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USING THE UNIFIED THEORY OF ACCEPTANCE AND USE OF TECHNOLOGY (UTAUT) MODEL TO EXPLORE CONSUMERS' CONTINUANCE INTENTION TO USE FOOD DELIVERY APPLICATION: THE CASE STUDY OF HO CHI MINH CITY

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ABSTRACT

This study aims to evaluate the drivers of customers' satisfaction and the intention to continue using food delivery application (FDAs) in Ho Chi Minh City by using the Unified Theory of Acceptance and Use of Technology (UTAUT) model. An online survey was conducted using Google Forms to collect data from 330 respondents in Ho Chi Minh City. The collected data was analyzed using SmartPLS 3.0, employing PLS-SEM to evaluate the model and test hypotheses. The results show that four elements from the UTAUT model, performance expectancy, effort expectancy, social influence, and facilitating conditions, have a significant impact on satisfaction with food delivery applications (FDA). Additionally, the intention to keep using mobile food delivery apps is significantly influenced by these factors as well. By validating UTAUT model factors in relation to user satisfaction and continuance intention to use mobile food delivery applications, this study offers a substantial contribution to theoretical insights and managerial implications. It provides practical guidance for academics and key stakeholders in FDA context.

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1. Introduction

The food delivery service sector in Vietnam has seen significant growth, with the entry of companies like Baemin and Grab which offer mobile applications for ordering food from restaurants. These food delivery apps have become popular among customers in Vietnam. The rise of digital platforms such as food delivery apps has revolutionized the way people order food, making it more convenient and accessible. As technology adoption in Vietnam continues to evolve, mobile food delivery applications play a crucial role in shaping consumer behavior and preferences.

The online food delivery service in Vietnam emerged in 2013 and recorded a growth rate of 32.4% in 2020. It has continued growing in recent years. This industry is forecasted to continue growing and reach approximately USD 500 million by 2023 (IMARC GROUP, 2020). The food delivery market in Vietnam is expected to reach USD 557 million by 2024. However, compared to other markets in Southeast Asian countries, such as Singapore, Indonesia, and Thailand, the market size is still small (Google et al., 2019). Therefore, the food delivery market in Vietnam is seen as a "golden" market that attracts numerous domestic and foreign investors.

Food delivery applications (FDAs) have emerged as the most popular option, particularly in major cities like Ho Chi Minh City (HCM City) and Hanoi (Q & Me, 2020), where the rate of smartphone ownership is so high in these two cities. High smartphone penetration makes it easy for customers to purchase and utilize online food delivery services (IMARC GROUP, 2020). A mobile food delivery app is a new platform that helps restaurants, franchisees, and food vendors provide consumers with a variety of options conveniently through an online mobile portal. Moreover, the trend of mobile app usage and e-commerce expenditures is continually increasing in the food sector in the Vietnamese market.

By using mobile food ordering applications, customers can easily and efficiently access and order meals from multiple restaurants at various times and in convenient locations. The apps also provide comprehensive information, accurately updated promotional programs, and menu options. Based on the information, customers can track their order progress through all stages of the ordering process. Ordering food online and food ordering applications have become popular and a natural habit for many customers in big cities like Ho Chi Minh City and Hanoi. Consumers' lifestyles in big cities have changed dramatically due to increasing urbanization. They are so busy with their work schedules that they don't even have enough time to go out for meals; therefore, food delivery services have emerged as a convenient alternative. Recent surveys indicate that the number of users of food delivery apps has increased significantly, with the frequency at least once a week (Q & Me, 2020). This trend is particularly evident among Millennials (born between 1980 and 2000), known for prioritizing convenience due to their fast-paced lives.

Food delivery apps have recently drawn the attention of researchers' interest, most of whom have explored the factors affecting consumers' behavioral intention and acceptance of food delivery apps (Choe et al., 2021; Song et al., 2021). Previous studies based on behavioral intention acceptance theory and technology continuance theory, including the TAM model (Choe et al., 2021; Hong et al., 2021; Nguyen et al., 2019), TBP theory (Troise et al., 2021), UTAUT (Puriwat & Tripopsakul, 2021; Zhao & Bacao, 2020), and UTAUT2 (Zanetta et al., 2021; Alalwan, 2020). Although research on consumers' behavioral intention to adopt food delivery apps has received significant attention (Choe et al., 2021; Hong et al., 2021; Puriwat

& Tripopsakul, 2021; Zhao & Bacao, 2020), few studies have examined e-satisfaction and continuance intention in this context (Alalwan, 2020; Nam & An, 2021; Wang et al., 2021). Therefore, this study extends the Unified Theory of Acceptance and Use of Technology (UTAUT) (Venkatesh et al., 2012; Venkatesh et al., 2003) by integrating e-satisfaction as a mediating factor, aiming to address this gap in the Vietnamese market.

The primary objective of this study is to examine the effect of performance expectancy (PE), effort expectancy EE), social influence (SI), facilitating conditions (FC), on e-satisfaction of customers regarding online review of FDAs and how e-satisfaction mediates such relationships. The research structure is presented as follows. *First*, the author presents the literature review on UTAUT and e-satisfaction; *Second*, the methodology, including measurement, sample design, and data collection, is presented. *Third*, the data analysis and results are presented, and the final section highlights the discussion of the study, contributions, implications, and limitations.

2. Literature review

2.1. The Unified Theory of Acceptance and Use of Technology

The Unified Theory of Acceptance and Use of Technology (UTAUT) was proposed by Venkatesh et al. (2003), a well-established framework for predicting the intention and actual use of technology. The UTAUT model consists of four main constructs: performance expectancy (PE), effort expectancy EE), social influence (SI), and facilitating conditions (FC), as a valuable tool for explaining behavioural intention and utilization of technology. It is a valuable tool for explaining behavioural intention and the utilization of technology. Several studies applied the UTAUT model to explain consumer behavioral intention towards food delivery applications. For example, Zhao and Bacao (2020) integrated the Unified Theory of Acceptance and Use of Technology (UTAUT) with perceived security and trust to identify the factors affecting customers' intention to adopt M-payment during the COVID-19 pandemic in China. Okumus et al. (2018) applied four main factors of the UTAUT model, adding personal innovativeness to identify factors affecting users' intention and acceptance of smartphone diet application for ordering food at the restaurants. Nam and An (2021) based on UTAUT 2 integrating ECM and TTF to investigate customers' satisfaction and their continuance intention to use FDAs in Ho Chi Minh City. According to Venkatesh et al. (2012), the UTAUT model is considered one of the most popular models that has the capacity to explain 70% of the variability in behavioral intentions to use technology, as well as 50% of the variability in technology acceptance and usage. Thus, the theoretical foundation of this study is primarily based on the Unified Theory of Acceptance and Use of Technology (UTAUT) (Venkatesh et al., 2003; Venkatesh et al., 2012) and the technology continuance literature (Anderson & Srinivasan, 2003; Bhattacherjee, 2001). UTAUT explains the role of four core constructs, performance expectancy, effort expectancy, social influence, and facilitating conditions, in shaping behavioral intention and technology usage. At the same time, technology continuance models highlight the importance of user satisfaction in predicting continuance intention beyond initial adoption.

By integrating these two theoretical perspectives, this study not only examines the predictive power of UTAUT constructs but also incorporates e-satisfaction. This integration provides a more comprehensive understanding of the factors influencing both satisfaction and continuance intention toward food delivery applications (FDAs).

2.2. Conceptual model and hypothesis development

Performance Expectancy

According to UTAUT, performance expectancy refers to the degree to which individuals believe that using technology enhances their job performance (Venkatesh et al., 2003). Performance expectancy is the usefulness and benefits of using a particular technology in helping consumers perform their tasks more efficiently (Venkatesh et al., 2003). In this study, we operationalize performance expectancy as the extent to which an individual believes that using Food Delivery Application (FDA) services will satisfy them and achieve efficiency in the service. For a Food Delivery Application, consumers appreciate the cognitive and functional benefits provided by this service. Many scholars have proposed that performance expectancy is one of the most critical predictors of technology usage intention (Lee et al., 2019; Kang, 2014; Venkatesh et al., 2012). In the context of food delivery apps (FDA), many studies have shown that performance expectancy has a significant influence on satisfaction with service (Al Amin et al., 2024; Alalwan, 2020; Nam & An, 2021) and the continuance intention to use FDAs (Yap & Lee, 2023; Hong et al., 2021; Puriwat & Tripopsakul, 2021; Zhao & Bacao, 2020) and (Al Amin et al., 2024; Munday & Humbani, 2024; Vu et al., 2023). To be specific, Alalwan (2020) affirmed in his study that performance expectancy played a vital role in predicting the customer's intention to adopt a mobile food ordering application and the customer's e-satisfaction with the mobile food ordering application. Moreover, Nam and An (2021), Zhao and Bacao (2020) concluded that performance expectancy had a positive and significant impact on the customer's intention to adopt the food delivery application and customer's e-satisfaction with the food delivery application (FDA). Based on the findings, the hypotheses are proposed:

Hypothesis H1: Performance expectation has a positive effect on satisfaction with FDAs.

Hypothesis H5: Performance expectation has a positive effect on continuance intention to use FDAs.

Effort Expectancy

Effort, as defined by Venkatesh et al. (2003) is "the degree of ease associated with the use of the system". Effort expectancy is defined as users' perception of how easy it is to use a specific technology. When an individual is new to a system and begins learning how to adopt it, if he understands how it works, he tends to find it easy to remember and become proficient in its use. The positive relationship between effort expectancy, satisfaction, and behavioral intention has been proven in many contexts, such as mobile banking adoption in Pakistan (Abbas et al., 2018), user acceptance of information technology in Canadian firms (Neufeld et al., 2007). In the context of food delivery apps (FDA), many scholars concluded in their study that the effort expectancy has a significant influence on satisfaction with the service and the continuance intention to use FDA (Yap & Lee, 2023; Nam & An, 2021; Puriwat & Tripopsakul, 2021; Zhao & Bacao, 2020). For example, Zhao and Bacao, (2020) proved that effort expectancy has a positive effect on continuance intention to use online food delivery applications. Moreover, Alalwan, (2020) revealed that effort expectancy also played an essential role in predicting the customer's intention to adopt a mobile food ordering application and the customer's e-satisfaction with the mobile food ordering application. Similarly, Nam and An (2021) showed that effort expectancy has a significant impact on both satisfaction and the intention to

continue using FDA. Therefore, the following two hypotheses are proposed:

Hypothesis H2: Effort expectation has a positive effect on satisfaction with FDAs.

Hypothesis H6: Effort expectation has a positive effect on continuance intention to use FDAs.

Social Influence

Social influence is defined as "the degree to which an individual or consumer perceives that others encourage them and believe they should use new technology or systems" (Venkatesh et al., 2012). Consumers may also be influenced by family members, friends, and colleagues in social relationships to encourage and persuade them to adopt new technological services. The effect of social influence on behavioral intention or continuance intention has been proven to be significant in the technology context, such as mobile Internet users in Greece (Kourouthanassis et al., 2010), e-government services in the state of Qatar (Al-Shafi & Weerakkody, 2009). In the context of the FDA, social influence refers to how much importance an individual places on others' opinions regarding whether they should use OFD services. Some researchers (Nam & An, 2021; Puriwat & Tripopsakul, 2021; Yap & Lee, 2023; Zhao & Bacao, 2020) concluded that social influence has a significant impact on both satisfaction and the continuance intention to use MFDA in their studies. For example, Puriwat and Tripopsakul (2021) and Zhao and Bacao (2020) proved that social influence has a positive effect on continuance intention to use online food delivery applications. Furthermore, Alalwan (2020) revealed that social influence also played an important role in predicting the customer's intention to adopt a mobile food ordering application and the customer's e-satisfaction with the mobile food ordering application. Besides, Nam and An (2021) showed that social influence has a significant impact on both satisfaction and the continuance intention to use MFDA. Therefore, the following two hypotheses are proposed:

Hypothesis H3: Social influence has a positive effect on satisfaction with FDAs.

Hypothesis H7: Social influence has a positive effect on continuance intention to use FDAs.

Facilitating Condition

Facilitating conditions are considered one of the most significant factors in predicting customers' intention to use a new technology (Verkijika, 2018; Khalilzadeh et al., 2017). Venkatesh et al. (2003) defined facilitating condition as "the extent to which an individual believes that organizational and technical infrastructure can support a new system" (Venkatesh et al., 2003). According to Naranjo-Zolotov et al. (2019), facilitating conditions refer to the ease of access to electronic resources, including computers, smartphones, internet connections, and other supportive conditions. From a technical perspective, facilitating condition were found to have a positive relationship with the customer's intention to use mobile banking, mobile food ordering application, and food delivery application (Alalwan, 2020; Dwivedi et al., 2019; Verkijika, 2018). However, the effect of facilitating conditions on individuals' intention to use mobile food ordering applications, food delivery applications, and customer e-satisfaction has been proven by many researchers (Nam & An, 2021; Alalwan, 2020; Verkijika, 2018). For example, Alalwan (2020) examined the relationship between facilitating conditions and customers' intention to use MFOA. He found that facilitating conditions had a positive relationship with both customers' intention and customer e-satisfaction with MFOA. In a subsequent study, Nam & An (2021) explored the factors affecting customer

e-satisfaction and continued intention to use a mobile food ordering application. He found that the facilitating condition had a positive and significant impact on both customers' intention and customer e-satisfaction with FDAs. Based on the above findings, the following two hypotheses are proposed:

Hypothesis H4: Facilitating conditions has a positive effect on satisfaction with FDAs.

Hypothesis H8: Facilitating conditions has a positive effect continuance intention using FDAs.Top of Form.

Satisfaction

Satisfaction (SA) is defined by Oliver (1980) as "the overall emotional response that results from the combination of an individual's past emotions and exceeded expectations in their environment (Oliver, 1980). Besides, Anderson and Srinivasan (2003) defined e-satisfaction as "a consumer's pleasure from their previous purchasing experience with a certain e-commerce platform"(Anderson & Srinivasan, 2003). In this study, we adopt e-satisfaction defined by Anderson and Srinivasan (2003). Regarding this definition, it could be argue that when the actual outcomes of using FDAs meet or surpass customers' expectations, they are more likely to be satisfied with their experience, thereby encouraging continued usage of FDAs. Previous studies have shown the positive relationship between e-satisfaction and continuance intention to use new technology, such as mobile payments (Franque et al., 2021; Gao et al., 2015), mobile FinTech services (Lim et al., 2019). In the context of food delivery applications, some scholars also proved that e-Sat has a positive influence on continuance intention to use FDAs (Nam & An, 2021; Wang et al., 2021; Zhao & Bacao, 2020). Based on the findings, the following hypothesis is proposed:

Hypothesis H9: Satisfaction has a positive effect on continuance intention to use FDAs.

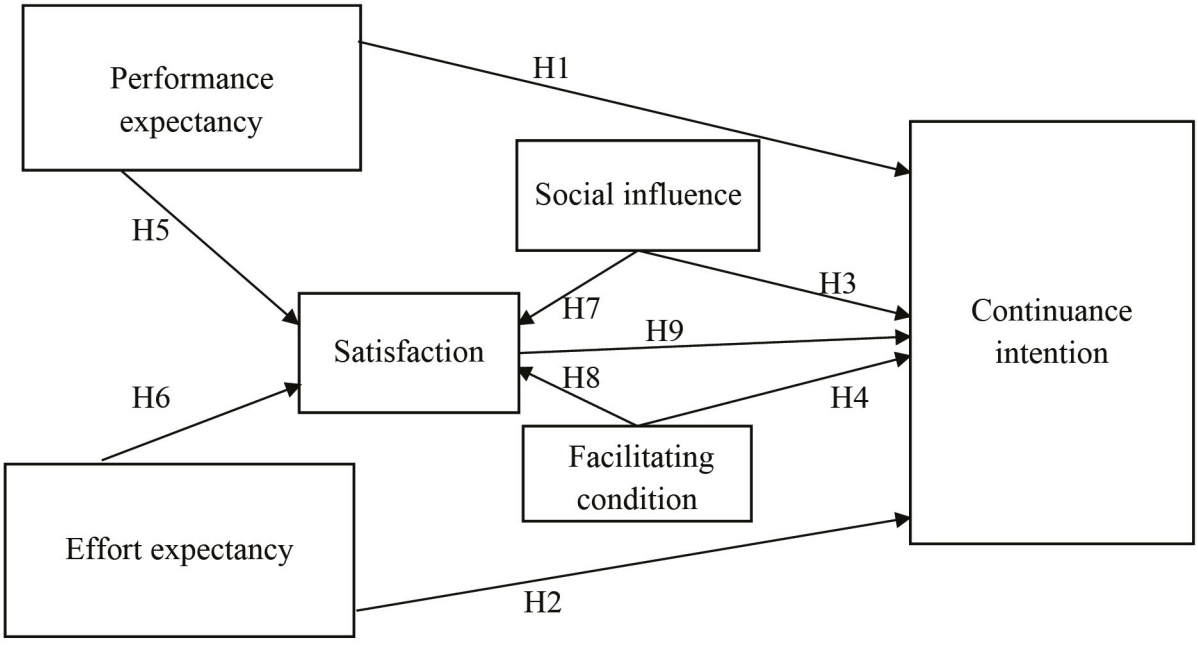

Figure 1. The conception model is proposed

3. Research Methodology

The conceptual model is based on the UTAUT model and incorporates customers' e-satisfaction. All constructs, including performance expectancy (PE), effort expectancy (EE), social influence (SI), facilitating conditions (FC), continuance intention, and customer e-satisfaction, were measured using multiple-item scales. All items in the constructs were adopted and adapted from prior studies (Nam & An, 2021; Venkatesh et al., 2012; Yap & Lee, 2023; Zhao & Bacao, 2020) to the context of food ordering and delivery applications. The 5-point Likert scale items (1 = strongly disagree, 2 = disagree, 3 = neutral, 4 = agree, and 5 = strongly agree) were used to rate all items *(see Appendix 1 online)*. A self-administered online survey was developed using Google Forms. The survey questionnaire link was distributed via online platforms, including Facebook, email, and Zalo across various districts in Ho Chi Minh City, with the largest population in Vietnam. Simple random sampling was employed to collect the primary data. The sample size of this study is 320. The data was collected in the period of November 2022 to January 2023. Out of the total of 335 online survey questionnaires sent to respondents, 310 responses were obtained for data analysis. Quantitative approach was employed, using PLS-SEM (Partial Least Squares Structural Equation Modeling) to test the hypotheses and examine the validity of the conceptual framework. The gathered data were input into the Smart-PLS (version 4.0) software to test Factor Loadings (FL), Cronbach's Alpha (CA), Composite Reliability (CR), and Average Variance Extracted (AVE). The acceptance levels would be greater than 0.70 for FL, CA and CR and above 0.50 for AVE. Second, we examined the assessment of path coefficients in the structural model, which was carried out using the bootstrapping procedure. The bootstrapping result showed the significance of the t-statistic associated with the path coefficients and the hypothesis. Top of Form

4. Research results

Results of descriptive statistics

The descriptive statistics are shown in Appendix 2 *(see Appendix 2 online)*. The study includes this study was 330. More than half of the respondents are female (n= 200; 60.6%), and the remaining are male (n= 130, 39.4%). In terms of ages, the majority of participants are between 18 and 25 years old (n= 110, 33.3%). The second group is between 26 and 35 years old (n=93, 28%). The third group is between 36 to 45 years old (n=58 and 17.6%). Respondents aged 46 to 55 account for 12.7% (n=42). Finally, 8.2% of respondents are above 55 years old (n=27). In terms of income, 40.9 % of respondents fall within the range of 5 to 10 million VND. The second group has an income ranging from 11 to 15 million VND, accounting for 23.6%. The third group is from 16 to 20 million VND, showing 13.6%. The fourth group is below 5 million VND, with 12.1%. Lastly, 9.7% of respondents have an income exceeding 20 million VND, showing 9.7%. For occupation, 39% of respondents are students with n =130. For occupation, 39% of respondents are students, with 130 respondents. Office staff make up 12%, with 42 respondents. Self-employed individuals account for 18%, representing 58 participants. Those engaged in business comprise 16%, totaling 55 respondents. Lastly, 13% fall into the "other" category, with 45 individuals.

Outer model assessment

First, the outer model was performed to evaluate convergent validity using the following tests: outer loadings of the items, Cronbach's Alpha, Average Variance Extracted (AVE), and Composite Reliability (CR). According to Hair et al., (2014), the outer loading coefficient should

be more than 0.4 to meet the requirements. A composite reliability coefficient (CR) can be utilized instead of Cronbach's alpha in Smart-PLS and it is required to be at least 0.6 (Hair et al., 2014). In other words, all six variables had the Cronbach alphas greater than 0.6, demonstrating good internal consistency reliability and meeting the general standard of a reliability test. Additionally, Fornell and Larcker (1981) recommended that a total average variance extracted (the AVE) was required to be more than 0.5 to demonstrate the convergent validity. The results in Appendix 3 *(see Appendix 3 online)* showed all values of outer loadings, AVE and composite reliability (CR) exceeded the cut-off values of 0.7, 0.5 and 0.7 respectively (Hair et al., 2014). Furthermore, the heterotrait-monotrait ratio (HTMT) is examined to assess the discriminant validity of the measurement items in this study. According to Hair et al., (2014), discriminant validity is achieved when the HTMT ratio is below 0.900 for all variables. *(see Appendix 4 online).*

Structural model

The inner model was used to test the hypotheses in the conceptual framework. The structural model was evaluated using bootstrapping in the Smart-PLS software package, with 5,000 repetitions of the nonparametric study via the bootstrapping method. This procedure was conducted to generate estimates of the standard errors, t-values, and p-values, allowing for assessment of the significance and the relationships among constructs in the theoretical framework.

Table 1. Structural model result

Relationship	Standard Deviation (STDEV)	T Statistics (|O/STDEV|)	P Values	Decision	VIF
PE => E-SA	0.044	1.757	0.682	Rejected	1.683
PE=> CI	0.032	16.645	0.000	Accepted	1.319
EE => E-SA	0.010	2.791	0.046	Accepted	1.245
EE=> CI	0.031	3.628	0.000	Accepted	1.161
SI => E-SA	0.048	1.679	0.063	Rejected	1.834
SI=> CI	0.007	147.690	0.000	Accepted	1.516
FC => E-SA	0.013	2.325	0.002	Accepted	1.803
FC=> CI	0.051	2.102	0.036	Accepted	1.522
E-SA=> CI	0.025	2.227	0.003	Accepted	1.352

Discussion

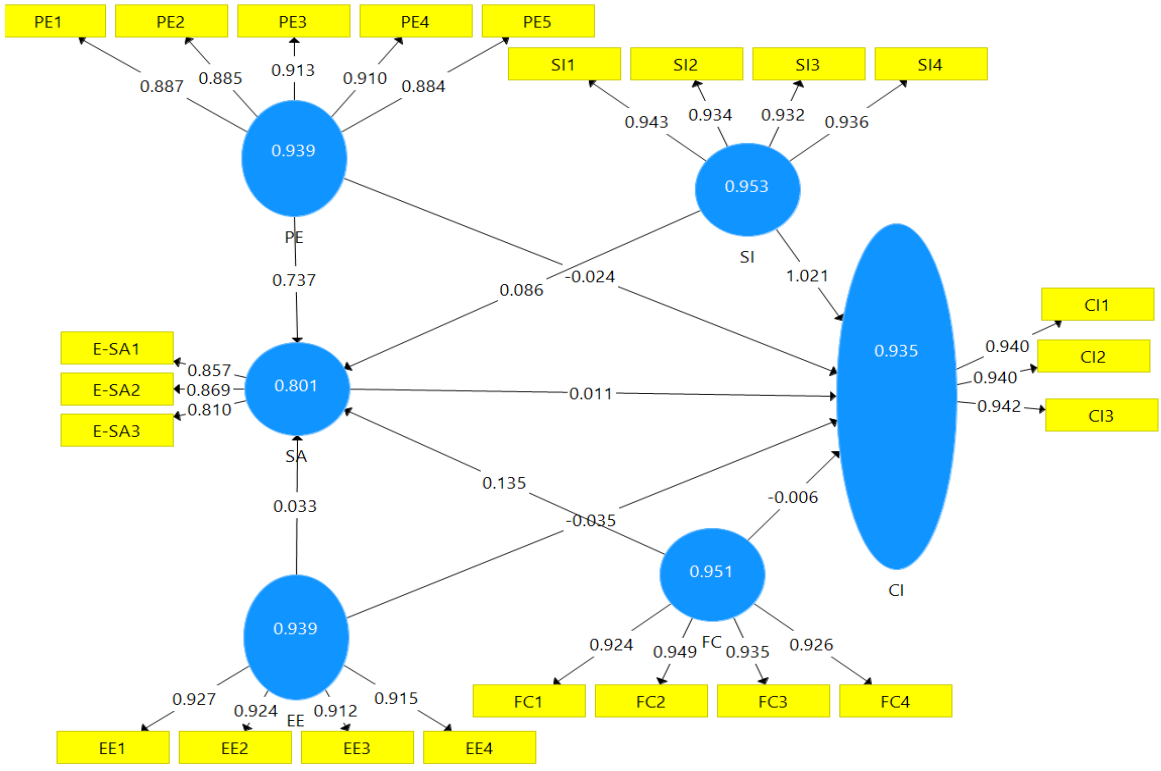

Figure 2. Structural model from Smart PLS

A conceptual framework has been proposed in accordance with the Unified Theory of Acceptance and Use of Technology (UTAUT) to examine and predict the variables affecting user satisfaction and the intention to continue using food delivery applications (FDAs) in Vietnam. This framework is significantly useful for comprehending users' behavioral intentions and their willingness to interact with FDAs in the future. According to the results shown in Table 3, all four of the UTAUT model's main constructs, performance expectancy (PE), effort expectancy (EE), social influence (SI), and facilitating conditions (FC), have a statistically significant and favorable impact on consumers' intention to adopt and continue using FDAs. The results are consistent with previous studies (Yap & Lee, 2023; Zhao & Bacao, 2020; Alalwan, 2020; Okumus et al., 2018). They confirmed the impact of PE, EE, SI, and FC on customers' intention to use MODAs and FDAs in their study.

The results further show that performance expectancy is the most significant factor in predicting customers' intention to adopt FDAs. Among these constructions, performance expectancy emerged as the strongest predictor of continuance intention. This indicates that customers are motivated to continue using FDAs when they perceive functional and cognitive benefits, such as convenience and efficiency. This implies that users are more likely to stick with a system or technology if they believe it improves their performance. This is consistent with previous studies that emphasize the critical role of perceived utility in technology adoption models (Al Amin et al., 2024; Munday & Humbani, 2024; Vu et al., 2023). This highlights the significance of the cognitive and functional benefits of FDAs from the

Vietnamese customers' perspective. However, performance expectancy did not significantly influence customer satisfaction, suggesting no relationship between performance expectancy and customer satisfaction. The result indicates that consumers expect functional benefits. One possible explanation is that users may view performance benefits as a basic requirement rather than a source of satisfaction. This finding is contrary to the results of Prayudhi and Zulkarnain (2023), Alalwan (2020), and Zhao and Bacao (2020) who confirmed a positive effect of performance expectation on satisfaction.

Based on the results, effort expectancy (EE) was found to have a positive and significant impact on both satisfaction and continued intention. The results are consistent with prior studies (Lam et al., 2023; Nam & An, 2021; Alalwan, 2020). A statistically significant correlation ($p = 0.046$) was found between effort expectancy and e-satisfaction. This implies that, overall, consumers are more satisfied with food delivery services when they perceive the services are simple to use. The results highlight the crucial role that effort expectancy plays in influencing user attitudes and behaviors toward food delivery applications. A major factor in e-satisfaction is effort expectancy, which indicates the degree of usability and low cognitive effort needed to interact with the application. Users are more likely to have a good experience and be more satisfied overall when they find an application to be intuitive and user-friendly. Additionally, the strong correlation between effort expectancy and continuance intention ($p = 0.000$) implies that one of the main factors influencing long-term engagement is ease of use. This result suggests that behavioral intentions are strongly influenced by effort expectancy. Consumers are more likely to stick with a food delivery app over time if they believe it to be easy to use and effective.

Social influence is the third indicator affecting continuance intention using food delivery apps. The result reveals that there is a significant relationship between social influence and customers' continued intention to use food ordering applications. This result aligns with prior studies (Marinković et al., 2020; Zhao & Bacao, 2020; Chopdar & Sivakumar, 2019; Roh & Park, 2019). This implies that social norms, peer pressure, and recommendations are important factors in motivating users to keep using the service. The substantial correlation emphasizes how crucial outside social influences are in influencing user behavior, especially when it comes to the adoption of digital services. However, social influences did not significantly impact satisfaction. This finding is similar to Alalwan (2020). This suggests that although social circles may encourage users to keep using the app, other elements like service quality, usability, and individual experience are what ultimately determine how satisfied users are. Consumers are influenced by peers in their decision to continue using FDAs; these factors alone do not directly translate into satisfaction. Social influence encourages initial adoption and continuance, and satisfaction appears to depend more on direct service experience, usability, and reliability of the application. According to these findings, food delivery services should concentrate on improving user experience and service quality to raise satisfaction levels, even though social influence is useful in encouraging consistent usage.

Regarding the factor of facilitating conditions, it can be used to predict both e-satisfaction and continued intention. The result showed a statistically significant correlation between facilitating conditions and e-satisfaction ($p = 0.002$) and facilitating conditions and e-satisfaction ($p = 0.036$). The results imply that technological assistance, human support, and the availability of essential resources play an important role in ensuring Vietnamese

customers have a good experience using food delivery applications. These results are in line with prior studies (Nam & An, 2021; Alalwan, 2020; Loan & Hung, 2018). They also proved the effect of facilitating conditions on e-satisfaction in their study. Additionally, a significant direct relationship between facilitating conditions and continuance intention is found. This finding could explain that customers or users are more likely to stick with an application in the future because they believe that the availability of technical and human support helps customers to have the intention to use the new technology system smoothly.

Another important result is found in this study, when the result further confirms that customer satisfaction has a positive effect on customers' intention to continue using food delivery applications. This result aligns with the findings of Alalwan (2020), Zhao and Bacao (2020). This suggests that improving customer satisfaction can strengthen their willingness to keep using FDAs. When customers feel their expectations have been met or exceeded, they are more likely to stay motivated and loyal to the service. Moreover, users are inclined to continue using these apps if they find them easy to use, convenient, and capable of meeting their needs. Ultimately, a satisfying experience encourages users to maintain their engagement with the service.

5. Conclusion and implications

5.1. Conclusion

This study has attempted to shed more light on the factors that may influence Vietnamese customers' satisfaction and intention to continue using FDA. It started with a review of the majority of the literature, which showed that a few studies had dealt with FDA-related issues.

It was determined that the suggested conceptual model had a good theoretical basis in the UTAUT model. PE, EE, FC, and SI were supported to predict continued intention in this model. In addition to UTAUT, one additional factor- E-SA- was suggested because of the unique characteristics of FDAs and the restaurant setting. The information used in this study was gathered from real FDA adopters in Ho Chi Minh City, Vietnam. SEM-Smart PLS was then used to analyze the data, and the findings confirmed the impact of the most important of the suggested factors on e-satisfaction and continued intention, thereby largely supporting the validity of the model used in this study. The findings show that four primary constructs in UTAUT, performance expectancy (PE), effort expectancy (EE), social influence (SI), and facilitating condition (FC), positively impact Vietnamese users' intention to continue using FDA. Most previous studies have demonstrated a direct relationship between four key constructs and customers' intention to continue using FDA or FOAs (Karulkar et al., 2021; Lee et al., 2019; Okumus et al., 2018). Additionally, this study has provided empirical evidence that four key factors in UTAUT are used to predict customer satisfaction. However, only two factors, effort expectancy (EE) and facilitating condition (FC), have affected users' satisfaction with FDA; social influence (SI) and performance expectancy (PE) had no direct impact on users' satisfaction. Moreover, it is necessary to emphasize that e-satisfaction is a suitable additional factor for the conceptual model, and it was found to have significantly impacted customers' intention to continue using FDA. This is consistent with the study of Lam et al. (2023).

5.2. Implication

Practical implications

This study offers practical guidance for food delivery application (FDA) providers, policymakers, and entrepreneurs. The findings underscore that *effort expectancy* and *facilitating conditions* are critical drivers of

both e-satisfaction and continuance intention. This suggests that designing user-friendly applications, offering intuitive navigation, and ensuring seamless technical support should be strategic priorities. Additionally, since *social influence* significantly shapes continuance intention, firms may leverage referral programs, peer reviews, and community-based promotions to enhance customer loyalty. The results provide actionable insights for service providers seeking to improve customer retention in Vietnam's highly competitive online food delivery market.

Academic contribution and novelty

From an academic perspective, this research contributes to the technology adoption literature by extending the Unified Theory of Acceptance and Use of Technology (UTAUT) with the construct of *e-satisfaction* as a mediating factor. While previous studies have primarily focused on adoption or initial usage, this study advances knowledge by emphasizing continuance intention, an area that remains underexplored in the context of FDAs. The results also reveal a unique finding: *performance expectancy*, although strongly influencing continuance intention, does not significantly affect satisfaction in the Vietnamese context. This contrasts with evidence from other markets and highlights a context-specific nuance, offering new insights into consumer behavior in emerging economies.

Creativity and novelty

The study's creativity lies in its integration of UTAUT with e-satisfaction to capture both cognitive and emotional dimensions of consumer behavior. This dual perspective provides a more holistic understanding of why consumers remain engaged with FDAs over time. Moreover, the study applies structural equation modeling (PLS-SEM) with a dataset collected from Ho Chi Minh City, one of Vietnam's largest urban markets. This context is particularly novel, as prior research has largely concentrated on developed economies, leaving a research gap in emerging Asian markets.

Contribution

By incorporating the e-satisfaction variable into the UTAUT model, this study makes a significant contribution by expanding the current understanding of four critical factors influencing the successful implementation of food delivery applications (FDAs). Unlike prior research, which predominantly focused on the adoption and initial intention to use mobile food ordering applications (MFOAs) or FDAs, this study emphasizes the importance of e-satisfaction and customers' continued intention to use such technological systems. Furthermore, it provides a practical and empirically grounded understanding of the key elements that should be prioritized in the design, development, and marketing of FDAs and food ordering applications (FOAs).

5.3. Limitation and future research

The current study has certain limitations. The research was conducted in Ho Chi Minh City, and data were collected from consumers in Ho Chi Minh City via online surveys. Therefore, the sample size is limited because the results may not generalize to other cities in Vietnam, so future studies should conduct and collect data from a broader sample size, including consumers from different cities, regions, in order to enhance the generalizability of the results. Second, the study only explored customer satisfaction with FOAs for meal ordering in the future, neglecting other factors such as psychological factors and time saving, which could be examined. Future research should explore the study using additional variables to understand users' habits. Thirdly, the study focused on FDAs in a general context without exploring specific platforms such as GrabFood, Beamin, and GoFood.

Different platforms may have distinct business models, service quality, and user experiences. Future research should investigate these specific platforms to provide deeper insights into the competitive landscape and consumer preferences in the food delivery industry.

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