

Acceptance of Mobile Food Delivery Application: Extending UTAUT2 with Perceptions of Food Safety and Food Delivery Hygiene

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Abstract

The government implemented policies for working and schooling from home and restricted access to public spaces during the COVID-19 pandemic. This policy requires people to stay at home, minimize going home, social distancing, and follow health protocols. To meet their daily consumption needs, the community purchased raw ingredients or ready-to-eat food online using the Mobile Food Delivery Application (MFDA). During the pandemic, the public's use of MFDA technology has increased significantly. Factors that are suspected to influence the increase in MFDA usage are the aspects of food safety and hygiene, as well as the delivery process. According to MFDA providers, pandemic conditions increase competition between providers in providing the best services that provide user safety and comfort. Therefore, the purpose of this research is to investigate the factors that influence consumer behavior toward the acceptance of MFDA so that providers can formulate appropriate strategies to win the competition. The research model is based on the Extended Unified Theory of Acceptance and Use of Technology (UTAUT2) model and several models in previous studies related to acceptance of MFDA. The survey was conducted on 244 MFDA users in the Bandung Raya area during the pandemic. Data processing is using Structural Equation Modeling (SEM) with Partial Least Square (PLS) approach. The results of this study show that Facilitating Conditions, Habits, Perceptions of Food Safety, and Food Delivery Hygiene influence the Behavioral Intention to use MFDA during the pandemic. The results of this research can be used by providers to improve strategies for winning the market in pandemic conditions or other disaster conditions in the future.

Keywords: Extended Unified Theory of Acceptance and Use of Technology (UTAUT2), food delivery hygiene, mobile food delivery application, perceptions of food safety, technology acceptance

1. Introduction

On December 31, 2019, 27 cases of pneumonia with unknown etiology were reported in the city of Wuhan, the capital of Hubei Province in China (Gao et al., 2020). After that, the world was shocked by the emergence of the COVID-19 virus, which began spreading from the city of Wuhan, Hubei, China. The World Health Organization (WHO) declared COVID-19 a pandemic on March 11, 2020 (World Health Organization, 2020b). As of November 14, 2020, more than 53,281,350 people from 219 countries were reported to have contracted the COVID-19 virus, with 1,301,021 deaths and more than 34,394,214 recoveries. The Indonesian region was generally affected by COVID-19 starting in mid-March 2020 with the issuance of the Circular Letter from the Minister of Administrative and Bureaucratic Reform Number 19 of 2020 concerning the Adjustment of the Work System for State Civil Apparatus in Efforts to Prevent COVID-19 in Government Agencies (Kementerian Pendayagunaan Aparatur Negara dan Reformasi Birokrasi, 2020). This circular letter became a guideline for State Civil Apparatus (ASN) to work from

home or Work from Home (WFH) as a preventive measure and to minimize the spread of COVID-19. The policy was then followed by the implementation of Community Activity Restrictions (PPKM) across all sectors, including education, economy, health, and social fields. The public is required to follow health protocols known as the 5M, which include wearing masks, washing hands with soap and running water, maintaining distance, avoiding crowds, and reducing mobility. In addition, the public is urged to practice physical distancing, which means maintaining physical distance and isolating themselves if they are sick to ensure that the disease does not spread without social separation (World Health Organization, 2020a).

With the various government policies in handling COVID-19, the community has faced limitations in outdoor activities, causing almost all life necessities to be fulfilled from home. School, office, and public service activities were shifted to an online system, while malls, entertainment and recreation venues, and fitness centres were temporarily closed (Kartono & Tjahjadi, 2021). With these limitations, there has been an acceleration in

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the adoption of technology used to meet daily needs. The COVID-19 pandemic has influenced the public's perception of the level of fear felt towards COVID-19, which has the potential to drive and accelerate the adoption of technology that can minimize that fear (Puriwat & Tripopsakul, 2021). On the other hand, despite the negative impact of COVID-19, the pandemic has significantly affected the supply and demand in the digital industry (Zhao & Bacao, 2020).

In the context of the COVID-19 pandemic, businesses in the food sector were not exempt from systemic changes, as evidenced by the increased adoption of food delivery app technology (Chotigo & Kadono, 2021). Rizou et al. (2020) state that the COVID-19 pandemic has caused changes in the food supply chain and the food industry. The food service industry is one of the largest industries in many countries. The food sector contributes to the creation of a significant number of jobs in the economy. The rise of food delivery applications and platforms has revolutionized the way food suppliers and consumer interactions occur worldwide (Muangmee et al., 2021). Food delivery services or Mobile Food Delivery Applications (MFDA) have become the choice of the public for purchasing food due to the necessity of staying at home or the preference to stay at home (Al Amin et al., 2021).

According to the Allied Market Research report by Limsarun et al. (2021), the global MFDA market was valued at \$3,120 million in 2016 and is projected to reach \$16,605 million by 2023, with an annual growth rate of 27.9% from 2017 to 2023. Meanwhile, in Indonesia, MFDA consistently contributes to a sustainable revenue stream, generating approximately \$1,915 million in 2020 and expected to increase by 54.8% in 2024 (Prasetyo et al., 2021). Chief Food Officer Gojek Group (2021) reported that in 2021, there were 250 thousand MSMEs that joined GoFood during the COVID-19 pandemic, with an income increase of sevenfold in the third quarter of 2021 compared to the second quarter of 2020.

With the help of the internet and mobile technology, MFDA services can be easily accessed through mobile phones or computers, which greatly encourages consumers to use MFDA services to meet their daily food consumption (Hooi et al., 2021). The massive growth of Information and Communication Technology (ICT), smartphones, smart technology, and mobile application software has become an important part of modern life (Al Amin et al., 2021). This is also supported by statistical data showing an increase in digital payment users in Indonesia (Santosa et al., 2021).

Based on data released by Momentum Works (2022), in 2021, Indonesia was the country with the highest gross merchant value (GMV) for MFDA services among six other ASEAN countries, amounting to US\$ 4.6 billion or approximately 29.6% of the total GMV in ASEAN, which was US\$ 15.5 billion. This top ranking

continued in 2022 and 2023, with GMVs of US\$ 4.5 billion (out of US\$ 16.3 billion in ASEAN) and US\$ 4.6 billion (out of US\$ 17.1 billion in ASEAN) (Momentum Works, 2024). This data indicates that Indonesia is a potential market for the development of MFDA businesses even after the pandemic has ended.

There are several MFDA providers available in Indonesia, among which the largest are GrabFood, which is the MFDA provider from the Grab app; GoFood, which is the MFDA provider from the Gojek app; and Shopee Food, which is the MFDA provider from the Shopee app. Gojek is one of the popular mobile apps and has enjoyed tremendous success in Indonesia. Gojek has had more than 2.9 million downloads since 2010 (Izzati, 2020). Based on data from Momentum Works (2022) and Momentum Works (2024) shown in Table 1, these three largest MFDA providers in Indonesia continue to compete for market dominance. The GMV of GrabFood, GoFood, and ShopeeFood from 2021 to 2023 did not change significantly. This shows that each provider is striving to maintain the market by implementing various strategies. Most providers conduct promotions by controlling the provision of shipping subsidies, offering discounts on food prices, providing points that can be exchanged for various goods or services, and so on.

Table 1: Gross Merchant Value (GMV) Provider MFDA in Indonesia 2021 – 2023

Year	GrabFood	GoFood	ShopeeFood
2021	49%	43%	8%
	US\$ 2,254M	US\$ 1,978M	US\$ 0,368M
2022	49%	44%	7%
	US\$ 2,205M	US\$ 1,98M	US\$ 0,315M
2023	50%	38%	12%
	US\$ 2,3M	US\$ 1,748M	US\$ 0,552M

As the MFDA system in Indonesia continues to develop, the competition among MFDA providers is also intensifying. The three largest MFDA providers in Indonesia, namely GoFood, Grab-Food, and Shopee Food, strive to provide the best service to consumers so that they feel satisfied and place repeat orders. MFDA providers conduct various research to create effective marketing strategies to win the competition. Therefore, the provider needs precise information regarding the factors that attract consumer interest, especially during the COVID-19 pandemic, as the ability of the MFDA provider to understand these factors can determine the correct strategy in application system development to win the market (Septiani et al., 2017). Additionally, identifying the factors that influence consumer interest can increase customer loyalty and usage in the future (Santoso & Maureen Nelloh, 2017). Understanding the factors that attract consumer interest will be beneficial for determining the MFDA provider's strategy post-

pandemic, as consumers are predicted to continue using MFDA even after the pandemic ends. This is because consumers already feel satisfied, comfortable, and helped by the presence of MFDA, so ordering food through MFDA has become a habit (Tenggara Strategics, 2022).

Several previous studies discuss the acceptance of MFDA during the COVID-19 pandemic in various countries. The research by Al Amin et al. (2021) in Bangladesh shows that Food Delivery Hygiene, Subjective Norms, Perceived Behavioral Control, and Dining Attitudes influence both Behavioral Intention and Continuance Behavior in the use of MFDA during the pandemic, with Perceived Food Safety affecting Behavioral Intention and Social Isolation affecting Continuance Behavior. Thus, Behavioral Intention mediates the relationship between Food Delivery Hygiene, Subjective Norms, Perceived Behavioral Control, and Dining Attitudes on Continuance Behavior in the use of MFDA. The study by Puriwat & Tripopsakul (2021) in Thailand indicates that Behavioral Intention in using MFDA during the COVID-19 pandemic is influenced by Social Influence, Performance Expectancy, Effort Expectancy, and Perceived Fear, while Facilitating Conditions affect Use Behavior, with a stronger moderating effect on Behavioral Intention by Perceived Fear of COVID-19 being more pronounced in women compared to men, and in younger individuals compared to older ones. Additionally, research in China shows that Satisfaction is the most significant factor, while Perceived Task-Technology Fit, Trust, Performance Expectancy, Social Influence, and Confirmation have an impact on Continuance Intention in the use of Food Delivery Applications during the pandemic (Zhao & Bacao, 2020).

In recent years, many studies have focused on measuring UTAUT and UTAUT2 in various cellular and digital fields, such as mobile payments, mobile banking, mobile internet, online ticket purchases from low-cost operators, online purchase intentions, smartphone usage, and mobile TV (Palau-Saumell et al., 2019). One of the models that can be used for the acceptance and use of MFDA technology is the Modified Unified Theory of Acceptance and Use of Technology (UTAUT2), which is a modification of the UTAUT model conducted by Venkatesh et al. (2012). UTAUT2 demonstrates superiority in understanding the intention to use certain technologies by explaining 70% of technology acceptance, whereas the previous model could only explain about 40% (Chen et al., 2021). UTAUT states that performance expectations, effort expectations, social influence, and facilitation conditions are direct determinants of intention and behavioral use (Lee et al., 2019). In the UTAUT 2 model, there are four moderator variables: the gender of the technology user (Gender), the age of the technology user (Age), and the duration of experience using the technology (Experience). Based on

the research by Al Amin et al. (2021), the model factors influencing Behavioral Intention to Use are Perception of Food Safety, Food Delivery Hygiene, Subjective Norms, Perceived Behavioral Control, Dining Attitudes, and Social Isolation.

Based on the above phenomena and issues, there is a need for research on the factors influencing consumer behavior interest in the acceptance of Mobile Food Delivery Application technology and the factors affecting the sustainability of Mobile Food Delivery Application usage by consumers during the COVID-19 pandemic. Model testing is conducted using Structural Equation Modeling (SEM), which consists of a measurement model for latent variables/constructs and a structural model for latent variables using the Partial Least Square (PLS) approach. The SEM model comprises a measurement model and a structural model. The measurement model is built to measure latent variables based on questionnaire items, while the structural model is built to determine and measure the extent of the influence between one latent variable and other latent variables.

2. Research Methods

Unified Theory of Acceptance and Use of Technology (UTAUT) is an integrated model of technology acceptance and use built upon eight previous research models that have discussed technology acceptance (Venkatesh et al., 2003). The UTAUT model consists of four variables as factors influencing Behavioral Intention and Use Behavior of technology usage, namely:

1. Performance Expectancy is defined as the level of confidence an individual has that using technology will enhance their job performance.
2. Effort Expectancy is defined as the level of comfort users feel when using technology.
3. Social Influence is defined as the extent to which an individual feels that others believe technology should be used.
4. Facilitating conditions are defined as the extent to which an individual believes that the existing organization and infrastructure can support the use of technology.

The Modified Unified Theory of Acceptance and Use of Technology (UTAUT2) model was developed by Venkatesh et al. (2012), which is a modification of the UTAUT model (Venkatesh et al., 2003) with three additional variables as factors influencing Behavioral Intention and Use Behavior of technology usage, namely:

1. Hedonic Motivation is defined as the level of pleasure an individual derives from using technology.
2. Price Value is defined as the perceived exchange by consumers between the benefits derived from using the application and its cost.

- Habit is defined as the extent to which a person tends to perform behavior automatically due to the learning process.

In the UTAUT2 model, there are three moderator variables: the gender of technology users (Gender), the age of technology users (Age), and the duration of experience using technology (Experience). UTAUT is also known to apply to various respondents, with different cultural backgrounds, as well as with various combinations of constructs. Allen and Kishore (2006) in Park et al. (2007) stated that UTAUT has been considered the most prominent and integrated model in technology adoption research due to its strong key construct instruments.

According to Al Amin et al. (2021), the variables that influence the Behavioral Intention variable for using the MFDA application during the COVID-19 pandemic are:

- Perception of Food Safety refers to the perception of food safety that pertains to the extent to which consumers are aware of and concerned about the quality of food ingredients, the food production process, and the food delivery process until it reaches the consumer.
- Food Delivery Hygiene is the procedure for food delivery couriers to maintain the safety and cleanliness of food. Consumers want to be

assured that by using MFDA, the safety and cleanliness in the food delivery process during the COVID-19 pandemic are better maintained by having couriers wear gloves and masks and maintain distance.

Figure 1 is the conceptual model of this research, which is based on the UTAUT2 model by Venkatesh et al. (2012) and the model (Al Amin et al., 2021). The conceptual model has nine constructs that influence Behavioral Intention with three moderator variables affecting Use Behavior.

3. Results and Discussion

3.1. Respondent Profile

In this study, data was collected from 244 respondents who had used the MFDA application during the COVID-19 pandemic in the Bandung Raya area, which includes the City of Bandung, Bandung Regency, West Bandung Regency, and the City of Cimahi. The determination of the number of respondents used the purposive sampling method because there was no sampling frame. Since the sampling frame in this study was unknown, the types of respondents were not grouped or stratified separately, which could allow certain groups to dominate the respondents, and this study is exploratory. The description of the respondents' profiles is presented in Table 2.

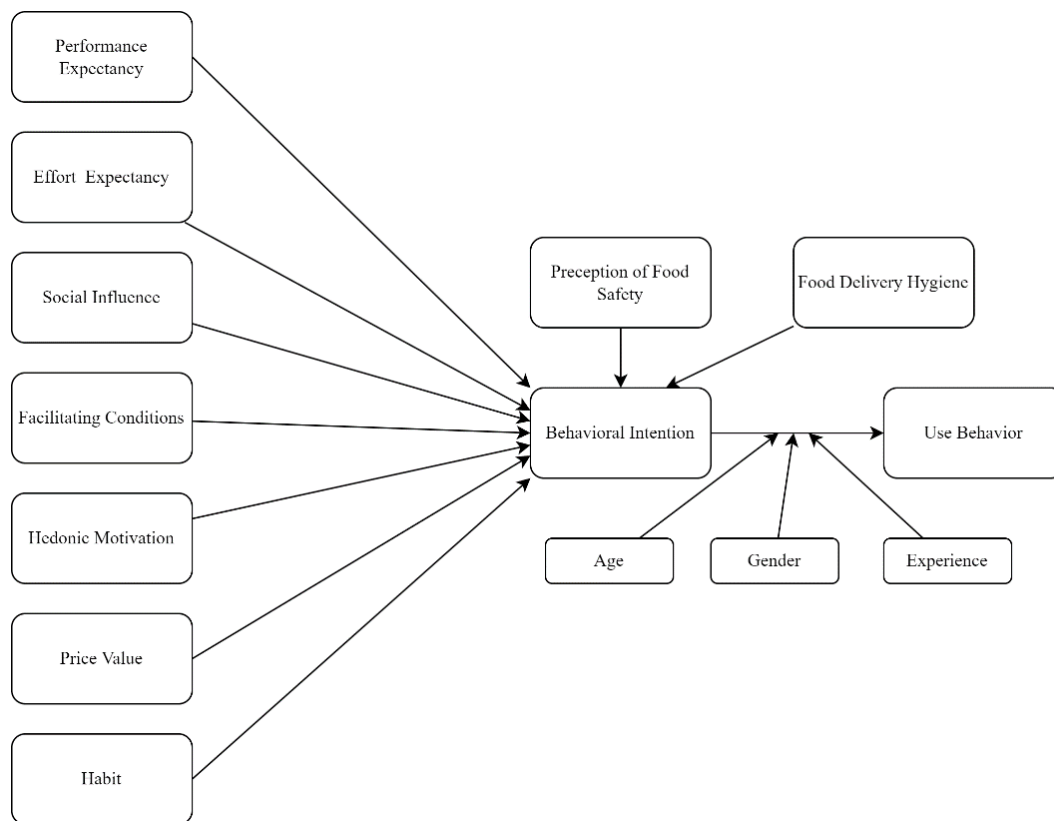


Figure 1: Conceptual Model

3.2. Measurement Model

The measurement of latent variables is conducted using validity and reliability tests and a confirmatory factor analysis approach. If Cronbach's alpha value is greater than 0.7, it indicates that a latent variable is reliable, while an AVE value greater than 0.5 shows that a latent variable is measured with a valid measurement tool (Hair et al., 2009). The results of the validity and reliability tests in this study have a Cronbach's alpha > 0.7 and an AVE value > 0.5.

Table 2: Respondent Profile

Variable	Freq.	Percentage
Gender		
Male	90	36,89%
Female	154	53,11%
Employment status		
Student	212	86,89%
Employed	29	11,89%
Unemployed	3	1,23%
Age		
<= 20 years old	214	87,70%
> 20 years old	30	12,30%
Experience (using MFDA)		
<1 year	15	6.15%
1 year	11	4.51%
2 year	36	14.75%
3 year	41	16.80%
>3 year	141	57.79%

3.3. Structural Model

The structural model illustrates the influence between latent variables. To observe direct and indirect effects, a path diagram is used to depict the direction of influence of one latent variable on another. The path diagram in this study can be seen in Figure 1, in accordance with the research conceptual model. Based on Figure 1, there are 13 hypotheses listed in Table 3.

After the path diagram is determined, the next step is to estimate the path coefficients and test the significance of the path coefficients for hypothesis testing. Significance testing on the Partial Least Square (PLS)-based model uses the lower percentile and upper percentile criteria. At the 5% significance level, the path model coefficients are considered significant if the lower percentile and upper percentile values do not contain zero. The estimation results and significance tests of the path coefficients are presented in Table 4 and Figure 2.

Based on Table 4, the estimation and significance test at a 5% significance level for the path coefficients yielded the following results:

1. Expectancy (EE), Social Influence (SI), Hedonic Motivation (HM), and Price Value (PV) do not have a significant effect on the Behavioral Intention (BI) of the Mobile Food Delivery Application.
2. The variables Facilitating Conditions (FC), Habit (HT), Perception of Food Safety (FS), and Food Delivery Hygiene (FDH) have a significant effect on the Behavioral Intention (BI) of the Mobile Food Delivery Application.
3. Behavioral Intention (BI) has a significant effect on the Use Behavior (UB) of the Mobile Food Delivery Application.

Table 3: Research Hypothesis

No	Hypothesis
H1	<i>Performance Expectancy</i> influences the <i>Behavioral Intention</i> of the <i>Mobile Food Delivery Application</i> .
H2	<i>Effort Expectancy</i> influences the <i>Behavioral Intention</i> of the <i>Mobile Food Delivery Application</i> .
H3	<i>Social Influence</i> influences the <i>Behavioral Intention</i> of the <i>Mobile Food Delivery Application</i> .
H4	<i>Facilitating Conditions</i> influence the <i>Behavioral Intention</i> of the <i>Mobile Food Delivery Application</i> .
H5	<i>Hedonic Motivation</i> influences the <i>Behavioral Intention</i> of the <i>Mobile Food Delivery Application</i> .
H6	<i>Price Value</i> influences the <i>Behavioral Intention</i> of the <i>Mobile Food Delivery Application</i> .
H7	<i>Habit</i> influences the <i>Behavioral Intention</i> of the <i>Mobile Food Delivery Application</i> .
H8	<i>Perception of Food Safety</i> influences the <i>Behavioral Intention</i> of the <i>Mobile Food Delivery Application</i> .
H9	<i>Food Delivery Hygiene</i> influences the <i>Behavioral Intention</i> of the <i>Mobile Food Delivery Application</i> .
H10	<i>Behavioral Intention</i> influences the <i>Use Behavior</i> of the <i>Mobile Food Delivery Application</i> .
H11	<i>Behavioral Intention</i> influences the <i>Use Behavior</i> of the <i>Mobile Food Delivery Application</i> moderated by <i>age</i> .
H12	<i>Behavioral Intention</i> influences the <i>Use Behavior</i> of the <i>Mobile Food Delivery Application</i> moderated by <i>gender</i> .
H13	<i>Behavioral Intention</i> influences the <i>Use Behavior</i> of the <i>Mobile Food Delivery Application</i> moderated by <i>experience</i> .

Table 4: Hypothesis Test Results - Path Coefficient

Hypothesis	Path	Coefficient	T-value	Lower	Upper	Result
H1	PE-->BI	-0,051	-0,011	-0,759	0,286	Not significant at $\alpha=0,05$
H2	EE-->BI	-0,027	-0,072	-0,274	0,241	Not significant at $\alpha=0,05$
H3	SI-->BI	0,112	0,098	-0,156	0,481	Not significant at $\alpha=0,05$
H4	FC-->BI	0,306	0,071	0,073	0,956	Significant at $\alpha=0,05$
H5	HM-->BI	0,163	0,247	-0,274	0,452	Not significant at $\alpha=0,05$
H6	PV-->BI	-0,073	-0,391	-0,269	0,097	Not significant at $\alpha=0,05$
H7	HT-->BI	0,251	1,107	0,111	0,401	Significant at $\alpha=0,05$
H8	FS-->BI	0,248	0,847	0,126	0,363	Significant at $\alpha=0,05$
H9	FDH-->BI	0,110	0,400	0,000	0,255	Significant at $\alpha=0,05$
H10	BI-->UB	0,847	23,665	0,776	0,914	Significant at $\alpha=0,05$

Table 5: Path Coefficient Test BI → UB on the Moderator Variabel

Hypothesis	Group	Statistic			Result	
		Coeffisient	t-value	p-value		
H11	<i>Gender</i>	Male	0.893	9.56	0.000	Significant
		Female	0.830			
H12	<i>Age</i>	≤ 22 years old	0.852	1.39	0.167	Not Significant
		>22 years old	0.862			
H13	<i>Experience</i>	≤ 3 years	0.842	1.93	0.055	Not Significant
		> 3 years	0.835			

In addition to the contribution value (coefficient) of each variable and its significance test, the R-squared (R²) value in the model can explain the variation in Behavioral Intention (BI) and Use Behavior (UB) that can be explained by the model. Based on the data processing results shown in Figure 2, the R² values for BI and UB are 0.724 (72.4%) and 0.717 (71.7%), respectively. This indicates that the variation in the Behavioral Intention (BI) variable can be explained by the model at 72.4%, while the remaining 27.6% is not explained by the model. Meanwhile, the variation in the Use Behavior (UB) variable can be explained by the model at 71.7%, while the remaining 28.3% is not explained by the model. The presence of unexplained variation in the model indicates that the research model specifications used can still be further developed with additional variables. However, in general, the variation value of the variables explained by the model is above 70%, so the model can be considered good for explaining the MFDA technology acceptance model under the COVID-19 pandemic conditions.

3.4. Test the Influence of Moderator Variables

Next, a significance test was conducted to examine the influence of moderator variables such as age, gender, and user experience on the relationship and effect of the

Behavioral Intention variable on the Use Behavior variable of the MFDA, specifically testing hypotheses H11, H12, and H13. The test results can be seen in Table 5. Based on the test results presented in Table 5, at a significance level of 5%, the moderator variable Gender has an effect on the Behavioral Intention variable to the Use Behavior variable of the Mobile Food Delivery Application. In other words, the gender moderator variable determines the influence of the Behavioral Intention variable on the Use Behavior variable of the MFDA. Meanwhile, at a significant level of 5%, the Age moderator variable does not determine the relationship and influence of the Behavioral Intention variable on the Use Behavior variable of the MFDA. For the Experience moderator variable, using a significance level of 5%, Experience with the application does not determine the relationship and influence of the Behavioral Intention variable on the Use Behavior variable of the MFDA, but it becomes significant if the significance level used is above 5%. Based on this coefficient test, it can be concluded that only the Gender factor has an influence on the Behavioral Intention variable to the Use Behavior variable of the MFDA.

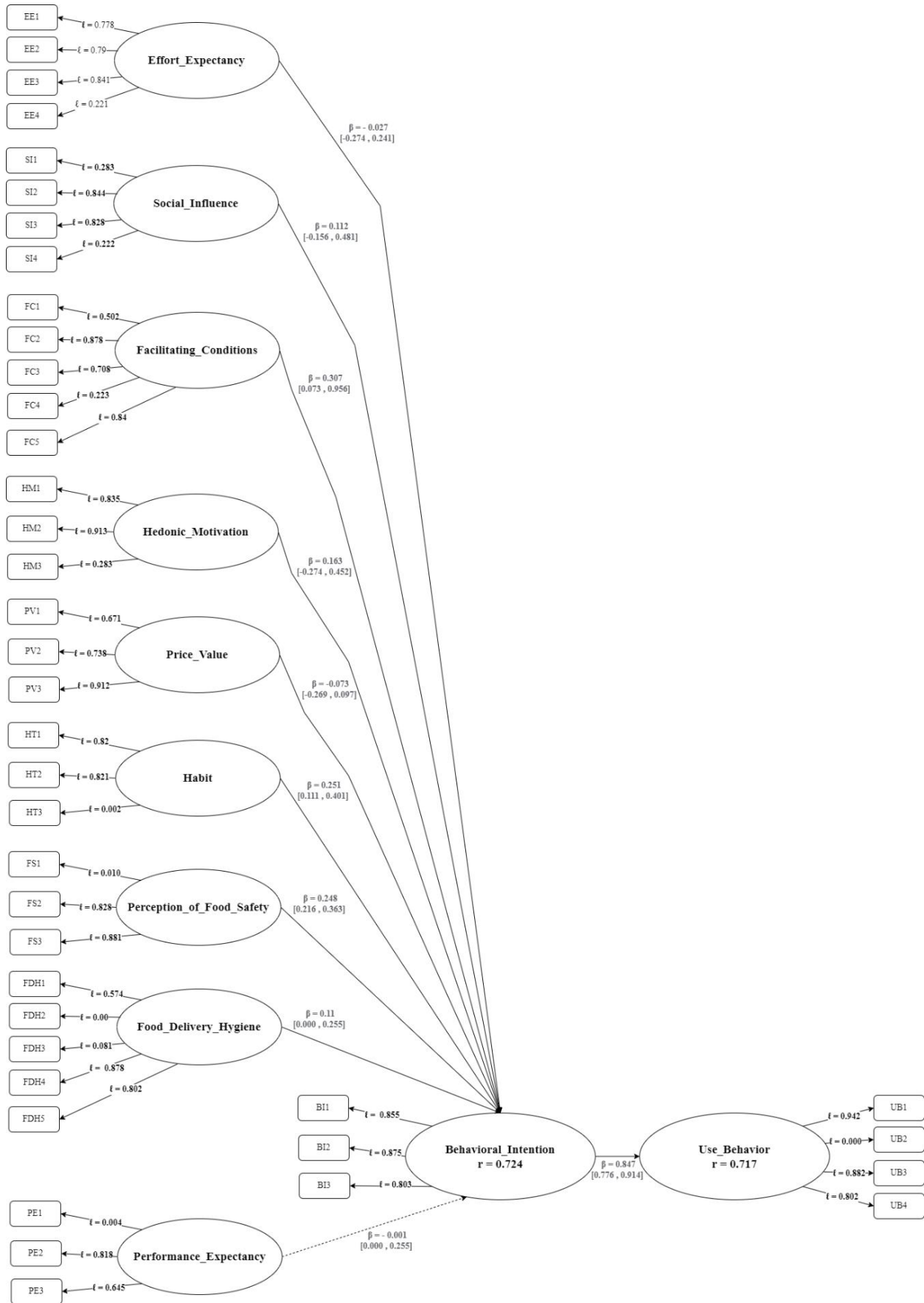


Figure 2: Structural Model

3.5 Discussion

Hypothesis test H1 shows that Performance Expectancy does not have a significant influence on the Behavioral Intention of the Mobile Food Delivery Application during the COVID-19 pandemic. This result indicates that the performance of the MFDA is perceived as unproblematic and meets consumer expectations, so the application's performance, whether good or bad, does not determine the interest in using the MFDA during the COVID-19 pandemic.

Hypothesis test H2 shows that Effort Expectancy does not have a significant influence on the Behavioral Intention of the Mobile Food Delivery Application during the COVID-19 pandemic. This result indicates that the developers' efforts in providing a supportive MFDA meet expectations, so the ease of using the application does not determine the interest in using the MFDA during the COVID-19 pandemic.

Hypothesis test H3 shows that Social Influence does not have a significant influence on the Behavioral Intention of the Mobile Food Delivery Application during the COVID-19 pandemic. This result indicates that the behavioral intention to adopt MFDA is not determined by environmental or social factors. The majority of respondents use MFDA to meet their daily food needs during the COVID-19 pandemic. Respondents have already experienced the benefits of using MFDA, so social factors no longer influence their interest in using MFDA.

Hypothesis test H4 shows that Facilitating Conditions have a significant impact on the Behavioral Intention of the Mobile Food Delivery Application during the COVID-19 pandemic. This result indicates that the interest in using MFDA is determined by the conditions that facilitate its use, such as the ease of using mobile devices and the availability of internet signals to operate MFDA. If consumers find it difficult to use these facilities, there is a possibility that they will not use MFDA to order food. Therefore, MFDA providers can develop and improve the quality of facilities so that the use of MFDA can run smoothly.

Hypothesis test H5 shows that Hedonic Motivation does not have a significant influence on the Behavioral Intention of the Mobile Food Delivery Application during the COVID-19 pandemic. This result indicates that the interest in using MFDA during the COVID-19 pandemic is not determined by the motivation to seek pleasure or entertainment, but rather because the use of MFDA has become a necessity to meet food needs.

Hypothesis test H6 shows that Price Value does not have a significant influence on the Behavioral Intention of the Mobile Food Delivery Application during the COVID-19 pandemic. This result indicates that the interest in using MFDA is not determined by price. Generally, the prices of food available on MFDA are higher due to development and delivery costs, although there are some discounts and promotions offered by the provider. During the COVID-19 pandemic, the price element was not a consideration for

respondents to avoid using the application, as the use of MFDA was based on the need for daily meal fulfillment.

Hypothesis test H7 shows that Habit has a significant influence on the Behavioral Intention of the Mobile Food Delivery Application during the COVID-19 pandemic. These results indicate that the interest in using MFDA is partly determined by the habit or repetition of using MFDA by consumers. The various benefits of using MFDA that consumers have experienced have caused the use of MFDA to become a habit to meet food needs during the COVID-19 pandemic.

Hypothesis test H8 shows that Perception of Food Safety has a significant influence on the Behavioral Intention of Mobile Food Delivery Application during the COVID-19 pandemic. This result indicates that the interest in using MFDA is determined by consumers' perception that the food purchased through MFDA is safe during the COVID-19 pandemic. Consumers perceive that the food has good and healthy raw material quality, the production process of making the food is clean, and even the food delivery process to the consumer follows health protocols, making it safe to consume. This is in line with the research findings of Al Amin et al. (2021), which state that the influence of Perception of Food Safety on the behavioral intention to accept MFDA is very significant, so consumers are willing to pay a premium price if the food purchased is hygienic and healthy.

Hypothesis test H9 shows that Food Delivery Hygiene has a significant influence on the Behavioral Intention of Mobile Food Delivery Application during the COVID-19 pandemic. These results indicate that the interest in using MFDA is determined by how well the food meets hygiene criteria during delivery, not solely because it is simple and quick to order food. This is evident from the couriers' adherence to health protocols when delivering food, such as maintaining distance while waiting, picking up and handing over food to consumers, wearing masks and gloves during food delivery, and avoiding direct physical contact with consumers when delivering food. (Rizou et al., 2020). The order delivery process is crucial in determining whether consumers will use MFDA again or not (Al Amin et al., 2021).

Hypothesis test H10 shows that Behavioral Intention influences the Use Behavior of the Mobile Food Delivery Application. These results indicate that consumer behavioral interest in adopting MFDA influences the decision to become MFDA users in fulfilling food needs during the COVID-19 pandemic, including the repeated use of MFDA by consumers.

Hypothesis test H11 shows that there is a difference or a contribution of consumer gender in determining the influence of the acceptance behavior interest in MFDA on the decision-making behavior of MFDA usage. This indicates that consumer gender affects the decision to use MFDA. During the pandemic, the majority of family members were at home, so the family's food needs tended to become the responsibility of the mother, who, in this case, is a woman. This is in line with the research findings of Puriwat & Tripopsakul (2021) that female consumers have a greater influence

compared to male consumers in the interest of adopting MFDA. Therefore, MFDA providers can be recommended to develop marketing strategies and MFDA development, considering that MFDA users are predominantly women. Additionally, MFDA providers can devise strategies to increase influence on male consumers who use MFDA.

Hypothesis test H12 shows that the age of consumers does not contribute to determining the influence of the interest in adopting MFDA on the decision to use MFDA. This may be due to the significant benefits of using MFDA that can be felt by all ages, both young and older consumers.

Hypothesis test H13 shows that the experience of consumers (length of experience using MFDA) does not contribute to determining the influence of the interest in adopting MFDA on the decision to use MFDA. This may be due to the ease of using MFDA and the significant benefits of using MFDA that can be felt by both long-term and new users. New users can easily use MFDA, while long-term users repeatedly use MFDA because they have already experienced the benefits of using MFDA.

Based on the results of the testing and discussion above, the MFDA provider can formulate strategies to increase interest in MFDA acceptance behavior during the pandemic by considering the factors of Facilitating Conditions, Habit, Perception of Food Safety, and Food Delivery Hygiene. The MFDA provider can improve the quality of the facilities used by consumers in using MFDA, for example, by ensuring the application runs smoothly with an interface that makes it easy for consumers and having a 24-hour Call Center that can address issues that arise during the food ordering process. Additionally, to enhance consumer trust regarding cleanliness, both in food hygiene and the hygiene of the delivery process, the MFDA provider can establish business processes that are then made into mandatory rules for seller partners and food delivery couriers. To improve compliance with these rules, the MFDA provider can implement a reward and punishment system for partners and drivers. In addition, the MFDA provider can implement other innovations that support food cleanliness and hygiene aspects to build consumer trust in consistently using MFDA for their daily needs, making the use of MFDA a habit.

Factors influencing the interest in the acceptance behavior of MFDA can be considered by MFDA providers to formulate strategies to win the competition even after the pandemic has ended (Puriwat & Tripopsakul, 2021). This is because consumers are predicted to continue using MFDA even after the pandemic ends, as they use MFDA for reasons such as beneficial promotions, easy access to the application, low delivery costs, a wide selection of restaurants to choose from, and the ease of finding couriers (Snapcart Indonesia, 2021). MFDA will continue to be used in the future because consumers already feel comfortable (Tenggara Strategics, 2022) and consider the use of MDA to be a habit (Yao et al., 2023). Therefore, research related to MFDA can continue to be developed to foster innovation in the field of MFDA. Understanding the factors influencing the acceptance of MFDA will be

beneficial if there are conditions beyond predictions, such as natural disasters.

4. Conclusion

Based on the conceptual model developed from the UTAUT2 model by Venkatesh et al. (2012) and the model by Al Amin et al. (2021), which was then tested at a significance level of 5%, the factors influencing consumer behavior interest in the acceptance of MFDA technology during the COVID-19 pandemic are Facilitating Conditions, Habit, Perception of Food Safety, and Food Delivery Hygiene. Additionally, there is an influence of Behavioral Intention on the Use Behavior of the MFDA application during the COVID-19 pandemic. The moderator variable, Gender, affects the relationship between the Behavioral Intention variable and the Use Behavior variable of the Mobile Food Delivery Application, while the moderator variables, Age and Experience, do not. The results of this study can be used by MFDA providers to develop MFDA development strategies and marketing strategies, thereby winning market competition in the future.

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