Analysis of Factors Influencing the Usage of Online Food Delivery Applications Based on UTAUT2 Model

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Abstract

Online food delivery applications are one of the fastest growing mobile applications sectors. During the pandemic, many traditional food delivery services have moved to online platforms, and there are new companies taking advantage of this opportunity to engage in online food delivery operations or move to digital platforms. This study aim to examine the relationships between variable that influences the usage of online food delivery applications by developing a conceptual model based on the Unified Theory of Acceptance and Use of Technology (UTAUT2) model with customer satisfaction and advocacy as an additional variable in our analysis. Data were collected from 366 respondents using an online survey and analyzed using PLS-SEM. 9 hypotheses were developed, of which eight were accepted, and one were rejected. Our findings can be used to help online food delivery companies to understand the factor that might influence the continuance intention of customer to the food delivery app and it will have implication for the design and marketing of these services in the Indonesian market.

Keywords
Online Food Delivery Apps, Structural Equation Modeling, UTAUT2, Customer Satisfaction, Continuance Intention

1. Introduction
Numerous companies have introduced mobile applications as part of their business strategy to tap into the market and entice customers. One of the most rapidly expanding sectors in terms of mobile apps is online food delivery platforms (Kumar and Shah 2021). The global pandemic caused by the COVID-19 virus has led to the widespread adoption and reliance on online food delivery applications, proving to be incredibly beneficial. This is especially true as the virus continues to spread rapidly across countries worldwide (Pan et al. 2020). Amidst the pandemic, numerous traditional food delivery services have transitioned to online platforms. Additionally, several new companies have seized the opportunity to participate in online food delivery operations or shift their existing operations to digital platforms in response to the ongoing pandemic (Lattani 2020). According to Katadata Insight Center (KIC) (2021), the data revealed the percentage of internet users who utilized food delivery applications in 2020. The findings indicated that Indonesia had the highest percentage, with 74.4 percent of internet users engaging with food delivery applications within a span of one year. In the aftermath of the pandemic, as the world gradually recovers, there is a resurgence in social and economic activities. Connectivity remains crucial in shaping people's lifestyles and the functioning of businesses. With the aid of high-speed and high-performance networks, digital services will gain even more significance, becoming deeply integrated into society in the post-pandemic era (GSMA 2022). Based on the data from Katadata Insight Center (KIC) in 2022, the percentage of consumers with food delivery applications on their mobile phones reveals that in Indonesia, 41 percent of consumers possess more than two applications, 31 percent have two applications, and 28 percent have just one food delivery application installed on their mobile devices. The competition among online food delivery applications is intense, emphasizing the importance of understanding customer expectations. The industry is undergoing a significant digital transformation on a large scale, and it's crucial to sustain this transformation in the long run. Since online food delivery apps serve as a bridge between restaurants, food service companies, and consumers, it is vital for businesses to continue utilizing these apps both during and after the pandemic to maintain their presence and cater to evolving consumer needs. Several studies have been carried out in the field of online food delivery. However, a literature review conducted by Shankar et al. (2022) reveals a gap in publications discussing online food delivery specifically in Indonesia. Building upon this context, the aim of this study is to analyze the factors influencing the usage of online food delivery applications in Indonesia, utilizing the UTAUT2 model while incorporating additional variables such

as satisfaction and advocacy. By doing so, this study seek to contribute to the understanding of online food delivery in the Indonesian market.

1.1 Objectives

With the background that has been discussed previously, the objective of this research is to analyze the factors that can influence the usage of online food delivery applications in Indonesia using the UTAUT2 method.

2. Literature Review

The UTAUT2 (Unified Theory of Acceptance and Use of Technology 2) model is a well-known framework utilized to comprehend and forecast the acceptance and usage of technology. It builds upon the original UTAUT model introduced by Venkatesh et al. (2003) and has since been refined and expanded to incorporate additional constructs that are pertinent to the acceptance and usage of technology (Venkatesh et al. 2012). The UTAUT2 model serves as a valuable tool for understanding the factors that influence the adoption and utilization of technology, including online food delivery applications in this context. The UTAUT model has been widely employed to identify key factors that influence the prediction of behavioral intention to use technology and technology usage, particularly in organizational settings. Building upon the UTAUT model, UTAUT2 was specifically developed to address consumer use contexts. Figure 1 provides a visual representation of the UTAUT2 model, outlining its components and relationships between them. The UTAUT2 model serves as a framework for understanding and analyzing the factors that impact the acceptance and use of technology, such as online food delivery applications in the consumer context.
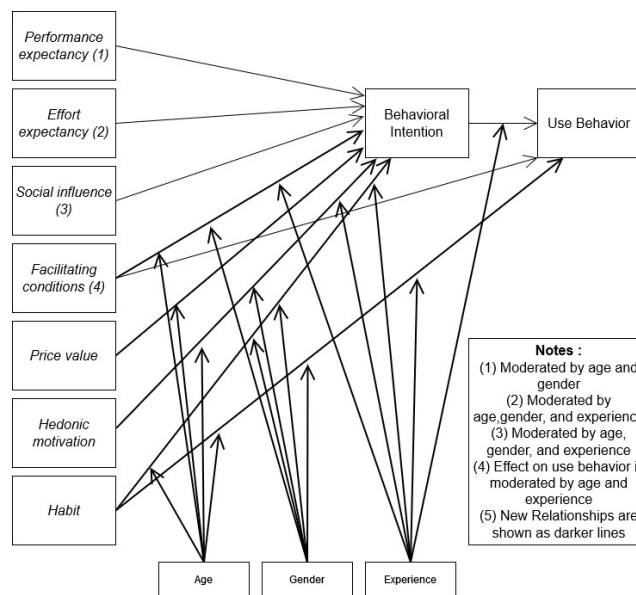

Figure 1. UTAUT2 model

The UTAUT2 model encompasses eight key constructs that play a role in technology acceptance and use. These constructs are performance expectancy, effort expectancy, social influence, facilitating condition, hedonic motivation, price value, habit and behavior intention. These eight constructs collectively contribute to the UTAUT2 model, providing a comprehensive understanding of the factors influencing technology acceptance and use in the consumer context (Venkatesh et al., 2012).

Previous studies in the field of online food delivery have explored various aspects using different models and variables. Alalwan (2020) conducted research in Jordan, employing the UTAUT2 model to identify the key factors influencing e-satisfaction and customer intentions to reuse food delivery applications. The study included variables such as online reviews, online ratings, online tracking, performance expectancy, hedonic motivation, and price value. Zanetta et al. (2021) also utilized the UTAUT2 model to assess the usage of food delivery applications. In

their study, they introduced the variable of solidarity with the food sector as an additional factor to understand the users' perspectives. Zhao and Bacao (2020) investigated the factors influencing customer decisions regarding the intention to use sustainable online food delivery applications. They employed multiple models, including the UTAUT model, Expectancy Confirmation Model (ECM), and Task-Technology Fit Model (TTF) to analyze the relevant factors. Meena and Kumar (2022) highlighted the significance of factors such as the brand of the online food delivery app company, market size, country context, and the impact of the COVID-19 pandemic in moderating customer sentiment towards these platforms. Fakfare (2021) explored the service dimensions that influence customer satisfaction and subsequent behavioral constructs, such as advocacy and intention to reuse online food delivery applications. These studies contribute to the understanding of various factors and their impacts on customer behavior, satisfaction, and intention to use online food delivery applications.

3. Methods

This study adopts the Unified Theory of Acceptance and Use of Technology 2 (UTAUT2) model, which was initially proposed by Venkatesh et al. (2012) and modified for this research by incorporating satisfaction and advocacy constructs. The research model, as depicted in Figure 2, illustrates the relationships among the various constructs used in the study.
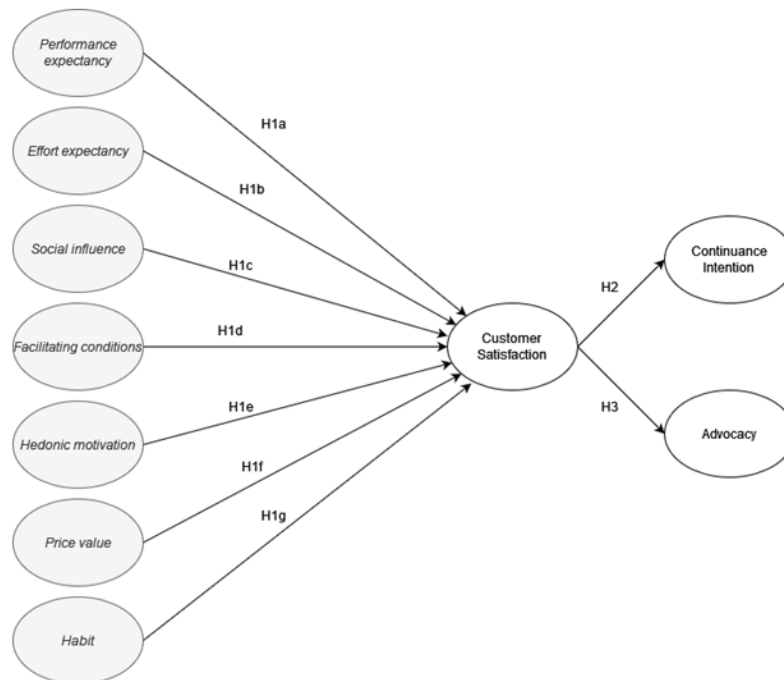

Figure 2. Proposed research model

The data for this study was collected through a questionnaire designed to align with the structure and theory of UTAUT2, including the additional satisfaction and advocacy constructs. The questionnaire was divided into two parts: respondent demographics and research questions. The demographic section of the questionnaire gathered information such as age, gender, education, occupation, the specific online food delivery application used, duration of application usage, average monthly usage, average monthly costs incurred, and respondent's monthly income. The second part of the questionnaire comprised 51 questions based on the modified UTAUT2 model, including the satisfaction and advocacy constructs. These questions were assessed using a Likert scale. Table 1 provides the definitions for each construct, while Table 2 presents the research hypotheses. Additionally, Table 3 displays the number of questions designed for each construct, and Table 4 showcases the specific questionnaire questions for each construct.

Table 1. Research construct and definition

Construct	Definition
Performance Expectancy (PE)	The belief that utilizing the technology will assist individual in achieving their objectives.
Effort Expectancy (EE)	The perceived simplicity of using technology.
Social Influence (SI)	The impact of others on an individual's decision to adopt technology.
Facilitating Conditions (FC)	Encompass the potential connections provided by branded apps, showcased within the context of connectivity.
Hedonic Motivation (HM)	The pleasure or enjoyment derived from using technology, which serves as an indicator of the intention to use said technology.
Price Value (PV)	The perceived balance between costs and benefits associated with using technology. It is influenced by factors such as the perceived price, benefits, and costs.
Habit (HA)	The automatic engagement or utilization of technology without conscious thought. Habit is a predictor of sustained usage, influenced by factors like frequency of use, ease of use, and perceived usefulness.
Satisfaction (SA)	The level of contentment experienced when utilizing an application. It assesses how well the application meets customer expectations in terms of facilitating efficient and effective shopping, purchasing, and delivery of products and services.
Continuance Intention (CI)	The inclination of individuals to continue using technology.
Advocacy (AD)	The attitude of users towards the application, indicating their willingness to support and recommend it.

Table 2. Hypothesis

Hypothesis	Definition
H1a	PE has a significant effect on SA
H1b	EE has a significant effect on SA
H1c	SI has a significant effect on SA
H1d	FC has a significant effect on SA
H1e	HM has a significant effect on SA
H1f	PV has a significant effect on SA
H1g	HA has a significant effect on SA
H2	SA has a significant effect on CI
H3	SA has a significant effect on AD

Table 3. Number of question for each construct

Construct	Number of questions	Reference
Performance Expectancy (PE)	7	(Venkatesh et al. 2012) (Fakfare 2021)
Effort Expectancy (EE)	7	(Venkatesh et al. 2012) (Fakfare 2021)
Social Influence (SI)	4	(Venkatesh et al. 2012) (Fakfare 2021)
Facilitating Conditions (FC)	9	(Venkatesh et al. 2012) (Fakfare 2021)
Hedonic Motivation (HM)	3	(Venkatesh et al. 2012)
Price Value (PV)	6	(Venkatesh et al. 2012) (Fakfare 2021)
Habit (HA)	4	(Venkatesh et al. 2012)
Satisfaction (SA)	4	(Fakfare 2021)
Continuance Intention (CI)	4	(Venkatesh et al. 2012) (Zanneta et al. 2021)
Advocacy (AD)	3	(Fakfare 2021)

Table 4. Measurement items

Construct		Measurement
Performance Expectancy	PE1	I find online food delivery app useful to my daily life
	PE2	I find online food delivery app easier for me to order and receive food delivery
	PE3	Using an online food delivery app improves the process of ordering and receiving food delivery
	PE4	Using an online food delivery app increases the efficiency of ordering and receiving food delivery
	PE5	I like the online food delivery app's provision for finding the delivery address on a map
	PE6	I like the online food delivery app's provision to know the estimated delivery time
	PE7	I like the online food delivery app's provision for real time delivery tracking
Effort Expectancy	EE1	Learning how to use an online food delivery app was easy for me
	EE2	Online food delivery app users are clear and easy to understand for me
	EE3	I find the online food delivery app easy to use
	EE4	It is easy for me to became skillful at using online food delivery features/app
	EE5	I like the feature to track order progress (order received/prepared/picked up) through an online food delivery app
	EE6	The filter options (for example: food price, type of cuisine, estimated delivery time) really helped me.
	EE7	A choice of payment methods is available (for example: cash on delivery, credit card / online payment).
Social Influence	SI1	People who matter to me suggest me to use an online food delivery app
	SI2	People who influence my habits advise me to use online food delivery app
	SI3	I chose to use an online food delivery app on the basis of recommendations from people I trust
	SI4	The online food delivery app provides photos, reviews and ratings, which help me choose a restaurant, order and menu
Facilitating Condition	FC1	I have the necessary facilities in using an online food delivery application
	FC2	I have the knowledge required to use an online food delivery application
	FC3	The online food delivery app is compatible with other technologies I use
	FC4	I can get help from others when I have trouble using online food delivery app
	FC5	Reliable food delivery
	FC6	Polite food delivery
	FC7	The food delivery man has a professional demeanor
	FC8	Food preparation in all the restaurants listed on the online food delivery app is safe and clean
	FC9	Restaurants listed on online food delivery app strictly follow safety guidelines in packaging
Hedonic Motivation	HM1	The use of the online food delivery application is responsive and attractive
	HM2	Using the online food delivery app is easy and fun

	HM3	The use of online food delivery app is entertaining and to the point
	PV1	The online food delivery application applies affordable fees
	PV2	Online food delivery app provide more benefits than the fees they charge
Price Value	PV3	I believe using an online food delivery app can save money
	PV4	I enjoyed the offers in the form of vouchers, cash-back and discounts from online food delivery app
	PV5	I enjoy the loyalty program launched by the online food delivery app
	PV6	I refer online food delivery app to my friends to get referral bonus
	HA1	The use of online food delivery applications has become second nature to me
Habit	HA2	I have a dependency on using online food delivery app
	HA3	I have to use an online food delivery app
	HA4	Using an online food delivery application has become natural for me
	SA1	I am very satisfied with the overall experience of using this online food delivery app
Satisfaction	SA2	I believe I did the right thing to choose this online food delivery app for food delivery
	SA3	I am satisfied with the convenience provided by the food delivery process
	SA4	Overall, I am happy with this online food delivery app
	AD1	I will try to get my friends and family to use this online food delivery app
Advocacy	AD2	I rarely miss an opportunity to tell others good things about this online food delivery app
	AD3	I will defend this online food delivery app if I hear someone talking bad about it
	CI1	I intend to continue using the online food delivery app
Continuance Intention	CI2	If I have the chance, I will continue to order food through online food delivery app
	CI3	I will always try to use online food delivery app in my daily life
	CI4	I am willing to use the online food delivery app continuously in the future.

The survey was conducted through an online survey platform, and the responses were gathered and processed using statistical software. Regression analysis was employed to analyze the data and determine the significance of each construct in predicting the factors that influence the usage of online food delivery applications. This analytical approach helps to identify the relative importance of each construct in understanding user behavior and preferences in relation to online food delivery applications.

4. Data Collection

The research data was collected through a questionnaire distributed to 366 respondents who are active users of online food delivery applications. The purpose of the study was to examine the behavior of these users. The initial part of the data collection process focused on gathering demographic information from the respondents. The results indicate that 56.3% of the respondents were female, while 43.7% were male. The respondents were categorized into five age groups based on a five-year age range. Among the respondents, 5.7% fell into the age group of 15 to 20 years. The age group of 21 to 25 years constituted 32.9% of the respondents. Additionally, the age groups of 26 to 30 years, 31 to 35 years, and 36 to 40 years consisted of 33.2%, 19.8%, and 8.4% of the respondents, respectively. Figure 3 provides a visual representation of these age group distributions.
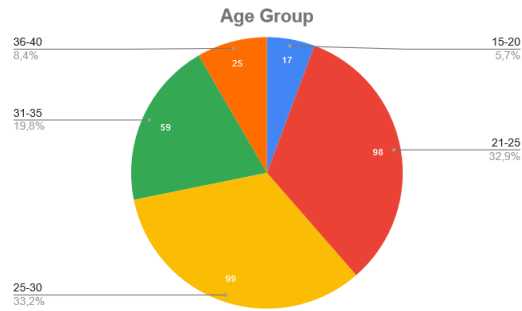
Figure 3. Age group

According to the education data gathered from the respondents, a significant portion, 321 individuals or 87.7% of the total respondents, had completed their undergraduate studies and obtained a bachelor's degree. Additionally, 13 respondents (3.6%) held post-graduate degrees, 20 respondents (5.5%) had diplomas and 12 respondents (3.3%) had completed high school or an equivalent level of education. Figure 4 provides a visual representation of these educational distributions. Regarding occupation, the respondents had diverse professional backgrounds. Out of the total respondents, 223 individuals (60.9%) were employed in the private sector, 36 individuals (9.8%) were civil servants, 77 individuals (21%) were students, 16 individuals (4.4%) were entrepreneurs, and 14 individuals (3.8%) identified themselves as fathers or housewives. Figure 4 illustrates the distribution of respondents' occupations.
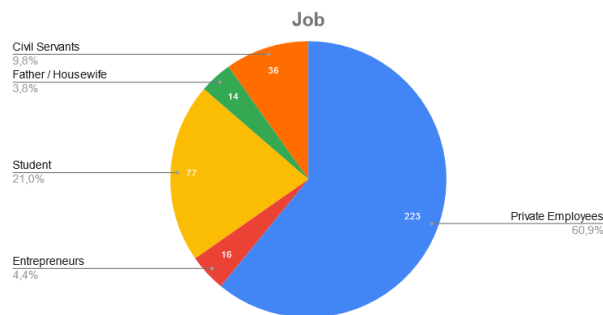

Figure 4. Occupation

The data analysis revealed that a significant proportion of the respondents, 310 individuals or 84.7% of the total, utilized the Gojek online food delivery application. Additionally, the Grab application was used by 258 respondents, accounting for 70.49% of the respondents. The Shopee application had 174 users among the respondents, representing 47.54% of the total. Furthermore, the Sayurbox application was utilized by 29 respondents, constituting 7.92% of the respondents. Figure 5 provides a visual representation of the distribution of application usage among the respondents.
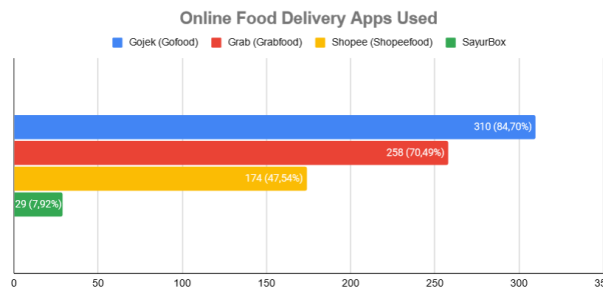

Figure 5. Online food delivery apps used by respondents

Based on the collected data, the majority of respondents (358 individuals or 97.8%) were long-term users of online food delivery applications, having used the applications for more than 1 year. The remaining respondents were relatively new users who had utilized the applications for a period of 4 to 8 months. Regarding the frequency of application usage, the data indicated that 153 respondents (41.8%) used the application 1 to 3 times a month. Additionally, 134 respondents (46.6%) used the application 1 to 2 times a week, while 50 respondents (13.7%) used the application 3 to 6 times a week. Moreover, 15 respondents (4.1%) reported using the application once a day or more, and 14 respondents (3.8%) either used the application once a month or had never used it. Figure 6 provides a visual representation of the distribution of application usage frequency among the respondents.
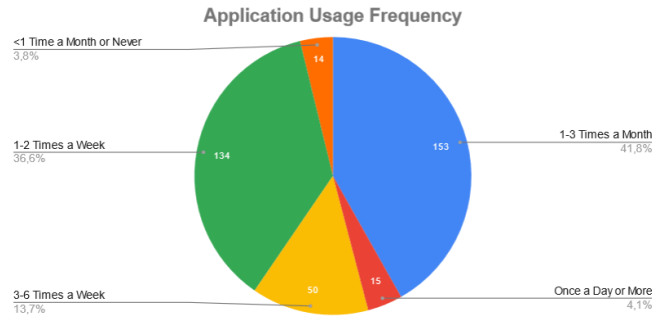

Figure 6. Application usage frequency

Figure 7 illustrates the income distribution among the respondents. The data reveals that 151 respondents (41.3%) had an income ranging from 5 to 10 million rupiah. Furthermore, 106 respondents (29%) reported an income of more than 10 million rupiah. Additionally, 88 respondents (24%) had an income between 1 to 5 million rupiah, while 21 respondents (5.7%) had an income of less than 1 million rupiah. This information provides insight into the income levels of the respondents in the study.
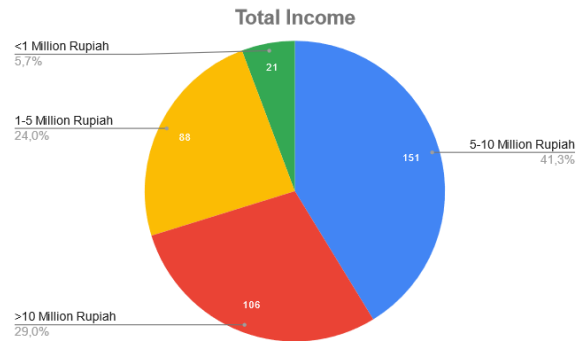

Figure 7. Respondent total income

Figure 8 displays the average fees incurred by respondents for using the application in a one-month period. The data indicates that the majority of respondents, specifically 179 respondents (48.9%), had an average application expenditure of less than 500 thousand rupiah. Additionally, 130 respondents (35.5%) reported expenses ranging from 500 thousand to 1 million rupiah. Furthermore, 49 respondents (13.4%) had expenses totaling 1 to 3 million rupiah, while 8 respondents (2.2%) incurred expenses between 3 to 5 million rupiah. These figures provide an overview of the average costs borne by respondents when using the online food delivery applications.
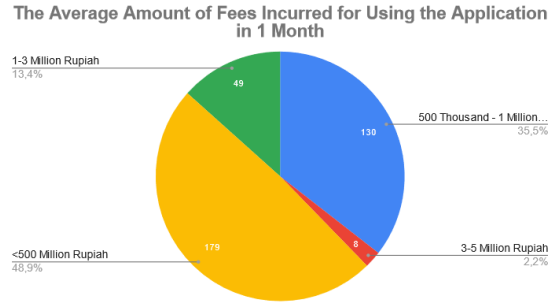
Figure 8. The Average Amount of Fees Incurred for Using the Application in 1 Month

Table 5 displays the results of the evaluation of scales for reliability and convergent validity using Cronbach's Alpha (CA), Composite Reliability (CR), and Average Variance Extracted (AVE) for each construct. These statistics are commonly used to assess the quality of the measurement model.

Table 5. Evaluation of scales for reliability and convergent validity

Construct	Cronbach's Alpha	Composite Reliability	Average Variance Extracted (AVE)
Habit	794	861	609
Continuance Intention	842	894	679
Facilitating Condition	851	901	696
Hedonic Motivation	797	880	711
Customer Satisfaction	884	920	742
Price Value	866	917	786
Advocacy	871	918	788
Performance Expectancy	872	921	796
Social Influence	874	922	799
Effort Expectancy	1.000	1.000	1.000

Based on the results, the model demonstrates satisfactory reliability and convergent validity. The Cronbach's Alpha values range from 0.794 to 1.000, indicating good internal consistency for all constructs. The Composite Reliability values range from 0.861 to 1.000, indicating that the constructs have high reliability (Cronbach 1951)(Sarstedt et al. 2017)(Hair and alamer 2022). The Average Variance Extracted (AVE) values range from 0.609 to 1.000. The AVE values exceeding 0.5 indicate that a substantial proportion of the variance in the observed variables is captured by the underlying constructs, supporting convergent validity (Cronbach 1951). Overall, these findings suggest that the measurement model used in the study has satisfactory reliability and convergent validity.

5. Results and Discussion
5.1 Numerical Results
Table 6 provides the path coefficients for each hypothesis, indicating the strength and direction of the relationships between variables. Table 7 presents the results of hypothesis testing, including the t-statistics and p-values.

Table 6. Path Coefficient

Hypothesis	Coefficient
Effort expectancy -> Satisfaction	0.260
Facilitating Condition -> Satisfaction	0.146
Habit -> Satisfaction	0.116
Hedonic Motivation -> Satisfaction	0.208
Performance expectancy -> Satisfaction	0.179

Price Value -> Satisfaction	0.207
Social Influence -> Satisfaction	-0.026
Satisfaction-> Advocacy	0.518
Satisfaction -> Continuance Intention	0.585

Table 7. Hypothesis testing

	T Statistics	P Values
Customer Satisfaction -> Advocacy	15.571	0.000
Customer Satisfaction -> Continuance Intention	15.110	0.000
Effort Expectancy -> Customer Satisfaction	6.563	0.000
Price Value -> Customer Satisfaction	5.048	0.000
Performance Expectancy -> Customer Satisfaction	4.456	0.000
Hedonic Motivation -> Customer Satisfaction	3.924	0.000
Habit -> Customer Satisfaction	3.087	0.002
Facilitating Condition -> Customer Satisfaction	2.674	0.008
Social Influence -> Customer Satisfaction	0.579	0.563

Based on the test results, the following conclusions can be drawn:

1. Performance expectancy (PE) has a significant positive effect on satisfaction (SA) (Coefficient = 0.179, $p < 0.05$).
2. Effort expectancy (EE) has a significant positive effect on satisfaction (SA) (Coefficient = 0.260, $p < 0.05$).
3. Social influence (SI) does not have a significant effect on satisfaction (SA) (Coefficient = -0.026, $p > 0.05$).
4. Facilitating conditions (FC) has a significant positive effect on satisfaction (SA) (Coefficient = 0.146, $p < 0.05$).
5. Hedonic motivation (HM) has a significant positive effect on satisfaction (SA) (Coefficient = 0.208, $p < 0.05$).
6. Price value (PV) has a significant positive effect on satisfaction (SA) (Coefficient = 0.207, $p < 0.05$).
7. Habit (HA) has a significant positive effect on satisfaction (SA) (Coefficient = 0.116, $p < 0.05$).
8. Satisfaction (SA) has a significant positive effect on continuance intention (CI) (Coefficient = 0.585, $p < 0.05$).
9. Satisfaction (SA) has a significant positive effect on advocacy (AD) (Coefficient = 0.518, $p < 0.05$).

Therefore, the hypotheses H3, H2, H1b, H1f, H1a, H1e, H1g, and H1d are accepted, indicating significant relationships between the respective variables. However, hypothesis H1c is rejected as the relationship between social influence (SI) and satisfaction (SA) is not significant. These findings provide insights into the factors that influence customer satisfaction, continuance intention, and advocacy in the context of online food delivery applications.

5.2 Graphical Results
In addition, the majority of respondents in our study were graduates or bachelor degree holders, indicating a certain level of education among online food delivery application users. Furthermore, the occupation distribution shows a significant number of private employees and students among the respondents. Regarding the usage of specific online food delivery applications, Gojek emerged as the most popular choice among respondents, followed by Grab and Shopee. This highlights the dominant presence of these platforms in the online food delivery market in Indonesia. The data also revealed that the frequency of application usage varies, with a substantial portion of respondents using the application multiple times a week. This indicates a frequent and habitual use of online food delivery applications among the respondents. In terms of income, a significant portion of respondents reported having an income between 5 to 10 million rupiah, followed by an income of more than 10 million rupiah. This suggests that online food delivery applications cater to a diverse range of income levels. The average expenditure on the applications in a month was found to be relatively low, with the majority of respondents spending less than 500 thousand rupiah. This indicates that online food delivery applications offer affordability and cost-effectiveness to users. Overall, these findings paint a positive picture of the popularity, adoption, and satisfaction with online food delivery applications among consumers in Indonesia. The widespread usage and positive experiences reported by respondents emphasize

the significance of these applications in the daily lives of individuals and the potential for continued growth in the online food delivery industry.

5.3 Discussion

Previous studies (Zanetta et al. 2021, Roh and Park 2019, Yeo et al. 2017, Zhao and Bacao 2020) have found that performance expectancy (PE) has a significant impact on satisfaction (SA) in online food delivery applications. The availability of a variety of restaurants and the ease of choice provided by the app motivate its usage (Ray et al. 2019). Effort expectancy (EE) also significantly affects satisfaction (SA) according to studies by Ray et al. (2019) and Zhao and Bacao (2020). However, social influence (SI) does not significantly impact satisfaction (SA) as individuals tend to make food choices independently and are less influenced by recommendations (Ray et al. 2019). Facilitating condition (FC), supported by technical and human assistance, is important for customer satisfaction, without which users may not have a satisfactory experience (Elvandari et al. 2017, Lu et al. 2008, Morris et al. 2005). Hedonic motivation (HM), price value (PV), and habit (HA) significantly influence satisfaction (SA) as identified in previous studies (Zanetta et al. 2021, Alalwan 2020, Elvandari et al. 2017). Satisfaction (SA) further impacts continuance intention (CI) and advocacy (AD) as users who perceive the benefits of the app are more likely to support it in the future (Fakfare 2021, Ray et al. 2019, Yeo et al. 2017).

6. Conclusion

This study presents a model based on UTAUT2 to analyze factors influencing online food delivery app usage, including satisfaction and advocacy. The model is tested using PLS-SEM and yields reliable and valid results. Factors such as effort expectancy (EE), price value (PV), performance expectancy (PE), hedonic motivation (HM), habit (HA), and facilitating condition (FC) significantly impact customer satisfaction (SA). Additionally, customer satisfaction (SA) significantly influences continuance intention (CI) and advocacy (AD) for the app. These findings offer valuable insights for improving services and enhancing customer satisfaction and app usage in the online food delivery industry.

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