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Post-COVID-19 Continuance of Online Food Delivery Services: Case Study on Determinants of Millennials' Usage in Malaysia

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ABSTRACT

Online Food Delivery (OFD) services provide significant convenience, enabling customers to personalize their food orders and have them delivered at any time and location. Consequently, demand for OFD services increased dramatically during the COVID-19 pandemic, mainly through the Movement Control Order (MCO) enforced by the federal government of Malaysia. Nevertheless, the convenience comes at a cost. Ordering food via delivery apps typically costs a fee ranging from RM4 to RM10, depending on the distance between the restaurant and the customer's location. Additionally, specific platforms impose service taxes, further escalating the overall cost. Given these factors, a critical question arises: Will OFD services remain sustainable post-pandemic? Moreover, what motivates Malaysians to continue using food delivery services despite the associated high costs? Drawing on a sample of 225 Millennials, this study employs ordered logit and probit models grounded in the Unified Theory of Acceptance and Use of Technology (UTAUT2) and the Expectation Confirmation Model (ECM) to investigate the factors influencing the continued use of OFD services. The findings indicate that performance expectancy, effort expectancy, and habit are significant determinants of continuance intention in using these services. To maintain customer loyalty, OFD companies should prioritize reducing delivery times and ensuring user-friendly app interfaces. Additionally, fostering and reinforcing habitual use of OFD services may be crucial for sustaining their customer base in the long term.

INTRODUCTION

The drastic expansion of digital platforms continues to transform business operation models as well as various aspects of human life. One noticeable industry that is profoundly affected by digital platforms is Online Food Delivery (OFD) services. The advancement of technology evolved the functions of OFD apps in response to the changing preferences of consumers. Today, consumers seek convenience and efficiency in their daily life, particularly, OFD services have become indispensable to resolving our daily meal problems (Grab, 2021). The exponential growth of the global delivery industry was witnessed following the development of mobile technology, digital payment gateways, and the shifting of urban lifestyles. Statistics show that the global market for OFD is projected to surpass USD 200 billion by 2024, with Southeast Asia as the major contributor to this expansion (Statista, 2023).

In Malaysia, it is observable that the OFD market grew considerably during the pandemic back in 2020 because of the safety measurement of human contact, upholding contactless options to minimise direct interaction for food purchases. The rise of new business models to be adopted by restaurants to retain their operations during lockdown periods (Bernama, 2020). Because of this, the operation landscape of the food

service sector has changed, and socially isolated food consumption trends have emerged (Mohamad et al., 2023). Hence, OFD services became prevalent for business operators to reach their consumers. Grab reports that OFD services have increased more than 30% since the Movement Control Order (MCO) was announced on 18 March 2020 (Grab, 2021). Among the food delivery companies in Malaysia, such as Food Panda, Grab Food, Fast Food delivery apps, dahmankan, etc., Food Panda and Grab Food obtained the largest market share and became household names in the OFD market (McKenzie & Co., 2021; Statista, 2021a).

Nevertheless, business operators faced another round of challenges when the restaurant started to reopen and was flooded by diners. Consequently, the use of OFD services shrank by about 17 per cent once the MCO was lifted (Statista, 2021b). Although the adoption and new users of OFD services spiked during the pandemic, it is questionable whether there was a continuance intention to use OFD services among users during the endemic. It has been more than two years since Malaysia entered the "Transition to Endemic" phase of the pandemic on 1 April 2022 (Salim, 2022); as such, there is a need to conduct a study among millennials in Malaysia to identify the determinants that associated with continuance intention usage of OFD services. Millennials are the largest generation cohort that adopted OFD services (Statista, 2022). Most past studies have focused primarily on adopting OFD services during the pandemic. However, a dearth of studies focuses on the continuance intention to use OFD services during post-pandemic (Zhao & Bacao, 2020). Additionally, the ever-changing consumer behaviour in response to technological advancements, society, and the economy demands a holistic understanding of the long-term sustainability of OFD platforms in Malaysia. Hence, the present study aims to examine the key factors that influence the continuance intention among millennials in Malaysia to use OFD services during the endemic.

This study offers considerable insights to academic literature and business practitioners. First, the current study is grounded on the UTAUT2 and the ECM. It applied both theories to an endemic context, which is the area that remains underexplored by researchers. Second, this study provides a comprehensive understanding of how demographic and technological factors influence the intention of tech-savvy Millennials in Malaysia to continue using OFD platforms. Given the post-pandemic changes in technology and consumer demands, it is imperative to thoroughly assess these determinants so that practitioners can strategize their business strategies effectively.

In conclusion, examining these determinants in the context of evolving technological innovations and changing consumer demands is essential, particularly in the aftermath of the pandemic. This study strives to contribute to theoretical and practical improvements in the field by thoroughly understanding the determinants influencing the intention to continue utilizing OFD services in Malaysia.

LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

Theoretical Background

Extended Unified Theory of Acceptance and Use of Technology (UTAUT2)

The Extended Unified Theory of Acceptance and Use of Technology (UTAUT2) was initially developed to continuously predict consumers' adoption of technology and their intention to use it (Venkatesh et al., 2011). UTAUT2 was adopted in numerous studies examining the factors influencing customers' continuance intentions to use Online Food Delivery (OFD) services (Lee et al., 2019; Alalwan, 2020; Ramos, 2022; Erdem & Celik, 2024). For example, according to Le & Thuan An's (2021) findings, performance expectancy, effort expectancy, social influence, hedonic motivation, price value, habit, and facilitating conditions significantly influence the millennials' intention to adopt OFD services continuously.

In this study, downloading the mobile applications for OFD services does not incur an additional fee (Shaw & Sergueeva, 2019); thus, the original construct of "price value" is adapted as "price saving orientation." Moreover, the constructs of "social influence" and facilitating conditions" were omitted from the research model. The rationale is that the participants in this study are actual users with good experience using OFD

service, making them less likely to be influenced by the roles of social influence and facilitating conditions to form their future intention to reuse the same system. Venkatesh et al. (2003) found that social influence mainly affects users who rely more on others' opinions whom they consider relevant during their initial usage of new systems. Similarly, facilitating conditions mainly relate to the users' immediate experience with a new system. For the participants in this study, the future intention to reuse the OFD system is less predicted by these factors as the impacts could largely disappear when the users already gained more experience in using a new system. The insignificant effects of social influence and facilitating conditions on continued usage were also observed by Alalwan (2020) in a study of mobile food ordering apps among actual users. In addition, Flores and Castaño (2020) observed similar findings: Food Delivery App (FDA) users tend to rely more on the previous consumers' online reviews and ratings than suggestions from their social circle. Facilitating conditions were also found to be insignificant due to the increased use of smartphones diminishing it perceived importance in influencing users' intention to use FDAs.

Expectation-confirmation model (ECM)

The Expectation Confirmation Model (ECM) was developed by Bhattacherjee (2001) with three dimensions (perceived usefulness, confirmation, and satisfaction) to study the cognitive beliefs and emotional responses that influence the users' intention to use an information system continuously after the initial adoption. ECM is widely recognized for studying the relationship between consumers' satisfaction and continuance intention to use an information system (Shang & Wu, 2017). Furthermore, Kurniawan et. al. (2023) and Erdem and Celik (2024) integrated UTAUT2 with ECM to examine the factors influencing continuance intention to use OFD services. Thus, the present study adapted the construct of "satisfaction" to assess the influence of users' satisfaction on their continuance intention to use OFD services.

Continuance Intention of OFD

According to Bhattacherjee (2001), continuance intention refers to the intention to repurchase a product or to use a service continuously. It is crucial to ensure the long-term success of a new technology or service after the initial adoption. Therefore, the continuance intention construct is significant in this study as it provides insight to understand the future adoption tendencies to use or reject OFD service. Meanwhile, Venkatesh et al. (2003, 2016) propound that behavioural intention is a significant indicator of consumers' tendency to repeat a specific behaviour over an extended period. Amin et al. (2021) found that consumers have continuance intention to use the service when the attributes of the service meet their expectations and needs after the initial adoption. Erdem and Celik (2024) further demonstrated consumers' level of satisfaction derived from post-purchase experiences compared with their initial perception of the OFD service. The level of satisfaction shaped consumers' willingness to use the OFD service continuously.

Factors of Influencing Continuance Intention of OFD

Performance Expectancy

Performance expectancy is defined by Venkatesh et al. (2003) as the degree to which an individual perceives the usefulness and advantages of adopting a specific system or technology towards better productivity or attaining exceptional outcomes. In the OFD service context, performance expectancy manifests the efficiency of the OFD platform in enhancing users' food ordering process, such as access to a wide range of restaurants, meeting dietary preferences, enabling price comparison, knowing the expected delivery time, time-saving and other benefits (Alalwan, 2020; Ramos, 2022). Globally, the expansion of OFD services has advanced the performance expectancy of users. For instance, users are more concerned about delivery speed, zero error on their orders, personalization and customization to suit the preferences of the users (Alalwan, 2020). Furthermore, Chen and Zhang (2023) assert the vitality of integrating Artificial Intelligence (AI) into OFD apps to optimise users' overall usage experience, promoting greater continuous intention to use OFD services. During the pandemic, consumers predominantly adopted OFD services for safety, and this further emphasised the imperative of performance expectancy on the security of digital services, ease of use, and availability of

various payment gateways. In a nutshell, performance expectancy significantly influences the intention to continue using OFD services beyond the course of time. Hence, it is hypothesized that:

H1: Performance expectancy positively influences intention to adopt online food delivery services in the post-COVID-19 pandemic era.

Effort Expectancy

According to Venkatesh et al. (2003), effort expectancy refers to the extent to which users perceive easiness in utilizing a particular technology. The ease of using technology accelerates acceptance and adoption of innovation (Okumus et al., 2014). Amin et al. (2021) postulate that a simple-to-use OFD platform is critically needed to capture the attention and retain users. For example, if the OFD mobile app is easy to navigate, has a hassle-free ordering and delivery tracking process, and is simple to make payments, the continuous usage of the OFD service is more intense. Moreover, Zhao et al. (2021) make it evident that offering a seamless user experience, especially from the user-friendliness perspective, significantly promotes user satisfaction and continuance of OFD service usage. In a similar vein, researchers (e.g., Chen & Zhao, 2022; Jiang et al., 2023; Ramos, 2021; Zhao & Bacao, 2020) highlight that the usability and design of the OFD app, which provides features like simple registration, multi-language interfaces, voice-activated ordering, and one-click reordering create a competitive advantage to the OFD service provider because these minimize the cognitive effort of the users. As a result, the likelihood of repeat usage of the service becomes greater. Henceforth, effort expectancy is an important predictor of intention to adopt OFD services. The hypothesis is proposed as:

H2: Effort expectancy positively influences intention to adopt online food delivery services in the post-COVID-19 pandemic era.

Hedonic Motivation

Hedonic motivation is defined as an intrinsic driver of behaviour, which is widely recognized as a key factor influencing customers' intention and continuance intention to adopt new technologies (Alalwan, 2018; Brown & Venkatesh, 2005). Hedonic motivation is intrinsic to the feelings of pleasure, enjoyment, entertainment, and happiness through the experience with innovative technology (Venkatesh et al., 2012). In the context of OFD services, the hedonic values attributed to the abundance of promotional discounts and wide selection of food and restaurants significantly influence consumers' intention to continuously adopt OFD services (Kurniawan et al., 2023). As such, OFD services are perceived as a convenient solution and an enjoyable experience in food purchases, particularly a motivation factor in today's modern and fast-paced lifestyle. Consequently, hedonic motivation is predicted to be related to the continuance intention to use OFD services. This study therefore proposed the following hypothesis:

H3: Hedonic motivation positively influences intention to adopt online food delivery services in the post-COVID-19 pandemic era.

Price-Saving Orientation

Price-saving orientation, adapted from UTAUT2, refers to evaluating benefits obtained from using a system relative to the financial costs incurred (Venkatesh, Thong, & Xu, 2012). Venkatesh et al. (2003) demonstrated that price value strongly influences customers' continued intention to use mobile internet services, as users typically evaluate the trade-off between the price paid and the value gained. Alalwan's (2020) study on continued intention to reuse mobile food ordering applications found that consumers are motivated to engage with the applications continuously as they perceived value gain from using the OFD service to compare prices across various food and restaurants within the platform, allowing them to find the best value for their money spend. Similarly, Kurniawan et al. (2023) found that price comparison maximized savings in food purchases using OFD services and contributed to consumers' satisfaction. Moreover, OFD services are perceived as providing reasonable prices with the quality received, leading to a continuance of the intention to use the

service. Thus, savings on food expenses are significant to customer loyalty to use the OFD service repetitively, according to Agarwal and Sahu's (2022) findings. This study therefore proposes the following hypothesis:

H4: Price-saving orientation positively influences intention to adopt online food delivery services in the post-COVID-19 pandemic era.

Habit

Habit is an individual acting automatically based on accumulated past experiences (Limayem et al., 2007). According to Amorosa and Lim (2017), there is an increased likelihood of using specific mobile applications when the users have positive past experiences using them and eventually develop a habitual behaviour towards using them. This assertion is consistent with studies during the COVID-19pandemic, which found consumers developed habitual usage of the OFD services continuously when they experienced satisfaction with this service (Le & Thuan An, 2021; Lee et al., 2019; Alalwan, 2020; Erdem & Celik, 2023). In other words, OFD services users became increasingly reliant on the services for food purchases during the COVID-19 pandemic and are likely to continue using these services out of habit in the post-COVID-19 pandemic era. This study therefore proposes the following hypothesis:

H5: Habit positively influences intention to adopt online food delivery services in the post-COVID-19 pandemic era.

Satisfaction

Oliver (1980) defined satisfaction as a collection of emotions derived from feelings when the expectation is met, exceeded, or unmet. Meanwhile, satisfaction by the Expectation Confirmation Model (ECM) portrays an overall emotion-based appraisal of the performance of a specific information system (Yuan et al., 2016). Based on Chotigo and Kadono's (2021) findings, the likelihood of continuing to use OFD services for food purchases will increase when consumers achieve high satisfaction as the service performance meets or exceeds their expectations. This outcome is affirmed by findings from Wang et al. (2021), Zhao and Bacao (2020), Le and Thuan an (2021), and Agarwal and Sahu (2022), indicating a relationship between satisfaction and continuance intention to use OFD services. Similarly, Erdem and Celik (2023) demonstrated that a significant majority of OFD users in Indonesia displayed a high level of satisfaction with these services during the COVID-19 pandemic, which could influence the usage of the OFD service in the long term. Consequently, it can be assumed that consumers' satisfaction with the overall attributes of OFD services will likely continue using these services in the post-COVID-19 pandemic era. This study therefore proposes the following hypothesis:

H6: Satisfaction positively influences intention to adopt online food delivery services in the post-COVID-19 pandemic era.

Trust

Trust is "a consumer's subjective belief that the selling party or entity will fulfil its transactional obligations as the consumer understands them" (Kim et al., 2008, p. 545). In the landscape of technology use, trust encompasses consumers' confidence that the technology will deliver the expected benefits and operate securely and reliably (Chae et al., 2020). Trust has been widely explored across various studies. For instance, Hsiao and Chen (2021) studied the influence of customers' trust, continuously enhancing their usage of food-ordering chatboxes, confirming that trust positively influences continuance intention and customer satisfaction. Interestingly, Hong et al. (2023) found that frequent OFD service users are likelier to continue using the services primarily due to their trust in the service. However, trust is not a significant factor for non-frequent users. In the context of OFD services, trust is the belief that the system can consistently and reliably fulfil its transaction obligations, which also include processing and delivering orders accurately and in a dependable manner. The relationship between trust and continuance intention is further supported by studies conducted during the COVID-19 pandemic (Cho et al., 2019; Wang et al., 2021; Zhao & Bacao, 2020). This study

therefore includes trust as a complementary variable of UTAUT2 and ECM in the following hypotheses:

H7: Trust positively influences intention to adopt online food delivery services in the post-COVID-19 pandemic era.

METHODOLOGY

Our targeted sample consists of millennials who have utilised OFD services at least once during the COVID-19 pandemic in Malaysia. Millennials refer to individuals born between 1981 and 1996. The rationale for choosing millennials is that they represent the group that generates the highest sales in the Food and Beverage industry. For instance, it is found that 32.4% of OFD services consumers aged 25 to 34 years old during the COVID-19 pandemic (Statista, 2021a). Additionally, a survey conducted by Rakuten Insight in April 2023 revealed that over 80 percent of Malaysian respondents aged 25 to 34 indicated that Grab Food was their most frequently used food delivery app. (Siddharta, 2023). The survey was conducted using Google Forms, and the link was distributed to respondents via online platforms such as email, Facebook Messenger, WhatsApp, and WeChat. Based on the sample size table developed by Krejcie and Morgan (1970) and considering that the millennial population in Malaysia is 11 million (Department of Statistics, 2020), the sample size for this research is 384. However, after filtering those incomplete questionnaire responses, the finalised sample size is only 225, supported by the G* Power analysis.

G* Power analysis software is used to determine the appropriateness of the sample size to obtain the minimum sample size. There are four important aspects to consider when calculating the minimum sample size—first, the effect size (f^2). An effect size explains how strong the relationship is in the population. There are three different effect sizes: 0.02 for a small effect, 0.15 for a medium effect, and 0.35 for a significant effect (Cohen, 1998). Second is the alpha value (α), or confidence interval, the cut-off value for deeming significance. Third, the power (1-ß) represents the outcome's accuracy. Fourth, the number of predictors. The selection of effect size, alpha value, and power is medium effect size (0.15) with a confidence interval of 95% (α = 0.05) and power of 0.95; the minimum sample size needed for this study is 153 responses. Any data set with more than 153 responses is sufficient to represent the population of interest. Hence, the sample size of 225 is adequate to present the population of Millennials who show continuous intention to adopt OFD service during post-pandemic.

Based on our theoretical framework, we propose the following empirical model:

$$Intention_i = \partial' + \beta_1 CPE_i + \beta_2 CEE_i + \beta_3 CHM_i + \beta_4 CPSO_i + \beta_5 CH_i + \beta_6 CSA_i + \beta_7 CT_i + \beta_8' x_i' + \varepsilon_i \quad (1)$$

where *Intention* represents the continuance intention to adopt OFD Services. This variable is proxied by the item, "I will continue to adopt OFD services after the COVID-19pandemic." with a scale from 1 (strongly disagree) to 5 (strongly agree). α' is the intercept in the multiple linear regression model and it also represents the cut-off values in the ordered logit and probit models; β are the estimates of regressors; and ε represents the error term and i denotes the i-the respondent. x' is a vector of control variables, including gender (Male), marital status (Single), and the frequency that respondents used the OFD service during the COVID-19 pandemic (Frequency). At the same time, β' is a vector of the estimates of control variables.

CPE, *CEE*, *CHM*, *CPSO*, *CH*, *CSA*, and *CT* represent performance expectancy, effort expectancy, hedonic motivation, price-saving orientation, habit, satisfaction, and trust, respectively. When analysing survey data, empirical studies typically encounter two primary challenges: first, large datasets that include an excessive number of items or variables for analysis; second, the issue of multicollinearity in regression analysis, which arises from correlated variables. Given this, we construct seven principle components to represent *CPE*, *CEE*, *CHM*, *CPSO*, *CH*, *CSA*, and *CT* using a categorical principal component analysis approach (CatPCA). Table 1 shows the items used and where they were adapted to construct the principal components. The principal components are the composites of all original variables that still carry the most information as before the transformation. The best components will be selected based on the goodness of fit indicators: component

loadings, Variance Accounted For (VAF), Eigenvalues, and Cronbach's α (Field, 2013). After obtaining the CatPCA components for the respective independent variables, we will include them in Equation (1), which will be analyzed using three approaches: (i) ordered logit model, (ii) ordered probit model, and (iii) multiple linear regression model.

Table 1: The Details of Items Used to Construct the Respective Principle Components

Principle Components	Items	Adapted from
CPE	*PE1* I find that OFD services helpful in ordering and receiving food delivery.	Zhao and Bacao (2020)
	PE2 I find that OFD services are convenient to order and receive food delivery.	Zhao and Bacao (2020)
	PE3 I find that OFD services improves ordering and receiving food delivery efficiency.	Zhao and Bacao (2020)
	PE4 Using OFD services helps me to get my food more quickly.	Zhao and Bacao (2020)
CEE	*EE1* Learning to use OFD services is easy for me.	Alalwan (2020)
	EE2 My interaction with OFD services is clear and understandable.	Alalwan (2020)
	EE3 I find OFD services easy to use.	Alalwan (2020)
	EE4 It is easy for me to become skilful at using OFD services.	Alalwan (2020)
CHM	*HM1* Using OFD services is fun.	Alalwan (2020)
	HM2 Using OFD services is enjoyable.	Alalwan (2020)
	HM3 Using OFD services is very entertaining.	Alalwan (2020)
CPSO	*PSO1* I can save money by using prices of different OFD services.	Escobar-Rodríguez and Carvajal-Trujillo (2013)
	PSO2 I like to search for cheap food deals in different OFD services.	Escobar-Rodríguez and Carvajal-Trujillo (2013)
	PSO3 Online food retailer offers better value for my money.	Escobar-Rodríguez and Carvajal-Trujillo (2013)
CH	*HH1* Once I start using OFD services, I will continue to use it.	Alalwan (2020)
	HH2 The use of OFD services has become a habit for me.	Alalwan (2020)
	HH3 Using OFD services has become automatic to me.	Alalwan (2020)
	HH4 I must use OFD services.	Alalwan (2020)
CSA	*SA1* I am very satisfied with the overall experience of OFD	Zhao and Bacao (2020)

	services.	
	SA2 I am satisfied with OFD service efficiency	Zhao and Bacao (2020)
	SA3 My interaction with the OFD service is very satisfying.	Zhao and Bacao (2020)
	SA4 I think I did the right thing by using OFD services.	Zhao and Bacao (2020)
CT	*C1* I trust the OFD services.	Zhao and Bacao (2020)
	C2 I felt safe in ordering food through OFD services.	Zhao and Bacao (2020)
	C3 The information provided by the OFD services is reliable.	Zhao and Bacao (2020)
	C4 I believe OFD services will act in my best interest.	Zhao and Bacao (2020)

Since the *Intention* is proxied by an item with a five-point Likert scale, it is an ordinal scaled measurement. Therefore, we use the ordered logit and ordered probit modelling approaches to estimate Equation (1). The estimated coefficients from the ordered logit model are the natural log odds ratios of continuing to use OFD services after the COVID-19 pandemic, given a one-unit change in the respective regressor. On the other hand, the estimated coefficients from the ordered probit modelling display the utility index of continuing to use OFD services after the COVID-19 pandemic. We also applied multiple linear regression to Equation (1) for consistency and robustness checks.

RESULTS

Table 2: Model Summary of CatPCA for Selected Independent variables

Variables	Component loading	Variance Accounted For		
		Cronbach's Alpha	Total Eigenvalue	% of Variance
1. *CPE*		0.831	2.653	66.316
Items:				
PE1	0.888			
PE2	0.902			
PE3	0.843			
PE4	0.584			
2. *CEE*		0.903	3.905	77.375
Items:				
EE1	0.860			
EE2	0.889			
EE3	0.906			
EE4	0.862			

3. *CHM*		0.919	2.582	86.068
Items:				
HM1	0.941			
HM2	0.909			
HM3	0.933			
4. CPSO		0.770	2.056	68.528
Items:				
PSO1	0.881			
PSO2	0.797			
PSO3	0.802			
5. *CH*		0.916	3.196	79.892
Items:				
HH1	0.839			
HH2	0.909			
HH3	0.942			
HH4	0.882			
6. *CSA*		0.898	3.060	76.512
Items:				
SA1	0.903			
SA2	0.887			
SA3	0.886			
SA4	0.820			
7. *CT*		0.889	3.002	75.058
Items:				
T1	0.863			
T2	0.886			
T3	0.908			
T4	0.806			

Based on our theoretical framework drawn upon UTAUT2 and ECM, we generate seven components to represent the factors influencing the continuance intention of OFD services after the COVID-19 pandemic. The CatPCA results (in Table 2) show that these seven extracted components can proxy well the factors

underlying UTAUT2 and ECM due to its high reliability. Overall, the reliability is satisfactory to good for all selected components that represent the respective independent variables: *CPE* (α = 0.831, Eigenvalue = 2.653, 66.316% of variance), *CEE* (α = 0.903, Eigenvalue = 3.905, 77.375% of variance), *CHM* (α = 0.919, Eigenvalue = 2.582, 86.068% of variance), *CPSO* (α = 0.770, Eigenvalue = 2.056, 68.528% of variance), *CH* (α = 0.916, Eigenvalue = 3.196, 79.892% of variance), *CSA* (α = 0.898, Eigenvalue = 3.060, 76.512% of variance), and *CT* (α = 0.889, Eigenvalue = 3.002, 75.058% of variance).

Table 3: Descriptive statistics of variables

	N	Mean	Std. Dev.	min	max
Intention	225	3.804	0.939	1	5
CPE	225	.075	0.011	.04	.08
CEE	225	.062	0.322	-2.85	.24
CHM	225	.017	0.996	-1.28	2.61
CPSO	225	.007	1.007	-.97	2.59
CH	225	.014	1.000	-1.55	2.8
CSA	225	.078	0.074	-.04	.19
CT	225	.017	0.996	-1.67	2.61
Male	225	.387	0.488	0	1
Single	225	.493	0.501	0	1
Frequency	225	2.756	0.875	1	4

Table 4: Pairwise correlations

Variables	(Y1)	(CPE)	(CEE)	(CHM)	(CPSO)	(CH)	(CSA)	(CT)	(Male)	(Single)	(Frequency)
Intention	1.000										
CPE	0.289***	1.000									
CEE	0.302***	0.384***	1.000								
CHM	0.320***	0.148**	0.278***	1.000							
CPSO	0.259***	0.234***	0.253***	0.547***	1.000						

CH	0.519***	0.180***	0.224***	0.635***	0.485***	1.000					
CSA	0.365***	0.405***	0.393***	0.463***	0.455***	0.460***	1.000				
CT	0.347***	0.269***	0.326***	0.589***	0.511***	0.593***	0.658***	1.000			
Male	-0.117*	-0.081	0.064	-0.073	-0.089	-0.071	0.023	0.027	1.000		
Single	0.083	-0.104	0.058	0.084	0.188***	0.058	0.126*	0.100	-0.035	1.000	
Frequency	-0.308***	-0.124*	-0.199***	-0.066	-0.031	-0.337***	-0.101	-0.077	-0.018	0.032	1.000

*** $p<0.01$, ** $p<0.05$, * $p<0.1$

Table 3 shows the descriptive statistics of the variables in this study, while Table 4 displays the pairwise correlations among the variables. We observed that all the correlation coefficients are below 0.80. This suggests that the empirical analysis is not significantly affected by the severe multicollinearity issues typically encountered in cross-sectional data analysis. Table 5 reports the regression results for Equation (1). Columns 1 and 4 show the obtained results of ordered logit modelling. Columns 2 and 5 present the estimated outcomes of the ordered probit modelling, while Columns 3 and 6 display the estimated outcome of multiple linear regression modelling. Columns 1, 2 and 3 include all the proposed independent variables as stated in Equation (1). For robustness checking, Columns 4, 5, and 6 eliminate those insignificant factors underlying both UTAUT2 and ECM theories. The results in terms of the signs and significances are consistent across the modelling from Columns 1 to 6.

Table 5: Regression Results

	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES						
CPE	31.005**	16.228**	11.603**	33.966***	18.929**	13.331**
	(13.817)	(8.110)	(5.750)	(13.115)	(7.658)	(5.393)
CEE	0.805*	0.419*	0.359*	0.883**	0.479*	0.376**
	(0.459)	(0.167)	(0.187)	(0.438)	(0.256)	(0.178)
CHM	-0.019	-0.011	-0.031			
	(0.195)	(0.111)	(0.076)			
CPSO	-0.091	-0.051	-0.050			
	(0.175)	(0.097)	(0.066)			

CH	1.028***	0.593***	0.398***	1.046***	0.620***	0.384***
	(0.213)	(0.120)	(0.079)	(0.173)	(0.093)	(0.056)
CSA	2.157	1.572	1.224			
	(2.442)	(1.441)	(1.011)			
CT	0.026	0.025	-0.009			
	(0.213)	(0.118)	(0.080)			
Male	-0.425	-0.251	-0.180	-0.389	-0.226	-0.162
	(0.277)	(0.155)	(0.080)	(0.274)	(0.154)	(0.106)
Single	0.278	0.176	0.125	0.294	0.192	0.128
	(0.271)	(0.155)	(0.107)	(0.262)	(0.151)	(0.104)
Frequency	-0.351**	-0.203**	-0.133**	-0.351**	-0.195**	-0.139**
	(0.164)	(0.094)	(0.066)	(0.158)	(0.090)	(0.063)
_cut1	-4.240***	-2.242***		-4.166***	-2.109***	
	(1.393)	(0.755)		(1.365)	(0.727)	
_cut2	-1.333	-0.870		-1.238	-0.737	
	(1.171)	(0.680)		(1.120)	(0.648)	
_cut3	0.545	0.203		0.634	0.330	
	(1.172)	(0.678)		(1.117)	(0.645)	
_cut4	3.127***	1.723**		3.204***	1.841***	
	(1.197)	(0.692)		(1.145)	(0.661)	
Constant			3.185***			3.160***
			(0.482)			(0.458)
Observations	225	225	225	225	225	225
R-squared			0.357			0.350

Notes:

The asterisk (*) represents the significant level: * p < 0.10, ** p < 0.05, and *** p < 0.10. ***Performance Expectancy***

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This result is consistent with previous research, which highlights performance expectations as a significant motivating factor influencing consumers' intention to continue using OFD services (Alalwan, 2020; Zhao & Bacao, 2020; Le & Thuan, 2021; Lee et al., 2019). The intention is likely due to OFD providers delivering consistent and high-quality performance. (Zhao & Bacao, 2020). This is in line with the UTAUT2 model, which suggests that consumers believe that using technology can enhance their activities or lifestyles. The greater the efficiency and usefulness of OFD services, the stronger the intention to use them for food purchases (Venkatesh et al., 2003, 2012; Alalwan, 2020). OFD services offer greater mobility and flexibility than traditional food ordering methods. Consumers perceive online food delivery (OFD) services as an innovative and convenient method to access various food and restaurant options anytime. It allows them to place orders and make payments efficiently without needing direct physical interaction with the restaurant (Alalwan, 2020). In short, this study confirms that performance expectancy helps to stimulate consumers' continuance intention to use OFD services.

Effort Expectancy

Under the unique event of the COVID-19pandemic, this study affirms with the previous research that effort expectancy has a positive relationship with shaping consumers' continuance intention to use OFD services (Troise et al., 2020; Muangmee et al., 2021; Zhao & Bacao, 2020; Ray et al., 2019). According to Ray et al. (2019), effort expectancy is strongly connected to the attributes of OFD services, such as the ease of using the OFD platform to select food across a wide range of food options and restaurants, the ease of placing and tracking orders and making payments, whereby consumers are motivated to use the OFD services repetitively. Therefore, the findings of this study align with previous research by Ramos (2021), Le and Thuan An (2021), and Chanthasaksathian and Nuangjamnong (2021), emphasizing effort expectation as a key factor influencing consumers' continued intention to use OFD services. Hence, the development of a user-friendly platform interface to motivate more people towards the OFD services. Nevertheless, this finding opposes some studies that suggest consumers' intention to continue using OFD services is not influenced by effort expectancy as they become familiar with the technology over time (Lau & Ng, 2019; Alalwan, 2020; Lee et al., 2019).

Hedonic Motivation

We found that hedonic motivation is insignificant in gaining continuance intention to use OFD services after COVID-19 pandemic. This is in contrast with the previous studies, which showed that users who derive a sense of enjoyment and satisfaction from OFD services are more likely to sustain their use of such services in the future. (Le & Thuan, 2021; Rasli et al, 2020). Our contrasted result could be due to our selected sample involving only millennials. Compared to other age groups, millennials constitute the largest group of early adopters and the primary contributors to sales in Malaysia's food and beverage industry. (Siddharta, 2023). Hence, they may not feel excited or pleased to use the OFD services because it is not something new to them.

Price-Saving Orientation

This research found that price-saving orientation does not contribute to the intention to keep using OFD services. This finding is inconsistent with the results of prior studies that consumers are motivated by financial savings derived from loyalty programs, discounts, or cashback incentives, which significantly make them continue utilizing the service. (Tomacruz & Flor, 2018; MarketWatch, 2019; Kapoor & Vij, 2018). Approximately 65% of respondents in this study reported earning less than RM5,000 per month, categorizing them as part of the lower-income group. (DOSM, 2021). Consequently, Price Saving Orientation was insignificant compared to prior research, as participants were likely price-sensitive and did not perceive OFD services as providing price-saving benefits. Additionally, delivery and packaging fees are typically incurred with OFD services, making the overall cost higher than buying directly from food stalls. Sometimes, consumers must place extra orders to qualify for free delivery, leading to extra expenses (Hooi et al., 2021). Consequently, OFD services are not considered a cost-saving option and do not affect the willingness to continue using them.

Habit

This research shows that habit is the most important factor affecting the intention to keep using OFD services. This is likely due to new habits that people developed during the pandemic (Zhao & Bacao, 2020). In this study, 47.4% of respondents were new to OFD services during the pandemic and tended to keep using the service if satisfied. Other studies have found that millennials develop habits around using food delivery apps (FDAs) because of their strong attachment to smartphones and e-commerce (Le & Thuan, 2021). This matches the current trend in Malaysia, where 97% of millennials use their phones to order food online (Siddharta, 2023). These findings support previous research that habit strongly influences the decision to keep using OFD services (Lee et al., 2019; Le & Thuan, 2021; Rasli et al., 2020; Chotigo & Kadono, 2021). Overall, consumers are more likely to use the same food delivery apps if they had positive experiences (Alalwan, 2020).

Satisfaction

This research found that satisfaction insignificantly impacts the intention to keep using OFD services. This result differs from earlier studies in countries like Jordan, Bangladesh, China, Vietnam, and Thailand during the COVID-19 pandemic, where satisfaction was a key factor. One possible reason for this difference is that respondents in this study may have generally been dissatisfied with their OFD experiences. Satisfaction is defined as the "overall emotion-based evaluation of an IS" (Yuan et al., 2016), so users may have felt less satisfied if they did not see factors like cost savings and trust as important for their continued use of the service. Additionally, this study did not assess other factors that could affect satisfaction, such as the quality of service from delivery personnel, platform performance, and content consistency.

Trust

This study found that trust does not greatly impact whether people use OFD services. This goes against previous research, which suggested that trust encourages people to keep using these services if they believe in their reliability and effectiveness (Cho et al., 2019; Chotigo et al., 2021; Zhao & Bacao, 2020). Surprisingly, trust was not a major factor in this study, even though people agreed that how well the service works and how easy it is to use influenced their decision to keep using OFD. One possible reason is that factors like food quality, packaging, hygiene, and the efficiency of delivery staff were not considered in this study, but they could affect trust. This finding aligns with Troise et al. (2020), who found that while trust affects how consumers feel about OFD services, it does not directly impact their decision to order food through these services.

For controlling variables, we find that the more the respondents used OFD services during the COVID-19 pandemic, the more they tended to continue using them after the pandemic. This could be due to their confidence in the OFD services in Malaysia. However, gender and marital status do not influence the continued intention to adopt OFD services after the COVID-19 pandemic.

CONCLUSION AND IMPLICATIONS

This study examined the key factors influencing the continuance intention among millennials in Malaysia to use OFD services during the endemic. The key factors that included in the study are performance expectancy, effort expectancy, hedonic motivation, price-saving orientation, habit, satisfaction, and trust. Based on the findings, only three key factors significantly influence the intention of millennials to continue using OFD services: performance expectancy, effort expectancy, and habit. While the remaining factors did not significantly influence the intention. This indicated that when using the OFD, millennials placed high expectations on the service's performance outcome and efficiency and also established habitual behaviour during the pandemic. It is consistently aligned with the habits formed during the pandemic, where convenience and minimal effort in ordering food were crucial. Subsequently, the pattern of behaviour also continued after the endemic, especially among the millennials.

Integrating the Unified Theory of Acceptance and Use of Technology (UTAUT2) and the Expectation-Confirmation Model (ECM) in this study contributed to the existing literature. The findings indicated that it is important to understand that long-term usage behaviour is more crucial than adoption behaviour alone, with the advancement of technology contributing to mankind's daily activities, especially after the tragedy of COVID-19. Furthermore, the study also suggested an important research gap in addressing millennials' continuance intention in emerging markets remains an underexplored area.

As for the practical implications, this study suggested some actionable approaches, especially those targeted at the OFD service providers. As OFD service providers, they must improve their efficiency in service quality, especially in terms of speed of delivery and user-friendly app interfaces. Service providers must constantly develop and enhance the seamless ordering of online platforms. However, additional focus should be placed on pricing strategies. Service providers should explore different pricing models to ensure that the services are perceived as affordable and accessible, particularly considering the price sensitivity among millennials. In addition, habit formation is also a significant factor that influences the continuance intention to adopt ODF, indicating that the service provider should consider implementing some features, such as the loyalty program, personalized service, and memories captured on the repeated orders. On the other hand, the price-saving orientation was found to be one of the nonsignificant factors that suggested that the service providers were required to reconsider their pricing strategies and models to appeal to wider users in the Malaysia context. This finding suggested that the service providers should reconsider their pricing strategies and models to better appeal to a broader range of users, especially in the Malaysian context.

This study recommended having different age groups as the sample due to the different behaviours among the different age groups. Moreover, future researchers should explore how longitudinal studies could be structured to provide insights into the evolution of consumer behaviour over time, particularly considering changing market dynamics, economic shifts and the lasting impact of the post-pandemic recovery phase. Besides that, for future study, researchers should consider the influences of external factors, especially from the service provider and food provider aspects, namely, the speed of delivery, the food quality, the hygiene awareness, etc. Besides that, future researchers should consider conducting a longitudinal study, especially looking at the evolution of the economy for post-pandemic

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