METHOD

This study employed a quantitative survey approach to examine the impact of self-service kiosks on customer satisfaction at McDonald's in Malaysia and India. A quantitative approach was selected because it enables systematic measurement, statistical hypothesis testing, and structured comparisons between the two countries (Creswell & Creswell, 2018). This approach is also consistent with previous research on self-service technology, which has commonly employed surveys to examine customers' perceptions and adoption of self-service kiosks (Blut et al., 2022; Meuter et al., 2000).

Sampling and Target Population

The target population comprised customers aged 16 years and above who had used a self-service kiosk at McDonald's at least once. Due to practical accessibility limitations, convenience sampling was employed. The survey link was distributed through social media, university networks, and direct contact with customers at McDonald's outlets in both countries. A screening question at the beginning of the questionnaire was used to confirm respondents' prior experience with self-service kiosks. After incomplete or inconsistent responses were excluded, a total of 206 valid responses were retained for analysis.

Data Collection Procedure

Data were collected between March and May 2026 using a self-administered online questionnaire distributed through Google Forms. The questionnaire consisted of two sections. Part A collected respondents' demographic information, including gender, age, race, occupation, country of residence, and frequency of visits to McDonald's. Part B contained Likert-scale items measuring six constructs: Waiting Time Reduction (WTR), Ease of Use (EOU), Order Accuracy (OA), Service Quality (SQ), Customer Experience (CE), and Customer Satisfaction (CS). All items were measured using a five-point Likert scale ranging from 1 (Strongly Disagree) to 5 (Strongly Agree). Participation was voluntary, informed consent was obtained before participation, and no personally identifiable information was collected.

Data Analysis

The data were analyzed using IBM SPSS Statistics Version 26. Prior to inferential analysis, assumptions related to normality, multicollinearity using variance inflation factor (VIF) and tolerance values, homoscedasticity, and equality of variances using Levene's test were assessed. Descriptive statistics were used to summarize respondents' demographic characteristics and the study variables. Internal consistency was assessed using Cronbach's alpha, with values of .70 or higher considered acceptable. Zero-order correlation analysis was subsequently conducted to examine the relationships among the variables.

Two multiple regression models were estimated to test the proposed hypotheses. In Model 1, Customer Experience was specified as the dependent variable, with Waiting Time Reduction, Ease of Use, Order Accuracy, and Service Quality as predictors. In Model 2, Customer Satisfaction was specified as the dependent variable, with Waiting Time Reduction, Ease of Use, Order Accuracy, Service Quality, and Customer Experience as predictors. These analyses were conducted to examine the relationships proposed in H1–H9.

RESULTS

A total of 206 valid responses were included in the analysis, comprising 103 respondents from India (50.0%) and 103 respondents from Malaysia (50.0%). The following sections present the respondents' demographic characteristics, descriptive statistics, internal consistency based on Cronbach's alpha, zero-order correlations, and multiple regression analysis.

Table 1. Summary of Respondents' Demographic Information (N = 206)

Characteristic	Response	Frequency	Percentage (%)
Gender	Female	116	56.3
	Male	90	43.7
Age	Under 18 years old	10	4.9
	19–24 years old	171	83.1
	25–35 years old	16	7.8
	36–50 years old	8	3.9
	51–60 years old	1	0.5
Occupation	Student	178	86.4
	Employed	22	10.7
	Unemployed	5	2.4
	Housewife	1	0.5
Ethnicity	Chinese	68	33.0
	Indian	114	55.3
	Malay	24	11.7
Country of Residence	India	103	50.0
	Malaysia	103	50.0
Frequency of Visiting McDonald's	1	17	8.3
	2	29	14.1
	3	50	24.3
	4	61	29.6
	5	49	23.8
Frequency of Ordering at Self-Service Kiosks	1	12	5.8
	2	9	4.4
	3	39	18.9
	4	69	33.5
	5	77	37.4
Frequency of Ordering at the Counter	1	51	24.8
	2	28	13.6
	3	40	19.4
	4	40	19.4
	5	47	22.8

As shown in Table 1, female respondents constituted the majority of the sample (56.3%), while male respondents accounted for 43.7%. The largest age group was respondents aged 19–24 years (83.1%), followed by those aged 25–35 years (7.8%), under 18 years (4.9%), 36–50 years (3.9%), and 51–60 years (0.5%). In terms of ethnicity, Indian respondents constituted the largest group (55.3%), followed by Chinese (33.0%) and Malay respondents (11.7%). It should be noted that "Indian" refers to ethnicity rather than country of residence. Based on country of residence, the sample was equally distributed between India and Malaysia, with each country contributing 50.0% of the respondents.

Students constituted the majority of the sample (86.4%), reflecting the characteristics of the respondents obtained through the convenience sampling approach.

Table 2. Descriptive Statistics, Reliability, and Correlations by Construct (N = 206)

Variables	1	2	3	4	5	6
1. Waiting Time Reduction (WTR)	0.904					
2. Ease of Use (EOU)	0.613***	0.934				
3. Order Accuracy (OA)	0.626***	0.814***	0.934			
4. Service Quality (SQ)	0.540***	0.693***	0.740***	0.825		
5. Customer Experience	0.481***	0.758***	0.745***	0.741***	0.849	
6. Customer Satisfaction	0.487***	0.765***	0.776***	0.773***	0.897***	0.909
Number of Items	3	3	3	3	2	3
Mean	3.8916	4.1974	4.2087	4.1392	4.2767	4.2767
Standard Deviation	0.82482	0.89496	0.85166	0.77077	0.75749	0.75749

Note. N = 206. $p < .05$, $p < .01$, $p < .001$. The diagonal entries in bold represent Cronbach's alpha coefficients.

Table 2 presents the descriptive statistics, reliability coefficients, and zero-order correlations for the study variables. All constructs demonstrated acceptable internal consistency, with Cronbach's alpha values ranging from 0.825 to 0.934. The mean scores ranged from 3.8916 to 4.2767. All variables were positively and significantly correlated at $p < .001$, with the strongest correlation observed between Customer Experience and Customer Satisfaction ($r = 0.897$).

Table 3. Regression Analysis

Variables	Customer Experience	Customer Satisfaction
Waiting Time Reduction (WTR)	0.013	0.049*
Ease of Use (EOU)	0.150*	0.088**
Order Accuracy (OA)	0.019	0.151***
Service Quality (SQ)	0.079	0.171***
Customer Experience		0.614***
Customer Satisfaction	0.713***	
R ²	0.819	0.844
F Value	181.491	216.888
Durbin-Watson Statistic	2.067	2.049

Note. N = 206; $p < .05$, $p < .01$, $p < .001$.

Table 3 presents the results of the regression analysis examining the relationships between the independent variables, namely Waiting Time Reduction, Ease of Use, Order Accuracy, and Service Quality, and the dependent variables, namely Customer Experience and Customer Satisfaction.

For Customer Experience, Ease of Use showed the largest coefficient ($\beta = 0.150$, $p < .05$), followed by Service Quality ($\beta = 0.079$, $p > .05$), Order Accuracy ($\beta = 0.019$, $p > .05$), and Waiting Time Reduction ($\beta = 0.013$, $p > .05$). For Customer Satisfaction, Service Quality showed the largest coefficient among the four predictors ($\beta = 0.171$, $p < .001$), followed by Order Accuracy ($\beta = 0.151$, $p < .001$), Ease of Use ($\beta = 0.088$, $p < .01$), and Waiting Time Reduction ($\beta = 0.049$, $p < .05$). Customer Experience also

showed a significant relationship with Customer Satisfaction ($\beta = 0.614$, $p < .001$), while Customer Satisfaction showed a significant relationship with Customer Experience ($\beta = 0.713$, $p < .001$).

The models explained 81.9% of the variance in Customer Experience ($R^2 = 0.819$) and 84.4% of the variance in Customer Satisfaction ($R^2 = 0.844$). The F values were 181.491 and 216.888, respectively, while the Durbin-Watson statistics were 2.067 and 2.049. Based on the regression results presented in Table 3, Figure 2 illustrates the relationships among the study variables and summarizes the results of the proposed hypotheses.

Figure 2. Results of the Research Framework

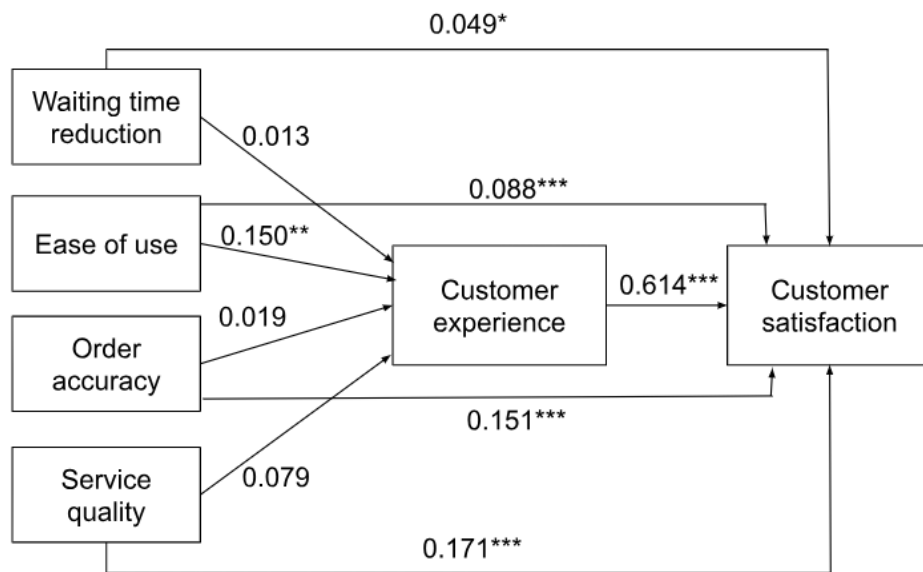


Figure 2 presents the results of the proposed research framework, showing the relationships between Waiting Time Reduction, Ease of Use, Order Accuracy, Service Quality, Customer Experience, and Customer Satisfaction.

DISCUSSION

This study aims to compare customer satisfaction with McDonald's self-service kiosks in Malaysia and India by examining the roles of waiting time reduction, ease of use, order accuracy, service quality, and customer experience. The findings provide general support for the proposed research model and demonstrate varying relationships among the study variables. Overall, the results highlight the important role of self-service kiosks in shaping customer experience and satisfaction in the fast-food industry.

Based on 206 valid questionnaire responses analyzed using SPSS, the findings indicate that waiting time reduction, ease of use, order accuracy, and service quality contribute differently to customer experience and satisfaction. Among the four kiosk-related factors, ease of use showed the largest coefficient for Customer Experience, while service quality showed the largest coefficient for Customer Satisfaction. Respondents also reported favorable perceptions of order accuracy, whereas waiting time reduction received a comparatively lower mean score. Furthermore, Customer Experience showed a significant positive relationship with Customer Satisfaction, highlighting the importance of customers' overall experiences in shaping their satisfaction with self-service kiosks.

Regarding waiting time reduction, although it received a comparatively lower mean score than the other factors examined in this study, the findings indicate its relevance to customer satisfaction, suggesting that consumers continue to value service efficiency. This finding is consistent with [Abdul Hamid et al. \(2021\)](#), who emphasized the importance of time efficiency in service delivery. However, the relationship between waiting time reduction and Customer Experience was relatively limited. One possible explanation is that self-service kiosks may accelerate the ordering process but do not necessarily reduce the total amount of time customers spend waiting for food preparation and collection. Therefore, customers may perceive the benefits of self-service kiosks differently depending on the overall service process ([Tao et al., 2023](#)).

Ease of use also plays an important role in customers' evaluations of self-service kiosks. The findings indicate that Ease of Use was positively associated with both Customer Experience and Customer Satisfaction. This finding is consistent with the Technology Acceptance Model proposed by [Davis \(1989\)](#), which emphasizes perceived ease of use as an important factor influencing individuals' acceptance of technology. Similarly, [Hamid et al. \(2016\)](#) suggested that individuals are more likely to understand and continue using a system when it is simple and straightforward to learn and operate. In the context of self-service kiosks, an intuitive and user-friendly interface can facilitate the ordering process, reduce the effort required from customers, and contribute to a more favorable service experience.

Order accuracy represents another important aspect of self-service kiosk usage. The findings demonstrate a positive relationship between Order Accuracy and Customer Satisfaction, indicating that customers value the ability to place and review their orders accurately. [Meuter et al. \(2000\)](#) highlighted the potential of self-service technologies to improve technology-based service encounters. By allowing customers to directly select, customize, and review their orders before completing a transaction, self-service kiosks may reduce miscommunication between customers and employees. Consequently, greater control over the ordering process may improve the reliability of transactions and contribute to higher customer satisfaction.

Service quality also emerged as an important factor in customers' evaluations of self-service kiosks. Among the four kiosk-related predictors, Service Quality showed the largest coefficient for Customer Satisfaction. This finding suggests that customers continue to place considerable importance on the reliability and overall performance of technology-enabled services. [Leimeister et al. \(2014\)](#) indicated that customers' evaluations of digital services are influenced by system stability and operational performance. Therefore, when self-service kiosks operate reliably and smoothly, customers may perceive the overall service more favorably. Maintaining system reliability and consistent performance is consequently important for fast-food operators seeking to enhance customer satisfaction through digital service technologies.

Customer Experience also demonstrated an important relationship with Customer Satisfaction. The significant positive relationship between these variables indicates that favorable experiences with self-service kiosks are associated with higher levels of satisfaction ([Yo et al., 2021](#)). Customers' overall experiences may be shaped by various aspects of the ordering process, including convenience, ease of interaction, service efficiency, accuracy, and system performance. Therefore, improving individual technological features alone may not be sufficient; fast-food operators should also consider the overall service journey experienced by customers when using self-service kiosks.

The findings also provide useful insights into self-service kiosk usage among respondents from Malaysia and India. Although this study incorporates respondents from both countries, customers' evaluations should be understood within their respective service and technological contexts. The comparatively lower evaluation of waiting time reduction may be related to the overall service process, particularly during peak hours. Although customers may complete the ordering stage more efficiently through self-service kiosks, they may still need to wait for food preparation and collection. Moreover, the majority of respondents were young adults aged 19–24 years, who may have greater familiarity with digital technologies and self-service systems. This demographic characteristic may have influenced respondents' perceptions and experiences with self-service kiosks.

Theoretically, this study contributes to the literature on self-service technology and customer satisfaction by examining respondents from Malaysia and India within the same research framework. Compared with previous studies that have predominantly focused on a single-country context, this study incorporates waiting time reduction, ease of use, order accuracy, service quality, Customer Experience, and Customer Satisfaction to provide a broader understanding of technology-enabled service experiences. The findings further highlight the importance of considering both kiosk-related service attributes and customers' overall experiences when examining satisfaction with self-service technologies.

Practically, the findings provide several implications for fast-food operators. Companies should continuously improve self-service kiosks by ensuring system reliability, ease of use, and order accuracy. User-friendly interfaces should be maintained to facilitate efficient ordering for customers with different levels of technological familiarity. Management should also improve staffing arrangements and service processes during peak hours because faster digital ordering may not necessarily reduce waiting time during food preparation and collection. Furthermore, while promoting digital services, fast-food operators should continue providing counter services and staff assistance to accommodate customers with different service preferences and technological capabilities.

This study has several limitations. First, convenience sampling was employed, which may limit the generalizability of the findings to the broader population. Second, the majority of respondents were students and young adults, which may have influenced the findings because of their greater familiarity with digital technologies. Third, the study focused exclusively on McDonald's, which may limit the applicability of the findings to other fast-food brands. Future studies are encouraged to employ larger and more diverse samples, probability sampling methods, and comparisons involving multiple fast-food brands or other service industries. Future research could also conduct specific cross-country statistical comparisons to provide a more detailed understanding of potential differences between consumers in Malaysia and India.

Overall, this study demonstrates the important role of self-service kiosks in shaping customer experience and satisfaction in the fast-food industry. The findings highlight the relevance of waiting time reduction, ease of use, order accuracy, service quality, and Customer Experience in understanding customers' evaluations of self-service technologies. In particular, Service Quality showed an important relationship with Customer Satisfaction, while Ease of Use was important in shaping Customer Experience. Customer Experience was also positively associated with Customer Satisfaction. As the fast-food industry continues its digital transformation, service providers should develop a deeper understanding of customers' expectations and

experiences with self-service systems. Through effective implementation and continuous improvement, self-service kiosks can serve as a valuable strategic tool for improving service delivery and enhancing customer satisfaction.

CONCLUSION

This study achieved its objective of examining the effects of self-service kiosks on customer satisfaction at McDonald's in Malaysia and India. The findings demonstrate that waiting time reduction, ease of use, order accuracy, and service quality play important roles in shaping customer experience and satisfaction, although the strength and significance of these relationships vary across the study variables. Customer Experience was also positively associated with Customer Satisfaction, highlighting the importance of the overall service experience in technology-enabled ordering.

This study contributes to the existing literature by examining self-service kiosk usage among respondents from Malaysia and India within the same research framework. Practically, the findings provide useful insights for fast-food operators to improve kiosk usability, system reliability, order accuracy, service efficiency, and overall customer experience. As digital transformation continues to expand within the fast-food industry, understanding customers' expectations and experiences with self-service technologies remains important for enhancing service delivery, maintaining competitiveness, and supporting long-term customer satisfaction.

LIMITATION

This study has several limitations. First, convenience sampling was employed, which may limit the generalizability of the findings to the broader population in Malaysia and India. Second, the sample was predominantly composed of students and young adults aged 19–24 years, whose familiarity with digital technologies may have influenced their perceptions of self-service kiosks. Third, the study focused exclusively on McDonald's, which may limit the applicability of the findings to other fast-food brands or service settings. Finally, although respondents from both Malaysia and India were included, further statistical comparisons between the two countries could provide a more comprehensive understanding of potential cross-country differences. Future studies are therefore encouraged to employ larger and more diverse samples, probability sampling methods, and comparisons across multiple fast-food brands and service industries.

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DECLARATION OF CONFLICTING INTERESTS

The authors have declared no potential conflicts of interest concerning the study, authorship, and/or publication of this article.

REFERENCES

- Abdul Hamid, N. A., Abdullah, N. H., & Seow Chian, N. (2021). The user experience (UX) analysis of self-service kiosk (SSK) in waiting time at fast food restaurant using user experience (UX) model. *Journal of Social Transformation and Regional Development*, 3(2). <https://doi.org/10.30880/jstard.2021.03.02.010>
- Blut, M., Wang, C., Wunderlich, N. V., & Brock, C. (2021). Understanding anthropomorphism in service provision: A meta-analysis of physical robots,

- chatbots, and other AI. *Journal of the Academy of Marketing Science*, 49(4).
<https://doi.org/10.1007/s11747-020-00762-y>
- Creswell, J. W., & Creswell, J. D. (2018). *Research design: Qualitative, quantitative, and mixed methods approaches*. SAGE Publications.
- Curran, J. M., & Meuter, M. L. (2005). Self-service technology adoption: Comparing three technologies. *Journal of Services Marketing*, 19(2), 103–113.
<https://doi.org/10.1108/08876040510591411>
- Dabholkar, P. A. (1996). Consumer evaluations of new technology-based self-service options: An investigation of alternative models of service quality. *International Journal of Research in Marketing*, 13(1), 29–51. [https://doi.org/10.1016/0167-8116\(95\)00027-5](https://doi.org/10.1016/0167-8116(95)00027-5)
- Davis, F. D. (1989). Perceived usefulness, perceived ease of use, and user acceptance of information technology. *MIS Quarterly*, 13(3), 319–340.
<https://doi.org/10.2307/249008>
- Davis, M. M., & Heineke, J. (1998). How disconfirmation, perception and actual waiting times impact customer satisfaction. *International Journal of Service Industry Management*, 9(1), 64–73. <https://doi.org/10.1108/09564239810199950>
- Edeh, F. O., P, R., V., Syafawani, N., Kee, D. M. H., Aina, N., Syafikah, N., & Nurunnisa, N. (2021). McDonald's customer's satisfaction strategies during COVID-19 pandemic in Malaysia. *International Journal of Tourism and Hospitality in Asia Pacific*, 4(3), 73–88.
- Hamid, A. A., Razak, F. Z. A., Bakar, A. A., & Abdullah, W. S. W. (2016). The effects of perceived usefulness and perceived ease of use on continuance intention to use e-government. *Procedia Economics and Finance*, 35, 644–649.
[https://doi.org/10.1016/S2212-5671\(16\)00079-4](https://doi.org/10.1016/S2212-5671(16)00079-4)
- Hui, M. K., & Zhou, L. (1996). How does waiting duration information influence customers' reactions to waiting for services? *Journal of Applied Social Psychology*, 26(19), 1702–1717. <https://doi.org/10.1111/j.1559-1816.1996.tb00093.x>
- Johnson, B. K. (2024). Improving service quality in the fast-food service industry. *Journal of Service Science and Management*, 17(1), 55–74.
<https://www.scirp.org/journal/paperinformation?paperid=131183>
- Leimeister, J. M., Österle, H., & Alter, S. (2014). Digital services for consumers. *Electronic Markets*, 24(4), 255–258. <https://doi.org/10.1007/s12525-014-0174-6>
- Lemon, K. N., & Verhoef, P. C. (2016). Understanding customer experience throughout the customer journey. *Journal of Marketing*, 80(6), 69–96.
<https://doi.org/10.1509/jm.15.0420>
- Liljander, V., Gillberg, F., Gummerus, J., & van Riel, A. (2006). Technology readiness and the evaluation and adoption of self-service technologies. *Journal of Retailing and Consumer Services*, 13(3), 177–191.
<https://doi.org/10.1016/j.jretconser.2005.08.004>
- Meuter, M. L., Ostrom, A. L., Roundtree, R. I., & Bitner, M. J. (2000). Self-service technologies: Understanding customer satisfaction with technology-based service encounters. *Journal of Marketing*, 64(3), 50–64.
<https://doi.org/10.1509/jmkg.64.3.50.18024>
- Rastegar, N., Flaherty, J., Liang, L., & Choi, H. (2021). The adoption of self-service kiosks in quick-service restaurants. *European Journal of Tourism Research*, 27, 2709. <https://doi.org/10.54055/ejtr.v27i.2139>
- Rumagit, M. C. N., Song, N. H., Farzana, A., Kee, D. M. H., Annaletchumi, A., Zuraya, A., Sofea, A., & Nathania, N. (2022). A study on factors affecting customer satisfaction at McDonald's restaurants. *International Journal of Tourism and Hospitality in Asia Pacific*, 5(1), 13–20. <https://doi.org/10.32535/ijthap.v5i1.1398>

- Shahril, Z. R., Zulkafly, H. A., Ismail, N. S., & Sharif, N. U. N. M. (2021). Customer satisfaction towards self-service kiosks for quick service restaurants (QSRs) in Klang Valley. *International Journal of Academic Research in Business and Social Sciences*, 11(13). <https://doi.org/10.6007/IJARBS/v11-i13/8502>
- Stanley, B., Pratama, Y., & Subakti, A. G. (2023). The impact of self-order kiosk and service quality on customer experience in McDonald's Citra Garden 6 Jakarta. *E3S Web of Conferences*, 426, 02073. <https://doi.org/10.1051/e3sconf/202342602073>
- Stanley, S., & Sebastine, A. J. (2023). Work-life balance, social support, and burnout: A quantitative study of social workers. *Journal of Social Work*, 23(6), 1135–1155. <https://doi.org/10.1177/14680173231197930>
- Tao, K.-C., Hsu, C.-Y., Yang, J.-J., Ke, M.-F., & Chiang, C.-H. (2023). Exploring use behavior of self-service ordering at restaurants with application unified theory of acceptance and use of technology model. *Engineering Proceedings*, 38(1), 26. <https://doi.org/10.3390/engproc2023038026>
- Travis, V. N. K. D. (2021). *Dissertation - Travis Vu Nguyen Khanh Duy.pdf* [Dissertation]. Figshare. <https://doi.org/10.6084/m9.figshare.17089454>
- Verhoef, P. C., Lemon, K. N., Parasuraman, A., Roggeveen, A., Tsiros, M., & Schlesinger, L. A. (2009). Customer experience creation: Determinants, dynamics and management strategies. *Journal of Retailing*, 85(1), 31–41. <https://doi.org/10.1016/j.jretai.2008.11.001>
- Waebuesar, A. E., Aruai, A. a/p, Rosli, A. B., & Azmi, A. N. B. M. (2022). Customer satisfaction and brand loyalty: A survey of Nestlé. *International Journal of Tourism and Hospitality in Asia Pacific*, 5(2), 20–37. <https://doi.org/10.32535/ijthap.v5i2.1577>
- Wang, X., Wong, Y. D., Sun, S., & Yuen, K. F. (2022). An investigation of self-service technology usage during the COVID-19 pandemic: The changing perceptions of “self” and technologies. *Technology in Society*, 70, 102032. <https://doi.org/10.1016/j.techsoc.2022.102032>
- Yo, P. W., Kee, D. M. H., Yu, J. W., Hu, M. K., Jong, Y. C., Ahmed, Z., Gwee, S. L., Gawade, O., & Nair, R. K. (2021). The influencing factors of customer satisfaction: A case study of Shopee in Malaysia. *Estudios de Economía Aplicada*, 39(12), 1–16. <https://doi.org/10.25115/eea.v39i12.6839>

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