

# Investigating the usage of Self Ordering Kiosk towards Customer Behavior: A case on McDonalds

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## Abstract

The introduction of Self-Service Technology (SST) has influenced the acceptance of consumers toward the use of SST in the service sector, especially the restaurant industry. This study intended to analyze the factor that influencing consumer acceptance on using self-ordering kiosks in McDonald's by using The Unified Theory of Acceptance and Use of Technology (UTAUT). Besides, this study focused on to examine the independent variable of UTAUT (Performance Expectancy, Effort Expectancy, Social Influence, and Facilitating condition) and their relationship toward behavioral intention and use behavior. The data was gathered from 400 respondents that have been used the kiosk through questionnaire by using a convenience sampling method. The finding of the result reveal that Performance Expectancy, Social Influence and Facilitating Condition has significant influence toward consumer behavioral intention to use Self-Ordering Kiosks. However, contrary to other constructs, Effort Expectancy did not influence behavioral intention. In addition, finding revealed that consumer behavioral intention has significant influence toward the use behavior, indicating that the probability of the consumer to use the kiosk is high. On the other hand, this study has proven that behavioral intention has influence the use behavior as mediator for UTAUT. Overall finding revealed that facilitating conditions shows the highest influence on consumer behavioral intention on using self-ordering kiosks McDonald's.

## Keywords:

The unified theory of acceptance and use of technology; UTAUT; SST; self-ordering kiosks; consumer acceptance

## 1 Introduction

SSTs have been widely used in food service industry since this technology assumed can help improving service quality and built new experience that can gain satisfaction from the customer. Previous study regarding consumer behaviour indicate that, consumers are curious and tend to demand for a new experience and things especially in new innovation of technology which can enhance their attraction and loyalty toward the product and services (Lowe & Dwivedi, 2019).

One of the SST that has been adopted in food service industry nowadays was self-service kiosk or self-ordering kiosk. McDonald's Malaysia was expected to growth and installed the SOKs to all the McDonald's outlet in Malaysia (Razaka et al., 2016). Self-ordering kiosks (SOKs) have been installed at McDonald's outlet Malaysia in 2017. Basically, this kiosk let the customer to skip queuing at the counter and let their customer place the orders with minimal hassle.

However, SST have its own advantage and disadvantage that can affect customer acceptance toward this innovation of technology. Previous studies regarding SST acceptance shows that when customer trust the technology used was a good option, enjoyable and easy to use, they were likely accepting the technology (Weijters, Rangarajan, Falk Schillewaert & Niels, 2007).

In contrast, Dabholkar et al. (2003) stated that, not all the SSTs have been successful and the customer acceptance towards SST seems slow and difficult to adopt them (M. C. H. Wang, 2012). This can be supported when there have some feedback or bad review from Macdonald's customer regarding self-ordering kiosks that had been installed in Macdonald outlet. They have been complaining about what they encounter during the process of ordering until payment by using the kiosks such as having a problem with the menu selection, payment method and language that offered by the system (Leong, 2019). This indicated that the ease of use of self-ordering kiosks decreased and may impact the behavioral intention to use this technology. The study variable "Effort expectancy" (EE) can be defined with respect to ease: how an individual feel either he/she efficiently uses technology and how much strength of ease is there in technology usage. The complaining indicated that McDonald's customer is having difficulty when using this technology. The Effort Expectancy factor must convince the user of technology to feel at ease. Although the self-ordering kiosks are said to facilitate the food ordering process, however, there are still customers who prefer to queue at the counter.

All this problem that occur may impact acceptance of consumer toward SST adoption. However, there is no study yet regarding acceptance factor that focusing on self-ordering kiosk in McDonald's Malaysia. Therefore, it is important to have a study to examine the factor influencing consumer acceptance on using self-ordering kiosks in McDonald's Malaysia.

## **2 Literature Review**

### **2.1 Self-Service Technology (SST)**

SST was introduced to the customer to gain satisfaction and good productivity since this technology is convenient to use (Gounaris et al., 2010). Customers can use the service without human involvement when using SSTs (Meuter et al., 2000). Customer satisfaction can be increase and allow them to experience service from the different channels by using SSTs (Meuter et al., 2000). Moreover, other advantages can obtain from SSTs, such as "increase the speed of transactions, increase the opportunities for customization and less heterogeneous service encounters" (Weijters et al., 2007).

Previous research stated that SSTs have positively affected the customers' attitudes on using technology (Bakar, 2014). In contrast, Dabholkar et al. (2003) stated that not all SSTs have been successful. The customer seems to have difficulty adapting and accepting the SSTs (M. C. H. Wang, 2012).

### **2.2 Behavioral Intention**

Behavioral intention defined as "person's perceived likelihood or subjective probability that he or she will engage in a given behavior" (Ajzen, 1991). Behavioral intention plays as a central role for the technology model which is TAM and UTAUT. Previous research indicated that behavioral intention toward SSTs was influence by the attitude of SSTs (C. Wang et al., 2012). In contrast, studied by Strombeck and Wakefield (2008) indicate that situational factor significantly influence behavioral intention toward SSTs (Chen et al., 2018). Behavioral intention does not lead to actual action. Therefore, previous studied indicate that studies which focus only on behavioral intention cannot determine user acceptance toward SSTs (Chen et al., 2018).

### **2.3 Use Behavior**

Use behavior is defined as "The physical and mental acts involved in incorporating the information found into the person's existing information base" (Wilson, 2000). Previous research suggested a moderator factor that influences use behavior toward SSTs (Blut et al., 2016). Some empirical studies assumed that customer's use behavior of SSTs is influenced by individual factors (Parasuraman, 2000) and situational factors (Belk, 1975). The previous studies on IT indicated that use behavior is the main factor determining the effectiveness of technology (K. Zhu & Kraemer, 2005). Besides, when SSTs service quality increase, the customer is more likely to use the technology frequently to experience the service (Shahid Iqbal et al., 2018b). This is supported by previous research that satisfaction and service quality is a strong factor that influences use behavior in SSTs (Torres-Moraga et al., 2008).

### **2.4 Unified Theory of Acceptance and Use of Technology (UTAUT)**

Unified Theory of Acceptance and Use of Technology or UTAUT is a framework proposed by Venkatesh et al. (2003) to predict technology acceptance in an organization setting. UTAUT advance based from the integrating dominant construct from eight prior

prevailing models, which are “Theory of Reasoned Action (Fishbein & Ajzen, 1975), Technology Acceptance Model (Davis, 1989), Motivational Model (Davis et al. 1992), Theory of Planned Behavior (Ajzen, 1991), Combined TAM and TPB (Taylor & Todd, 1995), Model of PC Utilization (MPCU) (Thompson et al., 1991), Innovation Diffusion Theory (Moore & Benbasat, 2001), and Social Cognitive Theory (Compeau et al., 1999).”

There have four constructs of UTAUT, which are “performance expectancy (PE), effort expectancy (EE), social influence (SI), and facilitating conditions (FC)” that influence behavioral intention and use behavior. The relationship between the UTAUT construct and the behavioral intention was proposed to be moderate by “age, gender, experience, and voluntariness” (Venkatesh et al., 2003).

Besides, UTAUT allowed the researchers to have a better understanding of technology adoption. UTAUT has been tested broadly in previous research in different fields to understand the factor that affects the adoption of technology (Zolotov, Jesus, Olivier & Martins, 2019). From the previous research, it can be concluded that the UTAUT model was useful to predict user behavior toward adopting new technology (Anderson et al., 2006). Figure 1 below shows the proposed research framework.

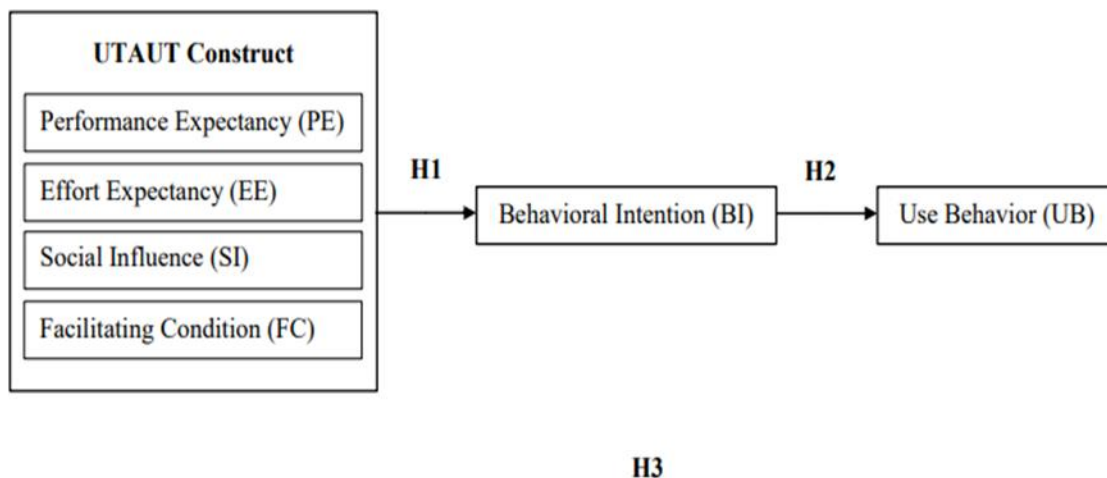


Figure 1: Proposed Research Framework

Source: UTAUT model (Venkatesh et al., 2003)

## 2.5 The influence of Performance Expectancy (PE) on behavioral intention toward SST

Performance expectancy (PE) is “the degree to which an individual believes that using a system will help him or her to attain gains in job performance” (Venkatesh et al., 2003). The PE concept was similar to construct perceived usefulness (PU) in the technology acceptance model. The concept view as individuals believed that using technology can improve her/he improve in task performance (Khayati & Zouaoui, 2013). PE concept has been attracting several researchers to study it in different human

behavior fields (Khayati & Zouaoui, 2013). PE was included in restaurant-related activities in the foodservice industry, where customers fully use self-ordering kiosks (Baba, N., Shahril, A. M., & Hanafiah, 2020).

Previous research shows that PE and behavioral intention are powerful predictors of technology acceptance (Abushanab & Pearson, 2007). The association between performance expectancy and behavior intention has been strengthened by the result obtained from other studies similar to UTAUT (Nejadrezaei et al., 2018). Therefore, it can be assumed that customer intention to use the self-ordering kiosks increase when they gain satisfaction and benefit by using the technology

## **2.6 The influence of Effort Expectancy (EE) on behavioral intention toward SST**

Effort Expectancy (EE) refers to “the degree of ease associated with customers’ use of technology” (Venkatesh et al., 2003). In general, EE is defined as respect to ease, which is how an individual feels either he/she easily uses technology and how much strength of ease is there in technology usage (Sair & Danish, 2018).

UTAUT model indicates that EE positively influences the behavioral intention to use the technology (Venkatesh et al., 2003). Many research supported that EE positively influences behavioral intention (Alhassany & Faisal, 2018). However, Zhou et al. (2010) and Yu (2012) have failed to endorse the relationship between EE and behavioral intention (Wu & Wu, 2019). The relationship between EE and behavioral intention has been debate regularly because of their effect on SST. (Chao, 2019). EE was classified from the construct perceived ease of use (PEOU) and complexity. When analyzing the previous study regarding PEOU and complexity (Davis, 1989; Davis et al., 1989; Thompson et al., 1991; Moore and Benbasat, 1991), the positive relationship between PEOU and behavioral intention is expected. Therefore, in this study, it is assumed that if the customers find the self-service kiosk easy to use, their intention is likely to increase.

## **2.7 The influence of Social Influence (SI) on behavioral intention toward SST**

Social influence (SI) refers to “the extent to which an individual perceives that others who are important to her/him, consider that she or he should use the system” (Venkatesh et al., 2003). “Others who are important” refers to family, friends, and relatives, who are believed to positively impact the intention and use behavior on the self-ordering kiosk (Baba, N., Shahril, A. M., & Hanafiah, 2020). Specifically, SI cab is an individual’s perception of using the technology from social pressure, such as a recommendation from friends, relatives, and superiors.

Previous studies on information systems indicate that SI has a positive relationship with customers’ intention to use the technology or system (Yousafzai et al., 2009). Therefore, it can be assumed that the customers will be influenced by friends, family, co-workers, and media to use the system since relationships are the main determinant in human behavior (Tarhini et al., 2016). SI has been investigated in more than one model, which are “Theory of Reasoned Action, Theory of Planned Behavior, and Decomposed Theory of Planned Behavior,” and the result indicated the importance of

this construct in predicting behavioral intention. Based on the previous research results, it can be assumed that SI will positively influence behavioral intention on self-ordering kiosks.

## **2.8 The influence of Facilitating Conditions (FC) on behavioral intention toward SST**

The Facilitating Condition (FC) is defined as “the degree to which an individual believes that an organizational and technical infrastructure exists to support the use of the system” (Venkatesh et al., 2003). In this study's context, facilitating conditions described as customers believe that technical infrastructure manages to support the use of self-service kiosk (SSK). FC also known as a significant predictor for the use behavior as purposed in UTAUT that have been discussed in the broad research area (Baba, N., Shahril, A. M., & Hanafiah, 2020). However, previous studies supported that facilitating conditions has a strong relationship toward behavioral intention on using SST (Herndon, 2019). A similar study in China also found out that facilitating condition was the positive determiner of the behavioral intention on using new technology (Mensah, K. I., 2019). In the context of this study, it can be assumed that FC is likely to influence the behavioral intention on using self-ordering kiosks.

## **3 Methodology**

This study was conducted in a descriptive quantitative study. The investigation in this research was causal since the researcher wants to study the effect between the variables. There will be six variables to determine causality in this study: four independent variables, one mediating variable, and one dependent variable. The populations of this research were the customers who use self-ordering kiosks in McDonald's with the total population of 6,345,000 customers (Yaacob, A. S., Phone Interview, December 12, 2019). Based on Krejcie and Morgan (1970), a minimum sample size of 384 is appropriate to cover up the total population of 6,345,000 peoples. According to Roscoe's (1975) rules of thumb, it has been stated that sample sizes that are above 30 and less than 500 appropriate to be used for most research. Therefore, the total number of the respondent to answer the questionnaire made was (s=384).

Convenience sampling has been used as a method to cover many surveys and cost effectively. Questionnaire collection was sent through an online survey and manual delivery to obtain data from the respondents accurately. The researcher was spreading the questionnaire through internet platforms and collecting it from customers at McDonald's outlet. The questionnaire was designed into seven section; “A= Performance Expectancy (PE), B= Effort Expectancy (EE), C= Social Influence (SI), D= Facilitating Conditions (FC), E= Behavioral intention, F= Use behavior and G= Demographic.” Section A, B, C, D, E and F was designed to answer the research question and measured by using 5 point Likert scale (1=strongly disagree, 2= disagree, 3=neutral, 4=agree, and 5=strongly agree) to determine the answer of respondent, meanwhile, in section G, both nominal and ordinal scales was used since it will cover general questions and demographic of the respondents.

A pilot test was conducted by the researcher that involve 30 respondents. The reliability of the questions will be analyzed using Cronbach's alpha. Each variable was evaluated for the reliability test separately. The result of reliability shows that performance expectancy ( $\alpha=0.80$ ), effort expectancy ( $\alpha=0.85$ ), social influence ( $\alpha=0.70$ ), facilitating condition ( $\alpha=0.82$ ), behavioral intention ( $\alpha=0.87$ ) and use behavior ( $\alpha=0.84$ ) was acceptable and good to be measures

## 4 Findings

### 4.1 Demographic Profile

A total of 400 questionnaires were obtained throughout the data collection period. After the data cleaning process, all 400 questionnaires were then preceding for the data analysis. Table 1 summarized the background of the respondent that participated in this research. Most of the respondents were female, with 70.5% ( $n=282$ ) of total respondents. The majority of the respondents were in 21 – 30 years old age category (63.2%,  $n=253$ ). For the occupation, the figure shows majority of the respondents are working in private sector (35.0%,  $n=140$ ) with a range income of RM11001-RM3000 (41.0%,  $n=164$ ). More than half of the respondent was from Malay (52.8%,  $n=211$ ), and for the state of respondent, the result shows respondent from Kedah has the highest percentage (22.0%,  $n=88$ ).

Table 1: Demographic Profile

	N	%
<b>GENDER</b>		
Male	118	29.5
Female	282	70.5
<b>AGE</b>		
20 years or less	74	18.5
21-30 years old	253	63.2
31-40 years old	63	15.8
41 years old and above	10	2.5
<b>OCCUPATION</b>		
Self- employed	37	9.3
Government	57	14.2
Private	140	35.0
Student	138	34.5
Not working	21	5.3
Other	7	1.8
<b>MONTHLY INCOME</b>		
Less than RM1000	160	40.0
RM1001- RM3000	164	41.0
RM3001 and above	76	19.0
<b>RACES</b>		
Malay	211	52.8
Indian	37	9.3
Chinese	139	34.8
Other	13	3.3

STATE		
Johor	26	6.5
Kedah	88	22.0
Kelantan	9	2.3
Kuala Lumpur	63	15.8
Melaka	13	3.3
Negeri Sembilan	10	2.5
Pahang	38	9.5
Penang	11	2.8
Perak	27	6.8
Perlis	7	1.8
Putrajaya	4	1.0
Selangor	72	18.0
Terengganu	25	6.3
Sabah	2	.5
Sarawak	5	1.3

## 4.2 Regression Analysis

### 4.2.1 Regression analysis for UTAUT and Behavioral Intention

The result in Table 2 shows that the p-value for performance expectancy (p-value=0.001) is less than 0.05, indicating that performance expectancy is a significant predictor of behavioral intention. The result also indicated the social influence as a significant predictor of behavioral intention with the p-value=0.05. The p-value for the facilitating condition recorded the same value as performance expectancy, which is 0.001. This indicates that facilitating condition also a significant predictor of behavioral intention. On the other hand, the p-value for effort expectancy is 0.666, which is more than 0.05. Thus effort expectancy is not a significant predictor of behavioral intention.

Table 2: Regression coefficients for UTAUT and Behavioral Intention

		<b>Coefficients<sup>a</sup></b>				
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	-.693	.177		-3.925	.000
	Performance Expectancy	.322	.049	.283	6.595	.000
	Effort Expectancy	-.028	.065	-.024	-.432	.666
	Social Influence	.148	.052	.128	2.834	.005
	Facilitating Condition	.699	.072	.516	9.734	.000

a. Dependent Variable: Behavioral Intention



#### 4.2.2 Regression analysis for Behavioral Intention (BI) and Use Behavior (UB)

The result obtained in Table 3 shows that the p-value for behavioral intention (p-value=0.001) is less than 0.05, indicating that the behavioral intention is a significant predictor of use behaviour.

Table 3: Regression coefficients for Behavioral Intention (BI) and Use Behavior (UB)

<b>Coefficients<sup>a</sup></b>						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.378	.177		2.127	.034
	Behavioral Intention	.825	.041	.710	20.116	.000

a. Dependent Variable: Use Behavioral

### 4.3 Mediation Analysis

#### 4.3.1 Mediation Effect of Behavioral Intention Towards the Relationship Between UTAUT and Use Behavior

According to the results obtained, it was shown that the direct effect was significant, and the indirect effect remained significant which is p-value less than 0.05. Thus, it was concluded that behavioral intention mediates the relationship between UTAUT and use behaviour.

## 5 Conclusion

This study utilized the UTAUT model to address consumer acceptance of using self-ordering kiosks at McDonalds'. The purpose of this study was to explore the factor that influences consumer acceptance of using self-ordering kiosks in McDonald's. The finding of this study was consistent with the previous study. Besides, this study also clearly revealed that among all the constructs, facilitating condition was the highest factor that influences consumer behavioral intention on using self-ordering kiosks in McDonald's. This can be assumed that consumers feel at ease and comfortable using the self-ordering kiosk and build their intention to use the kiosk again.

In conclusion, the information and result gathered can be used to understand consumer acceptance toward technology use. Besides, the result will help the industry to determine whether to increase the use of self-service technology among customers or not. Lastly, this study will also help the Restaurant's management as they can improve in their daily operation and marketing.

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