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Fast-Food Restaurant Consumer Preferences in Using Self-Service Kiosks: An Empirical Assessment of the 4As Marketing Mix

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ABSTRACT

This research note investigates the 4As marketing mix attributes (affordability, accessibility, awareness and acceptability) influence on fast-food restaurant consumer preferences in using the self-service kiosk. Self-administered questionnaires were distributed among fast-food restaurants that offer self-service kiosk facilities. The Partial-least Square-Structural Equation Modelling (PLS-SEM) was used to test the study hypotheses. This study confirms that all the fast-food self-service kiosk constructs (acceptability, accessibility, affordability and awareness) positively and significantly influence customer preferences in patronizing fast-food restaurants. The results indicates that the acceptability, accessibility, affordability, and awareness constructs can explain 56.5% of customer preference variance. This study provides theoretical and practical implications, limitations, and directions for future research within the fast-food restaurant realm.

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Fast-food restaurant; consumer preferences; self-service kiosk; 4As marketing mix

Introduction

The fast-food industry is one of the economic sectors undergoing rapid growth and has been mushrooming in recent years. According to (2020), the global fast-food industry generates beyond USD570 billion in revenues. The demand for fast-food keeps increasing yearly in line with the changing consumer lifestyle and preferences globally (Abu Bakar et al., 2017; Islam & Ullah, 2010). The Statista Research Department (2018) reported that Malaysians consumed fast-food at least once per week – an average of 49.52% of fast-food consumption weekly. Correspondingly, Malaysia's total number of fast-food restaurants has been expanding tremendously for the past ten years (Mat et al., 2016; Shaed et al., 2017; Shaharudin et al., 2011). As a result, the fast-food industry generates MYR8.6 million in sales value in Malaysia, highlighting the food and beverage industry as one of Malaysia's most prominent economic sectors. However, some customers were hesitant to use self-service kiosks due to a lack of

familiarity with the technology or a preference for conventional human interaction. In order to overcome this, fast food chains in Malaysia have to spend more on staff training and face-to-face support for customers who are not comfortable using the kiosks (Ahmad & Scott, 2019; Chong, 2022), which in return de-motivate the industry players to invest in technology.

Because of their demanding schedules or lifestyles, fast food has gradually become everybody's preference. In sustaining the fast-food industry within the competitive realm, fast-food providers tend to be distinctive and creative to attract and serve customers. As fast-food customers share similar purchase behavior traits (quality, variety and speed of services) (Janssen et al., 2018), fast-food restaurants must learn to fulfil their expectations and wants. Hence, fast-food operators must focus on offering superior service quality, technology adoption and product delivery (Samah et al., 2015). Recently, the foodservice industry has evolved into an ongoing technology adoption process (El-Said & Tall, 2019; Kaushik et al., 2015; Moon et al., 2022). Besides utilizing third-party online delivery services, convenience payment techniques were adopted using a single payment channel via a mobile app and self-service kiosk (Na et al., 2021; Park & Lee, 2020; Yang et al., 2019). As a result, it became attractive for customers looking for hassle-free ordering and payment methods.

The self-service kiosk allows the customers to personalize their services, i.e. personal service, self-service or a combination of both. These services could be conducted based on their preferred level of aid, maximum or minimal help from employees or service providers (Na et al., 2021; Park & Lee, 2020; Wei et al., 2016). Nonetheless, while designing the marketing approach for new products and services, service providers need to understand how consumers react to innovative offerings (Kement et al., 2021). Hence, they need to understand what matters most to consumers in using such facilities compared to brick-and-mortar counter services. Prahalad (2012) and (2017) argue that as the conventional 4Ps marketing mix is insufficient to explain the emerging market demand, business operators should focus on the 4As (awareness, accessibility, affordability and availability) marketing mix. However, based on the literature review, limited studies empirically explore how the self-service kiosk facilities' offering affects customer 4A's preferences, especially in the fast-food restaurant realm (Dadzie et al., 2017; Mathur et al., 2020; Rai & Rawal, 2019). In addition, apart from the prevailing technology adoption literature, studies of the 4A's marketing mix applied in technology adoption behavior and how they could be improved are lacking (Mathur et al., 2020; Venugopal, 2021)

Literature review

There has been a trend in the restaurant industry toward adopting new technologies to improve efficiency, streamline operations, and enhance

customer experience (Baba et al., 2023; Cavusoglu, 2019; Jeon et al., 2020). To amplify the impact of technology investments, companies must actively find ways to use technology to transform products and services, increase technology adoption, accelerate the impact, and reduce the complexity of technology architectures (Mercan et al., 2021; Ozdemir et al., 2023). However, even with technology products that were super strong on features available, they were not widely used. There are several reasons why customers might avoid using technology in a restaurant. First, customers may simply prefer a more traditional dining experience, and some may be uncomfortable with technology or not know how to use it (El-Said & Tall, 2019; Moon et al., 2022). On the other hand, some may feel technology is a distraction from the social aspect of dining out (Na et al., 2021; Park & Lee, 2020), while others argue that customers may be concerned about the security of their personal information when using technology in a restaurant (Yang et al., 2019).

This study reviewed past literature on applying the 4Ps and 4As in technology adoption and restaurant settings. The 4Ps marketing mix, introduced in the 1960s, is the most famous business management concept in modern marketing. Despite its popularity and long lifespan, the 4Ps model has been criticized as it concerns mostly the organization, not the customer. It merely means that the 4Ps were never designed for the conditions required to describe success from the customer's perspective. Besides, scholars argue that the 4Ps model may not apply to emerging market conditions (Pralhad, 2012). As a substitute, scholars like Anderson and Billou (2007) have long proposed the 4A marketing mix for implementing marketing strategy and theory. The 4As are affordability, accessibility, acceptability, and awareness marketing capabilities.

While the literature review acknowledges the relevance and usefulness of the 4As marketing framework (Dadzie et al., 2017; Nezakati et al., 2011; Pourdehghan, 2015; Pralhad, 2012), there is little evidence of how the 4As marketing framework helps to explain consumer-technology behavior (Türk and Erciş, 2017; Venugopal, 2021). Besides, there was limited empirical evidence on how technology adoption gel well with the 4As marketing mix within the fast-food realm. Focusing on the food industry, Nezakati et al. (2011) stated that the 4As marketing mix positively impacts fast-food restaurant selection. Meanwhile, a recent Adeleke (2019) study stated that the 4As positively influence customer preference in patronizing restaurants. However, even though the 4As marketing mix was introduced in 2003, there is still scarce research regarding the 4As marketing mix in relation to technology adoption within the fast-food industry area (Mathur et al., 2020; Nezakati et al., 2013; Rai & Rawal, 2019).

According to Anderson and Billou (2007), **affordability** refers to customers' willingness to pay a given price for an item or service. Affordability mainly focuses on two dimensions – economic

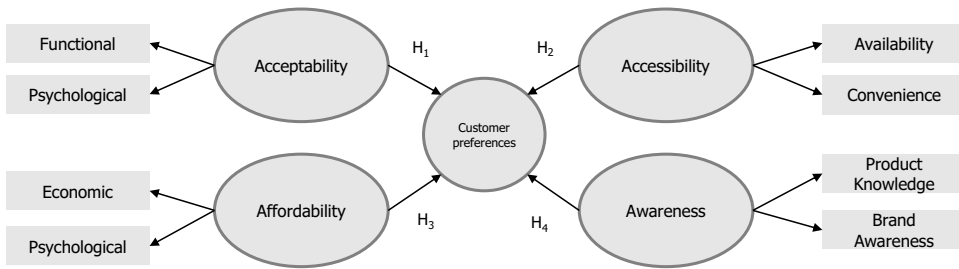


Figure 1. Research framework.

affordability and psychological affordability. Nezakati et al. (2012) and Sheth and Sisodia (2019) stated that affordability influences the customer's willingness to utilize the technology and ability to pay for the products. On the other hand, **accessibility** refers to customers' ability to acquire and use the product/service in availability and convenience (Sheth & Sisodia, 2012; Tommasetti et al., 2018; Türk and Erciş, 2017). The two dimensions of accessibility: availability and convenience are expected to influence technology adoption (Mathur et al., 2020; Venugopal, 2021).

On the other hand, Sheth and Sisodia (2012) claimed that awareness involves two marketing components: product knowledge and brand awareness. Studies found that awareness regarding the product's existence would initiate the purchase intention (Nezakati et al., 2012; Venugopal, 2021). Lastly, acceptability refers to the acceptable customization of goods and adaptation toward their lifestyles and values (Fayaz, 2012; Mathur et al., 2020; Sheth & Sisodia, 2012). Acceptability has two dimensions – functional acceptability and psychological acceptability. Researchers claimed that when customers think it is worth spending money on a product and beyond customer expectations, they will use it (Adeleke, 2019; Payaud, 2014; Türk and Erciş, 2017).

Based on the conjecture, this study conceptualized that customer's acceptability, accessibility, affordability and awareness of technology would positively influence customer preferences in using self-service kiosks in fast-food restaurants (Figure 1).

Methodology

A quantitative approach through a cross-sectional design with a self-reported and self-administered survey questionnaire, is used for information gathering. The study population are customers of Malaysian fast-food restaurants in Klang Valley. The minimum sample size (>85 respondents) was determined via the Power Analysis based on the study model complexity (Hair et al., 2017). The survey items were adapted from past studies (Nezakati et al., 2013; Rai & Rawal, 2019; Türk and Erciş, 2017) and were pre and pilot tested to confirm

their validity and reliability. The items were measured using a 5-point Likert scale.

Data were gathered through self-administered questionnaires through the purposive sampling methodology. Specific screening questions were added to ensure the respondents met the study inclusion criteria. Due to the restriction movement because of COVID-19, the data collection was done using the online survey platform. The Google Forms link was shared in social media platforms targeting consumers with experience patronizing the self-service kiosk in fast-food restaurants. The respondents were selected using the snow-ball sampling method. All respondents were informed that their participation was voluntary, confidential, and anonymous.

After the data-cleaning process, only 260 responses were valid. Most of the respondents are female and single, aged between 21 to 30 years old, with a range of income is less than MYR4,000, and most of them worked in the private sector. Before proceeding to the inferential analysis, the Harman single factors test was conducted to eliminate the potential common method variance issues and determine the bias's extent. Besides, the study confirmed the data normality using multivariate skewness and kurtosis. The result reflects the appropriateness of the computed data.

Next, the study hypotheses were tested using PLS-SEM via the SmartPLS 3.1.1 software. This study utilized the Partial least Squares-Structural Equation Modelling (PLS-SEM) due to the complexity of the proposed conceptual framework and the study's exploratory nature (Hanafiah, 2020). The first step of PLS-SEM is an iterative method that solves the blocks of the measurement model separately before estimating the path coefficients in the structural model assessment in the second phase (Hair et al., 2021).

Findings

Table 1 reports the assessment of the construct validity by measuring the loading, average variance extraction (AVE), and composite reliability (CR).

Table 1 reports that the measurement model adheres with Hair et al. (2017) threshold value (loading>0.5; AVE>0.5; CR > 0.7). Next, the researchers assessed the discriminant validity using the HTMT criterion suggested by Henseler et al. (2015). The HTMT value meets the minimum threshold ≤ 0.90 , which reflects that the measurement model is valid and reliable. The study also confirms that the VIF values are lower than the threshold value set by (2006), confirming that collinearity is not a problem for this study.

Table 2 summarized the hypothesis testing by assessing the significance of the path coefficient. This study confirms that all the fast-food self-service kiosk constructs (acceptability, accessibility, affordability and awareness) positively and significantly influence customer preferences in patronizing fast-food restaurants. The coefficient of determination ($R^2 = 0.565$) indicates that the

Table 1. Measurement model.

Construct	Items	Loading	AVE	CR
Affordability	AFF01	0.737	0.632	0.759
	AFF02	0.701		
	AFF03	0.988		
Accessibility	ACS01	0.829	0.624	0.869
	ACS02	0.766		
	ACS03	0.814		
	ACS04	0.748		
Awareness	AWN01	0.913	0.732	0.890
	AWN02	0.927		
	AWN03	0.710		
Acceptability	ACP01	0.573	0.517	0.838
	ACP02	0.541		
	ACP03	0.735		
	ACP04	0.849		
	ACP05	0.838		
Cust Preferences	PRE02	0.858	0.730	0.890
	PRE03	0.829		
	PRE04	0.875		

AFF04, AWN04, AWN05 and PRE01 were deleted due to low loadings.

Table 2. Path analysis.

	Beta- β	S.E.	T-Statistics	p-values
Acceptability > Customer Preference	0.121***	0.051	3.022	0.000
Accessibility > Customer Preference	0.182**	0.085	2.644	0.017
Affordability > Customer Preference	0.110**	0.061	2.066	0.044
Awareness > Customer Preference	0.273***	0.071	4.362	0.000

p-value < 0.05**; < 0.001***.

acceptability, accessibility, affordability, and awareness constructs can explain 56.5% of customer preference variance. The predictive relevance (Q^2) is 0.639, reflecting predictive accuracy for the structural model for the construct (Hair et al., 2019). Besides, the study found that the effect size of acceptability ($f^2 = 0.08$), accessibility ($f^2 = 0.03$), affordability ($f^2 = 0.16$), and awareness ($f^2 = 0.09$) reflect small to moderate effect size.

Implication

Self-ordering kiosk technology was an interesting area in the business management realm since the customer's acceptance of the technology came with a set of challenges to the quick-service restaurants. This was considering that the self-ordering kiosk technology was only introduced in the quick-service restaurant a couple of years ago. Notably, the ordering technology was still not ubiquitous among the restaurants. Due to its status as new technology, there was a lack of focus on the acceptability, accessibility, affordability and awareness of the self-ordering kiosk technology. Therefore, the present study realized the need to explore the elements influencing quick-service customers' preferences with the self-ordering kiosk technology. From the service industry perspective, utilizing a self-service kiosk is beneficial for restaurants to

minimize the risk of service failure from the common face-to-face interaction (Baba et al., 2023; Jeon et al., 2020). Besides, promoting the usage of the self-service kiosk will help the restaurants offer seamless and hassle-free food services that cater to the modern customer's demand (Cavusoglu, 2019; Jeon et al., 2020).

This study successfully supports the direct link between the 4As marketing mix and customer preferences. The study confirms that the 4As marketing mix (acceptability, accessibility, affordability and awareness) positively and significantly affects customer preferences in using the self-service kiosk. The results, which is similar with (2017) and Venugopal (2021) propositions revealed that affordability is the most significant 4As element that shapes customer preferences in using the self-service kiosk, followed by accessibility, awareness, and acceptability. Similar with the proposition by Adeleke (2019), both technology preferences and affordability are important considerations when introducing new technologies. If a technology is not perceived as useful or easy to use, it may not be adopted, even if it is affordable. Similarly, if technology is perceived as useful and easy to use but is too expensive, it may still not be adopted due to financial constraints (Anderson and Billou, 2007; Nezakati et al., 2013). Therefore, it is important to consider both technology acceptance and affordability when introducing new technologies to ensure that they are adopted and used effectively. Besides, ensuring that technology is easy to use and accessible to all can help to increase adoption and utilization, leading to greater efficiency and productivity.

The study's findings provide valuable insights for restaurant managers and marketers, as they suggest that improving the 4As can increase customer adoption of self-service kiosks. For example, making the kiosks more acceptable by ensuring they are user-friendly and aesthetically pleasing, improving accessibility by placing kiosks in convenient locations, offering affordable prices, and increasing awareness through effective promotion could all contribute to greater customer adoption of the technology. However, without acceptance and awareness, individuals or even organizations may be resistant to change or may not fully utilize the capabilities of technology, leading to missed opportunities for efficiency and innovation. Similar as posited by Mathur et al. (2020) and Rai and Rawal (2019), some people may resist using new technologies due to a lack of understanding or previous negative experiences. In contrast, others may be more open to trying new things. Besides, acceptability can vary greatly among individuals and can be influenced by a number of factors. Hence, companies and organizations need to consider customer acceptability when implementing new technologies, as it can impact the success of their technology adoption.

Conclusion

This study successfully supports a direct link between the 4As marketing mix and customer preferences, leading to restaurant performance. The study findings suggest that restaurants must frequently adjust their strategy to respond to changes in the marketing environment and technology advancement to serve their customers better. Restaurateurs need to constantly adjust their marketing mix to respond to changing marketing environment changes to serve customers better. In accordance with previous scholars like Anderson and Billou (2007) and Prahalad (2002) propositions, emphasizing the two-marketing mix (the 4As and the 4Ps) may support restaurant aim toward sustainable market share growth.

The increase in the competitiveness of the fast-food industry requires restaurant owners to understand the impact of technology adoption better and expand marketing mix elements on consumers' purchasing intentions. The restaurants need to pay considerable attention to the functionality or utilitarian value of the kiosk system. Besides, they should be more aware of the importance of continuous participation in new and innovative product development, and its purpose should be to meet the specific needs of consumers. Perhaps, on its inception, it was a new, unfamiliar technology; however, as time passed, it became one of the preferred applications for consumers. This indicates the potential of self-service kiosk technology to improve business operations and excellence. In addition, restaurant management must also improve product quality besides experimenting with new technology to ensure that modern consumers' needs are met in the long term (Adeleke, 2019; Türk and Erciř, 2017).

Nevertheless, the current research possessed some limitations. It is important to note that the study's focus on restaurant's self-service kiosks may limit its generalizability to other forms of restaurant technology adoption. Additionally, while the study establishes a direct link between the 4As and customer preferences, it does not explore the underlying reasons for this relationship, such as how each of the 4As influences customer decision-making. Further research could delve deeper into these questions to provide a more comprehensive understanding of the role of the 4As in restaurant technology adoption. Future research should focus on various type of restaurant establishment such as cafes, food courts or family restaurants that provide self-service facilities. In addition, as other business elements also play an important role in restaurant management, prices, topics, food availability, and location of venues can be included as additional predictors of customer preferences, highlighting the need to include these variables in future studies. In addition, it is recommended that future researchers study the effect of gender and age differences within the proposed technology adoption framework.

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