Factors Influencing the Intention to Reuse Self-Service Technology in Fast Food Restaurants: Integration of Delone Mclean and Stimulus-Organism-Response

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ABSTRACT

The development of the food industry has accelerated significantly, especially in terms of technology, including the use of self-service technology (SST). This study aims to investigate the factors influencing customer satisfaction and intention to reuse of SST in fast food restaurants based on the stimulus-organism-response (SOR) framework by adapting Delone and Mclean (D&M) information system (IS) success model. The target population is individuals with experience using SST at fast food restaurants within the last month. This research uses a quantitative approach, 184 samples were collected using purposive sampling. Data analysis techniques include the SEM-PLS with the SmartPLS 4.0 software. The findings suggest that enhancing customer satisfaction, particularly through service quality and information quality, is crucial for increasing reuse intention. while perceived value also positively affects reuse intention. Additionally, improving system quality contributes to both customer satisfaction and perceived value. therefore, our study proven the importance of a comprehensive approach in managing different quality dimensions to foster customer loyalty toward self-service technologies in fast food restaurants.

1. INTRODUCTION

The fast-food industry has experienced rapid growth and expansion in recent years, emerging as a significant economic sector with substantial contributions to the economy. According to Fortune Business Insights, the global fast-food market is projected to grow from USD 972.74 billion in 2021 to USD 1,467.04 billion by 2028 [1]. In Indonesia, the food and beverage (F&B) sector plays a crucial role in the national economy, contributing approximately 39.10% of the non-oil and gas GDP as of 2023 [2]. With an expanding middle class and changing customer preferences, the demand for fast food is expected to continue growing, further solidifying the sector's importance [3].

Among these technologies, self-service technologies (SSTs), like touch-screen kiosks and multi-touch tabletop screens, are becoming increasingly popular in fast-food restaurants. These technologies are designed to improve operational efficiency and provide greater convenience for customers. Research shows that more than 65% of consumers prefer using SSTs to order food, citing the speed and ease of the process [4]. Although SSTs have been widely adopted in developed countries, there is a significant gap in understanding customer perceptions and the factors that influence the adoption of these technologies in this area.

The practical significance of this study lies in understanding how customer satisfaction, perceived value, and technological quality influence the intention to reuse SST in fast-food environments. While SSTs offer clear benefits such as faster service and reduced operational costs, challenges remain. Consumers often express reluctance to use SSTs due to unfamiliarity with the technology or negative experiences such as technical failures or feelings of service dehumanization [5]. The previous survey found that 30% of customers preferred using SST over traditional cashier interactions, particularly during long queues [4]. Yet, the same survey also revealed that technical issues were a major deterrent, with consumers expressing frustration when the technology did not function properly [6]. Consumers often express reluctance to use SSTs due to unfamiliarity with the technology or negative experiences such as technical failures or feelings of service dehumanization [5]. Other findings stated that 30% of customers preferred using SST over traditional cashier interactions, particularly during long queues [4]. Yet, the same survey also revealed that technical issues were a major deterrent, with consumers expressing frustration when the technology did not function properly [6].

The integration of self-service technology offers numerous opportunities for improving service quality and operational efficiency, but it also requires a strategic approach to manage potential customer dissatisfaction and ensure smooth technology adoption. As the Indonesian foodservice sector evolves, understanding these dynamics is crucial for fast food restaurants to align their offerings with customer expectations and leverage SSTs to gain a competitive advantage [4].

This study integrates the IS success model with the SOR framework to explore how information quality, system quality, and service quality influence customer satisfaction and reuse

intention in the context of SST [7, 8]. By addressing the gap in literature, especially regarding the continuous use of SST in Southeast Asia [9], this research aims to provide valuable insights for both practitioners and researchers in the field. Through this integrated model, the study will contribute to a deeper understanding of how technological innovations in fast food restaurants can enhance customer experience and drive customer loyalty in a competitive market.

The importance of studying SST adoption in fast food restaurants becomes more evident when considering current practical applications and challenges. Despite the benefits, many customers still experience hesitation due to the perceived complexity of technology or issues such as service interruptions. Therefore, investigating customer satisfaction, perceived value, and system quality becomes essential in facilitating the continued growth and acceptance of SST in Indonesian fast-food establishments.

2. LITERATURE REVIEW

2.1 The SOR theory

The theoretical framework used in this study is the SOR framework, which was developed by Mehrabian and Russell in 1974 and serves as the foundation for the research model. Stimuli are substances that can have an impact on a person's interior state [10]. However, organisms are thought of as internal processes that mediate between final and individual impulses. Finally, a response is the result of people's intentions and actions. The SOR paradigm assumes that customers' perceptions of new technology goods influence their cognitive and affective states, which in turn influence their behavioral intentions [11]. Understanding how customers' perceptions of specific self-service technology attributes influenced their perceptions of values and emotional reactions to using the technology services is important because it can be used as a critical component of differentiation strategy over competitors. In this study, the overall information system success model (information, system, and service quality) serves as "stimulus." Perceived value and customer satisfaction serve as the "Organism" and reuse intention serves as the "response" respectively. The SOR model has been extensively used to assess human behavioral intentions, focusing on internal factors such as perception and satisfaction [12]. Studies have applied this model to examine the impact of SST features in airports on consumer satisfaction, behavioral intentions, and perceived value, with higher value perceptions leading to stronger satisfaction and increased reuse intentions [13].

2.2 Extending SOR framework with IS success model (D&M model)

Delone and Mclean first proposed the idea of information system success in 1992. It suggests that the functionality of the system and the quality of the information it offers have an impact on users' satisfaction and the likelihood of sticking with it. The D&M model has been widely applied in studies investigating the intentions of information system users, their satisfaction levels, and their ongoing usage behaviors. The previous research show that the quality of the system, information, and services has an important impact on user satisfaction and the intention to continue using the system [14]. Through a combination of quantitative and qualitative

analyses of empirical data, the D&M model revealed a significant positive correlation between perceived value, satisfaction, and usage intentions [15]. Moreover, users' perceptions of the usefulness of digital libraries are significantly shaped by their system and service quality, whereas e-learning systems' perceived usefulness is primarily determined by their system and information quality [16]. Several studies have also integrated the IS success model with the SOR framework. The previous research explored information quality, service quality, and system quality as stimulus, perceived usefulness and perceived usefulness as organism, and switching behavior of Internet of Thing (IoT) and Motion Recognition-Based Healthcare Rehabilitation Systems (IMRHRS) [17]. These studies indicate that the IS success model can serve as a stimulus within the SOR framework, influencing various user responses to systems or services.

2.3 Hypothesis development

2.3.1 Service quality and perceived value

Service quality is a key determinant factor of customer evaluations and business success in restaurant industries [18]. In self-service technologies (SSTs), service quality encompasses system efficiency, responsiveness, and reliability to enhance user convenience and shape perceived value [19] High service quality reduces customer effort, fostering a seamless experience and increasing perceived value [18]. Extending the SOR framework with information system success model, service quality serves as a stimulus that influences perceived value (organism). Customers interacting with self-service ordering kiosks assess service quality based on responsiveness, ease of use, and problem solving, shaping their overall perception of value [19]. Moreover, another research found that responsiveness, empathy, tangibles, assurance, and reliability affect perceived value [20]. Based on empirical findings, the researchers proposed the following hypothesis:

H_1: Service quality has a significant positive relationship with perceived value.

2.3.2 Service quality and customer satisfaction

The relationship between service quality and customer satisfaction in the context of the application of self-service technology (SST) in fast food restaurants has been researched [21-23]. Therefore, the service quality is crucial determinant of customer satisfaction in using SST. Extending the SOR framework with IS success model, service quality serves as a stimulus (S) that influences customer's satisfaction (Organism). When food ordered through SST is prepared according to customer orders, then the system and employees are able to meet customer expectations [21]. Although SST reduces direct interaction with employees, customers still expect responsiveness and employee assistance when customers have difficulty using SST [24]. This can improve the image of the restaurant by maintaining the warmth and friendliness of employees towards customers even though SST has been implemented [23]. Ultimately, SST cleanliness improves customer comfort and perception of service quality, thus affecting overall customer satisfaction [25]. Based on empirical findings, the researchers proposed the following hypothesis:

H_2: System quality has a significant positive relationship with customer satisfaction.

2.3.3 System quality and perceived value

System quality is a measure of how easily users can learn, operate, and communicate with the system; it is also regarded as a significant precedent for technology use and user satisfaction [10]. The usability, availability, dependability, responsiveness, and flexibility of an online system are all considered aspects of its system quality [26]. Extending the SOR framework with IS success model, system quality serves as a Stimulus (S) that positively affects perceived value (Response). When SSTs offer intuitive navigation, fast transaction processing, and reliable system, then user experience higher efficiency and convenience [26]. Subsequently affects their overall value assessment. However, experiencing slow response times or unstable systems when using the platform can result in higher search and organization costs as well as unpleasant purchasing experiences, which will eventually lower perceived value [16]. Therefore, this leads to the following hypothesis:

H_3: System quality has a significant positive relationship with perceived value.

2.3.4 System quality and customer satisfaction

Previous research has proven that system quality has a positive effect on customer satisfaction [24, 27-29]. From the SOR framework, system quality serves as a stimulus (S) that influence customer satisfaction when using the SST smoothly. Moreover, IS success model further support this relationship by identifying system quality as a primary determinant of user satisfaction. System quality pays a critical role in shaping customer satisfaction in self-service technologies [27]. A well-designed SST enhances transaction speed, reduce errors, and streamlines the ordering process, thereby increasing customer satisfaction [24]. The previous research found that a high-quality SST fosters trust, reliability, and consistency in service delivery, which enhances customer satisfaction by reducing frustration and increasing operational efficiency [28]. When the SST operates smoothly, the system offers fast processing, ease of navigation, and minimal disruption that will increase user positive experience [29]. Therefore, this leads to the following hypothesis:

H_4: System quality has a significant positive relationship with customer satisfaction.

2.3.5 Information quality and perceived value

Previous research has proven that information quality has a positive effect on perceived value [29-31]. From SOR framework, information quality serves as a stimulus (S) that influence perceived value when using the SST. Moreover, IS success model further support this relationship by identifying information quality as primary determinant of perceived value. This quality reflects that the better the quality of information, the higher the perceived value of customers towards self-service technology. When the information presented on the self-ordering machine is in accordance with customer needs, it will provide added value from the service [29]. Clear and accurate information can help increase customer trust where self-service messaging is in line with customer expectations [31]. In addition, the latest discounts, promotions, and product information reflects management's commitment to service quality [30]. Ultimately, the reliability of the information gives customers confidence that the decision to use SST does not have a negative impact [21]. Based on empirical findings, the researchers proposed the following hypothesis:

H_5: Information quality has a significant positive

relationship with perceived value.

2.3.6 Information quality and customer satisfaction

According to the Delone and Mclean (D&M) information systems (IS) success model, customer satisfaction is significantly influenced by information quality. Work performance and satisfaction among IS users rise when the information system provides high-quality information and is efficiently and conveniently accessible [32]. Previous research also has consistently demonstrated a positive relationship between the presence of information and customer satisfaction [33, 34]. In evaluating the impact of website use, information quality emerges as a crucial factor for consumers. This is particularly evident during the pre-purchase search for information on products and services in the e-retail sector [35]. Customers typically anticipate high-quality information about products or services to guide their purchasing decisions, whether shopping in physical stores or online [35]. Therefore, this leads to the following hypothesis:

H_6: Information quality has a significant positive relationship with customer satisfaction.

2.3.7 Perceived value and reuse intention

Previous research has proven that perceived value has a positive effect on reuse intention [21, 36, 37]. This reflects that increasing customer value towards SST can encourage customers to return to using the service. When customers feel that self-service technology (SST) services offer value for the price they pay, they feel satisfied and motivated to return to using the service [21]. Customers who feel that SST services are satisfactory and in line with customer expectations tend to be more loyal and have a stronger intention to use SST on their next visit [36]. Finally, customers who feel more value from using SST will benefit from conventional services [37]. Therefore, this leads to the following hypothesis:

H_7: Perceived value has a significant positive relationship with reuse intention.

2.3.8 Customer satisfaction and reuse intention

The previous research found that positive experience using technology significantly impact user acceptance and usage [38].
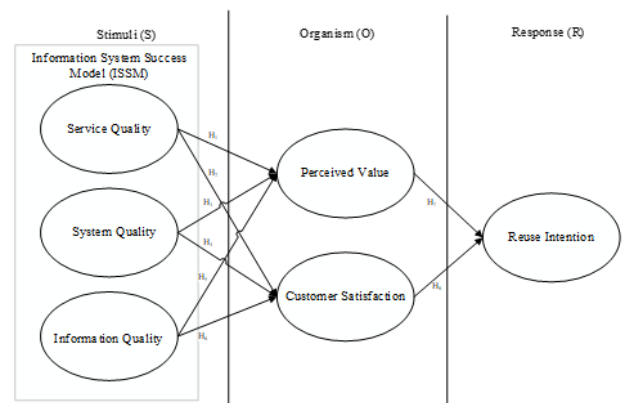

Figure 1. Research model

Figure 1 shows the proposed research model. The model was developed based on the stimulus-organism-response (SOR) framework. in this model, service quality, system quality, and information quality derived from Information System Success Model (ISSM) – serve as stimuli that

influence perceived value and customer satisfaction as key organism responses. These intermediary constructs, in turn, shape users' reuse intention. this model provides a theoretical foundation for understanding how different dimensions of information system quality contribute to users' continuance.

In the airline self-service check-in kiosks context, the previous research found that reuse intentions were significantly positively impacted by consumer satisfaction [13]. Research suggests that the likelihood of patronizing fast-food establishments again is influenced by customer satisfaction in Fiji [18] and Pakistan [22]. In addition, Rastegar suggested that customers' satisfaction with SOK has a significant effect on their choice to return [39]. Therefore, this leads to the following hypothesis:

H_8: Customer satisfaction has a significant positive relationship with reuse intention.

3. METHODS

The research design is a quantitative research method using cross-sectional study. The data analysis is structural equation modelling using SmartPLS 4. The researchers explain the procedure and its criteria in the results section. The data collection timeframe is between March and April 2024.

The population are individuals with experience using SST at fast food restaurants within the last month. The unit of analysis is SST users of KFC and McDonald's. Those restaurants were chosen because consistent utilization of SST in Indonesia [40]. The researchers cannot determine the population size due to customer data access limitation. The data collection is using an online self-administered questionnaire (Survey Monkey). The researchers employed 10 times of numbers of indicators and the minimum sample size is 170 respondents. The researcher uses purposive sampling to collect data. Before distributing the questionnaire, a pre-test was performed on 50 individuals to assess the clarity of the questionnaire's questions. The researchers conclude that there is no issue on the questions and the validity and reliability meet the criteria.

The indicators of service quality, system quality, and information quality were adopted from the studies [41, 42]. Furthermore, perceived value, customer satisfaction and reuse intention were adapted from the study [18]. The survey questions measured using a five-point Likert scale as 1 (strongly disagree) and 5 (strongly agree). The detailed questionnaire item can be found in the Appendix.

4. RESULT AND DISCUSSION

The researchers managed to gather 318 respondents and only 268 respondents passed the screening questions. Next, the researchers perform data screening by eliminating unengaged respondents using stdev.p function in Ms. Excel. Therefore, the authors removed 77 unengaged respondents and used 184 respondents for final analysis.

Table 1 shows the full collinearity test using SmartPLS. The result shows that the internal VIF value ranged from 1.067 (customer satisfaction) to 1.704 (reuse intention). Therefore, the researchers concluded that there are no issues on common method bias that might affect the findings.

Next, the researchers perform the descriptive analysis of respondent profile and psychographic of using self-service technology. Table 2 presents the descriptive analysis of

respondent profile and psychographic of using self-service technology, demographics of the collected data. The findings shows that 107 respondents (58.15%) are female, and 77 respondents (41.85%) are male. Based on age group, 116 respondents (63.04%) are in 20-29 years old, 54 respondents (29.35%) are below 20 years old, 14 respondents (7.61%). Based on education level, 91 respondents (49.46%) have an undergraduate education, 80 respondents (43.48%) have a senior high school, 7 respondents (3.80%) have a postgraduate education, and 6 respondents (3.26%) have a diploma education. Based on profession, 111 respondents (60.32%) work as student, 65 respondents (35.33%) work as employees, 5 (2.72%) respondents work as entrepreneurs, 2 (1.09%) respondents have retired, and 1 (0.54%) respondent works as a housewife.

Table 1. Common method bias and full collinearity estimate

	CS	IQ	PV	RI	SQ	SYQ
VIF	1.067	1.641	1.585	1.704	1.331	1.141

CS = Customer Satisfaction; IQ = Information Quality; PV = Perceived Value; RI = Reuse Intention; SQ = Service Quality; SYQ = System Quality; VIF = Variance Inflation Factor

Table 2. Descriptive analysis of respondent profile and psychographic of Self-Service Technology (SST) usage

Question and Category	n	%
Gender		
Female	107	58.15
Male	77	41.85
Age Group (years old)		
20-29	116	63.04
< 20	54	29.35
30-39	9	4.89
40-49	4	2.17
>50	1	0.55
Education Level		
Undergraduate	91	49.46
Senior High School	80	43.48
Diploma	6	3.26
Post graduate	7	3.80
Profession		
Student	111	60.32
Employee	65	35.33
Entrepreneur	5	2.72
Unemployed/Retire	2	1.09
Housewife	1	0.54
Frequency of Fast-Food Restaurant Visit		
2-3 times a month	67	36.41
Once a month	65	35.33
Once a week	34	18.48
2-3 times a week	18	9.78
Frequency of Using SST		
Once a month	78	42.39
2-3 times a month	61	33.15
Once a week	24	13.04
2-3 times a week	21	11.41
Who Recommends Using SST?		
Myself	112	60.87
Staff	41	22.28
Friend	21	11.41
Social Media	6	3.26
Family	4	2.17
Which Restaurant Do You Use SST?		
McDonald's	164	89.13
KFC	20	10.87

Note: n: Number of samples (184); %: Percentage

The findings show that 89.13% of the respondents visit McDonald's, while 10.87% visit KFC. Most respondents visit fast food restaurants 2-3 times a month and use SST. Of the participants, more than half (60.87%) stated they used the SST on their own, while 22.28% stated staff members urged them to do so.

Based on the frequency of fast-food restaurant visit, 67 respondents (36.41%) visit restaurants 2-3 times a month, 65 respondents (35.33%) visit restaurants once a month, 34 respondents (18.48%) visit restaurants once a week, and 18 respondents (9.78%) visit restaurants 2-3 times a week. Based on the person or source which suggests using self-service technology (SST), 112 respondents (60.87%) had the initiative to use SST, 41 respondents (22.28%) were asked by restaurant staff to order through SST, 25 respondents (13.58%) used SST on recommendation from friends or family, and 6 respondents (3.26%) used SST after accessing social media of the restaurant visited. Based on the restaurant brand, 164 respondents (89.13%) visited McDonald's and 20 respondents (10.87%) visit Kentucky Fried Chicken (KFC).

Before performing confirmatory factor analysis, the researchers perform data normality test and common method bias. The researchers used skewness and kurtosis criterion from SmartPLS software for evaluating the data normality [43]. The cut-off value for skewness and kurtosis are ±1 [44]. Table 3 shows the normality test. Most indicators show high kurtosis value (13 of 20) and a minority of indicators shows high skewness value (4 of 20). Therefore, the researchers conclude that the data is not normally distributed. The SmartPLS application is possible for non-normal data [45]. However, the previous research suggests performing bias-corrected and accelerated bootstrapping (BCa) for ensuring the highly skewed or kurtosis data not affect the PLS estimate [46].

Following this, the researchers performed common method bias (CMB) for ensuring the durability and reliability of the results [47, 48]. It is important to perform CMB due to the researchers used the online questionnaire approach and the respondents self-filling the questionnaire. Moreover, the CMB performed by adding dummy variable and perform regression analysis for all variables. The cut-off value of VIF is 3.3 [48, 49].

Next, the researchers conduct the confirmatory factor analysis by assessing the individual indicator consistency, internal consistency reliability, convergent validity, and discriminant validity. The cut-off value of outer loading, composite reliability, average variance extracted are 0.708, 0.8, and 0.5, respectively [38, 43]. Table 3 shows the individual indicator consistency, convergent validity and internal consistency reliability. The outer loading value ranged from 0.721 (IQ05) to 0.909 (RI01). The average variance extracted value ranged from 0.621 (service quality) to 0.834 (reuse intention). The composite reliability value ranged from 0.831 (service quality) to 0.909 (reuse intention). Therefore, the researchers concluded that individual indicator consistency, internal consistency reliability, and convergent validity meet the criteria.

Subsequently, the researchers examine the discriminant validity using Heterotrait-Monotrait Ratio of Correlations (HTMT) for ensuring each construct are distinct with other constructs in the model [38, 50]. The threshold value used in this study is ≤ 0.90 [50]. Table 4 is the result of the discriminant validity test with the HTMT approach. Based on the results of the discriminant test, all variables are below the threshold value. Therefore, the researcher concluded that the

discrimination test met the criteria.

Finally, the researchers conduct structural model analysis by examining the hypothesis testing, coefficient of determinant (R^2), effect size (f^2), and PLS predict. For the hypothesis testing, the researchers perform bootstrapping procedure as follow: subsample is 5,000, confidence interval method is Bias-corrected and accelerated (Bca), test type: one tailed, significance level: 0.05 [38]. Moreover, the effect size statistic was applied for determining the impact of exogenous factors to endogenous variables. The interval value of effect size is high ($f^2 > 0.350$), moderate ($f^2 > 0.150$), and small ($f^2 > 0.020$) [51]. The coefficient of determination (R^2) is a statistical measure that shows how well the regression model explains the variation in the observed data [41]. The R^2 value ranges between 0 and 1. The R^2 value closer to 1 indicates that a stronger exploratory power of the model in accounting for the variation within the data. Table 5 shows the hypothesis test result.

Table 3. Data normality, individual indicator consistency, convergent validity, and internal consistency reliability

Item	Kurtosis	Skewness	LF	Mean
SQ02	0.395	-0.544	0.868	4.114
SQ03	-0.528	-0.058	0.871	3.962
SYQ1	1.213	-1.067	0.764	4.147
SYQ2	1.282	-0.764	0.746	4.179
SYQ4	2.706	-1.164	0.853	4.266
IQ01	2.854	-0.967	0.868	4.168
IQ03	1.466	-0.854	0.822	4.234
IQ05	1.020	-0.619	0.721	4.114
PV01	-0.016	-0.536	0.820	3.973
PV02	1.081	-0.744	0.809	4.022
PV03	0.161	-0.534	0.811	4.234
CS01	0.796	-0.758	0.801	4.114
CS02	0.233	-0.514	0.823	4.054
CS03	-0.775	-0.106	0.798	4.011
CS04	-0.757	-0.425	0.866	4.125
RI01	1.894	-1.205	0.919	4.321
RI02	2.539	-1.313	0.907	4.272

Table 4. Discriminant validity (HTMT)

	CS	IQ	PV	RI	SQ	SYQ
CS						
IQ	0.869					
PV	0.897	0.889				
RI	0.878	0.725	0.747			
SQ	0.877	0.828	0.728	0.797		
SYQ	0.504	0.455	0.459	0.151	0.304	

Table 5. Hypothesis testing

1	2	3	4	5	6	7	8
H₁: SQ - PV	0.214	0.097	2.210	0.014	0.057	0.047	0.364
H₂: SQ - CS	0.407	0.071	5.704	0.000	0.267	0.281	0.518
H₃: SYQ - PV	0.123	0.065	1.897	0.029	0.026	0.021	0.235
H₄: SYQ - CS	0.173	0.054	3.241	0.001	0.068	0.086	0.261
H₅: IQ - PV	0.497	0.087	5.685	0.000	0.289	0.353	0.637
H₆: IQ - CS	0.383	0.076	5.056	0.000	0.223	0.264	0.511
H₇: PV- RI	0.140	0.082	1.704	0.044	0.020	0.002	0.275
H₈: CS - RI	0.621	0.065	9.505	0.000	0.396	0.504	0.720

Note: 1 = Hypothesis; 2 = Path coefficient; 3 = Standard Deviation; 4 = t-statistic; 5 = p-value; 6 = Effect Size (F^2); 7 = BCI LL (5%); 8 = BCI UL (95%); R^2 of Reuse Intention is 0.531; R^2 of Customer Satisfaction is 0.601; R^2 of Perceived Value is 0.484

Based on the hypothesis testing, customer satisfaction (β = 0.621; p-value < 0.001; high effect; BCI LL = 0.504; BCI UL = 0.720) and perceived value (β = 0.140; p-value = 0.044; small effect; BCI LL = 0.002; BCI UL = 0.275) positively affect reuse intention. Service quality (β = 0.407; p-value < 0.001; moderate effect; BCI LL = 0.281; BCI UL = 0.518), information quality (β = 0.383; p-value < 0.001; moderate effect; BCI LL = 0.264; BCI UL = 0.511), system quality (β = 0.173; p-value = 0.001; small effect; BCI LL = 0.086; BCI UL = 0.261) positively affect customer satisfaction. Information quality (β = 0.497; p-value < 0.001; moderate effect; BCI LL = 0.353; BCI UL = 0.637), service quality (β = 0.214; p-value = 0.014; small effect; BCI LL = 0.047; BCI UL = 0.364), and system quality (β = 0.123; p-value = 0.029; small effect; BCI LL = 0.021; BCI UL = 0.235) positively affect perceived value.

The R^2 of reuse intention is 0.531. The researchers conclude that customer satisfaction and perceived value explain 53.1% of reuse intention and 46.9% represent by other variables. The fit model test is run at this point to determine how well the model is doing. The Standardized Root Mean Square Residual (SRMR) and the Normed Fit Index (NFI) are PLS indicators that will be used to gauge the fit model test [25]. The fitness indices demonstrated that our proposed model exhibit a good fit, with a standardized root mean square residual (SRMR) of 0.083, a discrepancy value (d_ULS) of 1.050, a Chi-square value of 440.129, and a Normed Fit Index (NFI) of 0.709.

Moreover, R^2 of perceived value and customer satisfaction is 0.484 and 0.601. The researchers conclude that information quality, system quality, and service quality explain 48.4% of perceived value and 51.6% represent by other variables. Moreover, information quality, system quality, and service quality explain 60.1% of customer satisfaction and 39.9% represent by other variables. Therefore, the researchers conclude that the determinant variable in proposed model shows satisfactory level for explaining the dependent variable.

The final procedure of the structural model is examining the predictive capability using PLS predict analysis [52]. The researchers apply 10-fold cross validation method with 10 repeats as the experimental method. The researchers used Mean Absolute Error (MAE) because it has easy interpretation, is more stable in the face of skewed data, and a comprehensive view of prediction errors is needed. The researchers evaluate the partial least square of MAE value is lower than linier regression model (LM) of MAE. Table 6 shows the predictive capability using PLS Predict. The researchers conclude that the model have moderate predictive capability due to only one indicator (RI01) of reuse intention have negative value from the calculation of Δ PLS-LM.

Table 6. PLS predict

| 1	2	3	4	5
RI01	0.340	0.476	0.479	0.003
RI02	0.242	0.512	0.512	0.000

Note: 1 = Indicator; 2 = Q^2 predict; 3 = PLS-SEM_MAE; 4 = LM_MAE; 5 = Δ PLS-LM_ MAE

Ultimately, the researchers employ the importance performance analysis (IPMA) to enhance the PLS SEM findings and identify the crucial aspects for improvement [50]. Figure 2 shows the importance performance analysis of reuse intention. The researchers classify customer satisfaction in quadrant II (concentrate here). Moreover, the researchers classify information quality, perceived value, service quality, and system quality in quadrant III (low priority).

Since customer satisfaction considered as mediating variable, the researchers perform importance performance analysis of customer satisfaction. Figure 3 shows the importance performance analysis of customer satisfaction. The researchers classify information quality and service quality in quadrant II (concentrate here). Moreover, the researchers classify system quality in quadrant III (low priority).
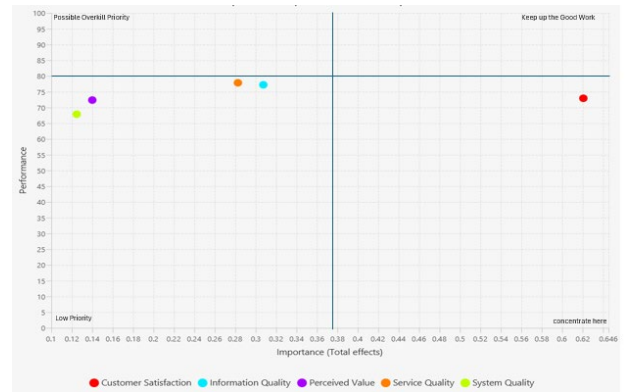
Figure 2. IPMA of reuse intention
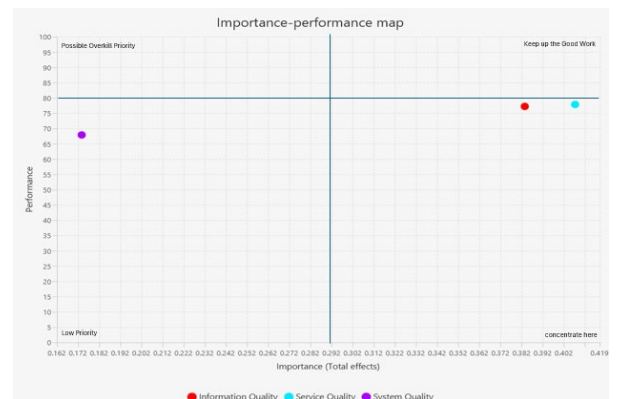
Figure 3. IPMA of customer satisfaction

The finding discovered that customer satisfaction shows high effect on reuse intention (H_8 accepted). These findings are in line with previous research [18]. The researcher concluded that customer satisfaction is an important parameter to assess the success of the implementation of self-service technology in fast food restaurants in Indonesia. Therefore, it is important for fast-food management that wants to improve customer retention to guarantee that self-ordering services function properly and provide a satisfactory experience for their customers. In addition, the results of the study show that a small increase in customer satisfaction can result in a significant increase in using self-service ordering services.

Perceived value shows small effect on reuse intention (H_7 accepted). These findings are in line with previous researches [21, 36, 37]. Researchers concluded that perceived value has a contribution to the intention to reuse self-service technology, although not as strong as customer satisfaction. In the fast-food context, perceived value is influenced by cost-effectiveness, promotions, customization options, and convenience trade-offs. Customer who prioritizes sped and ease of use may be more driven by satisfaction, whereas those who weigh cost and additional benefits may base their decision on perceived value.

Service quality shows moderate effect on customer

satisfaction (H_2 accepted). These findings are in line with previous researches [21, 23-25]. Researchers concluded that service quality is an important factor that influences customers' satisfaction after using the self-ordering services. In the SST context, key service quality aspects include the cleanliness of the self-service machine, the responsiveness and friendliness of staff, and the accuracy of order processing. When customers perceived high service quality in SST, their satisfaction increases, reinforcing the importance of maintaining both machine and human support elements in the fast-food ordering experience.

Information quality shows moderate effect on customer satisfaction (H_6 accepted). These findings are in with previous researches [32-34]. The researcher concluded that the quality of information in the self-ordering system plays an important role in influencing the customer satisfaction. Accurate and easy-to-understand product and price information will increase customer satisfaction in using the self-ordering system service. The results of the study also indicate that information quality is not a dominant factor in determining customer satisfaction, but service quality needs to be considered.

System quality shows small effect on customer satisfaction (H_4 accepted). These findings are in with previous researches [24, 27-29]. The researchers concluded that while system quality contributes to customer satisfaction, its impact is not as strong as the service and information quality. In self-service technology at fast-food restaurant, customers evaluate system quality based on reliability, speed, security, and ease of use. A well-functioning system that minimizes technical disruptions and ensures a smooth transaction process can enhance user satisfaction. Customer who feels comfortable and unconstrained in using SST are more likely to develop a positive experience.

Information quality shows moderate effect on perceived value (H_5 accepted). These findings are in line with previous researches [29-31]. The researcher concluded that information quality is a more important factor to increase the added value of self-service technology than the quality of service and the quality of information systems. Customers who get accurate information about prices, menus, and promotions can experience the added value of self-service technology. In addition, complete information about food ingredients, nutrition, and customization options can provide a positive experience that can increase value perception. Ultimately, the presentation of clear and easy-to-understand information can help customers make decisions when ordering through self-ordering services at fast food restaurants.

Service quality shows small effect on perceived value (H_1 accepted). These findings are in line with previous researches [26, 30]. The researcher concluded that information quality plays a role in increasing the perceived value of the use of self-service technology, although not as large as the quality of information systems and information quality. The efficiency of the ordering and payment process through the self-ordering system is a consideration for customers in assessing the quality of service. If the self-ordering system can meet customer expectations, it can provide added value for customers who use self-service technology to order food at fast food restaurants.

System quality shows small effect on perceived value (H_3 accepted). These findings are in line with previous research [16]. The researchers concluded that system quality influences perceived value by ensuring smooth operation, security, and efficiency. Customer expect SST to function reliability, process transactions quickly, and protect customer data. When these expectations are meet, SST offers a positive service experience, increasing the perceived value. However, compared to information and service quality, system quality plays a less dominant role in shaping perceived value.

5. CONCLUSIONS

The research objective is to examine the determinant factors of self-service technology reuse intention in the context of fast-food restaurant in Indonesia. The findings show that reuse intention is affected by customer satisfaction and perceived value. Moreover, customer satisfaction is affected by service quality, information quality, and service quality. However, perceived quality is affected by information quality, service quality, and system quality. The researchers conclude that the proposed research objectives have been confirmed in the findings presented in this study.

Next, the researchers discuss the practical implication based on the findings. First, enhancing service quality is essential for a seamless customer experience with self-ordering machines. Fast food restaurant management should prioritize user experience studies to ensure the self-ordering interface is intuitive, visually appealing, and easy to navigate. Moreover, investing in employee formal and on the job training programs can equip staff with the necessary skills to assist customer effectively. Management should establish a responsive technical support team and develop mitigation plans to promptly address potential system failures. Personalization of product offerings through data-driven loyalty programs can also strengthen customer engagement and repeat usage.

Second, improving information quality plays a critical role in customer decision-making. Self-ordering machines should present comprehensive product details, including product information, pricing, nutritional information, and customization options. A dedicated user experience division should conduct periodic assessments to align displayed information with customer preferences, ensuring clarity, and ease of access. Enhancing the technology capability to deliver tailored recommendations based on purchase history can further enrich the ordering experience.

Third, optimizing system quality is crucial to building customer trust and satisfaction. IT teams should focus on ensuring fast and secure transaction processing, minimizing system downtime, and implementing robust data security measures. Regular system performance audits and cybersecurity enhancements will help maintain a smooth, reliable ordering process. Moreover, offering real-time order tracking and seamless integration with mobile payment options can increase the user experience. By implementing these strategies, fast food restaurant management can improve customer satisfaction and perceived value of self-service technology in their restaurant. Subsequently, increasing the continuance usage and loyalty to the self-ordering services.

The researcher identified the theoretical contribution to the advancement of science in the field of information system management. First, this study integrates the Delone and Mclean information system success model (D&M model) with the SOR theory to offer a more comprehensive framework for understanding the factors influencing reuse intention in self-service technology within fast-food restaurants in Indonesia. Therefore, this research bridges two established theoretical

perspectives - The D&M model, which focuses on system success factors (stimuli), and the SOR framework, which explains psychological mechanisms (organism-response) to explain how system quality, service quality, and information quality serve as external stimuli that shape user perceptions (satisfaction and perceived value), ultimately driving behavioral response (reuse intention). This integration expands the theoretical lens for studying self-service technology by demonstrating how technology-driven factors interact with psychological mechanism to influence consumer behavior. Moreover, this study theoretical models by highlighting the stronger mediating role of satisfaction over perceived value in SST adoption, emphasizing the dominance of emotional responses over cognitive evaluations in reuse intention. Finally, it extends the applicability of the D&M model beyond traditional IT adoption by demonstrating its relevance in self-service technology within the fast-food industry.

Second, our research applies the most up-to-date protocols to analyze the data. Our findings demonstrate good validity and reliability of the developed research model. In addition, our research results are proven to enrich the literature on self-ordering machines in the context of fast food restaurants and provide new insights into how elements of quality and customer perception can be optimized to increase the intention to reuse the technology.

Our research cannot be separated from limitations in the implementation of research. Therefore, further research can accommodate these limitations. First, the researcher used the 10 times of indicator method to determine the number of samples and purposive sampling as a sampling technique. The researcher ignores the complexity of the proposed model so that the researcher does not conduct a mediation test because it can affect the results of hypothesis testing. In addition, the use of purposive sampling in the research design has an impact on the limitations of generalization of findings. Therefore, the researcher proposes to use 20 times of indicator or collaborate with fast food restaurant management to use probability sampling.

Second, the researchers eliminate 20% (4 of 21) of indicators during the confirmatory factor analysis because the indicators do not show sufficient validity and reliability. This has the potential for loss of important information, reduced statistical power, and bias in results. Therefore, the researcher proposes to use a larger sample, a mixed method approach, and test the instrument back in future studies.

Third, the researchers selected 2 international fast food restaurants in Indonesia and distributed questionnaires to several branches of these restaurants. Self-ordering machines are beginning to be adopted by various small, medium, and enterprise (SME) companies in Indonesia. Therefore, further research can replicate our research model in companies engaged in the food and beverage sector and other fields.

Forth, this employs a cross-section research design which limits causal inference. While structural equation modelling (SEM) provides a robust analytical framework, it does not fully capture how relationships among variables evolve over time. Causal relationship between system quality, service quality, information quality, satisfaction, perceived value, and reuse intention require further validation through longitudinal studies. Future research could employ longitudinal survey designs to track changes in user behavior over time. Moreover, experimental or panel data approaches could further enhance the robustness of findings by reducing biases associated with self-reported cross-sectional data.

Lastly, while perceived value is often conceptualized as a multidimensional construct in consumer research. Our study adopts a single dimensional approach to ensure model parsimony and alignment with prior SST research based also supported by empirical validation. Introduction of functional, emotional and social value as dimension of perceive value would increase model complexity and require additional empirical testing to ensure robustness. Therefore, future research could extend this study by exploring the differential effect of these dimensions on customer behavior in SST adoption.

AUTHOR CONTRIBUTIONS

DATA AVAILABILITY STATEMENT

The data supporting this study's findings are not publicly available due to privacy and confidentiality concerns. Access to the data may be granted upon reasonable request and after appropriate approval, ensuring compliance with data protection regulations. Please contact the corresponding author for further information regarding data access. The data can be downloaded through https://bit.ly/4jUxRrb.

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APPENDIX

Measuring Items Used in This Study
Service Quality [41]
SQ01 The food was prepared as I ordered it.
SQ02 Employees responded to any questions I had.
SQ03 Employees were friendly.
SQ04 The SST machine was clean.
System Quality [41]
SYQ1 I can get my service done with SST in a short time.
SYQ2 The service process of the SST is clear.
SYQ3 Using the SST requires little effort.
SYQ4 I can get service done smoothly with the SST.
SYQ5 The service function of the SST is error-free.

Information Quality [42]

IQ01 Information provided by the SST meets my needs.

IQ02 Information provided by the SST is in a useful format.

IQ03 Information provided by the SST is clear.

IQ04 Information provided by the SST is accurate.

IQ05 Information provided by the SST is up to date.

IQ06 Information provided by the SST is reliable.

Perceived Value [18]

PV01 The SST service was appropriate given this price.

PV02 The overall SST service was acceptable given what I paid.

PV03 The SST service offered good value.

Customer Satisfaction [18]

How do you feel about your overall experience of using the SST?

- Very dissatisfied/Very satisfied.
- Very displeased/Very pleased.
- Very frustrated/Very contented.
- Absolutely terrible/Absolutely delighted.

Reuse Intention [18]

RI01 I would use the SST again on my next visit.

RI02 I would choose to use the SST on subsequent visits.

RI03 I would prefer to avoid the SST. (-)