# Factors Affecting Consumer Adoption of Self-Service Technologies in Malaysia's Food and Beverage Industry: A Value-Based Adoption Model Approach

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Abstract. This study investigates factors affecting consumer adoption of self-service technologies (SSTs) in Malaysia's food and beverage industry. Drawing on the Value-based Adoption Model (VAM), the research examines how perceived benefits (convenience, enjoyment, and perceived ease of use) and perceived sacrifices (technicality and perceived time costs) influence SST adoption. Data were collected from 200 Malaysian consumers aged 18 and above who had used SST for food ordering within the previous six months. An online questionnaire was distributed via social media platforms using convenience sampling. Multiple regression analysis was employed to test the hypothesized relationships. The results reveal that only two factors significantly influence SST adoption in Malaysia's F&B industry: convenience ( $\beta = 0.50$ , p < 0.001) and enjoyment ( $\beta = 0.29$ , p < 0.001). Contrary to expectations, technicality ( $\beta = 0.14$ , p = 0.068), perceived time costs ( $\beta = -0.05$ , p = 0.430), and perceived ease of use ( $\beta = 0.01$ , p = 0.832) did not significantly affect adoption. The model explained 67% of the variance in adoption behavior, suggesting that Malaysian consumers prioritize perceived benefits over sacrifices when deciding to use SST. F&B businesses implementing SST in Malaysia should focus on enhancing convenience and enjoyment aspects rather than merely addressing technical complexity or time efficiency. The findings offer management insights for designing and promoting SST that aligns with consumer preferences. This study extends VAM application to SST adoption in an emerging market context, revealing that perceived benefits drive adoption while perceived sacrifices have minimal impact. These insights contribute to understanding technology adoption in culturally specific service environments and highlight the importance of experiential factors in consumer technology decisions.

**Keywords:** convenience, enjoyment, perceived ease of use, technicality, perceived time costs, adoption, food and beverage.

## 1. Introduction

Self-service technology (SST) is defined as a method used by consumers to access resources and solve problems on their own without the help of a service representative (Bhasin, 2021; Wongyai, Ngo, Wu, Tsui, & Nguyen, 2024). SSTs have demonstrated a win-win situation for both customers and businesses because the SST can save the burden of face-to-face interactions between customers and service representatives. Also, SSTs are convenient, quick, and have less human error (Umap, Surode, Kshirsagar, Binekar, & Nagpal, 2018). In addition, SST also assists organizations in lowering their total costs and enhancing customer satisfaction. According to Considine and Cormican (2016), a significant number of businesses consider the implementation of SST to be an indispensable component in lowering costs and improving the overall customer experience. Over the last few decades, SST has witnessed broad acceptance as a result of the favorable influence it has had on profitability, productivity, the reduction of labor costs, and the increase in client demand (Kapser, 2019).

The usage of SST has started to rise around the globe. Today, self-service technologies are increasingly common, and in 2019, the worldwide technology market had a value of USD 28.3 billion. Additionally, it is anticipated that the CAGH will rise 6.7% during the period from year 2020 to 2027. The market expansion of SST has happened due to the increased need for automated service, self-service equipment, remote administration, and wireless communication (Self-service Technology Market Size & Share, 2027, n.a.). In China, businesses have embraced this new technology in various ways to support high-quality development better, affecting industries such as agriculture, commerce, transportation, industrial production, and environmental protection. Similar cases have also happened in Korea, where self-service convenience stores are becoming increasingly popular (Song, 2021).

SST started to roll out into the F&B industry, and some major brands, such as McDonald's and Burger King, began experimenting with the use of SST by using a kiosk. Between 2014 and 2015, the fast food giant McDonald's launched an aggressive plan to install SST in their stores to stay ahead of their competition. SST has been widely accepted in the restaurant business. Today, industry 4.0 has hits the food and beverage sector, with restaurants and food service started to implement technology to improve customer experience and enhance competitive advantage. The implementation of technology in F&B is getting more popular particularly in the aftermath of the Covid-19 outbreak. Covid -19 make the adoption of technology transitioned from a temporary remedy to a necessary investment (Nguyen, 2024). Today's restaurant patrons can browse menus, self-order, and customise their cuisine through smartphone applications, tableside tablets, and self-service kiosks (Park, Lehto, & Lehto, 2021). Many services are now offered self-service; customers always find this technology wherever they go. Customers are becoming increasingly comfortable using self-service technologies to place their orders and make payments as they seek more convenience in their daily lives (Acrelec United Kingdom, 2022). SST use in restaurants has resulted in higher check-out averages and increased marginal profitability compared to when traditional human service was provided exclusively in the past (Charoenwong, Kowaleski, Kwan, & Sutherland, 2024).

According to the report from Global Finance Magazine (2023), South Korea, the United States, and Denmark are the top three most technologically sophisticated nations. In contrast, Malaysia, which is rated 33rd, is behind China. SST development is relatively slower in Malaysia than in other countries. Also, the report from Self-Service Market Size & Share Analysis (2025), highlighted the the used of self-service technology in the global market. In the report, it found that Japan has one of the highest densities of vending machines in the world, with approximately one vending machine for every 23 people 1. The widespread use of SST in Japan is driven by a strong emphasis on efficiency, convenience, and technological innovation. In contrast, Malaysia is still developing its technological

infrastructure and consumer familiarity with SST.

#### 1.1 Self-Service Technology in Malaysia

In 2017, McDonald's introduced the "Kiosk" into the Malaysian market. The first self-service kiosks were used at Bukit Bintang and Bangsar Telawi branches. To use the McDonald's self-service kiosk, customers must wait in line before placing their order and paying with a credit card, debit card, or electronic payment. A numbered order will be printed after this and the consumer must wait for their number to be called before picking up their order at the pickup counter. However, Malaysians were not shocked by the self-service McDonald's kiosk during that time because it had previously been implemented in other countries like Europe, China, and Singapore (Yap, 2017). According to a report from Mexen (2015), SST usage in Malaysia has progressed gradually. ATMs and CDMs are the most commonly used SSTs in the banking industry. Nearly 90% of Malaysians have used ATM and CTM services before, and more than 86% use them regularly. In retail, 87% of people have attempted at least one online transaction by using SST.

#### 1.2 Self-Service Technology in Food and Beverage in Malaysia

The COVID-19 pandemic has greatly increased the use of SST in Malaysia's F&B sector. People are more worried about health and safety, and SSTs help by reducing physical contact between customers and staff. This means there is a lower risk of spreading the virus (Mohamed et al. 2024). For example, a study showed that 70% of fast-food restaurants in Malaysia began using self-order kiosks and mobile ordering apps during the pandemic to keep everyone safer.

Despite the used of SST starting to increase, the implementation of SST in the food and beverage industry in Malaysia still new compared to other countries in the region, such as Singapore. A certain number of studies have been conducted to study the factors influence the implementation of SST (Chow, Yeow and See, 2022; Idris, Fauzi, Nasarudin, Mohamad, & Manshoor, 2023). Researches showed a significant number of customers in Malaysia do not choose to utilise SST when they are given an option (Shahril, Zulkafly, Ismail, & Sharif, 2021; Mahmood, Shukri, Ghani, & Shalifullizam, 2024). Many customers still prefer to connect with service providers to order food if given a choice (Zolkafli, Nizam, Haslan & En, 2016). This phenomena is contributed by some possible reasons, such as many users are lacking of technical awareness, making the self-service kiosks less desirable. Also, most consumers cannot use the equipment effectively without assistance from professionals (Rastegar, 2018). According to Cobanoglu et al. (2015), one of the significant factors contributing to the delayed adoption of SST is lacking awareness of the benefits of adopting SST. Hence, the study would like to identify the factors affecting the adoption of SST in the F&B industry. The research investigated factors such as convenience, enjoyment, technicality, time-saving, and perceived ease of use of SST and their influence on the adoption of SST in the F&B industry in Malaysia.

According to Yee et. al. (2024), the SST used in F&B includes Self-Service Kiosk(SSK), tablets, and QR codes. All these SST are revolutionising the restaurant sector. These systems allow customers to place orders in a faster manner. A self-contained and independent structure that is referred to as an interactive kiosk (also known as a self-service kiosk, or SSK) is utilised to accelerate processes or display information (Eleni, 2019). SSK allows customers to place orders for food, personalize their meals, and pay their bills all at the same time. Usually, SSK are popular to be used in the Fast food restaurant in Malaysia. Another type of SST used is the Self-service menu tablet means consumer can do their food ordering using devices like iPads or Samsung Galaxy Tablets (Yee et. al., 2024). However, this method is still not popular as it will need the business to have a huge investment in the devices. Another popular type of SST used in Malaysia is QR code ordering. Customers can rapidly scan these QR codes using a reader or their mobile phone; this is a convenient option. Following the

scanning of the QR code that links them to the restaurant's website, patrons have the opportunity to acquire additional information regarding the establishment. Customers can browse the menu options online and place their orders directly from their mobile devices, eliminating the need for a server or physical menu cards if they place their orders. It is the responsibility of the kitchen staff to take orders, after which they will prepare the meal and arrange it to be served at the right table (Yee et. al., 2024).

This research is necessary because it can provide marketers with additional information about their customers and help them better understand their customers' needs and desires. Customers will become recurring customers if they have a positive experience with the service they undergo, which is why providing a good service in the marketplace is essential. Additionally, the change in environmental factors might affect consumers' behaviour when it comes to the acceptance of self-service technology (SST). Merchants can deliver better services to customers from the perspective of customers when they can forecast their behaviour. This allows merchants to exceed customers' expectations, ultimately resulting in better consumer service. Although self-service technology (SST) has the potential to assist all organisations in increasing the number of clients they serve, it also has the potential to continue to enhance the quality of life of customers. Refers to the Value-based Adoption Model (VAM), Kim et al. (2007) proposed the adoption of technology is refers to two important factors: benefits and sacrifice. In VAM, users usually evaluate the perceived value of the technology and comparing the sacrifices and advantages of using it to determine should they adopt the new technology. However, the used of VAM to study about SST in Malaysia F&B market is limited. Hence, this study will instigates the perceive value (convenience, enjoyment, and ease of use ) and also sacrifices (technicality and perceived time cost ) when it come to the adoption of SST in F&B industry.

## 2. Literature Review

### 2.1 Adoption

Customers adopt a product or service by using it as intended after gaining an understanding of it, showing interest in it, assessing it, and trying it out. This process is referred to as adoption (Riserbato, 2021). The customer adoption process consists of five distinct stages. The initial stage, known as awareness, occurs when an existing client becomes informed about a new product or feature. Curious is the second stage where customers exhibit a sense of curiosity toward a product or service. Furthermore, during the third stage, the consumer will evaluate the new product or service and deliberate on its necessity or desirability, as well as their willingness to make a financial commitment towards it. In the fourth phase, the consumer will endeavor to evaluate your product or service by engaging in activities such as enrolling in a complimentary trial, participating in beta testing, observing a demonstration or tutorial, or perusing available reviews. Ultimately, the customer reaches the conclusion to purchase or to continue using the product or service. Adoption is the process by which a client begins using a new good or service in the manner it was designed for (Rogers & Williams, 1983; Ramayanti, Rachmawati, Azhar, & Azman, 2023).

The study highlighted the importance of understanding the factors that influence consumer adoption, particularly in the context of self-service technologies (SSTs) within the food and beverage (F&B) industry. It argues that simply adopt and use SSTs—such as self-order kiosks or mobile ordering apps—is not enough. If businesses fail to consider the specific conditions that influence customer willingness to adopt these technologies, they risk significant setbacks. In most of the situation, presence of SSTs does not guarantee usage; in fact, if customers perceive them as inconvenient, confusing, or unplesent, they will not adopt and to use the technology. Worse still, this might degrade

the overall customer experience, leading to dissatisfaction and potential loss of loyalty. Therefore, businesses must not only invest in SST infrastructure but also prioritize user experience and their adoption, to ensure successful adoption of SST in the F&B Industry.

### 2.2 Value-based Adoption Model (VAM)

The Technology Acceptance Model (TAM) was introduced in 1989 from an expansion of the Theory of Reasoned Action (Ajzen & Fishbein 1980). TAM is useful when it comes to predicting individual adoption and usage of new technology. TAM has demonstrated two important factors: perceived usefulness and perceived ease of use (Davis, 1989). Most of the studies used TAM in their research as it is simple to understand and has proven to be highly predictive in a variety of situations. However, according to Kim, Chan, and Gupta (2007), TAM was limited in explaining the acceptance of new ICT, and that new ICT users should not be recognized as simply technology users, but also as consumers. Similarly, according to Kim and Kyung (2023), past studies that have used the aforementioned theories alone to evaluate the behavior of users who accept and make use of new technologies have focused just on the side that new technologies or tools give positive impacts such as perceived benefits or advantages to users which is a single perspective (Yoon and Shin, 2017). However, when it comes to the adoption and use of new technologies, the reality is that both positive and negative attributes exist. Hence, It is very important to measure these two sides properly. On the other hand, UTAUT model (Venkatesh et al., 2003) is also another popular model used by previous studies when it comes to adoption. However, similar with TAM, both UTAUT and TAM do not explicitly account for the trade-offs between benefits and sacrifices. This can lead to an incomplete understanding of the adoption process from the consumer perspective (Rruplli, Frydenberg, Patterson & Mentzer, 2024)

With that, Kim et al. (2007) proposed to research benefits and sacrifice as the main factors of perceived value that lead to the adoption of a new technology. According to this concept, users evaluate the perceived value of the technology by considering and comparing the sacrifices and advantages of using it. The perceived sacrifices refer to the expenses and exertions that individuals invest to embrace technology. Kim et. al. (2017) mentioned that VAM is related to consumers' general assessment of the new technology. The need for benefits should be more than the sacrifices to make the consumer adopt a new technology. The perceived benefits refer to the anticipated advantages of technology (Kim and Kyung, 2023). In this study, as proposed by Kim and Kyung (2023), benefits include convenience, enjoyment, and ease of use. On the other hand, the sacrifices include technicality and perceived time costs. The section below will explain the variables in detail.

### **2.3 Perceived Benefits**

Perceived Benefits are the consumer's expectation of the advantages they can receive when adopting a technology (Kim and Kyung, 2023). Several researches in the marketing and information systems literature have found that perceived benefits are the main factor influencing consumers' perception of value when adopting information technology (Gupta and Kim, 2010; Kim and Lee , 2018; Kim and Kyung, 2023). Convenience, enjoyment, and ease of use are studied in this study as the perceived benefits consumers received when using the SST in the F&B.

#### 2.3.1 Convenience

Convenient is defined as the consumer accessibility to services they want at anytime (Ghosh, 20021). Convenience is important in today's world, consumers nowadays expect businesses will provide them with convenient services wherever they go. Based on earlier research that demonstrated a positive relationship between convenience and self-service technologies (Safaeimanesh et al., 2021). Convenience is cited as the primary driver of technology adoption when customers must first be persuaded of its benefits before adopting and using self-service technology, according to research that shows a strong relationship between the two. The goal of convenience now is to make the entire client purchasing experience as smooth as possible. The whole transaction process will run more smoothly and seamlessly if more handy services are offered. (Producing Customer Convenience With Market Research, 2022). hence, the hypothesis stating this is:

H1: Convenience will influence the adoption of self-service technologies in F&B industry.

#### 2.3.2 Enjoyment

Enjoyment in SST adoption refers to the consumer feelings about the SST. Enjoyment plays a very important role in influencing customers' willingness to adopt and continue using the technologies, especially in the F&B industry (Zaitouni, & Murphy, 2025). Although enjoyment is subject to change, it remains a memorable experience to the consumers. The previous analysis revealed enjoyment as the most significant factor for the quality of social media-based food ordering. Out of the seven dimensions, fast-food restaurants perceived enjoyment as having the highest impact on service quality and first-order quality (Pai et al., 2022). There is a strong correlation between adoption and enjoyment; as soon as consumers begin to gradually enjoy using a product, they are more likely to accept and employ self-service technologies over the long term. The hypothesis stating this is:

H3: Enjoyment will influence the adoption of self-service technologies.

### 2.3.3 Perceived ease of use

Perceived ease of use is the extent to which a person thinks that it is easy to make use of a certain system (Davis, Bagozzi & Warshaw,1989). In F&B, Perceived ease of use is formed as how consumer can understand and interact with the technology system easily when the time they are dine in in the restaurant (Zhang et al., 2014). When customers use a product, they will notice how simple it is to use; therefore, perceived ease of use is an important component in consumer acceptance. Businesses today are required to offer a large amount of technology to their consumers, which propels rapid technological advancement in the market and makes all of this technology user-friendly, especially with the introduction of self-service technologies. Although new technologies can offer new conveniences, if consumers feel that the technology is difficult to use or control, they will not accept it. In addition, customers will demonstrate that they will prefer other technologies in their place. The previous study's findings show a positive correlation between attitudes toward self-service technology use and perceived ease of use (Taufik, 2019). The hypothesis stating this is:

H5: Perceived ease of use will influence the adoption of self-service technologies.

### 2.4 Perceived Sacrificed

Perceived sacrifices meant customers' perceptions of anything that they had given up to obtain a product or service (Kim and Kyung, 2023). Perceived sacrifices are related to opportunity costs, transaction costs, and unexpected risks. As reported by Kim, Joo, & Park (2017) perceived sacrifices include both monetary and non-monetary sacrifices. Similar to Kim and Kyung (2023), this study will include technicality, also the perceived time cost (Kim, Joo, & Park, 2017; Tyagi, 2022) as the perceived sacrifices. These two variables are important as SST in F&B is supposed to make

consumers less hassles and save time in handling food ordering. Hence, the study needs to investigate its relationship with the adoption of SST.

#### 2.4.1 Technicality

Technicality is defined as the amount of mental and physical work, as well as the perceived difficulty, that users are expected to put up to acquire and make use of new technologies at a satisfactory level (Kim and Kyung, 2023). In the adoption of SST, organizations must understand the customer worry around SST (Hong and Ahn, 2023). When providing high technologies to customers, the purpose is not just to provide better service to consumers, but also to ensure that businesses can connect with customers more easily and make the consumer hassle-free when using the technology. When traditional business operation is replaced by new technology, it might need time and effort for the consumer to learn how to use the new technology. According to the previous research (Tang & Liu, 2022; Yu, Seo & Choi ,2019), when users ate using SST to order food, they often face several problems, such as : many of them mention that the design or screen layout is confusing, which makes ordering difficult. Some users even feel that these systems are generally hard to use, so they don't want to use them often. On top of that, many users experience less pleasant (Mohamed et al. 2024). The hypothesis stating this is:

H2: Technicality will influence the adoption of self-service technologies.

#### 2.4.2 Perceived Time Cost

Perceived time cost refers to the amount of time that users believe they will spend on a particular task or activity, rather than the actual time it takes (Lee & Yi, 2022). Lowering the perceived time cost including the management of customer flow, providing prompt service, and decreasing waiting times (Kim, Chan & Gupta, 2007). When customers wait for long periods, they experience pressure and negative emotions, transforming their positive mood into a negative one. A prolonged waiting period can cause anxiety and discomfort in the consumer (Tyagi, 2022). Nowadays, time is critical for consumers in any industry. The use of SST in F&B allows consumers to skip the waiting time, especially during peak hours.

Time has become a luxury in society today, and it is a key commodity for the consumer. As a result, time has evolved into a commodity that more and more people are willing to buy. Customers can save time and money by demonstrating that service and products are now the key selling points for many businesses. Customers want technologies that will help them address their problems quickly and with minimal hassle. The data from the previous study indicate that when more than half of the passengers were considered to be utilizing the self-service kiosk, the waiting time for those using the kiosk in the airport climbed more sharply (Tyagi, 2022). Simialr to F&B, El-Said and Al Tall (2020) found that reducing waiting time was one of the main factors for customers to use self-service kiosks in fast food restaurants. Individuals will be willing to accept Self-service technology offers the potential to save customers both time and money. Research has demonstrated a robust correlation between perceived time costs and the adoption of self-service technology. The hypothesis stating this is

H4: Perceived time costs will influence the adoption of self-service technologies.

The research framework is shown and listed in the section below:



Fig.1: Conceptual Framework of the study

## 3. Method

### 3.1 Sampling Plan

Participants in the Malaysian population who are at least 18 years old are the primary target of the research projects. There are 200 respondents included in the research sample, and to take part in the study. The study use the size heuristics : 100 to 200 is needed to ensure the reliability and precision of the research (Lakens, 2022).

### **3.2 Data Collection Method**

The data collection for the study last for 2 months, from March to May 2025. The data were collected from respondents who fulfilled the criteria stated in the research to ensure accuracy and precision. The criteria include :

- 1) The respondent must be a Malaysian citizen who is at least 18 years old in the year 2023.
- 2) The respondent must have used SST in the food and beverage industry at least once in the past 6 months.

The criteria set is to identified the correct respondents to participate in the study.

The questionnaires were sent to the users on social media such as Facebook, Instagram, and WhatsApp. Since, the study is using online questionnaire, hence, geographical location of the study will not be set. The research used convenient sampling techniques to collect the data. The time from for data collection is from

### **3.3 Research Instrument**

The questionnaire was divided into two parts, which were referred to as part A and part B, respectively. The respondents' demographic information, including their gender, age and occupation were covered in Part A of the survey. In addition, part B is associated with all of the dependent factors, adoption, and independent variables, which are as follows: convenience, enjoyment, perceived time costs, perceived ease of use, and technical. A Likert scale with five points, ranging from "strongly disagree" to "strongly agree," forms the basis of the measurement scale utilised in the questionnaire.

Every single item used to measure the independent and dependent variables that were included in the questionnaire was taken from Pai et al. (2022), Safaeimanesh et al.(2021), and Taufik (2019). There are 3 items for adoption, 4 items for convenience, enjoyment and perceived ease of used, 7 questions for technicality and perceived time cost. Some of the items were modified to ensure it fit the research context of the study (SST). The questionnaire was send to 3 experts for review to ensure the validity of the item. The experts included academics and also industry expert. The feedback received was good.

### 3.4 Analysis Method

The research used SPSS software to analyse the data. In order to predict the outcomes of a response variable, a statistical technique called multiple linear regression (MLR), also known as multiple regression, makes use of a number of explanatory factors. SLR is sued as compared to SAM as the model of the study is simpler and the primary goal is to understand the relationship between a set of predictors and its dependent variable (AmirAlavifar,2012)

### 4. Findings

#### 4.1 Respondent Rate

A total of 250 data sample were collected, and 201 usable data samples were obtained through an online questionnaire distributed over Facebook, Instagram, and WhatsApp (respond rate 80%). The study discarded 49 set of data as some of them never complete the questionnaire and also never fulfilled the two criteria stated in the data collection method.

#### 4.2 Demographic data

There are 38.3 per cent of male respondents were involved in the study, while 61.7 per cent of female. In term of age, respondents between the ages of 21 and 30 made up the majority (62.2%), followed by respondents between the ages of 31 and 40 (16.90%). The age groups with the lowest representation were below 20 and over 50, with 5.50% of each group. In term of occupation, there are 97 respondents (48.30%) who are students, followed by 58 respondents who work in the public sector (28.90%), self-employed individuals (13.90%), and public sector employees (5.50%). The retired made up the lowest percentage of respondents (3.50%).

In the past half year, every single one of the respondents has placed an order for meals through SST. All the respondents in the study used SST to order food at least once in the past six months. On top of using SST to order food, many of them also used SST in other industries, such as banking (100%), retailing (51.2%), airline (27.9%), and Hospitality (21.4%).

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### 4.3 Reliability Analysis

The reliability test analyses the internal consistency of the research instrument used in the study. The acceptable value for Cronbach's Alpha is 0.6, however, the high value of 0.90 is also acceptable as it is common to have high Cronbach's Alpha when there are more than 5 items in a construct (Taber,

#### 2018).

The results demonstrate that perceived perceived time cost (7 Items) is reliable, with a Cronbach's Alpha value of more than 0.90. Following by adoption (3 items) with the value of 0.88. The Cronbach's Alpha for enjoyment (4 items) is 0.86, convenience (4 items) is 0.85, perceived ease of use (4 items) is 0.85, and Technicality (7 items) is 0.83.

#### **4.4 Multicollinearity Dignostics**

Based on the VIF and tolerance values, the study identified that multicollinearity is not a significant concern for all the predictors as the VIF value is less than 5, and the tolerance is more than 0.2.

#### 4.5 Multiple Regression Analysis

Multiple regression analysis is used to determine the research model's importance. The outcomes of the multiple regression analysis are displayed in Table 1.

The R value of 0.8 suggests that the predictors are strongly associated with the dependent variable, and as the predictors increase, the dependent variable tends to increase as well. According to the R square of 0.67, the independent variables Convenience, Enjoyment, Technicality, Perceived time cost, and Perceived Ease of Use account for 67% of the variance in the adoption of self-service technology. This indicates that the model has a good fit and effectively captures a substantial portion of the variability in the dependent variable. The remaining 33% of the variance is attributed to other factors not included in the model.

Table 1: Regression Analysis

#### **Model Summary**

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Decision on Hypotheses
		В	Std. Error	Beta			
	(Constant)	.02	.22		.09	.926	
H1	Convenience	.56	.07	.50	7.88	.000	Accepted
H2	Technicality	.18	.10	.14	1.83	.068	Rejected
H3	Enjoyment	.31	.08	.29	3.90	.000	Accepted
H4	Perceived time cost	06	.07	05	790	.430	Rejected
H5	Perceived ease of use	.01	.06	.01	.21	.832	Rejected

R = 0.82, R Square = 0.67, sig = 0.000

The ANOVA results are presented in Table 1. The table demonstrates the model's overall significance by examining the F value or significance p-value of less than 0.05 (p< .05). The model is significant and suggests that at least one independent variable and moderator can be used to predict the dependent variable, adoption of the self-service technologies. The value is 80.69 and significant, with p-values less than 0.05, indicating that the adoption is significant.

As stated in Table 1, there are five independent variables, which include convenience, enjoyment, Technicality, perceived time cost, and perceived ease of use. All these variables were examined to

examine their influence on the dependent variable, the adoption of self-service technologies. If the p-value for this analysis is less than 0.05, the hypothesis will be accepted, but if the value is greater than 0.05, the hypothesis will be rejected.

Referring to Table 1, the p-value for convenience is 0.000, which is less than 0.05. This shows that hypothesis 1 is accepted. Similarly, the p-value for enjoyment is also 0.000; hence, Hypothesis 3 is accepted.

For Technicality, the result shows that the P-value for Technicality is 0.068. This means hypothesis 2 is rejected because the significant level is more than 0.05. For perceived time cost, the result showed the significant value is 0.430, which is also more than 0.05, hence Hypothesis 4 is rejected. Additionally, the p-value for perceived ease of use is 0.832. This demonstrates that hypothesis 5 is rejected as well.

Based on the study, the adoption is significantly affected by the two independent variables, convenience, and enjoyment, with their p-values less than 0.05; however, the adoption is not affected by the three independent variables: Technicality, perceived time cost, and perceived ease of use. Additionally, according to the B-value for unstandardized coefficients, convenience is the most important factor affecting SST adoption in the F&B industry with the bete value of 0.56, followed by enjoyment (0.31).

## 5. Discussion

The result of the study showed that convenience and enjoyment are the important factors affecting the consumer adoption of SST in F&B industry. According to previous research, convenience plays a significant role in determining a quality service level. It also implies that consumers consider the SST for ordering meals quicker than the traditional method and whether they place an order in advance for pick-up or delivery at a convenient time (Pai et al., 2022). According to Producing Customer Convenience With Market Research ( 2022), convenience is the primary driving force behind consumers' adoption of businesses' services. Convenience plays a crucial role in encouraging customers to adopt the services. If the service is more convenient, customers will be happier to use it. The core of convenience refers to the convenience of using something. Businesses may offer convenient services to customers no matter where they go or where they are adopting them. As a result, convenience is an essential factor in both customer satisfaction and customer adoption. Similarly, the result also showed enjoyment is going to affect thtechnology, showing of SST in F&B; this result implies that most of the customers will focus more on the enjoyment that they can get when they are using the self-service technology, showing that customers are paying great attention to the enjoyment experience of the food ordering process without the presence of the service provider (Pai et al., 2022).

On the other hand, the result of the study indicated Technicality, perceived time cost and perceived ease of use would not affect the consumer adoption of SST. The adoption of Self-Service Technology (SST) in Malaysia's food and beverage industry faces several challenges, primarily caused by the consumer perception as they perceived this SST is new to them. According to Mahmood, Shukri, Ghani, and Shalifullizam (2024), Malaysian consumers are still relatively new to SST technology, thus, some period of adjustment and learning are needed before they can accept the new technology. This unfamiliarity feelings make the consumers to have more time to become comfortable with using SST systems.

Moreover, the adoption of SST is often driven by necessity rather than choice. Many consumers are forced to use SST for food ordering when restaurant staff refuse to take their orders manually. This forced adoption can lead to resistance, as consumers may feel coerced into using a system they are not yet comfortable with. Consequently, when given the option, their decision to use SST is highly situational. For instance, if there is a long queue for SST, consumers may revert to traditional ordering methods, which they perceive as faster. Conversely, if the queue for SST is short and the wait for manual service is long, they might opt for SST (Tyagi, 2022). This situational dependency suggests that perceived time cost is not a sufficient motivator for SST adoption.

Additionally, the perceived ease of use of SST does not directly influence the adoption of SST. Davis (1989) found that ease of use impacts system use indirectly through its influence on perceived usefulness (Sheppard and Vibert, 2019). This means that even if consumers find SST easy to use, they may not adopt it unless they also perceive it as useful.

In summary, the adoption of SST in Malaysia can be attributed to consumers' unfamiliarity with the technology, situational preferences, and the complex relationship between ease of use and perceived usefulness. These factors highlight the need for a gradual and supportive introduction of SST to ensure its successful integration into the consumer experience.

## 6. Conclusion

The findings of this study provide important theoretical and practical insights regarding selfservice technology (SST) adoption in Malaysia's food and beverage industry. Our results demonstrate that perceived benefits—specifically convenience and enjoyment—significantly influence SST adoption, while perceived sacrifices (technicality and perceived time costs) and perceived ease of use do not have significant effects. This pattern suggests that Malaysian consumers primarily consider potential benefits when deciding to use new technologies rather than the sacrifices they might need to make. This findings showed Malaysian are different when its comes to the adoption of SST, as most of the previous studies indicated both benefits and sacrifice when its come to the adoption of new technology (Chow, Yeow and See, 2022).

From a theoretical perspective, these findings extend the Value-based Adoption Model (VAM) by demonstrating that in the context of food service technologies in Malaysia, the benefit-sacrifice evaluation is weighted more heavily toward benefits. This challenges the assumption that both elements are equally considered in technology adoption decisions and suggests that cultural or contextual factors may influence the relative importance of benefits versus sacrifices. Furthermore, the non-significant effect of perceived ease of use contrasts with traditional Technology Acceptance Model predictions, supporting Davis's (1989) finding that ease of use may influence adoption indirectly through perceived usefulness rather than directly. For practitioners, our findings offer clear strategic direction for implementing SST in Malaysia's F&B sector. Businesses should prioritize designing systems that enhance convenience (through features like faster ordering, customization options, and intuitive interfaces) and enjoyment (through engaging visuals, interactive elements, and rewarding experiences). Marketing communications should emphasize these benefits rather than focusing on technical simplicity or time efficiency. When customers perceive SST as both convenient and enjoyable, they are more likely to adopt it regardless of potential learning curves or time investments. F&B establishments should also recognize that many consumers (37.3% in our study) would not choose SST if given alternatives, suggesting that a hybrid service model offering both traditional and self-service options might optimize customer satisfaction across different segments. Training staff to assist customers with SST could further enhance adoption by addressing hesitations without diminishing the perceived benefits.

This study has several limitations that suggest directions for future research. First, our convenience sampling approach limits generalizability. Future studies should employ probability sampling methods across different Malaysian regions to verify these findings. Second, our cross-sectional design captures perceptions at a single point in time; longitudinal research could track how adoption factors evolve as consumers gain familiarity with SST. Third, examining demographic moderators—particularly age cohorts—could reveal important differences in adoption factors across generations. Given the rapid technological changes in the F&B industry, continued research on evolving consumer responses to new self-service innovations will remain important for both theory development and business strategy.

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