Assessing the Attributes of Self-service Menu Tablet Ordering Towards Customer Satisfaction

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Abstract

With the advancement of technology nowadays, it is believed that technology will enhance the internal operation of a restaurant and further deliver the best performance to the existing customers. The technology-based ordering system requires the customer to self-perform meal ordering processes by using the tablet menu provided by the restaurant on each dining table. There are three main attributes of self-service menu tablet ordering that can influence customer satisfaction, namely technology usability, menu information and menu design. These attributes may significantly influence customer satisfaction since restaurateurs may still struggling in familiarising themselves with the technology and also in designing an interface for an attractive and informative menu. Hence, this study aims to investigate the relationship between self-service menu tablet ordering attributes and customer satisfaction. A quantitative cross-sectional research design was opted for this study. The findings indicate that all self-service menu tablet ordering attributes significantly contribute to customer satisfaction. This study also reveals that technological usability emerges to be the main predictor for customer satisfaction related to self-service menu tablet ordering. Hence, future studies could be done to investigate the readiness of local restaurant in implementing self-service menu tablet ordering system in their business operations.

Keywords: Self-service Menu Tablet Ordering, Technology Usability, Menu Information, Menu Design, Customer Satisfaction

Introduction

According to the Malaysian Department of Statistics (2015), the food and beverage service makes up 25.1% of service sector. The economic census on food and beverage services revealed that there is an increase in gross output from 5.1% in 2010 to 12.2% in 2017 (Malaysian Department of Statistics, 2017). This is because the foodservice industry involves various types of establishments such as fine dining restaurants, casual dining restaurants, food trucks, airlines food service, lodging operations, institutional dining and even pop-up restaurants (DiPietro, 2010). In addition, factors related to the operations of business such as restaurant design, menu development, strategic management of foodservice operations,

and human resource play a significant role in a foodservice industry (DiPietro, 2010). In order to cope with the rapid growth of the foodservice industry, each restaurateur should have knowledge in understanding the needs and wants of the customers as these two have become more critical and intense than ever (Yong, Siang, Lok, & Kuan, 2013; Kreitner & Cassidy, 2012). As a result, restaurateurs have come up with various marketing strategies to attract customers in terms of menu presentation, themes or concepts for their business operations (Barrish, 2012).

A study conducted by Maze in 2017 however showed that there is a slow growth of foodservice establishment due to the rising of other competitors especially for bistros/bars and full-service restaurants as well as the closure of outlets because of failure to meet customer's expectations. Coincidentally, Euromonitor (2017) revealed that restaurateurs are facing challenges in regards to the government approach to highlight the implementation of a rationalisation program and currency depreciation that drives the foodservice management to confront high operational expenses. Nevertheless, restaurateurs should always aim at increasing sales by consistently introducing new products and revising marketing strategies in meeting customers' demands (Euromonitor, 2017).

In this new era, business operators are now aware of the technological development such as the trend of creating applications in smart phones or tablets just to assist customers in searching, reading and buying products online. This is due to customers' willingness to spend more time on smart phones for hours as compared to visiting the physical stores (Nyheim & Connolly, 2011). These changes in customers' behaviour have been obviously noticed by the foodservice establishments to be applied in their operations.

According to a report by Euromonitor (2017), technology has tremendously revolutionized the foodservice industry in Malaysia over the years. It was proven by Yieh, Chen and Wei (2012) where they claimed that customers nowadays demand businesses to keep pace with them in terms of technological use. Its application in the foodservice industry have been shown to be readily accepted by Malaysians (Zulkifly, Zahari, Hanafiah et al., 2016). In hotels and tourism industry, technology has been used to customize tourism products (Chevers & Spencer, 2017), as a platform for virtual tourism destination (Huang, Backman, Backman & Chang, 2016) that can enhance travel satisfaction (Huang, Goo, Nam & Yoo, 2017), to monitor the hotels performance (Melián-González & Bulchand-Gidumal, 2016; Mohammed, Rashid & Tahir, 2014) and also for training purposes (Issa & Muda, 2018; Zaitseva, Goncharova & Androsenko, 2016).

In Malaysia, the application of self-service menu tablet ordering or digital ordering through the use of devices such as iPad or Samsung Galaxy Tab in the foodservice industry is still lacking (Zulkifly, 2017; Siniah, 2011). Although the application of this technology will help to reduce restaurant's financial burden (Park & Shin, 2017) and to generate customer satisfaction through the ordering experiences (Dixon & Kimes, 2012), its high implementation cost leads to poor application of self-service menu tablet ordering in the foodservice industry. Furthermore, customer satisfaction in relation to the application of this technology relies on information and user interface quality where it is crucial for successful adoption in restaurants. For that reason, the system needs to follow the principles of menu psychology and menu engineering such as the use of colours, background, layout and pictures (Tian, 2015; Wang, Harris & Patterson, 2012).

Technology can advance the menu since it has the ability to surge the speediness of service, provide greater chance to alter meals, and provide customers with more specific data where it can lead and assist to customer satisfaction (Kimes, 2008). In addition, the inclusion of nutrition information such as the calorie count, the nutrition fact and the ingredients used in the menu can provide extra satisfaction to weight and health conscious consumers (Jeong & Jang, 2017; Brandau, 2011; Pulos & Leng, 2010; Tikkanen & Jaakkola, 2010). This information cannot be placed onto the current traditional menu card due to space limitation. Therefore, the application of technology such as meals ordering via tablet menu can help the restaurateurs to include extra information that can benefit the customers (Fajri & Salman, 2017; Hsu & Wu, 2013; Buchanan, 2011), and also to provide effective and efficient services (Chevers & Spencer, 2017; Chang, Wong, Sugumar & Maruthappa, 2015). Therefore, this study aims to investigate the relationship between the self-service menu tablets ordering attributes towards customer satisfaction, and also to identify the most influential attribute that contribute to customer satisfaction.

Literature Review
Technology in Foodservice Industry

Food industry in Malaysia has become more challenging from time to time and has been flooded with many kinds of food from around the world (Harrington, Chathoth, Ottenbacher & Altinay, 2014). This food tsunami phenomenon has made the restaurant operators struggle to sustain. Today, food service industry is perceived as a worldwide economic industry, with producers and consumers extending as far and widely as possible (Lee & Ha, 2012). The restaurant industry is generally competitive by nature and restaurant operators are constantly looking for better approaches to enhance sales and maintain customer relationships (Huber, Hancer & George, 2010; DiPietro, 2010). As a result, the restaurant industry has experienced tremendous growth as more persons are consuming meals outside of their home. Due to their busy schedule, with work definitely reducing the amount of time that people spend at home, dining out is obviously the easiest option to cope with this condition. Due to these trends, restaurateurs are seeking for marketing strategies to meet the demands of customers (Barrish, 2012). In this highly competitive market, restaurant businesses have been increasing the number of gross output from 5.1% in 2010 to 12.2% in 2017 (Malaysian Department of Statistics, 2017). From this number, it has indicated that Malaysia's economy contributor will be growing and expanding especially in the foodservice industry.

Looking at the rapid growth of the industry, restaurants have to practice aggressive marketing strategies to attract new customers and retain the old customers to compete in the industry (Kimes, 2008). One of the ways that restaurateurs have chosen is through the introduction of technology in the industry. Restaurant operators are now utilizing technology to improve service to customers, for example, the alteration of menus to incorporate pictures and nutritional information (Hsu & Wu, 2013; Buchanan, 2011; Huber et al., 2010). According to Marković, Raspor and Segaric (2010), the restaurant industry is a demanding sector in which customers expect to gain high quality of service and exciting dining experience. Thus, to retain existing customers, attract new business and gain market share, the restaurant industry should stay on top of technological development and implement new technologies (Kimes, 2008; Maze, 2017).

Huber et al. (2010) presented a classification scheme focusing on the management of decision-making: cost analysis, forecasting, administrative, service and advanced technologies to determine the current usage of various types of technology that are used in the restaurant industry. A study by Hsu and Wu (2013) has shown that the use of technology has now emerged throughout the foodservice industry and has widely changed the way restaurants manage their operations and are now reaping the benefits due to the flexibility to meet the expectations of demanding customers (Kasavana, 2011). A study by Dixon and Kimes (2012) found that customers value the technology in the restaurant industry which currently is the 'table virtual menus' where customers are attracted to the innovative ways in presenting the menu with additional information on nutritional value, origin of ingredients, to the point where customers can alter, place orders and even view the pictures or images of each menu presented.

In addition, the built-in wireless features enable the tablets to be viewed with multi-touch screen menu and offer customers to view the menu at their convenience and place the order when they are ready to do so (Hsu & Wu, 2013; Duffy, 2012). Moreover, tablet-based menu transmits the information (orders) directly from the dining table to the bar and kitchen and while waiting, customers have the opportunity to view the tablet menu and order extra food and drinks (Crowston, Rubleske & Howison, 2006). Customers will not only receive their orders faster but also have a tendency to view and order extra food and drinks while waiting for their food (Chevers & Spencer, 2017).

Self-service Technologies (SSTs)

The definition on SSTs referred to the technology that is provided by the organization specifically to enable customers to engage in self-service behavior replacing the role of frontline employees (Robertson, McDonald, Leckie & McQuilken, 2016; Hilton, Hughes, Little & Marandi, 2013). In simple words, SSTs are technology-based service delivery interfaces that allow customers to facilitate the ordering process without the help of an employee to encounter the ordering experience (Lee, Castellanos & Choi, 2012; Lin & Wang, 2006). SSTs have been widely adopted in service industries to link with customer's interactions and participations in the market to facilitate transactions or processes (Lin & Hsieh, 2012; Meuter, Ostrom, Roundtree & Bitner, 2000).

SSTs are also part of the market orientation that is related to Customer Relationship Management (CRM) processes. In line with that, organizations see it as one of the important roles in CRM in creating and generating sales which leads to customer satisfaction (Wang et al., 2012). Hence, it is not surprising to see these technologies to replace the old systems in interacting and communicating with customers in many foodservice operations. For example, airlines, banks, self-serve petrol pumps, Automatic Teller Machines (ATMs), vending ticket machines, online hotel banking and telephone banking offer a variety of integrated SSTs for convenience of customers (Lin & Hsieh, 2012). Despite all that, Hilton et al. (2013). Wang et al. (2012) found that it was the Internet and advertising commercial that really emerged the trend towards self-service technologies.

The adoption of SSTs is strongly believed to help improving customer satisfaction through process experience, achieve new customer segments and also help organizations in

reducing the labor costs (Bitner, 2001). SSTs allow organizations to manage interaction with customers and at the same time provide customers the flexibility in accessing services through new and convenient systems (Bitner & Brown, 2006).

Meanwhile, in foodservice industry SSTs are anticipated in digital menu presentations replacing the traditional menu cards (Dixon & Kimes, 2012; Rousseau, 2011). Tabletop tablet devices such as iPad provides multidimensional and multilingual menu presentation, visualize menu listings and nutritional information in the menu listing (Kamarudin, Johari, Wahab & Ayob, 2009).

Generally, it can be concluded that SSTs provide a new convenient service delivery options to customers, however, there are research findings where customers often express increasing frustration with the technology failure in terms of the need to navigate a host of SSTs-based activities which might be one of the reasons for their dissatisfaction (Meuter et al., 2000). Lin and Hsieh (2006) even argued that some customers might avoid using SSTs when they are not willing to embrace the use of new technologies in foodservice/restaurant industry in the first place.

Attributes of Self-Service Menu Tablet Ordering

The future of the restaurant industry especially menu presentation will be in digital visualization form while the traditional menu is expected to be left behind (Dixon & Kimes, 2012; Rousseau, 2011). The traditional ordering process that requires the waiters to write down the orders, transferring the orders to the kitchen, serving the dishes and finally preparing the bills is now being replaced by a more convenient and effective self-service menu tablet ordering system (Yieh et al., 2012). In addition, the traditional way is prone to human errors that leads to unsatisfactory experience. The fact that people nowadays are crazy about the latest technologies which had affected their daily lives has led to upgrading the conventional system and automatically replace the traditional paper-based menu ordering process (Yieh et al., 2012).

Technology Usability

Technology is an essential strategic asset for the hospitality industry to improve services and products to retain competitiveness (Nyheim & Connolly, 2011; Wang & Qualls, 2007). A tablet device has become a major platform to present menu items, display description, price and pictures to attract and communicate with customers and at the same time improving the ordering experience (Rousseau, 2011). Bedi and Banati (2006) highlighted that technology usability can also be referred as the ease of use in which a product can be used and learned by a user while providing user satisfaction. In line with that, previous studies indicated that poor usability can lead to dissatisfaction and inconvenience among users, as it may reduce customers' intention of using the technology again (Hsu & Wu, 2013; Lee et al., 2012; Law & Ngai, 2005).

Restaurateurs have been motivated to utilize technology to improve menu presentation, as they believe it can possibly increase the speed of service, provide more prominent opportunity to customize meals, provide customers with more detailed information, and thus leading to customer satisfaction (Beldona, Buchanan & Miller, 2014).

The self-service menu tablet ordering is welcomed by the customers and is considered as the most significant technology innovation of a restaurant (Hsu & Wu, 2013). It can be seen that, restaurants that use technology such as online reservation or ordering method can attract more customers and achieve higher revenue (Sarkar et al., 2014). Hence, it is vital to consider few factors when designing a technology for human interaction that can give significant impact on time, usability, productivity and convenience (Buchanan, 2011; Suarez, 2015).

With the aid of technology usability, customers have the opportunity to browse through their menu at their own pace and make their ordering process more convenient without the help of the waiting staff (Chang et al., 2015). Furthermore, other factors such as speed effectiveness (Buchanan, 2011), efficiency of use, easy to find information, easy to track orders, order cancellation and making comparisons are the major advantages that customers look forward to (Tandon, Kiran & Sah, 2017). Poor usability can lead to dissatisfaction that may reduce customers' intention to reuse the technology provided (Hsu & Wu, 2013; Law & Ngai, 2005) while good and excellent technology usability can lead to high satisfaction level and make them feel safe and secure to use the technology again (Wang et al., 2012; Buchanan, 2011).

Menu Information

The impact of innovation towards the restaurant industry is on how items are created and introduced on the menu (Lee et al., 2012; Buchanan, 2011; Lin & Hsieh, 2006). Besides that, restaurant menus present items in a way that is engaging to customers to increase sales. According to Tandon et al. (2017), an attractive display of information with simple, easily readable fonts and familiar symbols can lead to purchasing behaviour. This is supported by a study conducted by Fajri and Salman (2017) where helpful and easy to read menu information in a tablet menu is desirable because the customers can view and check for the food information anytime during the ordering. According to Brandau (2011), the information provided on the menu must be well interpreted to the extend where the customers can visualize the meals they ordered. The study likewise recommended that the information quality can majorly affect the customer satisfaction, where the contents of the menu as well as the way the menu is presented are the key for customer satisfaction (Kasavana, 2011).

Mills and Thomas (2008) highlighted that information related to the description of the menu, nutrition facts and guide can attract the customers. Therefore, it is important for the restaurateurs to disclose information on the nutritional content of every menu item that might be averse to the customer's health (Kasavan, 2011; McCall & Lynn, 2008; Mills & Thomas, 2008). Consumers nowadays are more weight and health conscious hence restaurants that provide nutritional information on the menu are more demanded than those without nutritional information (Cranage, Conklin & Lambert, 2014). Studies have concluded that providing nutritional information enables customers to achieve high satisfaction levels related to the quality of food, increase customer purchase intentions, and satisfaction during ordering experience (Oliveira, Fernandes, Proenca et al, 2018; Buchanan, 2011).

Local governments are now considering on marking the menu with nutritional information and calorie content as prerequisites for chain restaurants as included in the 2010 Health Care Reform (Pulos & Leng, 2010). Being aware with the predominant electronic

tablet, the present study has adopted iPad as a menu-displaying device to exchange the traditional-paper-based menu and undertake the impact of menu in the application of electronic-tablet-based menu towards customer satisfaction.

Menu Design

A menu has been considered as a marketing tools and printed advertisement since it explains the message to customers and influences sales directly (Wang, 2012; Buchanan, 2011; Mill & Thomas, 2008). A menu with an electronic display has empowered restaurateurs to include special promotions and cross-selling techniques to what had been a highly static sales methods provided by the traditional order taking process (Sarkar et al., 2014; Kasavana, 2011).

In order for the menu to execute its roles, restaurateurs need to focus on the appearance of the menu (McCall & Lynn, 2008). A study by Wang et al. (2012) found that, customers are influenced by the visual items of a menu such as layout, design and art work. Therefore, as a vital information, an appropriate planned menu should strengthen its picture, set the customer's desire in terms of food and service quality as well as give a decent return (Kwong, 2005). It is vital for restaurateurs to make their menus alluring with respect to an assortment of factors that influence customers' reaction including colour, layout, format, type and graphic designs (Panitz, 2000). Poor design of menu can create negative impression because a menu is seen as a major source of advertisement in a restaurant to attract customers (Hsu & Wu, 2013; Wang et al., 2012; Buchanan, 2011; Panitz, 2000). A proper design menu will reinforce its image, set the customer's expectation of the meal in terms of food and service quality and provide a good return (Kwong, 2005).

In addition, menu layout is seen as the key indicator of menu design as it shows the coordination and placement of the menu items to attract customers' attention throughout the ordering experience (Buchanan, 2011). The layout should be designed so the menu can present a clearer and easily to understand information of menu items in facilitating the sale (Pulos & Leng, 2010; McVety, Ware & Ware, 2009). A study by Kwon and Mattila (2017) highlighted that menu designs usually display the menu in multiple pages while single-page menus are usually found in today's digital world. The author further highlighted that it should be designed to be clear and readable in order to enhance the sale of high profit menu items while minimising the difficulties that customers may encounter while utilizing the menu (Buchanan, 2011; McVety et al., 2009).

In terms of creativity, the use of colours plays an important role to impact the mood of the customers (Reynolds et al., 2005; Buchanan, 2011). According to Singh, Kim and Huh (2006), the colours should be chosen wisely as it may impact people in many different ways in which it can affect their emotions. For example, colours such as yellow, orange and blue are considered happy colours while brown, black and red are perceived as sad colours. The authors also added that some restaurants may use blue for a relaxed mood while yellow get customers' attention in which will lead to an increase in time spent together, thus increasing the sales.

Apart from that, the use of illustrations and graphics also helps to design the interior of a restaurant and provides the concept to customers as well as gives an idea about the theme of the organization (Rousseau, 2011; Buchanan, 2011; Kasavana, 2011). In addition, an attribute-based menu will have chances to generate better perceptions of variety because it will enable customers to process and decide on the menu items individually (Kwon & Mattila, 2017). However, the restaurateurs should not stuff their menus with graphics and illustrations as it can distract customers' attention from the food selection.

Customer Satisfaction

Customer satisfaction plays a major role in competitive environments of technology because of its impact on retaining old customers and attracting new customers (Tandon et al., 2017). Satisfaction is a major factor to determine a customer's decision on whether to still continue or stop using the product or services (Chung & Shin, 2010). A study by Chen, Ling, Ying and Meng (2012) found that customer satisfaction is one of the essential keys to increase customer retention and long-term growth for an online business.

Sharma and Baoku (2013) identified that the influence of information, price display, fast service, convenience, technology update, and promotional items in a restaurant business could affect customer satisfaction. Thus, with a great investment in time and financial to implement the self-service technology (Robertson et al., 2016), it is important for the restaurateurs to understand customers' behaviour to continue using them. The key factor of customers' behaviour to continue using the self-service technology has shown the importance of satisfaction to the future use of the technology as it deals with customer ordering experience (Chen et al., 2012; Wang et al., 2012).

Sharma and Baoku (2013) highlighted that a good relationship between technologies and its users does not only improve customer satisfaction, but also helps in encouraging effective communications between them. The study also resulted that failure in dealing with the relationship will lead to dissatisfaction of customers, and lead to disbelief towards the technology. The concept of consumer satisfaction is one of the most vital issues in advertising and practice since it is the most significant in terms of increasing sales, positive word-of-mouth, and customer loyalty (Marković et al., 2010). Customer satisfaction plays an important role in competitive environments of technology-based business because of its effect in sustaining customer loyalty, attracting new customers (Tandon et al., 2017; Chen et al., 2012; Chung & Shin, 2010) and increases repetitive of purchases (Gupta & Kim, 2010).

Zhang, Tan, Xu and Tan (2012) revealed that computer proficiency, perceived value and perceived security as the major factors influencing customer satisfaction with technology. Website design, reliability, product variety and delivery performance are examples of factors that can influence customer satisfaction (Hsu & Wu, 2013). A study by Marinkovic and Kalinic (2017) discovered that satisfaction has been a strong influence on customer loyalty in the context of experiencing the use of technology. Meanwhile, providing excellent services, for example, listening to customers' needs and complaints, will lead to customer satisfaction and it is vital for marketers to observe this issue since it has significant and direct effects on the performance of a restaurant (Parsa, Gregory, Self & Dutta, 2012; Harrington, Ottenbacher, Staggs & Powell, 2011).

The rapid growth of technology innovation has given restaurateurs boundless opportunities to enhance their menus and the ordering experience. The recent innovation of technology which is steadily increasing is believed to me a more interactive platform to communicate with the customers (CBS News Morning Show, 2013). Thus, restaurateurs have been propelled to utilize innovation to enhance the menu, as they believe it can possibly build the speed of service, provide greater opportunity to customize meals, and provide customers with more detailed data/information, hence increasing customer satisfaction (Kimes, 2008).

It is important to gain a clear explanation on the implementation of self-service menu tablet ordering by examining the attributes of the menu tablet that includes technology usability, menu information, and menu design towards customer satisfaction. The knowledge and information from this study will lead to the opportunity to develop and to further improve the use of technology in foodservice operations that will benefit the customers, restaurateurs and even the foodservice industry. Based on the previous studies discussions, the research framework proposed by the present study is presented in Figure 1 and research hypotheses are introduced accordingly:
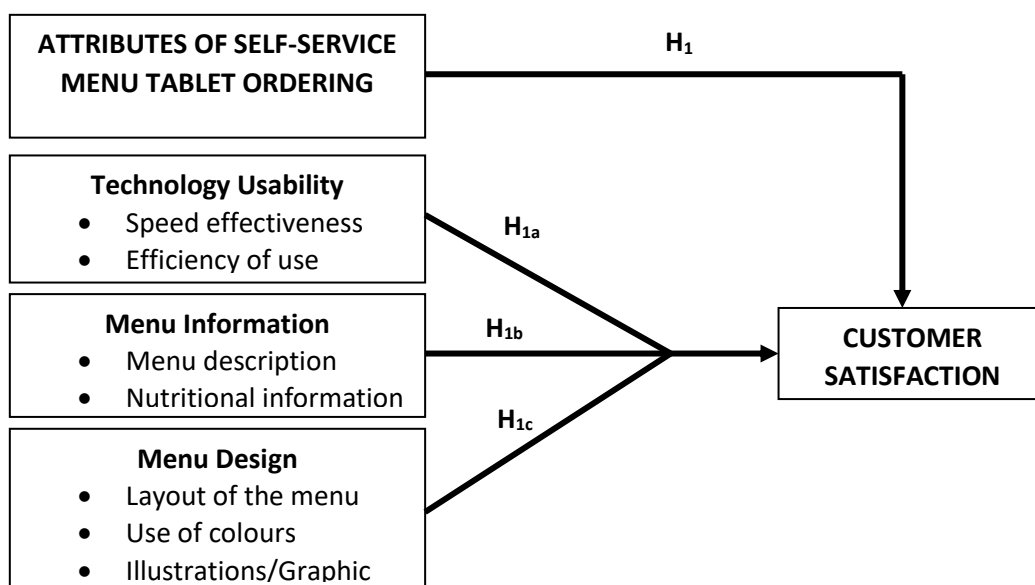

Figure 1: Research Framework Proposed by this Study

H_1: Self-service menu tablet ordering attributes significantly influence customer satisfaction.

H_{1a}: Technology usability significantly influences customer satisfaction.

H_{1b}: Menu information significantly influences customer satisfaction.

H_{1c}: Menu design significantly influences customer satisfaction.

Methodology

The subjects of this research were customers who had experience dining in at any casual restaurants that use a self-service menu tablet ordering in Klang Valley, Malaysia. Only customers who had experience using a self-service menu tablet ordering system would be asked to complete the questionnaire. The questionnaire was adapted from various sources

namely Bedi and Banati (2006), Hsu and Wu (2011), Chang et al., 2015, Beldona et al. (2014), Buchanan (2011), Mills and Thomas (2008), McCall and Lynn (2008), Pulos and Leng (2010), Harding (2014), Brandau (2011), Kwong (2005), Paniz (2000), Singh et al., (2006), Zhang et al. (2012), Harrington et al. (2011), Gupta and Kim (2010), Marinkovic and Kalinic (2017) and Parsa et al. (2012). The questionnaire used was bilingual since majority of the Malaysians can speak both Malay language and English. The questionnaire was divided into three sections: Section A (demographic profiles), Section B (customer's preference based on three attributes namely technology usability, menu information and menu design) and Section C (customer's satisfaction towards the self-service menu tablet ordering system). A 5-point Likert scale was used in Section B and C for the respondents to indicate their level agreement with the statement given: 1 = Strongly Disagree, 2 = Disagree, 3 = Neither Agree nor Disagree, 4 = Agree, 5 = Strongly Agree. Prior to the actual data collection, the reliability of the questionnaire was tested by distributing the questionnaire to 50 respondents who had experience using the self-service menu tablet ordering system in Seremban, Negeri Sembilan, a neighbouring state of Klang Valley. The reliability test resulted with an overall Cronbach's alpha value of 0.867 which is considered very good (Pallant, 2011).

Data Collection Procedures

A quantitative method was utilized in this study. Currently, there are approximately 50 Japanese restaurant outlets that use the self-service menu tablet ordering system in Klang Valley, Malaysia. Based on personal communications with the employees at the Japanese restaurants, there were approximately 100 customers per day who dine in at the restaurant on a normal day and slightly increased during weekends. Considering 50 outlets with 100 customers per day, the total customers per month would be 150 000 customers. With a target that the data would be collected within one-month time frame, then the sample size for this study would be 384 customers (Krejcie & Morgan, 1970). In this study, 20 Japanese restaurant outlets were conveniently identified and at each outlet, 20 questionnaires were distributed to the respondents who fulfilled the criteria resulting in 400 questionnaires were distributed to the respondents.

Statistical Analyses

The data were analysed using SPSS (version 22.0) software for descriptive statistics, Pearson correlation coefficient to explore the relationships between technology usability, menu information and menu design and customer satisfaction, and multiple linear regression to determine the most influential factor that contributes to customer satisfaction.

Results
Demographic Profiles

Of 400 distributed questionnaire, only 394 questionnaires (98.5%) were usable and subjected to further statistical analyses. Another six questionnaires (1.5%) were discarded due to more than 10% missing data. As summarized in Table 1, the majority of the respondents were females (64.2%), married (n = 54.1%) and were in the age category between 21 and 30 years old (57.1%). Almost half of the respondents (49.5%) had completed their first tertiary education and more than a quarter of the respondents had completed their postgraduate education (27.9%). Most of them visited the restaurant at least once a week (33%).

Table 1

Characteristics of the respondents (n = 394)

	N	%
Gender		
Male	141	35.8
Female	253	64.2
Age		
Below 20	29	7.4
21 – 30	225	57.1
31 – 40	87	22.1
41 and above	53	13.5
Marital status		
Single	181	45.9
Married	213	54.1
Education Level		
Secondary school	57	14.5
Professional certificate	28	7.1
Undergraduate	195	49.5
Postgraduate	110	27.9
Others	4	1.0
Type of Profession		
Private	162	41.1
Government	76	19.3
Self-employed	98	24.9
Student	52	12.9
Others	7	1.8
Frequency of Visit		
Once a month	106	26.9
Twice a month	90	22.8
Once a week	130	33.0
Everyday	63	16.0
Others	5	1.3

Descriptive Statistics

As shown in Table 2, the overall mean (M) for technological usability was 4.038 with a standard deviation (SD) of 0.56. "I save time by ordering food from this system" (M = 4.27 ± 0.75) obtained the highest mean score followed by "the self-service menu tablet ordering system that is faster than the traditional ordering system" (M= 4.15 ± 0.77) and "the self-service menu tablet ordering system provides effective services" (M = 4.08 ± 0.70). Item "The self-service menu tablet ordering system is user friendly" obtained the least mean (M = 3.93 ± 0.76). The findings indicate that the self-service menu tablet ordering system helps the customers to save much time compared to the traditional ordering system hence making the services more effective.

Table 2
Mean and standard deviation value for technological usability items

Items	N	Mean	SD
The self-service menu tablet ordering system is user friendly.	394	3.934	0.755
The self-service menu tablet ordering system is easy to use.	394	3.914	0.809
The self-service menu tablet ordering system is easy to read	394	4.048	0.728
The self-service menu tablet ordering system are faster than the traditional ordering system.	394	4.147	0.774
The self-service menu tablet ordering system provides effective services.	394	4.079	0.700
The transition to the next interface or page is smooth.	394	3.954	0.834
My interaction with the self-service menu tablet ordering system is understandable.	394	3.962	0.759
I save time by ordering food from this system	394	4.267	0.750
Overall Mean	**394**	**4.038**	**0.560**

Table 3 shows that the overall mean score for Menu Information was 3.605 (SD 0.67) where majority of the respondents agreed that "Language in the menu tablet ordering system is easy to understand" (M = 3.96 ± 0.764). They also agreed that "the menu written in the menu tablet was well explained" (M = 3.86 ± 0.85) and provides the information that fits their needs (M = 3.77 ± 0.74). These findings indicate that the self-service menu tablet ordering does not only smoothen up the service but also provides description and information as expected by the customers hence helping them in choosing their meal and satisfy their wants and needs. Unfortunately, the self-service menu tablet ordering was shown not to provide information related to nutrient content (M = 2.73 ± 1.205). This finding presents that customers are aware of the nutrition contents in the tablet and they might have higher expectation on this matter since this item could help customer in choosing the best meal among the menu selection in terms of nutritional quality of food/food with nutritional quality.

Table 3
Mean and standard deviation value for menu information items

Items	N	Mean	SD
The menu written in the menu tablet are well explained	394	3.858	0.853
Language in the menu tablet ordering system is easy to understand.	394	3.965	0.764
The self-service menu tablet ordering system provides information that exactly fits my needs.	394	3.774	0.736

The self-service menu tablet ordering system provides accurate information that I need.	394	3.713	0.833
The self-service menu tablet ordering system provides menu description in each menu.	394	3.594	0.909
The self-service menu tablet ordering system provides nutrition contents.	394	2.726	1.205
Overall Mean	**394**	**3.605**	**0.671**

As shown in Table 4, the overall mean score for Menu Design was 4.0730. Most of the respondents agreed that the picture of foods displayed in the menu tablet is pleasing (M = 4.254 ± 0.674), followed by the attractive visual appearance of the self-service menu tablet ordering system (M = 4.124 ± 0.733). Visual appearance in this question was basically referring to the image resolution and colours that appeared on the screen. However, "the design of the menu influences me during the ordering process" was scored the lowest (M = 3.975 ± 0.77).

Table 4
Mean and standard deviation value for menu design items

Items	N	Mean	SD
The design of the menu influences me during the ordering process.	394	3.975	0.771
The design of menu helps me in deciding the menu.	394	3.992	0.790
The visual appearance of self-service menu tablet ordering system is attractive.	394	4.124	0.733
The placement of every menu items attracts my attention.	394	3.980	0.832
The layout of the menu is well organized.	394	4.031	0.761
The use of colours is affecting my decision in choosing the menu	394	4.114	0.751
The picture in the menu helps me to visualize the actual menu	394	4.254	0.674
The picture of foods is arranged nicely on the interfaces of the tablet.	394	4.114	0.720
Overall Mean	**394**	**4.073**	**0.568**

Based on Table 5, the overall mean score for Customer Satisfaction was 4.021 (SD 0.55). The item "Overall, I am satisfied with the technology provided by the menu tablet ordering system" obtained the highest mean score (M = 4.165 ± 0.685) followed by their satisfaction on the features of the menu tablet ordering system (M = 4.084 ± 0.696). Unfortunately, the item "the self-service menu tablet ordering system always meet my expectation" had the lowest satisfaction score (M = 3.85 ± 0.71. From the above findings, it

can be assumed that the self-service menu tablet ordering system was developed in an efficient manner that helps to enhance the overall ordering experiences thus supporting the findings from the customer satisfaction aspect. The above results sum up that majority of the respondents had a good experience and are satisfied with the self-service menu tablet ordering system.

Table 5
Mean and standard deviation value for customer satisfaction items

Items	N	Mean	SD
I am satisfied with the performances provided by the menu tablet ordering system.	394	4.005	0.601
I am satisfied with the ordering experiences provided by the menu tablet ordering system.	394	4.025	0.625
The menu tablet ordering system always meet my expectation.	394	3.850	0.714
The service provided by the tablet-based menu ordering system was efficient.	394	3.995	0.688
The tablet-based menu ordering system did an excellent job for me.	394	3.970	0.754
I don't have any problem to use this system again.	394	4.071	0.758
I am satisfied with the features of the menu tablet ordering system.	394	4.084	0.696
Overall, I am satisfied with the technology provided by the menu tablet ordering system.	394	4.165	0.685
Overall Mean	**394**	**4.021**	**0.546**

The Relationship between Technology Usability, Menu Information and Menu Design towards Customer Satisfaction.

Table 6 summarizes the Pearson correlation and multiple linear regression analyses. The findings showed that all the self-service menu tablet ordering system attributes were positively correlated with customer satisfaction. Technology usability and menu design were largely and significantly correlated with customer satisfaction with the correlation value of 0.625 ($p < 0.05$) and 0.546 ($p < 0.05$), respectively. Meanwhile menu information was moderately and significantly correlated with customer satisfaction (r = 0.464, $p < 0.05$). Hence, the findings indicate that all hypotheses were failed to be rejected. The multiple linear regression analysis showed that, at 48.2% of the variance, technology usability (β = 0.432, $p < 0.05$) was shown to be the main predictor that influences customer satisfaction.

Table 6
Summary of correlation and multiple linear regression analyses

Variables	CS	TU	MI	MD	B	β
Customer Satisfaction (CS)	1.00					
Technology Usability (TU)	0.625**	1.00			0.421*	0.432**
Menu Information (MI)	0.464**	0.499**	1.00		0.123*	0.113*
Menu Design (MD)	0.546**	0.467**	0.461**	1.00	0.281*	0.292**
Means	4.038	3.605	4.073	4.021		
Standard Deviation	0.560	0.671	0.568	0.546		
					$R^2 = 0.482$	
					Adjusted $R^2 = 0.478$	
					R = 0.694**	

Discussion

From the overall results of the data analysis, it demonstrates that there are significant relationships between technology usability (r=0.625, p=0.00), menu information (r=0.464, p=0.011), and menu design (r=0.546, p=0.00) towards customer satisfaction. The finding of this study was supported by studies conducted by Tandon et al. (2017), Wei, Torres and Hua (2017), Wang et al., (2012) and Buchanan (2011). All of the studies proved that customers were more satisfied with the ordering experience from the use of the self-service menu tablet ordering than using traditional paper based menus. This is because users had a more enjoyable experience while exploring the menu (Wei et al., 2017) hence resulting in users experienced greater usability of the self-service menu tablet ordering (Chang et al., 2015).

A study by Brandau (2011) also agreed that the information quality can affect the customer's satisfaction, which explains that the contents of the menu is the key for customer satisfaction as well as the way the menu is presented. In addition, customers who have utilized the self-service menu tablet ordering were happy that they had a chance to view the menu before ordering especially the nutritional information (Buchanan, 2011; McCall & Lynn, 2008; Mills & Thomas, 2008). Meanwhile, visual appeal on the menu design serves as the major influencer of customers' decision on which menu items to order (Kwon & Mattila, 2017; Hsu & Wu, 2013; McVety et al., 2009). This is supported by the existing literature, which highlighted that the visual appeal helps to influence customers' decisions and lead to satisfaction (Pulos & Leng, 2010).

This study showed that technology usability is the main predictor that influence customer satisfaction value ($\beta = 0.432$). It was also found in the study by previous researchers that self-service menu tablet ordering system had a significant impact on the usability of the menu (Hsu & Wu, 2013; Buchanan, 2011; Kasavana, 2011). Meanwhile, Menu Design was the least influential predictor towards customer satisfaction ($\beta = 0.292$, $p < 0.05$). According to Wang (2012), immature menu design and lacks of guidelines affects the attitude of customers towards the restaurants (Wang, 2012).

Conclusion

The purpose of this research is to investigate the relationship of self-service menu tablet ordering attributes and customer satisfaction. Based on the findings, it can be concluded that all attributes have the capability in influencing customer satisfaction. The evidence clearly indicates that restaurateurs who implement self-service menu tablet ordering system have overwhelmingly dominated customer satisfaction. In addition, the result of this study also clearly reveals that among all constructs, technology usability is the highest factor in influencing customer satisfaction. Previous studies have also found a positive relationship between technology usability and customer satisfaction. Firms that utilize high technology device change rapidly because they are able to introduce new processes, products and ordering services to satisfy customers' needs. In line with this statement, by improving ordering service through the use of technology, it can affect customer satisfaction as well as ensure the survival and growth of an organization.

For recommendation, in order to generalize the results to a wider population, it would be meaningful for the future researchers to expand the sample size that would be sufficiently represent the findings from all over the country. In addition, since this study only focused on selected restaurants such as Sakae Sushi and Sushi King Restaurants, future researchers could investigate if self-service technology is suitable for all types of restaurant business and class. An additional work should be done by implementing qualitative research methods to stress on issues that are not highlighted here. The study might include investigating the role of the employees as the effect of implementing this system in the restaurant or clarifying the relations between employees' behaviour and emotions towards the system. Besides that, future study could also emphasize on the readiness of local restaurant to implement this self-service menu tablet ordering in their business operations.

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