Enhancing Customers' Self-Service Automation Technology Experience in the Fast-Food Restaurants

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Abstract. The fast-food industry is increasingly embracing self-service technologies to reduce operational costs and increase service efficiency. As with other new technologies, customers' experience with the self-service ordering kiosk is only sometimes positive. Although many studies have investigated the fast-food self-service ordering kiosk, several vital questions about customers' self-service technology usage experiences still need to be answered. Hence, the current study proposes a conceptual framework to examine the relationship between users' perceived quality, emotional usage experience, and technology familiarity on their continuous self-service ordering kiosk usage intention.Based on DeLone and McLean's Information Success Model and House of Quality, the study proposes that customers' perceptions of system quality, software design, technology familiarity, and innovativeness influence their reuse intention. The study introduces emotional usage satisfaction and technology familiarity as the critical intervening constructs of the conceptual research framework. The study might offer several theoretical and practical contributions to advancing self-service automation in the fast-food industry. The paper ended with a deliberation of the study's shortcomings that can assist as references for future research.

Keywords: Self-service Ordering Kiosk, Service Automation, Fast-food Industry

1 Introduction

The fast-food industry has a significant impact on the global economy. The industry is facing a challenging time in acquiring new markets as it is difficult to create signature products/services due to low consumer brand loyalty and standardized products [22]. Hence, more fast-food restaurants are innovating their service delivery by incorporating self-service kiosks in their business operations. A kiosk is a self-service machine that allows customers to order food and other services without encountering an employee [1]. It is one of the increasingly popular self-service technology used in the restaurant industry today. It includes self-order kiosks with touch screens, tabletop ordering devices, and drive-thru kiosks. [30] reported that consumers benefit from an improved experience, convenience, ease of use, increased personalization, and shorter

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wait times. Service providers profit from increased control over service delivery, standardization, smooth demand volatility, lower labor costs, and more delivery options. Due to its benefits, automated self-service technology is gaining recognition in food service.

Although automated self-service technologies are increasingly employed in the fast-food industry, customer acceptance is only sometimes positive. Previous research suggested that consumers' perceptions of self-service technology and intent to use it may be influenced by individual characteristics such as an inability to adapt to the rapid development of technology [6]. A recent study by [2] discovered that customers are still hesitant to use self-service kiosks because they prefer to interact with service providers due to a lack of technological knowledge. [3] put forward a similar view, who argued that customers still prefer human interaction with service personnel. This is because they often need help to use automated self-service technologies. The problems highlighted are related to the self-service kiosk's interface, menu selection, product personalization, and payment system [4]. Despite the growing literature on automated self-service technologies, limited studies have focused on automated self-service ordering kiosks, particularly in Penang, Malaysia. This is because self-service automation technology applications have been introduced only recently in Malaysia, particularly in Penang fast-food restaurants. Moreover, most studies have been conducted in Western developed countries where the concept of automated self-service technologies is more prevalent.

Aligned with the Malaysian government to promote Industrial Revolution 4.0, examining the attributes influencing customers' continuous usage of automated self-service technology in fast-food restaurants has become an essential subject of interest. Empirical studies that examine how customers use such self-service technology are imperative to justify the enormous investment paid by the fast-food industry. Therefore, the proposed study aims to conceptualize the link among perceived self-service technology quality, emotional usage experience, technology familiarity, and continuous usage intention. In line with the research purpose, the present study proposes the following research hypotheses:

H1: Perceived quality of self-service technology information, system, innovation, and design has a significant relationship with self-service kiosks' continuous usage intention.

H2: Users' emotional usage experience significantly correlates with self-service kiosks' continuous usage intention.

H3: Users' emotional usage experience mediates the relationship between perceived self-service technology and self-service kiosks' continuous usage intention.

H4: Users' technology familiarity moderates the relationship between emotional usage experience and self-service kiosks' continuous usage intention.

2 Literature Review

2.1 Continuous Usage Intention

[5] revealed that one of the essential post-adoption behaviors, continuous-use intention, is a fundamental and vital sign of user loyalty. It is seen as critical to the success of e-government initiatives since investments in e-government are cost-effective and can only yield maximum value if individuals utilize them consistently. [6] discovered that the willingness to continue using order and payment services through kiosks, as judged by user evaluation, is termed continuous use intention. [7] also discovered that consumer TRI influences sentiments regarding kiosks, service providers, and the desire to use continuously. [8] argued that the term "continuous use of information systems" refers to the user's continued use of an information system over time and possibly in the future. According to the expectation disconfirmation model, service quality and customer satisfaction impact a client's inclination to return; however, [9] indicated that customer satisfaction had been demonstrated to influence consumers' retention intentions because of cognitive, emotional, and conative loyalty.

2.2 System Quality

[10] defined system quality as the overall quality of information processing, characterized by using cutting-edge technology, a system with essential functions and features, and software that is user-friendly, easy to learn, and easy to maintain. This improves service quality and customer experience, increases customer satisfaction and loyalty, and contributes to the firms' return on investment [11]. [9] specified that the quality of an information system is described as products or services that meet the demands and expectations of customers to complete their transaction in an e-tourism environment plus the products or services include itinerary services, reliable information, rapid information, precise operation, and specific information that the consumer can obtain at any time and from any location. [12] argued that system quality relates to the technical features of a system, such as its usability and accessibility. [13] reported that system quality, information quality, and service quality as dimensions influencing user satisfaction and successful usage of the information system, as subsequent indicators illustrating the success of the information system from a cause-and-effect perspective.

2.3 Information Quality

[33] defined information quality as the accuracy of information delivered to customers without errors and the ability to clarify what is meant. They discovered that the quality of information significantly affects consumer engagement. [32] denoted that the users perceived information quality substantially influences their purchase decision. It is postulated that the greater the information quality gained, the better their engagement in attaining the products or services. The quality of information is vital for users to equate the products/services they plan to obtain, facilitating them to make a better-informed purchase decision. Offering correct information will lessen users' grievances and increase their perceived information quality (Pratomo, 2015)

2.4 Design Quality

Design is the process of cognitively thinking or generating ideas and communicating these ideas to others in an easily understandable form; however, using adequately sized text and high contrast colours to provide clear changeable outputs plus keeping system complexity to a

minimum by limiting the number of menu layers such a good design that need to be in self-service ordering kiosk [14]. This should also be reconsidered because situational factors may be happening in the future that involves senior consumers and gives them technology anxiety as well [15]. Thus, a digital kiosk can access information on enormous screens with touch features. [16] identified that some models have large, interactive surfaces with multitouch capabilities, as well as product movies, statistics, product comparisons, and reviews. [17] also highlighted that modern design processes constantly reference design thinking. This discipline relies on user empathy to meet their requirements within the bounds of technological feasibility and profitable business strategies.

2.5 Innovativeness

[31] stated that innovativeness is a proclivity to be a technology pioneer and thought leader. Innovativeness is defined as the timely introduction of novel products and services to the market (product-related), efficiency and speed (process-related), new technology and marketing strategy (market-related), and overall encouragement of new ideas and innovation by organizational members [18]. According to [19], innovativeness refers to an organization's participation in and support of innovative processes or services. [20] highlighted that consumer innovativeness is the proclivity to buy and utilize new items faster and more frequently than others, which indicates an essential personality feature. Meanwhile, [21] elucidated that technology innovation is a collection of inventions linked with technological breakthroughs, aiming to incrementally improve existing products or services or radically invent new ones. [22] discovered that self-service kiosks are predicted to become widespread in the food service industry due to the innovative technology infrastructure, which adds more value to customers' purchase experience.

2.8 Emotional Usage Experience

Increasing studies support the view that emotion is a crucial determinant of technology adoption attitudes and behaviours. [34] proposed that a person's behavioural intention to adopt technology is more significant if he/she perceives the technology as pleasurable. In a similar vein, [35] denoted those different forms of subjective emotions, both physiological and psychological, play an essential role in hedonic utilization, whereas [36] inferred that personal pleasure is a more significant cause of using a hedonic technology application as opposed to a functional technology application. The emotional attachment to technology grows when users start engaging with technology, eventually creating positive feelings about it, and establishing deep attachments over enduring consumption experiences [37].

2.7 Familiarity with Technology

[23] stated that familiarity is a measure of the ability to recognize and comprehend a person, place, or thing because of prior knowledge, and the term is known as "prior knowledge," was defined as information that has been learned because of previous experience and can be used in the future. [24] also stated that familiarity is a measure of how much recognition and comprehension are related to a specific situation because of prior knowledge and be used to describe recognition and understanding by promoting average usefulness; the development of novel combinations of components increases the likelihood of breakthroughs while decreasing the possibility of failure. [25] reasoned that familiarity moderates the relationships between

product or service perceptions and consumer responses. As said by [26], familiarity significantly impacts customer decision-making processes, such as their willingness to continue using a website. Similarly, [27] reported that *"familiarity allows for relatively secure assumptions about the future, assuming unequal relationships between a system and its surroundings and thereby absorbing residual risk."*

3 DeLone and McLean Model and House of Quality Framework

This study used the DeLone and McLean Information Success Model [28] and House of Quality [29] to construct the conceptual research framework. Based on DeLone and McLean (2003), the study conceptualized that users' quality perceptions of information, system, innovativeness, and design will contribute to their emotional usage experience. This will lead to their continuous usage intention of self-service technology. Here, users' emotional usage experience plays a vital role in bridging the link between the perceived quality constructs and ongoing usage intention. However, the association between users' emotional usage experience and their constant usage intention is assumed to be moderated by their familiarity with the self-service technology. In other words, it is conjectured that users with a higher level of self-service technology knowledge will be more likely to continue using the self-service technology due to their positive emotional usage experience. The perceived quality of information, system, innovativeness, and design of the self-service technology is abstracted from the principle of the House of Quality [29]. Figure 1 shows the conceptual research framework grounded on the Delone and McLean Information Success Model [28] and House of Quality [29].

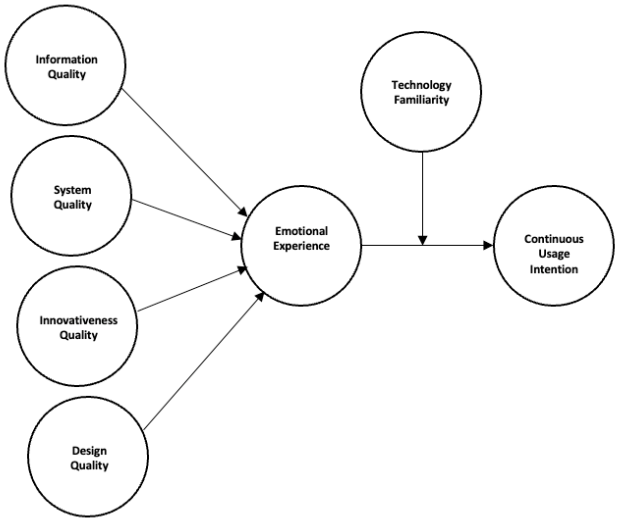

Fig. 1. Conceptual Research Framework.

4 Discussion

The paper attempted to conceptualize the predictors and intervening variables of self-service kiosk technology's continuous usage in fast-food restaurants. Specific attention is given to hypothesizing the relationships among perceived self-service technology quality, emotional usage experience, technology familiarity, and constant usage intention. The perceived self-service technology quality is proposed as a multidimensional construct comprised of information quality, system quality, innovativeness quality, and design quality. From a theoretical contribution standpoint, the study would advance the self-service kiosk technology and continuous usage intention literature. The findings could broaden the current understanding of the critical attributes and theories in examining self-service kiosk technology's continuous usage intention. In terms of practical contribution, the results would improve self-service restaurant technology in the fast-food industry. Industry players can identify critical factors that contribute to self-service kiosk enhancement. This could help increase service efficiency, reduce operational expenses, and increase revenue. On the other hand, self-service kiosk developers could improve software quality and design. Customers can benefit by effectively deploying self-service restaurant technology through increased customization and transaction speed. They can design an easier-to-use self-service kiosk to improve customers' overall service experience.

5 Conclusion

This conceptual paper presented the predictors and intervening variables that might significantly influence self-service kiosks' continuous usage in fast-food restaurants. Based on the DeLone and McLean and House of Quality frameworks, it is assumed that users' perception of self-service kiosks' quality will contribute to their emotional usage experience, leading to continuous usage intention. Here, emotional usage experience is conjectured as a mediator linking the dimensions of perceived self-service technology quality with continued usage behavioural intention. The study introduced technology familiarity as a moderator that moderates. Although the study has significantly contributed to the body of knowledge, several shortcomings should be addressed. Since the study is based on developing a conceptual framework, future researchers are encouraged to test and validate the proposed relationships with statistical software—the link between emotional usage experience and continuous usage behavioural intention. Moreover, a qualitative study can be conducted to interview users of self-service kiosks in Penang, Malaysia. The combination of qualitative and qualitative methods will bring better insights that will advance the literature. This study can be an essential reference for future studies in improving users' perceptions, attitudes, and experiences toward the self-service kiosk.

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