Article

Understanding Consumers' Acceptance Intention to Use Mobile Food Delivery Applications through an Extended Technology Acceptance Model

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Abstract: The rapid growth of the domestic food delivery market has led to intense market competition as the use of delivery applications has grown quickly. This study explored the variables of personal innovativeness, trust, perceived ease of use, perceived usefulness, and intention to use such applications by testing the extended technology acceptance model (ETAM). By using Google Forms, data were collected from 10 May 2022 for a period of two weeks from Koreans who have experience using mobile food delivery applications. A total of 296 responses were used to test the hypotheses. The findings revealed that personal innovativeness had a positive effect on perceived ease of use. Trust was found to positively affect perceived usefulness and perceived ease of use. The variables perceived ease of use and perceived usefulness significantly influenced intention to use food delivery applications. This current research study provides practical implications by suggesting that ease of use with food delivery applications deserves further consideration. It was shown to be a key factor in increasing the intention to use such applications and can help to influence the creation of strategies to enhance continuous usage.

1. Introduction

The remarkable development of information technology due to the ubiquitous nature of smartphones provides various services to many people's lives regardless of time and place. The penetration rate of smartphones in South Korea has reached 95%, and the range of smartphone applications used by smartphone users is widely distributed and used in most people's daily lives [1], as smartphones are used not only for mobile phone functions but also for various functions such as the use of wireless internet, banking, retail, and order and delivery services [2]. Online to offline (O2O) is a form of e-commerce service which connects online and offline services and is spreading to various markets, including the food and beverage industry [3]. In particular, a representative example of food tech that combines food and information technology (IT) and mobile food delivery applications (hereafter MFDAs) has shown rapid growth due to the increase in the supply and use of smartphones. Additionally, due to the epidemic of COVID-19, consumers who are sensitive to safety use MFDAs as a non-face-to-face service method, resulting in steep growth of this industry. MFDA services are services that allow consumers to search for, order, and pay for food with their own mobile phones [4]. Consumers may or may not be in favor of using MFDA in situations where they have to rely on mobile devices to a large extent, such

as choosing food and having to pay for it themselves by providing personal information with their mobile phones. Therefore, in order to provide optimal environments for MFDA users, it is necessary to understand the characteristics of consumers, such as personal innovativeness and trust in technology use. Moreover, examining how consumers evaluate the ease of use and usefulness of MFDA can be better understood through the technology acceptance model (hereafter TAM).

The TAM was introduced by Davis [5] and serves to predict how much consumers will accept new information technologies. This model has been applied to many research fields, as it is a model that serves to help describe new technology and can be a useful tool for predicting technology acceptance. The research model was further expanded to include additional variables that affect perceived ease of use and perceived usefulness. The extended TAM (hereafter ETAM) includes behavioral intention and further subdivides variables related to information technology according to Davis et al. [6]. Research on the acceptance of new technologies, such as mobile apps, was conducted based on the model, and the innovation of users was verified through the research of Rosers [7]. Personal innovation is the tendency to embrace new ideas or experiences and to embrace innovative products or services [8]. Based on the theory of the ETAM, the perceived ease of use and usefulness influenced by individual innovation ultimately affect behavioral intentions. Studies about this have been conducted in various areas: drone food delivery services [9], mobile commerce services [2,10], and robot baristas [11]. However, the majority of previous studies on MFDAs have focused on consumers' intention to use the applications, service quality characteristics, or consumer satisfaction [12–16]. Therefore, there is a need to emphasize research on the structural relationships of customers' personal traits, such as innovativeness and trust, with ETAM determinants. The current study aims to test the ETAM to examine how Korean customers are willing to use mobile food delivery applications. This would extend ETAM knowledge by applying it in the context of food delivery applications. More specifically, the following research questions guided this study: How do customers' personal traits, such as innovativeness and trust, influence perceived ease of use and perceived usefulness of food delivery applications? What is the effect of perceived ease of use on perceived usefulness? How do perceived usefulness and perceived ease of use of the applications influence customers' intentions to use mobile food delivery applications? These research questions guided the inquiry into the relationship between the following variables: innovativeness, trust, perceived ease of use, perceived usefulness, and intention to use mobile food delivery applications. This research study contributed theoretically by extending ETAM research and proposed useful directions for MFDA companies by presenting practical implications related to the findings.

2. Theoretical Framework: Extended Technology Acceptance Model

2.1. Innovativeness, Perceived Usefulness, and Perceived Ease of Use

Innovation refers to new products, ideas, devices, technologies, activities, and methods different from the existing ones, and it also refers to the willingness of an individual to know or purchase new services or products comparatively before other members of a social system [17]. In other words, it means the degree to which consumers quickly and easily accept new things, and innovation affects the acceptance and speed of new technologies or innovative products. Understanding consumer innovation is important, as the spread and acceptance of a company's innovative new products heavily depends on whether the consumer will accept these innovations [18]. Innovative consumers tend to be open, strong adventurous, and willing to take risks, so they are willing to accept innovations they choose even if they fail [17,19]. The intention to adopt new technology can increase among those observing other people utilize innovative systems [20]. While highly innovative consumers tend to take risks and choose to consider the benefits of products or services, low innovative consumers purchase products after confirming the benefits of products or services through highly innovative users to avoid risks [21]. Personal innovation is the degree to which new products, lifestyles, and consumption patterns are accepted first compared to others, and

as a major variable of personal characteristic adoption and spread of innovation, users are related to the time it takes to adopt new information technologies [7]. Based on the results of previous studies, this current study defined personal innovation as the degree to which consumers quickly and easily accept new things when using mobile delivery app services. As an antecedent variable of TAM, innovation has been mainly studied in the field of internet technologies, and research in the field of tourism or the food and beverage industry is insufficient.

In the literature, perceived ease of use along with usefulness was found as being positively affected by an antecedent variable, such as innovation. Lu et al. [10] found that social influence and personal innovativeness influenced perceived usefulness and perceived ease of use regarding online mobile technology usage adoption among American students. Recently, Waris et al. [9] examined customers' adoption intention of drone food delivery services, and the results indicated that innovativeness positively influenced customers' intention to use drone food delivery services. Such a positive relationship was found in other past studies. Slade et al. [22] identified a significant positive effect of performance expectancy, social influence, and innovativeness on the intention to adopt remote mobile payments. In a study by Sun and Chi [23], innovativeness had a positive influence on perceived usefulness. In the context of food delivery services, Hwang et al. [13] noted that hedonic, social, and functional motivation were the dimensions of consumer innovativeness which were found to be significant predictors of attitude and behavioral intentions.

H1. *Personal innovativeness will significantly and positively affect perceived usefulness.*

H2. *Personal innovativeness will significantly and positively affect perceived ease of use.*

2.2. Trust

Trust has been regarded as an important concept in the relationship between supply and demand. Trust is the level of confidence and expectation of the other person or object in a transaction or human relationship, and it can be said that it is formed when there is confidence in the dependability and sincerity of the other person [24]. In other words, it is associated with the state of customers' faith in a particular technology [25], mobile food delivery applications in this case. Unlike offline commerce, online trust formation (including mobile environments) is more important because of anxieties regarding concerns such as physical distance, non-face-to-face transactions, uncertainty about products and services, and security issues caused by potential leakage of personal information. Cha and Seo [26] noted that developers of food applications should focus on cultivating trust regarding mobile applications. Trustworthiness influenced perceived value in a study of food delivery applications by Cho et al. [27]. Kaur et al. [28] confirmed that trust issues have a negative association with the usage intention of food delivery applications. Trust was found to influence continuance intention among food delivery application users during the COVID-19 pandemic [29]. Ngubelanga and Duffett [2] applied trust as an antecedent to investigate its effect on customer satisfaction among millennial users in South Africa and found it had a positive relationship with consumer satisfaction. In the context of mobile commerce and food delivery applications, the effect of trust on behavioral intention has gained much attention recently [2,22,30], which indicates a lack of prior empirical studies about how trust influences the perceived usefulness and ease of use for food delivery application consumers. Based on the aforementioned literature on trust, for the purposes of this study, trust is defined as the level of certainty and belief one has in information and overall usage pertaining to delivery applications.

Prior studies have applied trust to the TAM to examine the role of trust in the model. Researchers have found that customer trust in a business plays a role in increasing usefulness and ease of use perceptions along with customer intentions to buy a specific product and service [2,22]. For example, Pipitwanichakarn and Wongtada [31] studied mobile commerce adoption intentions and found that trust served to influence users' perceived usefulness in their study. Similarly, Alalwan et al. [32] found that trust positively influenced

perceived usefulness in a study about consumer intention to use the mobile internet. Such results are supported by research conducted by Chawla and Joshi [33] that suggested a positive relationship between perceived usefulness and trust. Researchers have conducted many studies on the establishment of relationships between trust and perceived ease of use or intention, but there are limited studies on how much trust affects perceived usefulness. It is assumed that if consumers have trust in any business, they may find it useful to use the goods or services provided by the business. Sun and Chi [23] identified that US consumers' trust sentiments played a significant role in increasing consumers' perceived usefulness toward apparel mobile commerce. Therefore, two additional hypotheses were proposed based on these findings.

H3. *Trust will significantly and positively affect perceived usefulness.*

H4. *Trust will significantly and positively affect perceived ease of use.*

2.3. Extended Technology Acceptance Model

After being introduced, the TAM was used to study perceived usefulness and perceived ease of use and how it can affect an individual's use of an information system. Perceived usefulness describes a person's perception concerning how the adoption of new technology would be beneficial. Perceived ease of use refers to a person's perception of how simple to use technology will be. Studies using the model noted that it performed well in explaining information systems acceptance behavior [34,35]. Hendrickson et al. [36] and Hendrickson and Latta [37] confirmed the reliability of the scales used to measure these variables through test–retest analysis.

Following the early period of TAM research, the theory was applied in other contexts. Igbaria et al. [38] found that organizational factors affected perceived usefulness, perceived ease of use, and computer use. Agarwal and Prasad [39] applied five variables to the model and found that participation in training influenced perceived usefulness and role with regard to technology, education level, and prior similar experiences that influenced perceived ease of use. Venkatesh and Davis [40] enhanced TAM research by exploring organizational and social variables in their study. The researchers found that perceived use was influenced significantly by job relevance, result demonstrability, output quality, and image. Subjective norm was also found to have an impact on perceived use by these researchers.

The TAM has continued to be examined and enhanced through subsequent research [41]. Similarly, the TAM has been acknowledged as a suitable model to examine acceptance behaviors related to technology in a variety of contexts [42]. This underscores the need to further understand the TAM by using it in different contexts. As new technologies proliferate and can be used easily by the general population, expanding what is understood about the TAM is increasingly necessary. In tourism and food service industry settings, the TAM began to be applied more recently [43–45]. Kim et al. [46] mentioned that the use of mobile applications had influenced the development of such applications in tourism. Herrero and Martin [47] found that the use perceptions and attitudes of tourists can be affected by perceived usefulness. De Oliveria Nunes and Mayer [48] discovered that mobile application use in a tourism setting affected tourist experiences. Ayeh et al. [43] employed the TAM in their study on using media made by consumers for the purposes of travel planning. This study found that perceived usefulness significantly influenced tourist intention to use technology. Xia et al. [49] were able to confirm that mobile applications are effective for destination marketing organizations, as they can influence potential tourists. Past studies have described extending TAM as a predictive tool to better understand individuals' acceptance intention concerning newer technologies and to further develop the model itself [50]. Since the ETAM was introduced in the tourism and food service industry, it has been examined in different contexts, including drone food delivery services [9], the adoption of mobile internet [32], and food delivery apps [14,51–53].

Jaradat and Al-Mashaqba [54] studied the ETAM and found a strong positive relationship between perceived ease of use and perceived usefulness in terms of the use of mobile payment systems among Jordanian students. In the same vein, Lu et al. [10] noted a positive relationship between perceived ease of use and perceived usefulness in a study on adopting mobile technology. Lee et al. [14] applied the ETAM to examine the determinants that influenced customers' use of food delivery applications. In this study, the results demonstrated that there was a positive association between perceived ease of use and perceived usefulness. More recently, Lee et al. [52] tested the technology acceptance model in the context of food delivery applications. The results revealed that ease of use is positively related to usefulness. The ease of use of food delivery applications is vital, and flexibility, support, and saving time and effort are desirable to consumers [55]. While previous studies have identified significant positive relationships between ease and availability, there have been studies that did not show this result. Chen and Tsai [56] did not find a significant relationship when they examined perceived ease of use and perceived usefulness in the context of adopting a mobile application. Similarly, ease of use was not found to be a critical factor in determining the continuous use intention of food delivery applications by Lee et al. [57]. Thus, there is a need to examine such relationships in the context of food delivery applications, and a hypothesis about these issues is proposed.

H5. *Perceived ease of use will significantly and positively affect perceived usefulness.*

Lu et al. [10] indicated that consumers' perceived ease of use and perceived usefulness with wireless internet services via mobile technology were strong predictors of intention to adopt mobile technology. Alawan et al. [32] applied the TAM to examine the intention and adoption of mobile internet service among Saudi Arabians. In the context of food delivery applications, usefulness positively influenced satisfaction in a study [26]. Roh and Park [58] found that ease of use positively influenced both usefulness and intention to use food delivery applications. These researchers also found that usefulness positively influenced the intention to use such applications. Ngubelanga and Duffett [2] also found perceived usefulness and perceived ease of use to be antecedent variables that influenced satisfaction among customers. The benefits perceived by the user did not affect behavioral intention in a study of food delivery applications in India [59]. Talwar et al. [60] noted that perceived usefulness was positively associated with continuation intention pertaining to technology use. Performance expectancy, which is analogous to perceived usefulness, did influence the intention to use in a study of food delivery applications during the COVID-19 pandemic [25]. A similar study during the pandemic found that perceived task–technology fit (i.e., usefulness) influences continuance intention among food delivery application users.

Song et al. [61] noted that both perceived ease of use and perceived usefulness influenced attitude in their study of food delivery applications. Lee et al. [61] found both usefulness and ease of use positively influence the intention to use. The results from the study indicated that both perceived ease of use and perceived usefulness influenced consumers' intention in adopting mobile internet services. The researchers in [9] studied drone food delivery services, noting that the key variables that were predictive of customer intention were attitude, subjective norms, and perceived usefulness.

H6. *Perceived usefulness will significantly and positively affect the intention to use.*

H7. *Perceived ease of use will significantly and positively affect intention to use.*

3. Methodology

3.1. Measurement

The variables measured in this study were derived from past studies and were modified for the purpose of this research (see Figure 1). The survey questionnaire contained items that measured the concepts being researched (e.g., personal innovation, trust, perceived ease of use, perceived usefulness, and intention to use). Personal innovation consists of four measurement items and trust consisted of four items that were drawn from previ-

ous studies [2]. In addition, four measurement items respectively measuring perceived ease of use, perceived usefulness, and intention to use food delivery applications were drawn from previous research [5,6,62]. The measurement items used in this study were measured using a 5-point Likert-type scale (wherein 1 = strongly disagree, 3 = neutral, and 5 = strongly agree). Items associated with the demographic information of respondents were also incorporated into the survey questionnaire (e.g., age, gender, and education). Similarly, characteristics of participants' food delivery experiences were included as well (e.g., number of times food delivery apps were used, names of food delivery services, and reason for using food delivery apps). Before pursuing data collection, a pilot test was conducted using the questionnaire as 50 students and professionals in the tourism and hospitality field completed the survey to test the suitability of questions and ease of response. After reflecting on the results of the pilot study, a final questionnaire was developed and distributed.
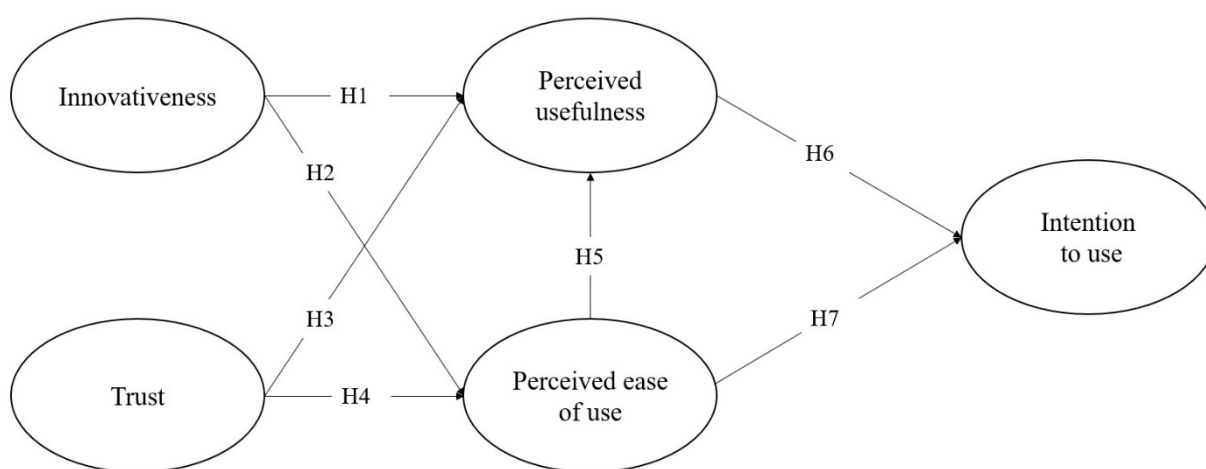

Figure 1. Research model.

3.2. Data Collection

The population sampled was Koreans living in South Korea who have experience in ordering food through mobile food delivery applications, and Koreans aged 20 and above were sampled. The sample included university faculty, students, and professionals in the tourism and hospitality industry living in Seoul and Busan metropolitan cities. Google's questionnaire program was used to develop the questionnaire, and it was distributed online to participants. Data were collected from 10 May 2022 for a period of two weeks. A total of 310 responses were obtained, and 296 responses were used for the final analysis after excluding 14 questionnaires that either were not completed or included "straight-line" responses. After removing these invalid questionnaires, the remaining 296 responses were used to test the hypotheses of the study.

3.3. Data Analysis

Univariate and multivariate outliers were checked prior to completing the primary data analysis. This was done by calculating Z-scores and Mahalanobis distance. Data were screened for missing data, but none was identified. SPSS 24.0 (Statistical Package for the Social Sciences) was used for descriptive analysis. This helped to specify information about participants and items used for measurement. Cronbach's alpha (α) test and confirmatory factor analysis were run to evaluate internal consistency and construct validity. In order to test the research hypotheses, structural equation modeling (SEM) was used in the AMOS 24.0 program.

4. Results

4.1. Profile of Respondents

Demographic information from participants is shown in Table 1. It was shown that a majority of respondents (51.8%) were female, and 23% of respondents were in their 40s. Almost 40% of respondents were working at a company, and about 32% of respondents received $2788 to $3485 as a monthly salary. In terms of the frequency of using food delivery applications, a little less than 40% of respondents indicated that they use it one to three times per month, which was the response most selected. Slightly over 33% of respondents ordered fast food by using the application, the most common type of food ordered by respondents.

Table 1. Participant demographics.

Demographic	Item	Frequency (n)	Percentage (%)
Gender	Male	144	48.6
	Female	152	51.4
Age	20s	53	17.9
	30s	51	17.2
	40s	68	23.0
	50s	64	21.6
	60s	60	20.3
Monthly income (USD)	<1000	28	9.5
	1000–2000	55	18.6
	2001–3000	73	24.7
	3001–4000	96	32.4
	Over 4000	44	14.9
Food delivery app usage frequency	6 per week	8	2.7
	4–5 per week	16	5.4
	2–3 per week	87	29.4
	Once per week	70	23.6
	1~3 per month	115	38.8
Delivery food menu	Korean	46	15.5
	Western	11	3.7
	Japanese	7	2.4
	Chinese	96	32.5
	Snacks	36	12.2
	Fast food	100	33.8
		296	100

4.2. Reliability and Validity

In order to estimate the appropriateness of the measurement model, confirmatory factor analysis (CFA) was completed (Table 2). CFA results indicated an acceptable model fit: $\chi^2(142) = 239.69$, $p < 0.05$, comparative fit index (CFI) = 0.96, normed fit index (NFI) = 0.91, goodness of fit index (GFI) = 0.92, incremental fit index (IFI) = 0.93, root mean square error of approximation (RMSEA) = 0.05, and root mean square residual (RMR) = 0.02. The measurement constructs were reflective of the observed variables as the standardized loadings estimates were acceptable (>0.50), demonstrating that the construct validity was adequate [63]. The average variance extracted (AVE) for all constructs ranged from 0.51 to

0.57, more than the 0.5 level needed to demonstrate that convergent validity was acceptable. As for the construct reliability, all constructs were above the accepted level recommended to achieve composite reliability (>0.60) [63], ranging from 0.74 to 0.84.

Table 2. Confirmatory factor analysis results.

Variables and Items	Standardized Loading	S.E.	Composite Reliability	AVE
Personal innovativeness				
Among my peers, I am usually the first to explore new technology (e.g., food delivery apps).	0.721			
I like to experiment with new technology (e.g., food delivery apps).	0.608	0.090		
In general, I am not hesitant to try out new information technologies.	0.812	0.117	0.766	0.507
I would try a new mobile internet service if my circle of friends nobody has tried it before.	0.627	0.119		
Trust				
Transactions via food delivery apps are safe.	0.609			
The privacy of food delivery app users is well protected.	0.651	0.145		
Food delivery apps are reliable.	0.862	0.149	0.755	0.513
Perceived usefulness				
Food delivery apps would enable me to have food more quickly.	0.681			
Using food delivery apps seems to be convenient when having food.	0.779	0.099	0.806	0.511
Food delivery apps are useful.	0.744	0.104		
Using food delivery apps increases my chances of achieving things that are important to me.	0.647	0.111		
Perceived ease of use				
Learning to use food delivery apps is easy for me.	0.821			
My interaction with food delivery apps is understandable.	0.736	0.065	0.841	0.571
I can install food delivery apps without any conflicts.	0.643	0.073		
My interaction with food delivery apps does not require a lot of mental effort.	0.809	0.067		
Intention to use				
I am willing to use food delivery services for dining.	0.743			
I will use food delivery services for dining.	0.767	0.082	0.835	0.558
I am likely to use food delivery services for dining.	0.775	0.080		

Note: $p < 0.001$.

In AMOS, the construct reliability and standard error cannot be calculated for the items in this study, as the first items of the variable were fixed to 1. To examine discriminant validity, the square root of the AVE was compared with the interfactor correlations for each construct. All correlations were lower than the square root of each AVE, as Table 3 indicates, which demonstrated that discriminant validity was acceptable [64].

Table 3. Discriminant validity test of the measurement model.

Measured Variable	Personal Innovativeness	Trust	Perceived Ease of Use	Perceived Usefulness	Intention
Personal innovativeness	**0.457**				
Trust	0.241 (0.491)	**0.513**			
Perceived ease of use	0.207 (0.455)	0.249 (0.499)	**0.571**		
Perceived usefulness	0.184 (0.429)	0.294 (0.542)	0.773 (0.879)	**0.511**	
Intention	0.278 (0.527)	0.349 (0.591)	0.480 (0.693)	0.538 (0.734)	**0.558**

In AMOS, the construct reliability and standard error cannot be calculated for the items in this study, as the first items of the variable had to be fixed to 1. To examine discriminant validity, the square root of the AVE for each construct with the interfactor correlations was compared. As Table 3 indicated, all correlations were lower than the square root of each AVE, which demonstrated acceptable discriminant validity [64].

4.3. Testing Hypotheses

The structural model demonstrated a strong model fit (Figure 2): $\chi^2(144) = 263.67$, $p < 0.01$, CFI = 0.95, NFI = 0.90, TLI = 0.93, RMR = 0.05, RMSEA = 0.05. Consequently, seven research hypotheses were tested. Results from testing the structural model failed to show a significant relationship between innovativeness and perceived usefulness while innovativeness had a positive effect on perceived ease of use ($\beta = 0.28$, $t = 3.531$). Trust had a positive effect on both perceived usefulness ($\beta = 0.18$, $t = 2.891$) and perceived ease of use ($\beta = 0.36$, $t = 4.518$). Perceived ease of use had a positive effect on perceived usefulness ($\beta = 0.62$, $t = 9.457$). Perceived usefulness and perceived ease of use had a positive effect on the intention to use ($\beta = 0.59$, $t = 2.977$), ($\beta = 0.77$, $t = 3.885$). Therefore, as depicted in Figure 2 and Table 4, H2 to H7 were accepted while H1 was rejected.
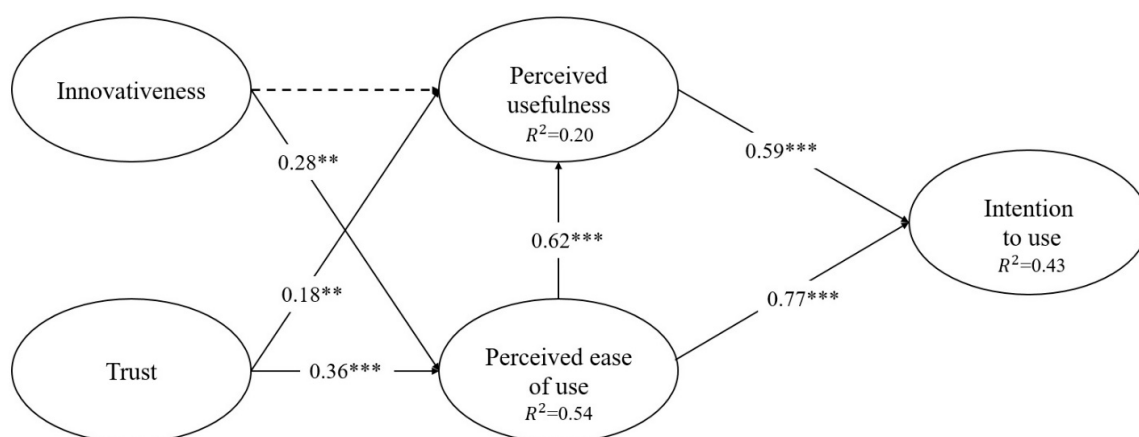

Figure 2. The result of SEM with standardized coefficients. Note: ** $p < 0.01$, *** $p < 0.001$.

Table 4. Hypotheses testing.

Hypothesized Path	Standardized Path Coefficients	t-Value	Results
H1: Innovativeness → Perceived usefulness	0.28	3.531 ***	Supported
H2: Innovativeness → Perceived ease of use	0.15	1.892	Rejected
H3: Trust → Perceived ease of use	0.36	4.518 ***	Supported
H4: Trust → Perceived usefulness	0.18	2.891 **	Supported
H5: Perceived ease of use → Perceived usefulness	0.62	9.457 ***	Supported
H6: Perceived ease of use → Intention to use	0.59	2.977 ***	Supported
H7: Perceived usefulness → Intention to use	0.77	3.885 ***	Supported

Note: R2 Perceived usefulness = 0.35; R2 Perceived ease of use = 0.35; Intention to use = 0.61. ** $p < 0.01$, *** $p < 0.001$. $\chi^2 = 263.671$, $df = 144$, CMN/DF = 1.831, GFI = 0.910, AGFI = 0.881, NFI = 0.897, CFI = 0.950, TLI = 0.931, RMR = 0.051, RMSEA = 0.053.

5. Conclusions

The main purpose of the current study was to examine consumers' intention to use a mobile food delivery service in an application of the ETAM to provide effective strategies for marketing in the hospitality and tourism industries. Thus, this study joins recent research into consumer behavior and technology innovation [65–68] by contributing to

knowledge and understanding of the use of mobile food delivery service applications. Findings from the current study did not demonstrate a significant relationship between innovativeness and perceived usefulness. This was contrary to the finding of a previous study that confirmed the positive relationship between these two variables in the context of mobile commerce applications for millennials [2]. However, the current study did find that innovativeness had a significant and positive relationship with perceived ease of use. This confirmed what had been found in prior research [69]. It can be interpreted that consumers who are more inclined to accept and experience new technologies quickly consider the ease of using food delivery services. This study also confirmed that trust positively influenced perceived ease of use and perceived usefulness. These results are consistent with previous research results [2,14,70], demonstrating that trust is an important external variable in the ETAM.

Customers who pursue innovation tend to accept and acquire new skills quickly. Similarly, in mobile food delivery services, they were found to have a stronger tendency to experience delivery services faster than others. At this time, it can be interpreted that they place more importance on the ease of acquiring and using technology quickly than on how useful it is. Moreover, perceived ease of use had a significant positive effect on perceived usefulness, confirming findings from prior research [14,52,71]. This indicates that easier-to-use food delivery services would be viewed as being more useful. Lastly, it was found that both perceived ease of use and perceived usefulness significantly influenced intention to use, which is supported by previous studies [52,71,72]. These results can be interpreted to mean that the more useful and easy consumers think food delivery applications are to use, the higher their intention to use them will be. One interesting finding in the results of this study relates to the age distribution of the sample respondents. In this study, respondents in their 20s and 30s were about 17% of the total participants while respondents in their 40s, 50s, or 60s were between 20.3% and 23% of the total respondents. From this, the question may be raised concerning age and MFDA use. Indeed, in a prior study by [66], it was noted that most e-consumers of local food products were in the 30–40 age demographic. It would seem that MFDA use among a younger demographic would be expected, but this may have changed due to the appearance of COVID-19. According to Lee et al. [61], due to the prolonged COVID-19 situation, the number of customers using MFDA has expanded from those in their 20s and 30s to a more middle-aged demographic of people in their 40s and 50s. Customers using delivery apps, which were centered on those in their 20s and 30s, seem to have expanded to the middle-aged demographic. The younger demographic has a high technology use and MFDA order frequency, but the middle-aged demographic has emerged as a relevant MFDA customer, which may be due to financial stability and the need for food products they can use to feed their children [66]. Therefore, in the sample of this study, the fact that there are many MFDA users in their 40s or older reflects the changes in the social use of MFDAs that seems to have become more widespread because of COVID-19.

6. Implications

6.1. Theoretical Implications

The ETAM, one of the most utilized models globally, was originally developed to determine workplace information system technologies and is an extension of the original TAM. While the TAM was adopted in the fields of tourism, hospitality, and food services, it has been applied to several different settings. The ETAM has yet to receive full attention in terms of mobile food delivery application services. Thus, this current study contributes to the literature about mobile technology use in the tourism, hospitality, and food service industries. Through this study, the ETAM was revalidated as a tool to better understand consumers' acceptance intention of using technology for mobile food delivery services. According to Ngubelanga and Duffett [2], to explain consumer technology use intention, understanding perceived usefulness and ease of use are crucial given that those variables are affected by external variables. Therefore, this current study contributes to the literature

by examining the ETAM with external variables, such as innovativeness and trust in a mobile food delivery application service context. Moreover, this study demonstrated that innovativeness and trust are important antecedents of both perceived ease of use and usefulness. More specifically, our study highlights the importance of trust as an antecedent of both perceived usefulness and usefulness. Such results show an important link to research in open technology innovation. These research results may contribute to the development of innovativeness in the mobile food service industry more broadly. It will contribute to creating an environment where all stakeholders, including customers who need food, restaurants who make and sell food, suppliers who deliver food to customers, and food delivery applications, can provide a place for these processes to take place and be better connected.

6.2. Practical Implications

There are practical implications from this study for the restaurant and food services industry. Firstly, innovativeness was found to have a significant positive effect on perceived ease of use. Thus, targeting innovators would be a reasonable strategy for food service industries. For customers, MFDAs should be designed to be easier to navigate. For food providers, it is necessary to design applications with simple written descriptions of food with photos at a glance in the mobile version. It is also important to make ordering and payment systems easy to use. Secondly, it is not just about designing applications that are more convenient to use. As trust also influenced perceived ease of use and perceived usefulness, the consistency of applications is important due to consumers completing online transactions by inputting their personal information in the system and becoming more attentive to risk. Thus, applications should be reliable and stable in order for consumers to feel safe in making such payments. In MFDA companies, updating consumers with notifications on how personal information is stored and treated is also a way to reduce their risk awareness level. Lastly, practitioners and MFDA designers should attend to the perceived ease of use and perceived usefulness of applications given that both are significant to promote consumers' use of the service as found in this study. Practitioners should be aware that there are consumers who have lower levels of trust and are less innovative. Therefore, it would be more profitable for practitioners to focus on attracting those consumers who are resistant to using technologies. Showing a simple video as a marketing effort to teach them how to download the application, make orders, and input information for payments would be helpful to attract those new consumers. If businesses can make the MFDA more accessible and easier to navigate, it would be innovative for those consumers.

6.3. Limitations and Future Research Directions

This current study has limitations that need to be considered. Firstly, this study focused on consumers of MFDAs in South Korea, and thus results may not be generalizable to different countries. It is possible that studies of populations from other cultural backgrounds could yield different results, so the issue of generalizability should be kept in mind by future researchers. The utilization of probabilistic sampling and cross-cultural comparisons would bring meaningful results about technology acceptance in future research. Furthermore, future studies could draw on higher response rates to avoid generalization issues. Secondly, the data were collected for this study from MFDA users who may be sensitive to new technologies. The type of users examined could be considered in more detail and may provide more insights regarding market segmentation and possible acceptance of MFDAs. It would be interesting to examine how much elderly people intend to accept new technologies and what motivates their intention to use them. Such results will help to identify constraints when using MFDAs, which should help all generations to be able to conveniently use technology in their daily lives and promote sustainable development of MFDA.

Conflicts of Interest: The authors declare no conflict of interest.

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