Determinants of Gen-X's Behavioral Intention to Use Online Food Delivery Services in Malaysia

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Abstract

With the rapid technological change, online food delivery services (OFDS) have become a major innovation in Malaysia, especially during the COVID-19 pandemic. However, Gen-X remains an underexplored segment with lower adoption rates compared to younger generations which leads to a slow decline in OFDS usage. Based on the Unified Theory of Acceptance and Use of Technology, this study investigates four key factors, i.e. Performance Expectancy, Effort Expectancy, Social Influence, and Facilitating Condition influencing Gen-X's behavioral intention to use OFDS. The survey has been done among 384 respondents born between 1965 and 1980, located in Selangor, Kuala Lumpur, and Johor. The result indicated that all four independent variables have positive and significant relationships towards the behavioral intention of Gen-X in using OFDS. Among these, effort expectancy is the most important factor showing that the company should focus on improving the ease of using the OFDS.

Keywords: Behavioral intention; Performance expectancy; Effort expectancy

1. Introduction

In recent years, there has been a sharp rise in the acceptance and popularity of online food delivery services (OFDS), which were influenced by the COVID-19 pandemic and the implementation of movement control orders (MCO) (Najmie et al., 2024). The COVID-19 pandemic is a significant situational factor impacting consumers' use of delivery service since it has had the biggest impact on recent human behavioral changes (Laato et al., 2020). According to Ali et al. (2021), the industry for OFDS has been expanding at a never-before-seen pace in recent years. Within retail e-commerce, the greatest segment is OFDS. Aryani et al. (2022) mentioned that the consumer's behavioral intentions drive them to engage in a specific purchase behavior. An individual's intention and readiness to carry out a specific purchasing behavior can be used to measure a customer's purchasing behavior.

Globally, dine-in traffic at restaurants has decreased by 83% due to lockdowns and health concerns, prompting customers to cook at home or use OFDS (Ali et al., 2021). The contactless ordering system for OFD has captured global attention since COVID-19 and continues to attract new customers, impacting their behavioral intentions (Maida, 2020; Aryani et al., 2022). The restaurant business is extremely competitive and has reached a point of saturation, thus for businesses to stay in the industry, restaurant operators must introduce innovative services such as online ordering (Ali et al., 2021).

Online food delivery (OFD) is fast rising as restaurants react to trends driven by affordable smart devices, enhanced telecommunications, and tech-savvy consumers seeking

convenience (Saad, 2020). Malaysia's food delivery industry is developing with a variety of services available online or through mobile applications (Ariffin et al., 2021; Hooi et al., 2021). According to Aryani et al. (2022), Foodpanda is one of Malaysia's top online food delivery marketplaces. Customers using OFDS save time while enjoying the convenience of ordering food from home or work (Ariffin et al., 2021). With a compound yearly growth rate (CAGR) of 5.7%, the size of the global market for Malaysia OFD is anticipated to reach USD 63,246.1 million by 2029 (Malaysia Online Food Delivery Market Trends, Size & Share, n.d.). Thus, the FDA's "Internet + Catering" model addresses consumers' demands for a quick and easy way to get food as their concerns about safety while simultaneously satisfying the interests of catering companies (Zhao and Bacao, 2020).

While various age groups contribute to the growth of online food delivery services, Generation X, individuals born between 1965 and 1980 (ages of 44 to 59), emerges as a significant demographic. Statista (2020) data highlights that the age groups of 25–34 (32.40%), 35–44 (23.40%), and 18–24 (19.80%) represent the majority of food delivery app users in Malaysia (Najmie et al., 2024). Generation X, which includes roughly 7,581,800 people in Malaysia, is entering its peak earning years with greater disposable income and leisure time, making them an important target for marketing efforts to promote higher purchases (Department of Statistics Malaysia, n.d.; Chelvarayan et al., 2022). This research is done by creating a model that incorporates elements from the Unified Theory of Acceptance and Use of Technology (UTAUT). Performance expectancy (PE), effort expectancy (EE), social influence (SI) and facilitating conditions (FC) are the four main components that the UTAUT focuses on to clarify users' goals when utilizing an information system and their actual usage patterns.

Statement of the Problem

Despite OFDS's explosive expansion in Malaysia, the industry's e-commerce potential remains largely underutilized (Thirosha, 2024). Approximately 58% of the participants in a Malaysian survey by Rakuten Insight stated that they placed more food orders using meal delivery apps during the COVID-19 pandemic (Statista, 2025). However, the trend of OFDS has slowly declined after recovering, reaching a record low of 29% compared to the peak pandemic period (Lee, 2023). As technology and consumer preferences change, external delivery service providers need to adjust to these shifting demands to retain customers (See-Kwong et al., 2017).

Furthermore, the declining trend threatens OFD services' viability, especially among Gen-X, whose adoption rates have been lower than younger generations (Hong et al., 2021). As an illustration, 81% of respondents between 25 to 34 years would continue using OFDS while 29% of respondents over the age of 55 stated that they would reduce their OFDS usage after the pandemic (Statista, 2023). Additionally, a Rakuten Insight survey carried out in Malaysia revealed that roughly 38% of individuals aged 45 to 54 preferred to cook more for their families and themselves rather than placing frequent orders from food delivery apps (Statista, 2023). Ling et al. (2023) states that 33% of Gen-Xers face barriers in keeping up with new technological advances. These findings show that while the use of OFDS increased during the pandemic, Gen-X continued engagement and behavior remains uncertain.

As one of Malaysia's major e-commerce platform users (Hua and Dada, 2023), 69% of Gen-X own digital devices (Agárdi and Alt, 2022). Santosa et al. (2021) indicates the strong

engagement of Gen-X in online transactions suggested for expanding digital services beyond Millennials. Rafki et al. (2023) identified that perceptions of usefulness, ease of use, value, and security significantly impacted Gen-X intention to engage with mobile shopping apps. Similarly, Chelvarayan et al. (2022) found that Gen-X online purchase intentions in Malaysia are significantly influenced by trust, customer satisfaction, and delivery, indicating that collaboration between online platforms and the government can boost e-commerce.

Furthermore, Gen-X is a key market segment with significant purchasing power in mobile ecommerce (Moorthy et al., 2017). For instance, Gen-X made up 45% of Malaysia's workforce and are approaching their prime earning years (Zwanka and Buff, 2020). Sweeney (2019) showing Gen-X shops both in-store and online and is open to experimenting new platforms. Based on these researches, Gen-X with more free time and greater disposable income contributes high usage in online services, marketing strategies should focus on Gen-X (Chelvarayan et al., 2022). Although Gen-X are a significant demographic with considerable purchasing power, they could differ from younger generations in preferences, attitudes and obstacles (Wahyuningsih et al., 2022). Therefore, there is a significant gap in understanding Gen-X intentions and motivations toward OFD services.

In addition, previous studies on OFD adoption have focused on Millennials (Mavilinda et al., 2023) and Gen Z (Pramezwary et al., 2023; Merniawandai and Sfenrianto, 2023; Vu et al., 2023), leaving Gen-X underexplored. Since younger generations are more likely to be exposed to electronic gadgets and to take advantage of technology advantages like online food ordering. In order to improve adoption and customer retention in the Gen-X demographic, service providers must have a thorough understanding of the elements impacting this cohort's behavioral intention to use OFD services. Using the UTAUT as the theoretical framework, the research aims to fill this gap by examining the factors that affect Gen-X's behavioral intention to use OFD services in Malaysia. Therefore, it helps service providers better understand the needs of Gen-X, which will support the expansion and sustainability of the OFD industry in Malaysia.

2. Literature Review

Unified Theory of Acceptance and Use of Technology (UTAUT)

According to Blut et al. (2021), an extensive synthesis of earlier technology acceptance and utilization studies served as the foundation for the development of UTAUT. UTAUT represents a composite model that draws from the core theories of technology acceptance and technology user behavior, including Diffusion of Innovation Theory, Social Cognitive Theory (SCT), Motivation Model, Personal Computer Usage Model, and TRA, TAM, and TPB (Tussardi et al., 2021). Thus, UTAUT is the most modern and successful technology adoption model that has been used to evaluate intentions to use technology.

UTAUT explains the behavioral intention to utilize technology in a variety of domains, including applications for online food delivery (Surya et al., 2021b). It has been used in a variety of technology-accepting sectors, such as mobile payment services, publicly accessible government information, mobile healthcare, m-learning, m-banking, and m-payments, in addition to being evaluated in various geographic contexts (Ronaghi and Forouharfar, 2020). Compared to the eight theories mentioned above, the UTAUT model has the highest

explanatory power (70%) and is more effective in analyzing technology acceptance and it identifies four core constructs as direct determinants of user adoption of technology: Performance Expectations (PE), Effort Expectations (EE), Social Influence (SI), and Facilitating Conditions (FC) (Teng et al., 2022). These structures give rise to Behavioral Intentions (BI), which characterize an individual's reason for acting or the period before selecting to use the technology (Puriwat and Tripopsakul, 2021b).

Magsamen-Conrad et al. (2020) determined that performance expectation refers to the "degree to which a person assumes that using the procedure will help them to enhance job effectiveness"; "The level of difficulty related to using the system" is known as the effort expectation; social influence, defined as "the degree to which a person perceives that significant others think he or she should utilize the new system," is a direct predictor of behavioral intention; facilitating conditions include "the extent to which a person believes that the organizational and technological framework present to facilitate the use of the system". Ayaz and Yanartaş (2020) state that these elements are significant because they directly influence user acceptability and usage patterns and therefore people can have positive reactions towards systems that meet their expectations for effort and performance.

According to UTAUT theory, an organization's implementation of information technology is mostly determined by its perceptions of the advantages and usability of a system (Istyqomah et al., 2024). As a result, if the system's facilities are met, people will interact with it more socially (Ayaz and Yanartaş, 2020). According to Mutaqin and Sutoyo (2020), UTAUT is still highly effective (robust) despite having been translated into multiple languages and being cross-culturally applicable.

Behavioral Intention to Use OFD

Novita and Husna (2020) define behavior as an individual's reaction to a particular stimulus. In contrast, intention reflects the willingness to focus their attention, search information, and make the purchase decisions (Aryani et al., 2022). Behavioral intention measures a customer's intention and motivation to perform a specific behavior (Dwivedi et al., 2017; Shaya et al., 2023; Vu et al., 2023). Vu et al. (2023) defined behavioral intention as a purchase intention to forecast customer behavior. The client's buying decision is influenced by the consumer's willingness to consider a variety of external factors. Customers' decisions to "buy again" and "continue to use intention" are similar since information system users' subsequent usage of the system would be influenced by their initial experience (Business and Research, 2020).

In relevant experiments, behavioral intention predicts behavior more accurately than other perceptions (Lin and Roberts, 2020). According to Chelvarayan et al. (2022), behavioral intention is the driving force behind a customer's decision to purchase a good or service. This indicates the amount of effort people are willing to put in to complete the behavior or the buyer's readiness to use the online ordering system eventually. In the food delivery sector, behavioral intention is the consumer's intention to utilize an OFDS application (Novita and Husna, 2020). Therefore, behavioral intention reflects the likelihood that consumers will use the OFDS.

Performance Expectancy

Performance expectation is an individual's belief that using technology can improve the performance (Chen et al., 2023; Dwivedi et al., 2017; Pan and Gao, 2021; Shaya et al., 2023). It is defined as the extent to which customers think that utilizing a technology will assist them in carrying out their tasks (Ariffin et al., 2021; Hunde et al., 2023; Handayani, 2023). However, Alkhowaiter (2022) explains that in the meta-UTAUT model, performance expectation is an essential exogenous element. According to Agarwal (2020), it is the belief that a novel system will outperform traditional methods, and it has repeatedly been shown to be the strongest predictor of behavioral intention, closely related to perceived usefulness. Muangmee et al. (2021) argue that performance expectation helps to determine the likelihood of user adoption of new technology.

Customer satisfaction and customer intentions to continue using a service are impacted by performance expectation (Tam et al., 2020; Kurniawan et al., 2024). When it comes to online food delivery services, performance expectation demonstrates how ordering food online can save more time and effort than using traditional methods (Srinivas and Ramachandiran, 2022). Customers are able to access various restaurants anywhere and anytime and food choices to choose from the online delivery application, without visiting the restaurant directly (Kurniawan et al., 2024). Applying the concept of performance expectation in the context of OFDS reflects how much users believe that using these services will enhance their dining experience by making it more convenient, efficient, and enjoyable compared to traditional dine-in options.

Thus, performance expectation may have an impact on Gen-Xers' behavioral intention to utilize OFDS. FDAs are often easy to use as they involve few steps and offer multiple choices of payments. The adoption of certain new technologies is positively impacted by effort anticipation, which in this example suggests that users desire to continue using FDAs. Nevertheless, enhancing consumers' familiarity with new technology does not immediately impact their continuous use across a period of time (Muangmee et al., 2021). Furthermore, user objectives can easily be achieved since mobile applications can provide benefits such as performing a task quicker. An application's ability to function well can make users more inclined to utilize it over time (Business and Research, 2020). Hence, this study proposes the following hypothesis of:

H1: There is a significant relationship between performance expectation and Gen-X's behavioral intention to use online food delivery services.

Effort Expectancy

Effort Expectancy is defined by a system's ease of use. Based on the TAM model, effort expectancy is a measure of how feasible a technology is to employ (Ariffin et al., 2021; Chen et al., 2023; Dwivedi et al., 2017; Pan and Gao, 2021; Handayani, 2023). Shaya et al. (2023) found that people's objectives are influenced by constructs associated with effort expectancy, whereas Yeh et al. (2022) discovered that it is a consideration that utilizing technology would bring convenience. According to Muangmee et al. (2021), effort expectancy can be used to evaluate a customer's degree of association with the use of a specific technology based on the ease with which they believe it to be to use.

In OFDS, effort expectancy reflects how simple consumers perceive the online ordering process including the usability of the online food application, browsing the online menu and completing transactions (Business and Research, 2020). These features are crucial to providing a consistent user experience, which has a direct impact on consumer satisfaction. When a system is regarded to be simple to use, consumers are more likely to adopt since the barriers to use are reduced.

Kurniawan et al. (2024) mentioned in his study that the effort expectancy is a significant indicator of a user's propensity to acquire and use internet and mobile technology. There are few factors that will affect customers' adoption of food delivery applications include the simplicity of the app's user interface, the convenience of finding the app online, the simplicity of interacting with the app, and the overall process simplification provided by mobile ordering applications (Ramesh et al., 2023). However, according to Zhao and Bacao (2020), prior research indicates that effort expectancy has no significant effect on consumers' intentions regarding mobile technologies. Since users become more accustomed to mobile technology after initially adopting it, effort expectancy is no longer influences their intention. The simplicity, comprehensibility, and adaptability that users encounter when utilizing a system shape how they perceive it. In the context of online food delivery services, effort expectancy refers to users' perceptions of how simple or convenient these platforms are to use. Hence, the hypothesis is proposed in this study:
H2: There is a significant relationship between effort expectancy and Gen-X's behavioral intention to use online food delivery services.

Social Influence

Social influence is the belief that people in positions of authority could influence decisions by endorsing particular actions (Agarwal, 2020). As stated by Handayani (2023), it is how much a person values the opinions and trust of others when creating a new system. This indicates that a person's attitude towards embracing new technologies is greatly influenced by their social surroundings, encouragement and suggestions of reliable people.

In the words of Ariffin et al. (2021), Dwivedi et al. (2017), Li (2024) and Pan and Gao (2021), social influence is defined as the extent to which important people, such as family and friends, believe that customers should use a specific technology. According to Muangmee et al. (2021), social influence influences behavior as well as the intention to adopt new technology.

Based on the research conducted by Lee et al. (2019), it revealed that consumers' intentions to use OFD platforms were highly impacted by good peer recommendations (Chang et al., 2023). Chen et al. (2023) expand on this concept by interpreting social influence as the influence of a social group on technology use, highlighting the role of peers and social networks in an individual's decision-making. Social influence captures the reality that peer opinions impact how a technology is used which is like TRA's subjective standards (Business and Research, 2020).

According to Sabilaturrizqi and Subriadi (2024), views and opinions of peers' impact how a technology or system is used. From the perspective of OFD companies, an OFDS company with better brand perception, larger market size, and listed on the stock market should have better performance and influence to consumers (Meena and Kumar, 2022; Sabilaturrizqi and Subriadi, 2024). When individuals take information from those around them as their own, the opinions facilitate the acknowledgement of the benefits of the service (Bonn et al., 2015, Hong

et al., 2023). Moreover, according to Izzati (2020), system usage behavior is positively influenced by the social influence variable. However, Shen et al. (2006), on the other hand, examined the role of social influence in the online course delivery system and found that peers had minimal influence over the overall user-friendliness of the online course. Generation X customers' behavioral intentions might be significantly influenced by their social surroundings. The sources of this influence include the experiences and positive or negative evaluations of people around them about the delivery service, influencers and social media evaluations. Therefore, the following hypothesis is proposed in this study:
H3: There is a significant relationship between social influence and Gen-X's behavioral intention to use online food delivery services.

Facilitating Conditions

According to Business and Research (2020), the degree to which individual beliefs are defined within the framework of organised technical support for system implementation is known as "facilitating conditions". It is defined as a technological framework that supports a person's belief in the system (Dwivedi et al., 2017; Pan and Gao, 2021; Chen et al., 2023). Hunde et al. (2023) state that facilitating conditions is the belief in the availability of ICT, technical infrastructure, and technical support in various contexts and studies have shown that facilitating conditions brings the impact to behavioral intention of using services. Similarly, Handayani (2023) explains that a facilitating condition is an individual's view of the resources and support needed to fulfill a behavioral objective. Within the context of OFD services, facilitating conditions pertains to the perceived accessibility of tools, infrastructure, and assistance that facilitate consumers' efficient utilization of these platforms.

An individual's opinion of the sufficiency and accessibility of organizational and technical infrastructures to facilitate system use is referred to as facilitating conditions (Venkatesh et al., 2003). In the context of this OFD service, FC refers to how users judge the degree of organization, infrastructure, human resources, and technical assistance as sufficient or inadequate for utilizing OFD services (Kurniawan et al., 2024). Users feel confident through FC that the service provider has the resources needed to run efficiently, including the capacity to deliver accurate and punctual service (Ratnasingam, 2004; Yuen et al., 2015; Hooda et al., 2022). Customers' intention to utilize these services is greatly influenced by their perception of the availability of dependable internet connectivity, intuitive apps, attentive customer support, and effective delivery logistics. Customers are more likely to adopt and remain loyal to a service when they are provided with the necessary tools and assistance, especially in technology-related settings where the actual purchase decision is influenced by how useful the service is in helping them complete specific tasks (Hong et al., 2023; Morosan and DeFranco, 2016). However, when it comes to behavior intention in using mobile healthcare applications, Utomo et al. (2021) found that Performance Expectancy and facilitating conditions did not affect the intention to adopt the technology. Furthermore, Performance Expectancy does not affect behavioral intention, according to Kwateng et al.'s (2019) findings. Given these conflicting findings based on previous research, the purpose of conducting the hypotheses was to understand whether FC significantly affects the adoption of OFD services by Generation X users. Hence, the hypothesis is proposed in this study:
H4: There is a significant relationship between Facilitating Conditions (FC) and Gen-X's behavioral intention to use online food delivery services.

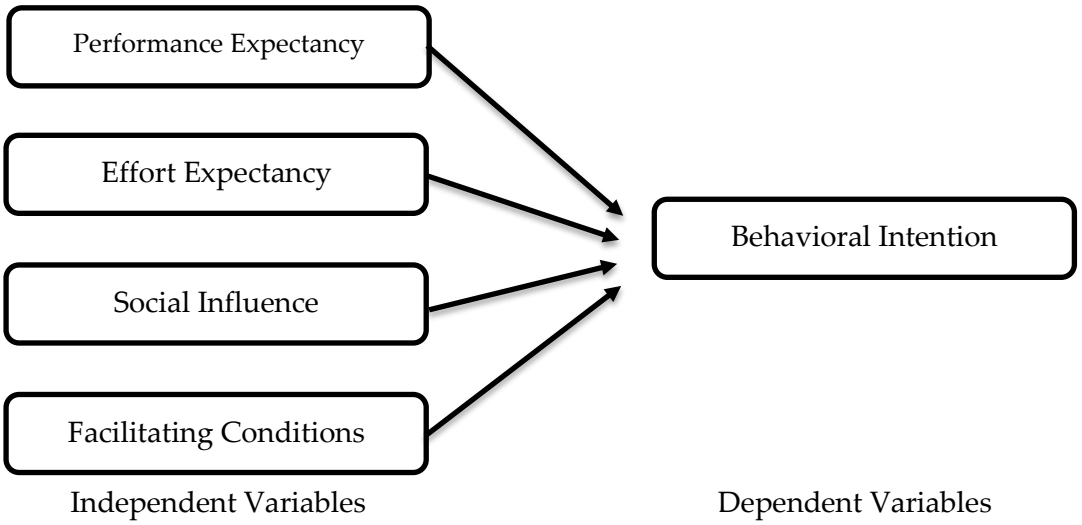

Figure 1: Residual plots for CUSUM and CUSUMSQ stability test

3. Methodology and Data Collection

This study employs a quantitative approach to ensure reliable and objective data and a correlational research design is used to examine relationships between independent and dependent variables. This research used convenience sampling as it is quicker, affordable, and easy to gather samples from the general populations. Therefore, to identify the factors influencing the behavioral intention on using OFDS based on the conceptual framework in Figure 1, a survey has been conducted with 384 respondents comprising of generation X in Malaysia.

The questionnaire consists of two sections covers demographics details and the independent and dependent variables. In the variables section, a five-point likert scale method such as strongly disagree, disagree, neutral, agree, and strongly agree has been used in all 30 items with six items per variables. The scale for Performance Expectancy includes item such as "Using an OFDS service is time-saving" while for effort expectancy, the item includes "Learning how to use OFDS is easy" (Hong et al., 2021; Zhao and Bacao, 2020). The 6-item scale for social influence section of the survey include items such as "People who are important to me recommend me to use OFDS" and was adapted from Zhao and Bacao, 2020. "OFDS seem unique" for the facilitating conditions section was adapted from Kim et al., 2021) while the last section of behavioral intention includes item such as "I will try to use an OFDS if necessary." All the data obtained has been generated by using Statistical Package for Social Science (SPSS) software.

4. Results

Table 1: Summary of results for hypotheses testing

Hypotheses	Unstandardized Coefficient Data	t-value	Significant Level	Result
H1: There is a significant relationship between Performance Expectancy and Gen-X's behavioral intention to use online food delivery services.	0.171	4.673	0.001	Supported
H2: There is a significant relationship between Effort Expectancy and Gen-X's behavioral intention to use online food delivery services.	0.246	6.969	0.001	Supported
H3: There is a significant relationship between Social Influence and Gen-X's behavioral intention to use online food delivery services.	0.220	5.767	0.001	Supported
H4: There is a significant relationship between Facilitating Conditions (FC) and Gen-X's behavioral intention to use online food delivery services.	0.187	3.962	0.001	Supported

According to Table 1, the beta value shows that Effort Expectancy ($\beta = 0.246$) had the highest impact, meaning that Gen-X's intention to use online food delivery increases the most if the ease of use improves. In contrast, Performance Expectancy ($\beta = 0.171$) indicates that perceived usefulness has a smaller impact on Gen-X's intention to use online food delivery services in Malaysia.

The table also indicates that the Effort Expectancy ($t = 6.969$) shows that simplicity of use is an important motivator for Gen-X's intention to use online food delivery services in Malaysia. Generation X is more likely to accept an application that is easy to use and involves fewer processes such as simple navigation and payment methods. Facilitating Conditions ($t = 3.962$) has the lowest t-value, demonstrating that they have slightly lower influence than ease of use or social influence although resources such as internet connection and customer service are significant.

The p-value (0.001) for all hypotheses indicates that the relationships between independent variables and dependent variables are highly significant. This demonstrates that performance expectancy, effort expectancy, social influence, and facilitating conditions all have a positive impact on Gen-X's intention to use online food delivery services in Malaysia. Moreover, this study shows that Performance Expectancy, Effort Expectancy, Social Influence, and Facilitating Conditions have a significant impact on Gen-X's behavioral intention since all hypotheses (H1, H2, H3, H4) were supported.

5. Conclusions and Recommendations

This study on the factors influencing Gen-X's behavioral intention to use OFDS in Malaysia carries significant implications for researchers, businesses, and the government. Understanding these implications can help improve academic research, business strategies, and policymaking to ensure the sustainability and growth of the online food delivery industry. Since there is a significant relationship between Social Influence and Gen-X's behavioral intention to use online food delivery services, generation X consumers will be

influenced by peer recommendations, family members, and online reviews. Hence, businesses can invest in word-of-mouth marketing, customer testimonials, and influencer partnerships to build trust and attract new users. Since Effort Expectancy mostly influences the intention of generation X in using OFDS, businesses must ensure that their mobile apps and websites are simple, intuitive, and user-friendly since they are not as familiar with technology as younger generations. In addition, service providers can offer various kinds of checkout options by using debit or credit card, online banking, digital wallets to make transitions smoother.

Meanwhile, since there is a significant relationship between Performance Expectancy and Gen-X's behavioral intention to use online food delivery services, businesses should make sure that their services such as food delivery is always on time and consumers could track their food with accurate delivery time predictions to boost Gen-X's adoption. Moreover, since the relationship between Facilitating Conditions and Gen-X's behavioral intention to use online food delivery services is significant, service providers should ensure efficient customer support, multiple payment options, and strong cybersecurity measures. Providing tutorials, frequently asked questions sections, and live assistance can reduce barriers to adoption.

On the other hand, the government could encourage digital adoption among older generations by collaborating with OFDS providers to provide training programs and workshops for generation X individuals to enhance their digital confidence and app navigation skills. Moreover, users may have concerns about online fraud and data security, government initiatives that strengthen digital payment security and enforce consumer protection laws can improve trust in OFDS platforms.

While this study provides valuable insights into the factors influencing Gen-X's behavioral intention to use OFDS in Malaysia, several limitations must be acknowledged. The study focuses exclusively on generation X consumers in Malaysia, which means the findings may not be fully applicable to other age groups (Gen Y, Gen Z, Baby Boomers) or to consumers in other countries with different economic, culture, and technological landscapes. Consumer behaviors, preferences, and technological adoption vary in every region and demographics, limiting the study's ability to represent global trends. Therefore, future researchers can broaden the study's scope by expanding the target population to other generations.

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