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Continuous Behavior of Using Food Delivery Mobile Applications in Vietnam after Covid-19 Pandemic*

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Abstract

Purpose: During and after Covid-19 pandemic, technology has emerged as a key factor in supporting the recovery of the economy and the rise of living standards. This study examines seven factors affecting the intention of food delivery apps usage, which include Performance Expectancy, Effort Expectancy, Social Influence, Hedonic Motivation, Price Value, and Habit, and how much influence they have on the customers' behavioral continuance of food delivery apps after Covid-19 Pandemic. **Research methodology:** This research is a quantitative descriptive research with 473 qualified respondents from 550 respondents collected. Besides using the UTAUT2 model (Venkatesh et al., 2012), Information Quality was added to give a better explanation for the consumers' intention towards continuance behavior using food delivery apps. The collected data is then processed using SPSS 22.0. **Results:** Habit factors and Information Quality factors have significant positive effects on promoting food delivery apps usage intention, which in turn influences continuance behavior. In addition, Habit factors and Information Quality factors together have an effect of 48.57% on Behavioral Intention. **Conclusion:** The result proves that positive habits and food information quality can increase the usage intention towards the behavioral continuance of consumers. Higher usage frequency can be improved by increasing these two factors.

Keywords: UTAUT2, Mobile Applications, Food Delivery Application, Continuous Behavior, Covid-19, Online Buying Behavior.

JEL Classification Code: M10, M30, M31

1. Introduction

Through the Covid-19 pandemic, almost the governments in the world issued strict social distancing

directives at different level. Citizens were required to stay at home, except for trips to buy necessities for emergencies, or go to work at businesses that were allowed to open. The social communication had to change completely from face-

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to-face to digital platforms such as Facebook, Zoom, Microsoft Teams... for keeping the work and connections in flow. As a result, people are adapted to work and study through the internet, thereby, the way companies and schools are operating has changed from working at their locations to remote working or hybrid working. Learning from Korea's strategy, "The Korean New Deal" policy including the "Digital New Deal" and the "Green New Deal" is imposed for overcoming crises and gaining global economic leadership after the end of Covid-19 through the expansion of digital technologies comprising the development of the e-government infrastructure and services and data economy. According to the World Economic Forum, in order to effectively improve the epidemic monitoring, virus tracking, prevention, control and treatment, and resource allocation, China actively leveraged digital technologies such as artificial intelligence (AI), big data, cloud computing, blockchain, and 5G.

Since the Covid-19 outbreak, the development of food delivery mobile apps has evolved dramatically to live up to people's demand of ordering food online; whereas businesses can engage in and build a strong relationship with customers through installed applications which have a lot of insightful user data. Along with their growth and importance, consumers' behaviors have continually changed, especially in emerging Southeast Asian countries like Vietnam. Due to Covid-19, there are 24 percent of the new users who have started to use food delivery mobile applications for the first time and 70 percent of respondents increased their food delivery usage in the last 60 days among the existing users in Vietnam. Obviously, the reason for this phenomenon is that the adoption and habit of using technology like food delivery mobile applications seems to be embedded in the behavior of customers in Vietnam with the beliefs that ordering food online helps them gain a lot of benefits including convenience, time-saving, price value, updates on food information and little efforts to use needed during the social distancing. From the intention to use leading to the actual use, continuance behaviors of food delivery mobile application utilization are in likelihood of modification owing to the context change, namely "after the covid-19 pandemic".

This research concentrates on the intention to use food delivery mobile applications in the context of the new normal in Vietnam, which is implied from the actual customer behavior during the Covid-19 pandemic. In terms of the sharing economy, food delivery mobile applications have brought a lot of benefits to businesses through increasing customers' choice owing to the social distancing. The shift towards online food ordering society is developing at speed for the reasons that customers have been in the habit of using food delivery mobile applications during the Covid-19 pandemic. Moreover, such global epidemics can be

occurring in the future as predicted from the early 2000s. Therefore, food delivery mobile applications are and will continue to be the trend and bring a lot of profits for corporations after the covid-19 pandemic.

In regard to the research model, the Unified Theory of Acceptance and Use of Technology (UTAUT2) model is regarded as a well-developed model expanded from the UTAUT model by Venkatesh (2003) with the purpose of understanding users' behaviors and use of information technology in a certain context. Recent researches have employed the UTAUT2 model to shed light on the adoption and using behaviors of technology, especially applications on technological devices because it can be pointed out that behaviors of users can change based on context having a profound impact on their life. For example, Arenas-Gaitán et al. (2015) applied the UTAUT2 model to analyze the acceptance and use of Internet Banking by the people at the age of over 50 because age itself is the crucial factor hindering users from access to change like complex Internet activities including banking transactions on mobile apps. Blended learning defined as the combination of face-to-face learning and online learning, is a new method enhancing the quality of education, particularly in medical study, therefore, Azizi et al. (2020) investigated and determined the factors affecting the students' behavioral intention to use this educational approach. As a result, Universities can utilize the results of this study to design and implement successful blended learning courses in medical education. Obviously, the UTAUT2 model is an effective approach in studies relevant to technology, and trendy industries such as fintech, healthcare, e-commerce, entertainment, food delivery, etc., understanding how people can adopt, use and continue to take advantage of mobile applications to make their life aspects more convenient. To the best of our knowledge, due to the lock-down during the Covid-19 pandemic, citizens were forced to use technological amenities and platforms in order to communicate with others and have shippers deliver food to their houses. During this time, all people from the young to the elderly got access to mobile applications such as Facebook, Zalo to keep contact with friends and relatives, Grab, Shopee Food to get food without going out of the streets. This can be identified as a free education to convey knowledge and information about the mobile applications which help human's daily activities more easily. However, after the Covid-19 pandemic, the question is that when people come back to the normal, whether or not they use food delivery applications frequently because they can go to stores to buy food themselves. There have been a few studies on the continuous behaviors of using food delivery mobile applications after the Covid-19, therefore, filling this research gap, this research will make use of the UTAUT2 model to provide insights for stakeholders.

Our purpose for this article is examining the factors affecting the behavioral intention leading to the continuance behavior of using food delivery mobile applications in the North of Vietnam after the Covid-19 pandemic. Moreover, the researchers included a new variable, Information Quality, which helps ensure future customer's intention, as well as, studied about the main drivers for continuance of using such kind of technology, thereby value the customers' interest by improving their use experience of food delivery mobile apps. Although researches relating to food delivery mobile applications are valuable, there has been a lack of resources showing the implications of customers' behaviors after the Covid-19 pandemic in Vietnam, and thereby provide little information on this growing industry in Vietnam. Therefore, in this article, scholars will introduce the study of the aforementioned for opening the viewpoint for Vietnamese and Southeast Asia businesses which are similar to Vietnam cultures.

2. Literature Review

2.1. Unified Theory of Acceptance and Use of Technology (UTAUT2)

Unified Theory of Acceptance and Use of Technology Model (UTAUT2), which was proposed by Venkatesh et al. (2012), is a theoretical model expanded from the UTAUT model by Venkatesh (2003) with the purpose of understanding individual and use of information technology and paying particular attention to the customer use context. Venkatesh kept the ideas outlined by Alvesson and Kärreman (2007) about the ways of extending a theory by leveraging a new context, which are presented in the Journal of the AIS special issue on TAM (e.g., Bagozzi 2007; Venkatesh et al., 2007). This model assumes that seven key factors including Performance Expectancy (PE), Effort Expectancy (EE), Social Influence (SI), Facilitating Conditions (FC), Hedonic Motivation (HM), Price Value (PV) and Habit (H) have a profound influence on Behavioral Intention to use a technology, while behavioral intention and determine technology use. The UTAUT2 framework is regarded as an important theory due to the capability of examining consumer context such as the context of user technologies, a multibillion-dollar industry given the number of technology devices, applications, and services targeted at consumers (Stofega & Llamas, 2009).

Unified Theory of Acceptance and Use of Technology Model is a prominent theory that has been applied as an approach and the original model in many studies about customer acceptance in a particular context in terms of intention and behavior. Since its original publication, UTAUT2 has proved that instead of initial acceptance,

context habit has been demonstrated to be a critical driver predicting technology use (e.g., Kim & Malhotra, 2005; Limayem et al., 2007). Therefore, there are a lot of researches including the UTAUT2 model and further developed UTAUT2 constructs. The authors showed that Information Quality (IQ), Effort Expectancy (EE), Hedonic Motivation (HM), Price Value (PV) and Habit (H) have a positive relationship with behavioral intention. Furthermore, Behavioral Intention has been the best predictor of technology use behavior (e.g., Davis & Venkatesh, 2004; Kim & Malhotra, 2005; Kim et al., 2005; Limayem et al. 2007). As a result, the more positive intention to use, the greater continuance behavior of using.

It is undeniable that the model UTAUT2 has been giving a hand to the research completion because it can explain the full outlook on external factors affecting user behaviors with a certain context which could not be showed in many prior studies using other models including theory of reasoned action (TRA), TAM/TAM2, the motivational model (MM), theory of planned behavior (TPB), combined TAM and TPB (C-TAM-TPB), the model of PC utilization (MPCU), innovation diffusion theory (IDT), and social cognitive theory (SCT). UTAUT2 reflects a thorough theoretical framework that has been applied in various settings, thus proving its applicability and adaptability in various contexts that address consumers' adoption and use of technologies (Vinerean et al., 2022). For instance, such a study was examined in the context of food delivery apps in Thailand (Chotigo & Kadono, 2021). As a conceptual framework, UTAUT2 was also applied in relation to consumers' tendency to utilize health apps or telemedicine (Schmitz et al., 2022; Damberg, 2022), travel and tourism apps (Medeiros et al., 2022; Rauscher & Humpe, 2022), electric car-sharing services (Curtale et al., 2021), acceptance of artificial intelligence (Gansser & Reich, 2021), retail app usage (Hanif et al., 2022; Chimborazo-Azoguet et al., 2021; García-Milon et al., 2021), adopting food delivery apps (Zanetta et al., 2021), or mobile payment app usage (Chen et al., 2022). Obviously, UTAUT2 research is regularly employed to evaluate determinants affecting consumers' continuance intent to rely on online food delivery applications. As a result, the researchers made a useful contribution to the food industry, supporting food delivery mobile application developers and service providers in advancing their company and marketing strategies.

2.2. Behavioral Intention of Using Food Delivery Mobile Applications

Users' behavioral intention of using software products is the major objective of mobile app owners. Because intentions in those contexts are "to capture the motivational factors that influence" the actual customer behavior, being

proper determinants for the willingness to perform certain behaviors (Ajzen, 1991). In fact, an “individual’s tendency to perform some behavior” is the major aspect of the ‘Theory of Reasoned Action’ (TRA) (Fishbein & Ajzen, 1975). Therefore, intentions illustrate an indicator of users’ “perceived likelihood of using a particular innovation” (Yapp & Kataraiyan, 2022; Chotigo & Kadono, 2021), such as mobile food delivery apps. Behavioral intentions (Rasli et al., 2020; Vinerean et al., 2022) have been considered several times in relation to investigating food delivery apps and the UTAUT2 approach.

Behavioral Intention (BI) is related to the probability of which an individual formulates conscious plans to perform a behavior (Venkatesh et al., 2003, 2012). When it comes to food delivery mobile applications which can be defined as mobile applications downloaded by ones using technological devices such as smartphones and tablets with the purpose of getting access to restaurant information, browsing food menus, making food order, and transferring payment without any physical contact with restaurant staff (Alalwan, 2020), there is a positive result showing BI’s profound impact on the actual behaviors of customers. During the Covid-19 pandemic, food delivery mobile applications brought a lot of benefits to customers including ease and convenience of shopping, swift and comprehensive product searchability, price comparison, real-time monitoring, payment flexibility, loyalty benefits, instant delivery, and active customer support (Hansen, 2008; Gupta, 2019). These advantages in such a complicated situation boosted the intention to use this kind of application with the increase in new users by 24 percent in Vietnam. Therefore, the behavior modification will be likely to occur after the covid-19 pandemic, when all people adapt to the new normal.

In the context of Malaysia, online food delivery with certain strategies on website or mobile applications is offered by various firms like Mammam, Uber Eats, Shogun2U, Honestbee, DeliverEat, Running Man Delivery, FoodTime, Dahmakan, and FoodTime and the pioneer FoodPanda (Rasli et al., 2020). Using the UTAUT2 model and the additional variable “Information Quality”, Maizatul Akmar Mohd Rasli showed that although online food delivery has hit a huge amount of revenue in 2019 which was \$US 145 million in Malaysia and are expected to state an annual growth rate of 23.2% in 2023, it is uncertain whether user will continue use this kind of apps in future depending on the unexpected change. Therefore, behavioral intention in online food delivery has been carefully examined to predict which factors affect usage decisions, leading to user retention throughout the years.

Previous research has studied the main factors affecting customers’ adoption and intention to use food delivery mobile application behavior during the covid-19 pandemic

(Puriwat & Tripopsakul, 2021); whereas there are comparatively few studies that get in-depth into the behavioral intentions after the covid-19 pandemic despite the high likelihood of customers’ habit change. In particular, in Vietnam, the food delivery mobile application penetration has accelerated in recent years, with increased investment from global leaders such as GrabFood or ShopeeFood. Such breakthrough has a profound impact on customers’ intention to use owing to the numerous benefits recognized such as time-saving, cost efficiency, and delivery speed improvement. Therefore, this study has illustrated determinants influencing the intention to use food delivery mobile applications in the North of Vietnam after the boosted-technology period, the Covid-19. In addition, we will propose a result of affecting factors, continuance behavior, which can show prediction of customers’ behavior after the Covid-19 pandemic.

2.3. Continuance Behavior of Using Food Delivery Mobile Applications

In UTAUT2, Continuance Behavior (CB) is the uninterrupted actual usage behavior stemming from a direct function of Behavioral Intention (BI). Take the m-commerce field as an example, Wu and Wang (2005) showed that BI is the main factor impacting on the actual usage behavior, so-called Continuance Behavior (CB). Such scientific evidence has come to light in electronic services for e-consumers (Hsu & Chao-min, 2004) and mobile services (Kargin et al., 2008). With a social context, continuance behaviors are examined to predict the possible change in users’ behaviors and the demand on product features, thereby up-to-date fixes can be completed just in time, heading to the successful implementation of software products in the long run.

Continuance Behavior is considered as the continued usage by adopters, which follows an initial acceptance decision (Kim et al, 2007). This also can be defined as the result of behavioral intention to use a technology owing to external factors affecting customers’ thoughts. After receiving the value from using food delivery mobile applications during the covid-19 pandemic, consumers have an increasing demand for continually using them for fear of social exposure. Moreover, there are about 60% of users who have installed at least one food delivery mobile application on their smartphones, Sumagaysay (2020) has stated.

In the context of Korea, the number of users in Korea’s delivery app market has risen dramatically, from 870,000 in 2013 to 25 million in 2018. The volume of transactions as of 2018 was estimated to be about 3 trillion KRW, accounting for 20% of the food delivery market (15 trillion KRW) (Joins, 2019). Customers can search for on-demand

products and compare prices in a fast way through online food delivery apps, therefore, small-scale restaurants with moderate budgets can take advantage of these apps as a convenient and highly efficient sales and marketing tool. Lee et al. (2019) employed the UTAUT2 model with the additional variable “Information Quality” to examine e-commerce consumer behavior in the continuous use of mobile delivery app services for the purpose of contributing to marketing strategies for service providers and restaurant businesses.

According to Report on mobile applications 2021 in Vietnam, the number of people using this service regularly (at least once a week) in 2016 accounted for only 20%; it would reach 80% by 2020. The special thing is that the dense appearance of food ordering applications on smartphones has boosted continuance behavior. The rate of ordering food through the mobile app reached 82 percent compared to 2018, only 58%. From this previous survey, it can be noticeable that customers’ behavior continues to change depending on the background situation. Moreover, this transformation can happen because consumers have a desire to enjoy a great deal of utilitarian conveniences thanks to rapid developments in ICT. The researches on the continuance behavior after the Covid-19 pandemic are so important to businesses because understanding continued user engagement in a platform like food delivery mobile application helps them to promote platform activities, therefore, their loyalty to the brands will be higher.

3. Hypothesis Development and Research Model

3.1. Hypothesis Development

Performance Expectancy (PE): shows a consumer’s belief that innovation usage will assist to gain benefits in task performance (Venkatesh et al., 2012). Food delivery mobile applications can be defined as mobile applications downloaded by ones using technological devices such as smartphones, tablets... with the purpose of getting access to restaurant information, browsing food menus, making food order, and transferring payment without any physical contact with restaurant staff (Alalwan, 2020). Accordingly, as long as productivity and time-saving are the main advantages for customers perceiving using food delivery mobile applications, they have a tendency to use food delivery mobile applications many times. Zhou et al. (2010) found that performance expectancy has a profound impact on user’s technology adoption with positive results. Therefore, learning from the research results of previous studies, the authors come up with a hypothesis:

H1: “Performance Expectancy” of users has a positive impact on Behavioral Intention.

Effort expectancy (EE): is the perception that it is easy to learn how to use a technology in order to support other activities (Venkatesh et al., 2012). Accordingly, it can be stated that with little effort, users are ready to perceive technology products. Mobile applications have been more susceptible to being adopted and utilized for the reason that they can be involved in a lot of complicated steps to complete the tasks. Meanwhile, for people who fail to have a knack for technology, especially the older, they find it hard to change their behaviors to use the new technology. Effort expectancy is a determinant for perceived utility, as evidenced that it is easy to use a system, both directly and indirectly resulting in the intention to use (Gárdan et al., 2021). Food delivery mobile applications are just involved in a few steps but multiple payment choices. Effort expectancy positively influences the use of certain new technologies and, thereby indicating a behavioral intention to use food delivery mobile applications. Therefore, the following hypothesis shows that:

H2: “Effort Expectancy” of users has a positive impact on Behavioral Intention.

Social influence (SI): is the degree of the individual’s perception that he or she should use a new technology recommended by the key figures (Venkatesh et al., 2003). It is involved in users’ willingness to try out new technologies suggested by others, including friends, colleagues, and families. According to Alaimo et al., (2020), from the Covid-19 pandemic appearance, there is a growing number of mobile applications, leading to the increase in social influence on new mobile technology use including food delivery applications. The social influence has a positive impact on the user’s intentions to use new technologies (Sair & Danish, 2018; Skoumpopoulou, 2018; Sathye et al., 2018). Therefore, this factor can determine behavioral intention to use food delivery mobile applications. From this, a hypothesis is proposed that:

H3: “Social Influence” of users has a positive impact on Behavioral Intention.

Hedonic motivation (HM): is defined as the fun or pleasure stemming from using a technology, and the crucial role in examining technology acceptance and use. According to IS research, technology acceptance and use are directly affected by such hedonic motivation, which is conceptualized as perceived enjoyment (Thong et al., 2006). This enjoyment has a profound impact on users’ intention to adopt and rely on mobile applications in the long run. In the

user context, hedonic motivation has also been shown to be the important factor of technology acceptance and use (Childers et al., 2001). Utilizers are more willing to enter the mobile apps on a daily basis if they provide additional entertainment or possess multimedia value. Various app features such as browsing, content and social sharing, collecting incentives/rewards, etc., increase the user frequency, generating customer engagement and loyalty to products. Therefore, we regard hedonic motivation as a predictor of customers' behavioral intention to use food delivery mobile applications. Thus, the following hypothesis is proposed that:

H4: "Hedonic Motivation" of users has a positive impact on Behavioral Intention.

Price value (PV): connects to the financial aspects of using new innovative products or technologies. PV is an additional variable in UTAUT2 that differs it from UTAUT, making UTAUT2 more relevant to the consumer market (Venkatesh et al., 2012). Marketing research illustrates that the monetary cost/ price is usually equivalent to the quality of products or services to dictate the perceived value of products or services (Zeithaml, 1988). It could be "users' cognitive tradeoff between the perceived benefits of the applications and the monetary cost for using them" (Dodds et al., 1991). The fact is that food delivery mobile applications offer a great deal of discounts, cashbacks, points, coupons, etc., which motivates the frequent use of them. Moreover, people after the covid-19 pandemic may keep the purchasing behavior from the lockdown that they concentrated essential items, medication, antiseptics and disinfectants, delivery services, etc because of the decreased income. The price value is positive when the benefits of using food delivery mobile applications are more than the monetary cost, affecting positively behavioral intention. Thereby, we regard price value as a predictor of behavioral intention to use food delivery mobile applications with the following hypothesis is proposed that:

H5: "Price Value" of users has a positive impact on Behavioral Intention.

Habit (H): can be defined as the indicator of automotive action as result of an accumulation of learning or adaptation process (Limayem et al., 2007), whereas Kim et al. (2005) supposed habit as automaticity. The automaticity is developed when a particular behavior is repeated in a stable context. Habits will be acquired through an incremental strengthening of the association between a situation (cue) and a behavior (Gârdan et al., 2021). That customers used technology more and gained benefits and pleasing outcomes during the lockdown shows customers' increased frequency to use food delivery mobile applications, leading to habit

creation (Chotigo & Kadono, 2021). From prior experience, customers will have the behavioral intention to use food delivery mobile application after the covid-19 pandemic because of their tremendous advantages. In the habit of using mobile applications, people will make use of them for convenience without thinking, thereby, ready to submit the payment for any products on demand. Moreover, because it is stated to be their habit, they will consider food delivery mobile applications as a part of their lives and utilize them as a daily routine. Thereby, we regard habit as a predictor of behavioral intention to use food delivery mobile applications with the following hypothesis is proposed that:

H6: "Habit" of users has a positive impact on Behavioral Intention.

Information quality (IQ): can be defined as the value, validity, and usability of information that is both the output of an information system and the quality of that output (Negash et al., 2003). Moreover, Information quality mentions the degree to which a software platform provides the user with useful and tremendous information in a speedy and exact way (Zhao, 2019). Ranganathan and Ganapathy (2017) showed the quality of a website, a software product like mobile applications is based on information quality. Positive behavioral intention to use can derive from better information quality (Ahn et al., 2007). If the information is irrelevant, inaccurate or out of date, users will perceive those applications as useless ones, thereby having no intention to enter them once again. Therefore, information quality would increase interest and positive behavior intentions in utilizers. In addition, information quality significantly affects perceived usefulness, leading to the increased frequency of users and friend invitation to use apps. As a result, the number of users will increase at a fast pace, creating a network-based community sharing the same insights which provide information about the possible behavior change in the future. With a bulk of data, mobile app owners can promptly adjust and adapt in the context of VUCA (Volatility, Uncertainty, Complexity and Ambiguity). It is indicated that people have looked after their health more from the pandemic booming, leading to the specific attention to the food origin, therefore, an application which is sufficient with trustworthy data will definitely engage utilizers. As a result, consumers will have a positive view of information quality when the information is presented in a proper manner and comes up to their expectations during their decision-making process (Corbitt et al., 2003). We, therefore, propose the following hypothesis:

H7: "Information Quality" of users has a positive impact on Behavioral Intention.

Behavioral Intention (BI): can be defined as the degree to which an individual formulates conscious plans to perform a behavior (Venkatesh et al., 2003, 2012). Accordingly, behavioral intention could be the best forecaster of actual behavior. Behavioral intention has played a role in predicting technology use and introducing a new theoretical variable (i.e., habit) as another important predictor of technology use (e.g., Davis & Venkatesh 2004; Kim & Malhotra 2005; Kim et al., 2005; Limayem et al., 2007). During the covid-19 pandemic, customers had behavioral intention to use food delivery mobile applications, leading to the real use owing to the lockdown and fear of the crowd. Therefore, it could be that after the covid-19 pandemic, people will continuously use this kind of technology product because of the positive behavioral intention. As a result of Behavioral intention, Continuance Behavior can be defined as the users' long-term utility of a specific mobile service on a regular basis. From unconscious processes such as hedonic motivation, habits, users will be more consistent to select the specific mobile applications for several fixed advantageous reasons. In the midst of the Covid-19 pandemic, customers who have bought food from physical stores before, began using online food delivery applications as their daily activities. The adoption and acceptance of this kind of technology appeared during the time, will influence their next move in the normal when the Covid-19 pandemic terminates. Forecasting the continuance behavior from behavioral intention provides a solid foundation to make further decisions to nurture relationships with users. Therefore, the following hypothesis can be proposed:

H8: "Behavioral Intention" of users has a positive impact on Continuance Usage Behavior.

3.2. Research Model

Based on the theoretical basis of the UTAUT2 model, (Venkatesh et al., 2012), the authors built the final research model with six independent variables including Performance Expectancy (PE), Effort Expectancy (EE), Social Influence (SI), Hedonic Motivation (HM), Price Value (PV) and Habit (H). These six hypotheses were used to examine the influence on two dependent variables, Behavioral Intention and Continuance Behavior.

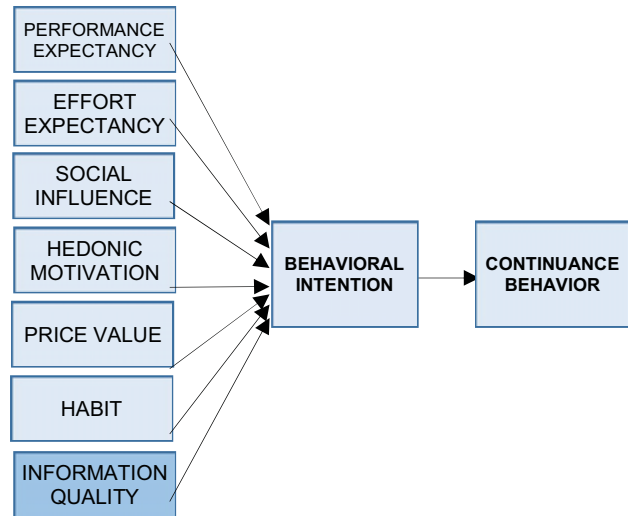


Figure 1: Model of Research

This article includes seven variables similar to the original model. Nevertheless, in the Vietnam context of mobile applications, one independent variable Information Quality (IQ) is expected to influence two dependent variables mentioned above. After all, there are seven independent variables constructed to study their impact on two dependent variables, Behavioral Intention to Use and Continuance Behavior to Use.

4. Research Methodology

The questionnaire was distributed to 550 Vietnamese citizens use food delivery apps via online survey which the research objectives were explained. This research's required information was not available in secondary data, so we conducted a survey to gather the primary data. The questionnaire, which was created using constructs and items from the literature and hypotheses, was divided into two sections: the first part asked questions about users' demographics, including their gender, age, occupation, income, education, and the food applications they frequently used, and the second part asked questions to evaluate how the nine factors mentioned above affected their intentions as well as how those intentions affected their behaviors. A Likert scale with five possible responses—1 for "strongly disagree" and 5 for "strongly agree"—was applied to this section. We only approach online buyers whose permanent addresses are in Hanoi because of the limited resources.

The research group has handed out 550 questionnaires but 473 were considered qualified and in line with the requirements that have been initially set. Among 473 respondents, the male gender makes up 32,98% and the

female accounts for 67,02%, which are equivalent to 156 men and 317 women respectively. Additionally, the majority of respondents belonged to the group of people under the age of 40, and the largest age range was between the ages of 18 and 22.

In this study, the research chose multiple regression analysis to estimate the relationships that were presupposed in the theoretical model. Initially, we used Cronbach's Exploratory Factor Analysis (EFA) to assess the scales' validity and reliability. After that, we calculated the correlation coefficients between the variables to see if there were any linear relationships between them. Finally, OLS method was used to assess the effects of explanatory variables on explained variables. The research team used SPSS 22.0 in order to present the demographic profile of the respondents.

5. Analysis Results

5.1. Measure Reliability

Authors use Cronbach's Alpha to measure the reliability of each factor or to evaluate the relationship of each set of items as a group. A factor is considered to be reliable if its Cronbach's Alpha value is equal to or bigger than 0.6 and each item's Corrected Item – Total Correlation is not less than 0.3. The Cronbach Alpha values for all factors shown in Table 1 are ranging from 0.798 to 0.881, therefore meet the requirement above. The collected results indicate a reliable consistency among items in each factor. The group continued to put 35 satisfactory observed variables into the EFA exploratory factor analysis.

Table 1: Reliability Analysis Result

Factor code	Number of items		Cronbach's Alpha	Corrected Item – Total Correlation minimum
	Before	After		
Independent variables				
PE	5	5	0.822	0.553
EE	5	5	0.881	0.609
SI	5	5	0.875	0.462
HM	5	5	0.872	0.587
PV	4	4	0.856	0.539
H	5	5	0.798	0.649
IQ	6	6	0.784	0.602
Dependent variables				
BI	5	5	0.830	0.581
CB	5	5	0.881	0.653

Source: Quantitative research results.

5.2. Measure Validity

The authors used exploratory factor analysis (EFA), selecting the Principal Components and Varimax rotation approach, to perform a validity test after assessing each factor's dependability. The research group ran two separated EFA analyses, one for seven potential factors the author expected to be independent factors and the other for two factors the author expected to be dependent factors in the Regression model. If the loading factors of each factor are less than 0.5, the items will be kept. The first EFA analysis excluded no items as the loading factors of all items were satisfactory in the criteria mentioned previously. Inspection Result KMO = 0.924 and Bartlett's results have Sig. = 0.000, the number of factors extracted is 7 factors, total variance extracted of 66.772. The second EFA analysis saw a clear separation between two factors with no items being excluded. For this analysis, Bartlett's Results have a Sig. = 0.000, the number of factors extracted is 2, and the total variance extracted is 58.473 according to the inspection result KMO = 0.939. The authors have identified seven key groups of factors that will become independent factors and two groups that will be dependent factors.

5.3. Hypothesis Testing

The research team used Pearson's correlation analysis to determine the relationship between the two dependent variables, BI and CB, and the seven independent variables, PE, EE, SI, HM, PV, H, and IQ (Sig. 0.05). The first regression model was then applied by the authors to examine how seven independent factors affected the dependent factor, behavioral intention. Table 2 displays the outcomes of the first regression model. As can be seen in Table 2, the VIF coefficient value of all independent factors is below 2, which ensures there is no collinearity phenomenon. In addition, the adjusted R² value is 0.573, indicating that 57.3% of the data set was used to build the linear regression model.

The research group then continued to run the second regression model in which the author examined the linear correlation between 2 factors, Behavioral Intention and Continuance Behavior. The result of this model is shown in Table 3. The result shows that Intention impacts Behavior (Sig. < 0.05). Additionally, the corrected coefficient R² is 0.688, which explains why 68.8% of the data set was used to build the linear regression model.

Table 2: The Regression Results

Coefficients							
Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	VIF
	B	Std. Error	Beta			Tolerance	
1	(Constant)	.339	.154		2.198	.028	
	PE	.066	.044	.063	1.510	.132	.524
	EE	.065	.039	.068	1.659	.098	.534
	SI	.148	.042	.146	3.488	.001	.517
	HM	.072	.033	.086	2.199	.028	.593
	PV	.163	.042	.159	3.913	.000	.549
	H	.251	.030	.327	8.445	.000	.603
	IQ	.174	.042	.166	4.092	.000	.547
Dependent Variable: BI – Behavioral Intention							
Coefficients							
Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	VIF
	B	Std. Error	Beta			Tolerance	
2	(Constant)	.522	.100		5.232	.000	
	BI	.858	.027	.830	32.290	.000	1.000
Dependent Variable: CB - Continuance Behavior							

Source: Quantitative research results

Table 3: The Regression Model

Model Summary b					
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.761a	.579	.573	.427	1.927
Predictors: (Constant), IQ, EE, HM, H, PV, PE, SI					
Dependent Variable: BI					
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
2	.830a	.689	.688	.378	1.957
Predictors: (Constant), BI					
Dependent Variable: CB					

Source: Quantitative research results

The research team discovered two regression models measuring the effects of independent variables on two dependent variables as follows:

Model 1: $BI = 0.063(PE) + 0.068(EE) + 0.146(SI) + 0.086(HM) + 0.159(PV) + 0.327(H) + 0.166(IQ)$

Model 2: $CB = 0.830(BI)$

In the first model, there are 7 factors affecting the intention to use the mobile application to order food, the level of impact (normalized β value) of the factors is ranked in descending order: (1) H Habit ($\beta = 0.327$), (2) IQ Information Quality ($\beta = 0.166$), (3) PV Price Value ($\beta = 0.159$), (4) SI Social Influence ($\beta = 0.146$), (5) HM Hedonic motivation ($\beta = 0.086$), (6) EE Effort Expectancy ($\beta = 0.068$) and (7) PE Performance Expectancy ($\beta = 0.063$). In this

model, based on the normalized β value, the independent variables all have a positive impact on the Behavioral Intention BI.

In the second model, the variable BI Behavioral Intention has a positive impact on CB Continuance Behavior continued to use with the coefficient $\beta = 0.830$.

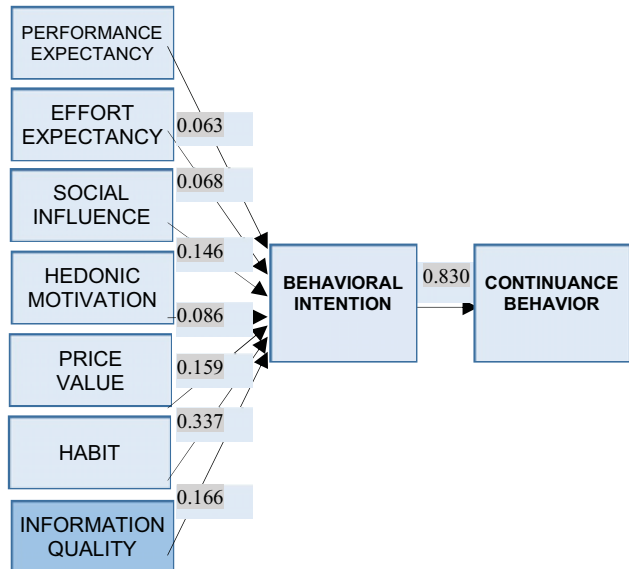


Figure 2: Model of Research on Factors Affecting Vietnamese' Intention Leading to Continuance Behavior When Using Food Delivery Apps

6. Discussion

Performance Expectancy (PE) has been verified in the regression model and was found to have a positive and significant effect on intention towards continuance usage intention with the reliability at $\alpha = 0.822 > 0.6$ and the correlation coefficient $\beta = 0.063$. This finding is consistent with that of Alalwan (2020), who came to the same conclusion that the performance expectations of FDA compliance were a significant predictor of both mobile user satisfaction and intent to continue using it. This finding is consistent with earlier research (Roh & Park, 2019; Zandi et al., 2020), showing that customers' performance expectancy is the primary factor influencing their usage of FDA. In addition, Performance Expectancy is considered to be a strong determinant of the effects on the mobile commerce adoption intention through personal innovativeness among Pakistani consumers. (Sair & Danish, 2018). Through the correlation coefficient, the item put the smallest impact on usage intention, it appears that consumers certainly will have a change in their intention towards using online ordering methods when they realize the benefits that these methods bring are better than those of traditional methods, especially after the pandemic.

The results showed that (EE) Effort Expectancy had a positive influence on the Behavioral Intention leading to the Continuance behavior of using food delivery mobile applications ($\beta = 0.068$). In particular, Karulkar et al. (2019) created a model to predict the variables influencing Indian consumers' intentions to use online meal delivery services, and they found that effort expectations have a major impact on consumers' intentions. According to Chaipayit Muangmee et al. (2021), effort expectancy may have an impact on a person's behavioral intention to use FDAs during the COVID-19 pandemic. Additionally, Northeastern Brazilian consumers provided more accurate assessments of effort expectations in the FDA's continuation intention. This implies that Effort Expectancy is an important factor affecting consumers' intention toward their continuance usage behavior of food delivery apps. Therefore, consumers will have a positive intention towards using food delivery apps if the procedures or steps of these methods are easy to carry out.

Social Influence (SI) was also specified to have a significant effect on consumers' intention to continually use the food delivery apps ($\beta = 0.146$). Social Influence was regarded to exert one of the strongest impacts on the users' intention to use food delivery apps. These outcomes are supported by earlier research (Sivakumar & Chopdar, 2019; Lai & Shi, 2015; Zhao & Bacao, 2020). The research team's findings are in line with a study by Sair and Danish (2018) and Sathye et al. (2018) in which the authors claimed that social influence has a favorable impact on users' intentions

to employ new technology. As a result, this factor can tell whether a user intends to keep using the FDA. This suggests changes in consumers' intention to be influenced by reference groups or the surrounding people. In fact, they may consult people around them or shopping groups on the Internet about the decision whether to pay online or not. If these reference groups have positive reviews, it is likely that consumers might have a different view about food delivery apps. As a result, Social Influence is regarded as an important aspect affecting Intention towards using behavior.

The result showed that (HM) Hedonic Motivation has a positive impact on the intention of customers who use applications to order food online ($\beta = 0.086$). Numerous studies have also demonstrated the positive effects of hedonic motivation on the dependent factor, such as those by Brown and Venkatesh (2005) who noted the importance of these characteristics in the acceptance of technology, and Venkatesh et al. (2012) who examined the effects of hedonic motivation on consumer behavior. In the early stages of a consumer's experience, hedonic motivation has a stronger influence. Numerous consumers have altered their eating habits as a result of the pandemic. Due to orders to stay at home, many are therefore at this initial stage and using FDAs. As a result, Hedonic Motivation is regarded as an important aspect affecting Intention towards using behavior.

Price Value (PV) was found to have a positive and significant effect on intention towards continuance behavior ($\beta = 0.159$). This outcome is similar to earlier research (Alalwan, 2020; Venkatesh et al., 2012). Price is the monetary cost to acquire and use a thing, according to Tam et al. (2020); value is an abstract term that varies depending on the circumstances (Chiu et al., 2005). Customers pay for technology either directly by purchasing an app or indirectly by purchasing FDAs (Venkatesh et al., 2012). Due to FDA incentives, more sales, and cheaper operational expenses including rent, taxes, and staff, many Vietnamese vendors using the FDA may be able to provide food at reasonable pricing. Thus, when the consumer understands that the benefits outweigh the price itself, the price value positively influences the continuance intention (Tam et al., 2020; Tandon et al., 2021; Venkatesh et al., 2012); this is also the reason why the price value places the third impact on continued use.

Habit is considered to be the strongest of all independent factors affecting Intention towards continuance behavior of using ($\beta = 0.327$). The influence of habit on the intention to continue depends on one's familiarity with the technology; specifically, the intention to continue grows as one gains familiarity with a given technology (Nascimento et al., 2018). Habit is a behavioral element that refers to the frequency of use and historical behavior of a particular technology (Yan et al., 2021). As people get older, they use technology less frequently. Even with repeated use, it might

be challenging for older persons to adjust to a new setting (Venkatesh et al., 2012). This is the same outcome as Lee et al. (2019) who found that habit has the biggest impact on intent to use continuously. Therefore, Habit has a positive and significant impact on Intention towards Continuance Usage Behavior.

Information Quality (IQ) - The newly added variable into our model based on previous research by Lee et al. (2019) which team research takes into consideration, will be potential in Vietnam. (IQ) Information Quality had a positive impact on Intention towards Continuance Usage Behavior ($\beta = 0.166$). To explain this unexpected result more clearly, one should take a look at the current state of online shopping behavior in Vietnam. In particular, due to the development of living standards, people tend to care more about health, food origin, nutrition, and supplier quality. Many food sellers, after realizing this new consumption trend and the huge benefits of selling online, start to sell their products on some famous platforms to improve customers' beliefs. This conclusion is in line with the findings of Escobar-Rodriguez and Carvajal-Trujillo (2014), who discovered that the credibility of the information reinforced customers' faith in online shopping, which in turn positively increased their intention to use. Thus, the quality of the information has a beneficial influence on users' intentions to continue using meal delivery applications.

The usage of behavioral intentions (BI) was discovered to have a significant favorable influence on (CB) Continuance Behavior to use food delivery apps ($\beta = 0.830$). Evidently, the relationship between behavioral intentions and continuance in usage behavior have been studied in an amount of research in the past, including the study where consumers' intention influence their behaviors (Donald & Sören, 1990) and the research where intention represents one important element in the attempts to predict or influence a change in consumer behavior (Madalina, 2019). The study of authors also draws the same conclusion in which consumers will have the higher continuance of using applications to order food if they have a positive intention towards these food delivery apps.

Overall, this study shows a solid significance on determinants that influence the continuance usage behaviors through Food Delivery Apps in Vietnam. The findings should be recommended for adopting better use of food delivery to order food. This would increase the growth of business in e-commerce and help in competing with several other e-commerce companies. Some of the recommendations are illustrated below:

(1) Universalize ordering food online in food delivery apps as a general trend and follow the development process of ordering food online forms.

(2) Approach customers to disseminate the advantages of ordering food online in delivery apps through mass media such as television commercials, radio news, and social networks.

(3) Develop confidentiality policies and transaction monitoring systems to limit risks for both consumers and sellers when these two groups conduct food delivery transaction.

(4) Improve the logistics system from supplier to customer to ensure food is always fresh. Accept ordering food online systems that work exactly or carry out certain functions of this unit to safeguard consumers' online transactions, such as allowing customers to exchange or return products if these items for some reasons do not live up to promised standards and accept to pay only after having checked the foods.

7. Conclusion

7.1. Implications and Values of the Research

According to the research's findings, the current model – UTAUT2 theory, in the context of customers' continuance usage intention of FDAs during COVID-19 quarantine, enables the research group to measure and to evaluate which factors affect the intention to investigate e-commerce consumer behavior in the continuous usage of mobile delivery app services in this study. The research shows that seven factors affected the intention and the continuous use of customers who order food by food delivering app. In which, the new variable Habits was included in the model and affirmed its importance in the model. Habits is evaluated as having the strongest impact on consumers' attitude of all independent variables considered. The next factors are Information Quality, Social Influence that affect the user's intention, but the level of these factors is almost equal. The results also show that there are also three remaining factors: Hedonic Motivation, Effort Expectancy and Performance Expectancy have an influence on intention to use but not as clearly as the factors listed above. Thus, a new factor is added based on Vietnamese conditions: The Information Quality has a significant impact on Continuance Behavior to use food delivery apps.

At the same time, research shows that the relationship between intention and behavior to continue using the application is closely related and affects each other. With the development of food delivery apps and covid 19 pandemic, Vietnamese customers tend to worry that the product quality is not like expected as when using this method, they must receive the order regardless the food is high quality or not. Qualified for this matter, the food delivery apps not only allow buyers to check the merchandise before payment, but

also offers a refund policy to buyers when the quality product is not like expected.

7.2. Limitations and Further Research Directions

Despite the study's conclusions and recommendations, a number of restrictions were found. First, the generalization of the results may be limited due to the fact that the findings may not be very generalizable because the research team only used data collected by sampling from Hanoi Capital residents. In other words, it might not be suitable to extrapolate the results of this study to other fields. Second, one of the drawbacks of the sample is its age distribution. Due to the covid-19 quarantine, an online survey approach was adopted, which resulted in an 84.36 percent share of responders being in their 20s and 30s. Therefore, several sorts of data collection techniques must be used in future research and future research is highly recommended for different regions or countries.

In future research, it will be vital that the research should be applied to many different countries and cultures in the future to think about and find whether there are cultural differences in terms of these behaviors because the study's participants are largely Hanoian students and office professionals. On the other hand, since the study was conducted during the COVID-19 quarantine in Hanoi Capital and in accordance with the spatial-temporal dynamics of an individual's behavior, future research can use longitudinal design to examine users' perceptions of food delivery apps' attributes in various contexts, including after quarantine, during the COVID-19 pandemic, specifically when restaurants were open and serving at a certain percentage of capacity, and after the pandemic.

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