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Research article

Customer Satisfaction Towards Onsite Restaurant Interactive Self-Service Technology (ORISST)

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ABSTRACT

A recent development in the restaurant industry is the use of on-site restaurant interactive self-service technology (ORISST) by some operators who are moving away from traditional service methods. ORISST allows customers to manage dining services independently through interfaces such as self-service kiosks or tabletop tablets. However, the gap in understanding customer satisfaction regarding ORISST is notable, as there is a lack of technology-related research in the restaurant industry. The research objectives of this study are to investigate the significant relationship between the four dimensions of SSTQUAL (functionality, design, enjoyment, and customisation) and customer satisfaction in using ORISST. In this study, quantitative research was conducted. Data was collected via a Google Form from 293 STML students at UUM who had experience using ORISST. The findings of this study show that functionality, design, and enjoyment have a significant positive relationship with customer satisfaction in using ORISST, with functionality being the most significant determinant. In contrast, customisation has no significant relationship with customer satisfaction when using ORISST. All these findings may provide valuable suggestions to restaurant operators on how to properly implement ORISST to improve their business performance and attract more customers. This study has broadened the understanding of customer satisfaction towards ORISST, which has yet to be fully explored.

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1. Introduction

Technology serves as a catalyst for business innovation, with an increasing number of restaurateurs embracing its adoption. As per Lorden and Pant [1], a significant majority of restaurant owners express intentions to either bolster or maintain their technology investments. Notably, a prevailing trend in the restaurant industry is the shift towards on-site restaurant interactive self-service technology (ORISST).

ORISST encompasses technological interfaces within restaurants that facilitate mediated communication, empowering customers to independently plan, prepare, and complete meal services without direct staff assistance [2;3;4]. These devices, such as self-service kiosks and tabletop tablets, are exclusive to the restaurant premises, distinguishing them from general self-service technologies like merchant websites or mobile applications [2]. Prominent Malaysian restaurant chains like McDonald's, Kentucky Fried Chicken, and Sushi King have integrated ORISST into their service offerings.

Customer satisfaction emerges as a pivotal consideration when contemplating the deployment of technologies like ORISST [5]. Dissatisfaction with ORISST can lead to diminished customer loyalty, adversely affecting restaurant profitability. Conversely, satisfied customers using ORISST can confer a competitive advantage, attracting more patrons and bolstering profits. Moreover, customer satisfaction with ORISST impacts the restaurant's reputation, particularly in the digital age of online reviews and social media influence [6;7]. Positive feedback enhances a restaurant's image, while negative reviews can tarnish its reputation and deter potential customers.

Hence, investigating customer satisfaction with ORISST is imperative for restaurant operations to fully comprehend customer perceptions. This study aims to: (1) examine the significant relationship between ORISST functionality and customer satisfaction; (2) explore the significant relationship between overall ORISST design and customer satisfaction; (3) investigate the significant relationship between the enjoyment level during ORISST procedures and customer satisfaction; and (4) analyse the significant relationship between ORISST customisation and customer satisfaction. The findings of this study may offer valuable insights for restaurant operators to effectively implement ORISST, thereby enhancing customer satisfaction and operational efficiency.

2. Literature Review

2.1 Customer Satisfaction

Customer satisfaction serves as the dependent variable in this study. User satisfaction refers to the level of contentment or fulfillment experienced by individuals or entities when using a particular product, service, or system [8]. Early studies, notably Oliver [10], introduced the theory of "expectation inconformity," positing that customers feel satisfied when products surpass their expectations, while dissatisfaction arises when expectations exceed the product's actual condition. Moreover, customer loyalty is closely tied to satisfaction; satisfied customers are more likely to frequent a restaurant consistently, influencing prospective customers positively. Conversely, dissatisfied customers may deter others by spreading negative feedback, tarnishing the restaurant's reputation [10]. Thus, this study centres on customer satisfaction regarding the attributes of ORISST, aiming to understand customer perceptions and their impact on restaurant operators' efforts to enhance sales and profitability.

2.2 Service Quality Measurement Of Self-Service Technology (SSTQUAL)

In this study, the Service Quality Measurement of Self-Service Technology (SSTQUAL) was utilised as a comprehensive tool to evaluate the quality of SST. SSTQUAL comprises seven dimensions: functionality, design, enjoyment, security, customisation, assurance, and convenience. Among these dimensions, functionality, design, enjoyment, and customisation were deemed suitable for assessing the attributes of ORISST and were thus selected as independent variables (Figure 1). The convenience aspect, which pertains to the ease of using ORISST at the appropriate time and place, was not included in this study. This decision was based on the premise that ORISST is readily available on-site and operates according to the restaurant's operating hours, rendering convenience a constant factor [11;12;13]. Similarly, the assurance dimension, focusing on the safety and reliability of service delivery, was excluded to maintain focus on measuring the inherent features of ORISST rather than broader restaurant quality [12;13;14]. Additionally, the security aspect, emphasizing the confidentiality of personal information and clear privacy policies, was deemed irrelevant as it does not represent a fundamental component of ORISST experienced by all users [12;13;15;16].

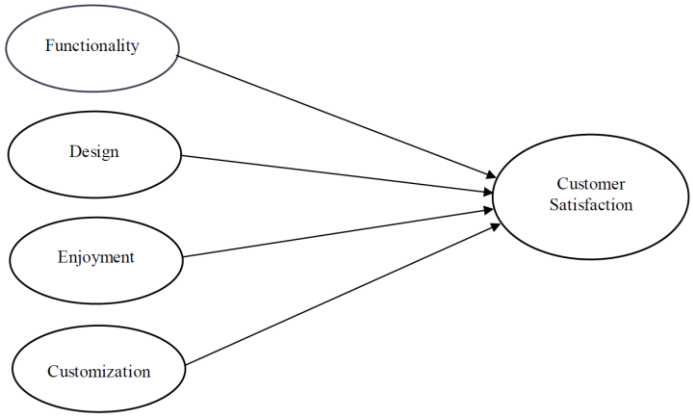

Figure 1. Research Framework

2.3 Functionality

Functionality encompasses the effectiveness of the transaction process, including its responsiveness and usability, representing the practical aspect of self-service technology [17]. Previous research indicates a significant correlation between perceived functionality and subsequent attitudes or behaviours [18;19]. Furthermore, functionality has been found to influence users' perceptions of the financial value of electronic technology services [20;21] as well as their emotional responses [22;23]. For instance, Bernardo et al [24] examined the influence of customer service standards on perceptions of online travel agency e-commerce platforms, highlighting the importance of functional qualities such as easy navigation in enhancing consumers' perceived monetary value. Additionally, functionality significantly impacts customers' positive emotional responses [25]. For example, Kim and Qu [26] found a significant connection between perceived functional features and positive emotional attitudes towards self-service technology in a hotel context. In summary, previous research consistently demonstrates that functionality plays a crucial role in shaping customer satisfaction.

H1: The functionality of ORISST has a positive relationship with customer satisfaction in using ORISST.

2.4 Design

In terms of self-service technology, design encompasses visual aspects such as colour schemes and layout, as well as aesthetic convenience, such as the inclusion of relevant imagery [27;28]. Previous research has consistently highlighted design as a significant predictor of users' behavioural intentions towards adopting or reusing technology [29;30]. For instance, Bauer et al [31] found that elements contributing to hedonic quality, such as visual appeal, significantly influence customers' perceptions of value and satisfaction in their interactions with electronic services. Moreover, design is recognised for its role in evoking a favourable emotional state [32], with the term "aesthetic experience" coined to describe this phenomenon [33]. Porat and Tractinsky [34] investigated how design elements of virtual environments impact customers' psychological states, revealing that perceived visual appeal enhances satisfaction, ultimately influencing purchasing behaviour positively [35]. Collectively, these studies underscore the significant impact of design attributes on customer satisfaction.

H2: The overall design of ORISST has a positive relationship with customer satisfaction in using ORISST.

2.5 Enjoyment

Customers' overall satisfaction is heavily influenced by enjoyment, which is defined as the level of delight they feel when using self-service technology. Despite customers' primary interest in the practical benefits of self-service technology, the aspect of enjoyment remains significant [19;36]. Research suggests that when self-service technology is perceived as enjoyable and entertaining, individuals are more inclined to use it [37]. Moreover, enjoyment has been linked to perceived value and positive customer sensations in previous studies [22; 24; 38; 39; 40]. Consequently, marketers are encouraged to incorporate elements that enhance enjoyment in their advertisements to create pleasant emotional experiences for customers when using self-service technology [37]. Overall, existing research suggests a positive relationship between the level of enjoyment during ORISST procedures and customer satisfaction with its usage.

H3: The level of enjoyment experienced during ORISST procedures is positively associated with customer satisfaction with using ORISST.

2.6 Customization

Customisation refers to the degree to which self-service technology aligns with individual customer preferences and requirements [41]. Enhancing the customisation aspect can cater to the specific needs and preferences of customers, consequently enhancing service quality and customer satisfaction [13]. For instance, a study by Wang et al [42] established a correlation between service personalisation and perceived financial benefits in service utilization. This underscores the significance of customisation as a competitive differentiator, prompting service organisations to strike a balance between customisation and standardisation through the application of advanced technology [43].

H4: The customisation of ORISST has a positive relationship with customer satisfaction when using ORISST.

3. Research Methodology

3.1 Research Design

This study's research objectives were investigated using quantitative research methods. One explanation for this decision is the efficiency of quantitative data collection methods, which allow for the acquisition of a large amount of data in a relatively short period of time. This efficiency was favourable to the study's objectives. Furthermore, using quantitative research methodologies ensures data reliability by drawing from a wider population sample, which improves the credibility and robustness of the study's results.

3.2 Population and Sample

The unit of analysis in this study is the individual. The study population comprises students from the School of Technology Management and Logistics (STML) at Universiti Utara Malaysia (UUM) who have utilised ORISST, including self-service kiosks and tabletop tablets. STML students were selected as the target respondents due to their belonging to Generation Z, frequent exposure to technological advancements, and predominantly tech-savvy nature. According to official records, the student population of STML for semester A231 is 1138 individuals. Hence, the appropriate sample size for this study is determined to be 291 individuals, in accordance with Krejcie and Morgan's [44] sample size table.

3.3 Data Collection Method

In this study, data from respondents was collected via an online questionnaire survey utilising Google Forms. One of the benefits of utilising Google Forms to collect data is its flexibility, which can be accessed at any time and from any location. Respondents can complete the questionnaire anytime and wherever they like. Because the

questionnaire may be accessed 24 hours a day, the study benefits from collecting as much data as possible in a short period of time in order to acquire trustworthy results.

In addition, the questionnaire for this study was created by adapting Lin and Hsieh [13] and Pai et al. [45]. The questionnaire has three sections: demographics, the dependent variable of this study (consumer satisfaction), and the independent variable of this study (functionality, design, enjoyment, and customisation). The dependent and independent variables were assessed using a five-point Likert scale, ranging from "strongly disagree" (1) to "strongly agree" (5)..

3.4 Data Analysis Techniques

After collecting data from respondents, inferential statistics were used in the data analysis phase of this study. Inferential statistics approaches include hypothesis testing, regression, and correlation analysis, all of which are relevant for this investigation. The study's final results are then reported as probabilities. Furthermore, the Statistical Package for the Social Sciences (SPSS) software was utilised to examine the data in this study. It is very user-friendly software for researchers with non-technical backgrounds, as it does not require prior knowledge of programming languages to run [46].

4. Findings

4.1 Sample And Profiles

A total of 293 responses were gathered via an online questionnaire sent via Google Forms (see Table 1). Females made up the majority of respondents, accounting for 160 (54.6%), while males made up 133 (45.4%). Among the respondents, 137 (46.8%) were in semester 7, 67 (22.9%) in semester 6, 42 (14.3%) in semester 5, 29 (9.9%) in semester 4, 13 (4.4%) in semester 3, 3 (1%) in semester 1, and 2 (0.7%) in semester 8 (see Figure 3).

Table 1. Respondents' Demographic

		Frequency	Percentage (%)
Gender	Male	133	45.4
	Female	160	54.6
Semester	1	3	1.0
	3	13	4.4
	4	29	9.9
	5	42	14.3
	6	67	22.9
	7	137	46.8
	Above 7	2	0.7

Note: Sample profile (N=293)

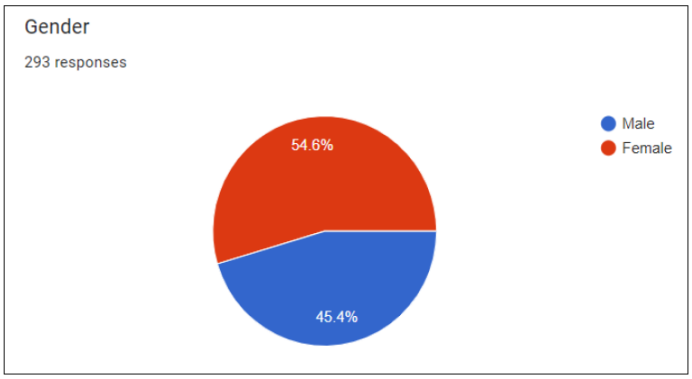

Figure 2. Respondents' Gender

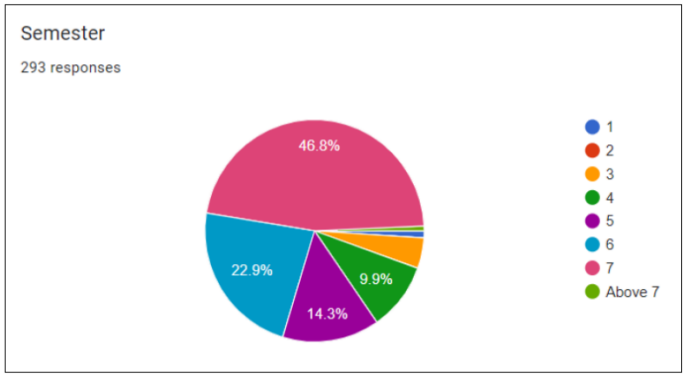

Figure 3. Respondents' Semester

Further analysis of the respondents' profiles (see Table 2) revealed that the majority, 216 respondents (73.7%), had used both tabletop tablets and self-service kiosks (Figure 4). Among the remaining respondents, 63 (21.5%) had previously used only self-service kiosks, while 14 (4.8%) had only used tabletop tablets. In terms of payment methods preferred when using ORISST, 155 respondents (52.9%) preferred e-wallets, 128 respondents (43.7%) picked debit or credit cards, and 10 respondents (3.4%) chose cash transactions (Figure 5).

Table 2. Respondent Profiling

		Frequency	Percentage (%)
Type of ORISST that has been used before	Tabletop Tablet	14	4.8
	Self-Service Kiosk	63	21.5
	Both	216	73.7
Type of payment method used while using ORISST	Debit/Credit Card	128	43.7
	E-Wallet	155	52.9
	Cash	10	3.4

Note: Sample profile (N=293)

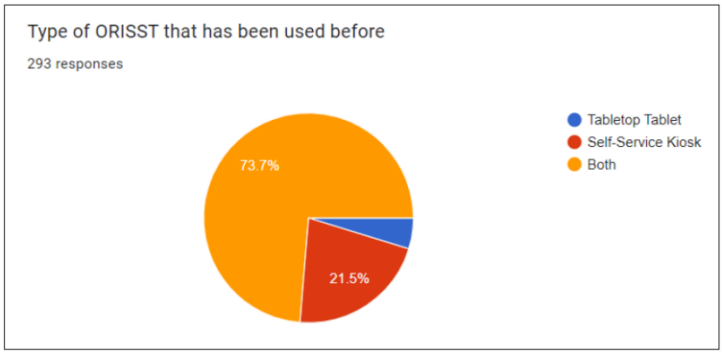

Figure 4. Type of ORISST that Has Been Used Before by Respondents

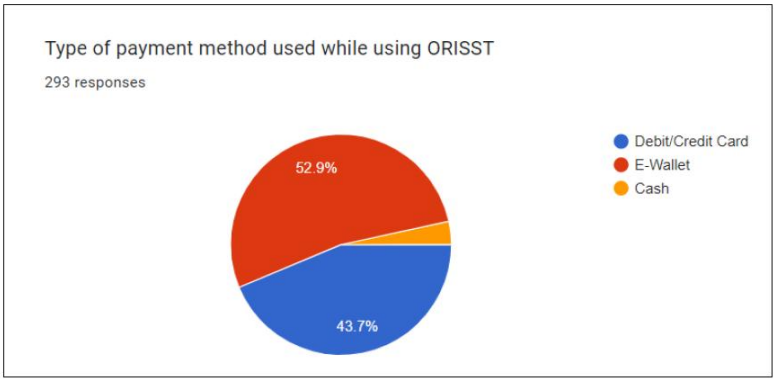

Figure 5. Type of Payment Method Used by Respondents while Using ORISST

4.2 Reliability of Measurement

The first analysis carried out on the data was the reliability test on the multi-item instrumentals utilised in this research. The Cronbach's alpha value was applied to test the reliability of the items measuring each variable: customer satisfaction, functionality, design, enjoyment, and customization. It is a reliability measure coefficient that expresses the degree of positive correlation between items in a set. The results obtained for this analysis are shown in Table 3.

Table 3. Summary of Reliability Analysis

Variable	Number of items	Cronbach's alpha
CS	4	.93
F	4	.92
D	3	.79
E	3	.90
C	2	.92

Note: Customer Satisfaction= CS; Functionality= F; Design= D; Enjoyment= E; Customization= C

The level of acceptability for the reliability test is above 0.70 Cronbach's alpha value [47]. Based on the result, customer satisfaction, which is the dependent variable in this research consisting of 4 items, got a Cronbach's alpha value of 0.93. Among the independent variables, functionality, consisting of 4 items, got a value of 0.92; design, consisting of 3 items, got a value of 0.79; enjoyment, consisting of 3 items, got a value of 0.90; and customisation, consisting of 2 items, got a value of 0.92. Hence, all the variables in this research reached the level of acceptability.

4.3 Descriptive Analysis

An overview of the descriptive statistics for the variables is provided in Table 4. Every variable was measured using a 5-point Likert scale, where 5 represented strongly agree.

Table 4. Overall Descriptive Statistics of the Study Variables

Variable	Mean	Standard Deviation (SD)
CS	4.05	.40
F	4.06	.38
D	3.98	.36
E	3.98	.37
C	3.40	.85

As shown in Table 4, customer satisfaction, the dependent variable for this research, had a mean of 4.05, closely approaching the strongly agree score of 5. It means that the majority of respondents agree with the dependent variable of this research. For the independent variables, functionality got the highest mean value (4.06), followed by design (3.98), enjoyment (3.98), and customisation (3.40). This indicates that functionality got approval from the majority of respondents, while customisation got approval from fewer respondents. Besides, the variable with the highest value of the standard deviation was customisation (0.85), followed by customer satisfaction (0.40), functionality (0.38), enjoyment (0.37), and design (0.36). This means that the customisation data was the most spread out or dispersed data, while the design data was the most clustered data or closer to the mean.

4.4 Correlation Analysis

The next analysis carried out on the data was a correlation analysis. Pearson Product-Moment A correlation was employed to examine the inter-correlations between all the study variables. Table 5 provides the summary of the results.

Table 5. Pearson Correlation Coefficients for the Study Variables

		CS	F	D	E	C
CS	Pearson Correlation	1	.707**	.622**	.691**	.218**
	Sig. (2-tailed)		.000	.000	.000	.000
	N	293	293	293	293	293
F	Pearson Correlation	.707**	1	.633**	.632**	.213**
	Sig. (2-tailed)	.000		.000	.000	.000
	N	293	293	293	293	293
D	Pearson Correlation	.622**	.633**	1	.701**	.319**
	Sig. (2-tailed)	.000	.000		.000	.000
	N	293	293	293	293	293
E	Pearson Correlation	.691**	.632**	.701**	1	.334**
	Sig. (2-tailed)	.000	.000	.000		.000
	N	293	293	293	293	293
C	Pearson Correlation	.218**	.213**	.319**	.334**	1
	Sig. (2-tailed)	.000	.000	.000	.000	
	N	293	293	293	293	293

**.Correlation is significant at the 0.01 level (2-tailed).

The Pearson correlation coefficient (r) measures the strength of a linear relationship between variables. The Pearson correlation coefficient (r) ranges from -1 to 1. Furthermore, 0.01 was used as the significance threshold in this research. Table 5 demonstrates a high positive and substantial association between customer happiness and functionality ($r = 0.707$, $n = 293$, $p < 0.01$). Customer happiness and design showed a relatively positive and substantial link ($r = 0.622$, $n = 293$, $p < 0.01$). The relationship between customer satisfaction and enjoyment was somewhat favourable and significant ($r = 0.691$, $n = 293$, $p < 0.01$). Customer satisfaction and customisation showed a weak but significant positive link ($r = 0.218$, $n = 293$, $p < 0.01$).

4.5 Regression Analysis

A regression analysis was undertaken to determine the relationship between functionality, design, enjoyment, and customisation and consumer happiness. All hypotheses were tested at this point. The results were summarised in Table 6.

Table 6. Coefficients of the Study Variables

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	.242	.185		1.313	.190
	F	.439	.054	.413	8.120	.000
	D	.135	.062	.120	2.161	.032
	E	.386	.061	.355	6.353	.000
	C	-.013	.019	-.027	-.686	.494

a. Dependent Variable: Customer Satisfaction

This section analysed coefficients to identify the effect of each element (functionality, design, enjoyment, and customisation) on the criterion variable (consumer satisfaction). The first hypothesis in this study examines if ORISST functionality has a positive association with customer satisfaction with ORISST. The results showed that when using ORISST, functionality has a significant and favourable effect on customer satisfaction ($B = .439$, $t = 8.120$, $p = .000$). Therefore, H1 was supported. H2 investigates if the overall design of ORISST is positively related to customer satisfaction with ORISST. The results show that design has a substantial beneficial impact on customer satisfaction when utilising ORISST ($B = .135$, $t = 2.161$, $p = .032$). Thus, H2 was supported. H3 explores if the level of enjoyment felt during ORISST procedures correlates with customer satisfaction with ORISST. The study found that enjoyment had a significant beneficial impact on consumer satisfaction ($B = .386$, $t = 6.353$, $p = .000$). Therefore, H3 was supported. H4 determines whether ORISST customisation has a positive association with customer satisfaction when utilising ORISST. The findings indicated that customisation had a small and negative influence on customer satisfaction ($B = -.013$, $t = -.686$, $p = .494$). Therefore, H4 was rejected.

5. Discussion

5.1 Discussions of Major Finding

The study found that functionality has the strongest positive association with consumer happiness. Thus, functionality was the most important determinant of consumer satisfaction. This is similar to a study conducted by Ahn and Seo [2]. According to the study's findings, 52.9% of respondents prefer to use an e-wallet, 43.7% prefer to use a debit or credit card, and only 3.4% prefer to pay with cash while using ORISST. This suggests that ORISST's functionality, which includes a variety of rapid payment options such as e-wallets and debit or credit cards, is a key factor influencing customers' propensity to use ORISST on a frequent basis. Furthermore, design has a considerable positive association with consumer satisfaction. This illustrates that a better design for ORISST will increase customer satisfaction. Customers are more likely to use ORISST if its design is appealing. Enjoyment has a considerable positive association with customer satisfaction. This demonstrates that customers will be more delighted with ORISST if it provides a greater level of enjoyment. The higher the amount of delight felt during ORISST operations, the more interested the consumer is in using ORISST. However, there is no substantial association between customisation and consumer happiness. This suggests that better customisation of ORISST does not result in higher customer satisfaction with ORISST. Most clients who previously utilised ORISST are not focused on the customisation aspect.

5.2 Theoretical Implications

This work provides several key theoretical advances to existing SST research. First, this study advances SST research in hospitality academia by emphasising the use of SSTQUAL rather than the technological acceptance model (TAM). Some previous studies (e.g., [48; 49]) on SST issues such as ORISST and self-service hotel technology have focused on the usage of TAM. As a result, this study produced unique findings that are more focused on STQUAL. Using SSTQUAL, this study investigated more extensive elements of ORISST that can affect customer satisfaction (functionality, design, enjoyment, and customisation).

Furthermore, this study reported findings on consumer happiness with a specific form of SST, namely ORISST, rather than evaluating customer satisfaction with all SST. Furthermore, the majority of research on

restaurant-related technology used by customers has concentrated on the use of portable mobile devices [50;51;52]. This study examined consumer satisfaction with onsite restaurant technologies, with a focus on gadgets that are only provided on-site by the restaurant, such as tabletop tablets and self-service kiosks.

5.3 Practical Implications

This study has some useful managerial implications and demonstrates the viability of deploying ORISST devices, such as self-service kiosks and tabletop tablets, for restaurant owners. First, restaurant managers should focus on ORISST's functionality, ensuring that the ordering and payment systems are always accurate. This is because maintaining accuracy contributes to a great client experience, which is critical for repeat business and positive word-of-mouth. Restaurant owners can avoid problems by performing routine maintenance checks and software updates. Restaurant operators can additionally propose that the ORISST developer include a confirmation screen for the order quantity and payment so customers can inspect and verify before completing the transaction to avoid errors caused by thoughtless customers.

Second, restaurant managers should pay close attention to the design of the ORISST screen layout to ensure that it is both appealing and user-friendly. A visually appealing and user-friendly screen layout encourages users to interact more comfortably with ORISST. As the learning curve is reduced, clients will find it easier to utilise the system, such as making orders and completing payments. To reduce consumer confusion, restaurant managers should use plain and succinct language for menu items and directions. Restaurant operators are also urged to include high-quality photographs of menu items in ORISST, helping to improve the entire consumer experience.

Third, restaurant operators should make sure that ORISST includes engaging and playful features so that customers enjoy the ordering and payment procedures more. Making the ordering and payment process interesting may transform a seemingly monotonous chore into an engaging experience, causing clients to spend more time examining the menu. For example, the ORISST may include some animation or fun visuals. When an object is picked, a nice animation or sound effect confirms the selection.

Finally, restaurant managers can focus less on customisation when considering how to meet consumer satisfaction with ORISST. This is because the majority of customers who previously used ORISST were unconcerned about customisation. ORISST is also difficult to prioritise customisation for each individual, as it might complicate the user experience and make the system less efficient in general use.

6. Conclusion

The findings of this study revealed that functionality, design, and enjoyment are factors that influence customers' propensity to use ORISST. Customers do not prioritise customisation when using ORISST. The study's findings may help restaurant owners better understand how to adopt ORISST based on customer satisfaction in order to improve operational performance and attract more customers. Nonetheless, despite its interesting findings, it is critical to acknowledge the study's shortcomings. First, the focus of this study is limited to UUM STML; hence, the findings cannot be widely extended throughout Malaysia.

It should be emphasised that caution must be exercised when projecting the findings to the entire Malaysian population. As a result, future research can broaden the study to cover other locations within Malaysia, increasing the relevance of the findings throughout the country. Second, the study's findings are limited to one business, the restaurant industry, despite the fact that SST has been widely used in a variety of industries, including banking, transportation and logistics, and healthcare. This has limited the generalizability of the findings across all industry categories.

Thus, future studies can broaden the scope to include diverse businesses that use SST in order to acquire a better knowledge of the technology. Third, because the study's demographic consists of university students, the findings are geared towards a younger generation. This has hampered the findings' generalizability across all age groups. As a result, future research should include diverse age groups in the study so that the findings can provide a more complete picture of SST. Fourth, due to time and resource constraints, this study has a small sample size of 293 respondents. Future research may require more time and resources to undertake larger-scale studies.

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