No More Starving with Food Delivery Applications, But Why Should I?

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Abstract

Food delivery applications are rapidly expanding and have become popular and successful in many countries. However, this sector is still in its initial stage, particularly in developed and emerging markets. This research aims to evaluate factors that affect consumers' intention to use food delivery applications in Malaysia. First, create customer encounters with food delivery by smartphone devices by introducing a diffusion of the innovation model. Five characteristics: relative advantage, compatibility, observability, complexity, and trialability, were used to assess consumer intention in food delivery applications. A total of 218 valid samples were obtained from Malaysian consumers. This research shows a positive influence on the intention. A five-attribute perception was used to determine the intention to use food delivery applications. Together, these results have a critical managerial impact on core players, for example, food delivery companies or restaurants. One of the main implications is that food delivery companies must make their applications easy to access, smooth, and enjoyable.

Keywords: consumers, diffusion of innovation, intention, mobile applications, online food delivery service

1.0 Introduction

In 2016, 17.9 million Malaysians were on the Internet through their cell phones. In 2020, this was predicted to reach 21.1 million internet subscribers (Al Amin et al., 2021; Ismail et al., 2019). The

majority of Malaysians shop online using their mobile devices. In response, Malaysian food and beverage companies seek to grow their online food delivery services (OFD). Online meal ordering is no longer confined to taking and eating out; it is the new platform for consumers to get their meals. Many restaurants and food delivery providers in Malaysia offer online food delivery services (Mat Nayan & Hassan, 2020; Eu & Sameeha, 2021). FoodPanda, the first actively established supplier in Malaysia, is among the firms. Other companies in the market are GrabFood, Deliver Eat, Uber Eats, honestbee, Running Man Delivery, FoodTime, and Dahmakan. Major regions like Kuala Lumpur, Klang Valley, and Johor Bahru are clustered in the most food delivery services (Mat Nayan & Hassan, 2020). Furthermore, the additional ease of access to OFD services via smartphones encourages consumers, with one single click, to switch to online food delivery services from conventional buying of online products.

Technology plays a critical part in modernising food delivery systems. It aids in changing customers' behaviours, inspired by their technology belief to accomplish anything online that includes cooked meals being delivered. Convenience is the most important driver for consumers because ordering is simple, with only a few taps on any mobile device. South East Asia has a high demand for food production. While the food sector is worth trillions of dollars, distribution accounts for only a small portion of that total (Lee et al., 2017). This is an excellent opportunity for future growth.

Food vendors face increasingly fierce competition with the exponential increase in economic globalisation, social transformation, and lower market entry rates (Smith et al., 2021). Therefore, key players must know how and why customers adopt a new product or service. Based on the market analysis, this awareness is common knowledge of consumers' approaches to innovation and their procurement intent (Al Amin et al., 2021; Baek & Kim, 2018; Banerjee et al., 2019; Lee et al., 2019; Troise et al., 2020).

To date, customers are increasingly using a variety of mobile applications for hospitality and tourism to enhance their gastronomic tourism experiences (Razali et al., 2021). Customers are growing more sophisticated and demanding as market trends change (Fadzil et al., 2020a; Ismail et al., 2019; Yusra & Agus, 2020). Companies devote all of their resources to better understand and provide outstanding services to their customers. However, restaurant-related mobile applications are rarely explored in the literature despite that mobile

application platforms can be used by business operators to enhance e-marketing efforts and provide competitive advantages (Fadzil et al., 2020b).

Nevertheless, few studies have been undertaken on the accessibility impact of mobile technology on meal delivery in the food industry sectors. Since Malaysians are accustomed to dining in restaurants for meetings, events, and family gatherings, it is critical to comprehend how customer behaviour has shifted towards meal delivery. This means that Malaysians are ordering food to their homes using mobile applications. How has the practice of not dining out in restaurants influenced Malaysian society? This research aimed to investigate users' adoption of meal delivery applications in the Malaysian restaurant industry. This research addressed the following research questions: what factors influence customers' desire to use food delivery applications? And why do consumers adopt food delivery applications instead of dining out?

This research investigates how restaurant customers in Malaysia use mobile applications and contributes to organisational applications' mobile context. Mobile phones are compatible with third-party applications that supply customers with information about various restaurants. The diffusion of innovation theory (IDT) (Rogers et al., 2014) was adopted in this work to integrate various perspectives. IDT is a theoretical framework that explains why modern ideas and technologies have become widespread. In addition, a theoretical model framework was developed and implemented to support the findings and limitations of the previous research on OFD adoption (Mat Nayan & Hassan, 2020; Yusra & Agus, 2020). IDT, in particular, is an intriguing model that explains tourists' intentions to engage in the online community and has a substantial impact on their intentions to buy and spread positive word of mouth (Lee et al., 2017).

Therefore, the main objectives of this research are: (1) to investigate customers' adoption of food delivery applications, (2) to develop a research model to integrate various perspectives into this investigation, and (3) to examine the factors affecting consumers' intention towards food delivery applications. The review of OFD and the theoretical foundation of this research are discussed in the following section. Next, the summary of the research model and hypotheses are discussed, followed by this research methodology. This involves reviewing measurements such as construct validity, convergent

validity, discriminant validity, and reliability to see the goodness of fit of the constructs.

2.0   Literature Review

Online food ordering is a mechanism of ordering food on a website or mobile application of a or many restaurants. A customer can choose to have the food delivered or pick it up. The method consists of selecting the restaurant you want, scanning the menu items, picking up, or delivering it. Customers will then pay via credit, debit card, or cash from an application or website when they pick up their food at the restaurant. The website and application provide customers with information on the quality of the food, the duration of the preparation, and the time the food will take to be delivered when it is ready for pick-up. The online market for food orders includes foods prepared in restaurants, produced and ordered online, and then picked or delivered by independent people or delivery service providers.

2.1   History of Online Food Ordering

Pizza Hut produced its first ordered pizza online in 1994. Online service delivery was created in 1995 as the first online ordering service in the worldwide waiter (now known as Waiter.com). The company initially covered Northern California and expanded into numerous other cities in the United States. Grub Hub was founded in 2004. By the end of the 2000s, large pizza chains developed and started operating between 20 and 30 per cent of their online business. Smartphone penetration has increased, and both the technology and restaurant or food industry sharing economy have given more attention to online food supply as a start-ups. In 2010, Snapfinger was a restaurant search and remote ordering site for takeout, delivery, and catering. This multi-restaurant company expanded its smartphone order of food by 17 per cent a year. In 2014, Uber Eats was opened in Los Angeles, California. In 2015, mobile requests started to exceed. China rose in the volume of food and distribution in 2015 from 0.15 billion yuan to 44.25 billion yuan. Around three per cent of 61 billion transactions of restaurants in the US were delivered online as of September 2016.

In a dynamic world, sometimes consumers find it challenging to manage simple tasks like buying food or cooking dinner. Fortunately, consumers can solve these tasks within a few taps on their mobile phones. Smartphones have become their tool to obtain everything they

want at their doorstep because of on-demand services. Indeed, digital technology reshapes the delivery market (Kaur et al., 2021). The food service industry is no exception as on-demand food delivery applications are disrupting the food delivery concept. Food delivery applications allow consumers to order food from a wide array of restaurants, allowing them to compare menus, prices, and reviews from other users quickly and easily.

Previous studies prove that consumers use online services because of their speed, precision, and ease of use (Baek & Kim, 2018; Daim et al., 2013; Lee et al., 2017). Besides, consumers keep on asking for more convenient orders and delivery. Convenience is undoubtedly one of the strongest motives for consumers to intensify their relationships with any service platform (Al Amin et al., 2021; Mei Yien Chin, 2019). Unsurprisingly, these food delivery services are the most popular among millennials, the consumer segment that uses the most online services. Over the years, several researchers studied consumer behaviour and preferences in an online context (Tang, 2019). There is, however, a lack of research in the area of food delivery applications (Al Amin et al., 2021). Therefore, the fundamental logic behind which users use them and the functionality of those devices they find the most relevant must be understood. These attributes can be tangible, like the application's design, or intangible, such as the service's convenience and quality.

Even though there are several reasons preventing consumers from adopting online purchase behaviour, there is limited research to date analysing those reasons for this service. Throughout this research, the main barriers and concerns of the consumers who order food through mobile applications are evaluated.

2.2   Food Delivery During the Pandemic of Covid-19

The concern has been raised that food delivery has a tremendous potential to lead to the disease's dissemination. When more and more consumers obeyed the authorities' movement control order (MCO), delivery workers fulfiled customer food orders, which had driven the delivery workers to be on the COVID-19 frontlines. It seemed likely that delivery workers came into close touch with potential customers without being noticed. Also, it would serve as pre-symptomatic senders who unintentionally transmit the latest coronavirus to stable consumers, colleagues, or families.

During this pandemic, delivery workers were more likely to be infected with the modern coronavirus and more likely to be the 'spreader' of the virus. To minimise the risk and reduce human interactions, food delivery companies such as FoodPanda, and Grab food launched a contactless delivery policy and the 'leave at my door delivery' option in their respective applications.

Food delivery companies such as FoodPanda implement new initiatives to ensure that consumers feel safe when using their services. The customer will notify riders if they plan to deliver without interaction during the delivery process. Customers' food will be delivered to their home or office at the pinned location, and the customers will be notified. The rider and customers must ensure a minimum gap of one meter, and the customers must also check if their food has been delivered. Therefore, customers are encouraged to switch to online payment to reduce physical contact. The food delivery companies support restaurants or vendors with the new health and safety advisories and updates from the World Health Organisation (WHO). Food Panda says they are united in their hard work to help their consumers, restaurant partners, and respected riders.

2.3   Types of Food Delivery Applications

There are three main types of food delivery systems implemented in the market: aggregators, fully stacked food services, and new delivery applications (Isa et al., 2021; Mat Nayan & Hassan, 2020).

2.3.1   Application Aggregator

Consumers and restaurants communicate using aggregation applications. App aggregators have been around for 15 years and are considered a "third party." They are based on the traditional delivery approach, in which a customer places a phone order and expects couriers to deliver it. With the advent of digitization, this cycle has become more efficient and requires less human engagement. Food delivery aggregators, for example, provide customers with internet access to a variety of eateries. These requests are normally subject to a set price, which is usually paid by the establishment where the request is made.

2.3.2 Full-stack Operation of Food Delivery

Full-stack food delivery systems are a brand new idea in the food delivery market, and they provide a new look at the food manufacturers. They manage the entire operation, which includes management, food preparation, and logistics of customer interaction.

2.3.3 New Delivery Applications

Food delivery applications are convenient for small restaurants or vendors with little money for their delivery system. Unlike the aggregators, consumers compare prices, deals, and menus of different cafés and restaurants in one application. The key difference is that new delivery players complete the distribution process and deliver orders. Besides, such a logistical support food delivery platform offers food packaging services to restaurants if necessary. It is an excellent way for small restaurants or vendors that have not yet set up their delivery service to use a new delivery application. It is also suitable for those who cannot afford a proper physical restaurant setup.

3.0 Theoretical Background

3.1 The Diffusion of Innovation

The degree to which a good service can be seen as revolutionary must be clarified before the features and models used to characterise the diffusion of innovation are discussed. The book *Diffusion of Innovations* by Rogers provides the author's definition of a novelty, 'innovation is the concept, activity or plan which is viewed by individuals or other units of adopting as new' (Rogers et al., 2014), which is one of the most influential works on innovation and diffusion. Rogers et al. (2014) emphasise the idea of perception because a brand must not be objectively new. Indeed, it is an invention when a concept looks unique to the individual in knowledge, persuasion, and the decision to follow the latest dimension of creativity.

When the term innovation is clarified, the term 'diffusion of innovation' should be added. Diffusion is the process through which an innovation is communicated over the years through specific channels by members of a social system (Rogers et al., 2014). The author describes diffusion as the knowledge that flows between two or more people, both of which affect the other messages instead of one way. It is a different kind of interaction in which new ideas and novelty are found and described for diffusion. This theory shows that innovation

communication channels, time, and social systems are the four essential elements of innovation diffusion (Ali et al., 2019; Ayob, 2021; Sufardi Mohd Yunan et al., 2020).

Innovation has already been seen as one of the four main components of innovation diffusion and is negatively linked to uncertainty. Ambiguity is an obstacle to a new product or service adoption rate. Implementing innovation produces unknown consequences (Alam et al., 2018). Therefore, marketers must minimise the incertitude of their new product as to the advantages and disadvantages. This theory is practical when we analysed this research. Communication channel is the second element mentioned by Rogers. While the last is made between two people, the mass media communication is directed at a large number of people.

Potential adopters participate in knowledge-gathering activities to learn more about an innovation's possible consequences, and their decision to adopt is based on the assessment and evaluation of that information. According to Roger's theory, future adopters place a high emphasis on communication networks and information gathering. Five key perceptions of the characteristics of an invention, according to his innovation diffusion theory, influence an individual's decision to adopt or not adopt are: relative advantage, complexity, compatibility, observability and trialability. Many studies have applied these characteristics and innovation factors to evaluate consumer product adoption, while some have applied these factors to assess customer resilience (Tang, 2019).

3.1.1 Relative Advantage

One of the best predictor variable is the relative advantage that positively connects to the adoption of the innovation rate (Al Amin et al., 2021; Troise et al., 2020). However, other conceptual for relative advantage based on technological features can include business process efficiency (communication, collaboration, and engagement). Because of the advantages that food delivery applications offer, it would thus expect that Malaysians who perceive food delivery applications as advantageous would likely adopt food delivery applications and improve their delivery service. The following theory, therefore, is proposed.

H1: Relative advantage positively affects consumers' intention to adopt food delivery applications.

3.1.2 Compatibility

Innovation compatibility can be measured by how well an innovation meets consumer requirements. A company should assess the need to satisfy its customers' needs and suggest innovation (Goh et al., 2020; Limsarun et al., 2021). The company should also suggest innovations. If an innovation complies with these conditions, the acceptance rate would be faster and higher. However, if these innovations are irrelevant to the consumer's needs, they cannot be implemented even if they can deliver better performance and services in carrying out a specific task (Al Amin et al., 2021). According to Lee et al. (2017), an innovation's effectiveness depends primarily on consumers' work, beliefs, and trust. Many individually and socially acceptable technologies are likely to be taken. So, the following hypothesis is suggested.

H2: Compatibility positively affects consumers' intention to adopt food delivery applications.

3.1.3 Complexity

Innovation's complexity is measured to the extent innovation is viewed as challenging to understand and use. Because most consumers cannot accept poorly designed applications, they usually do a lot of retries before they agree to implement them (Banerjee et al., 2019; Goh et al., 2020; Limsarun et al., 2021). The difficulty of technologies to be understood and used are the challenges to technologies. In the Malaysian context, the complexity of innovation negatively influences the adoption of food delivery applications. So, such hypothesis is suggested.

H3: Complexity negatively affects consumers' intention to adopt food delivery applications.

3.1.4 Trialability

Trialability is the degree to which companies believe they are capable of trying. The implementation of a product characterises the trialability of an invention without any unnecessary commitment from customers. Rogers et al. (2014) propose introducing and applying technologies more effectively if an instalment model is attempted. Potential consumers must check an idea before it is wholly implemented to decide whether it satisfies their standards (Limsarun et

al., 2021). Applications may be assumed to be at least initially free to enable consumers to test their applications. This will promote adoption rates and the general adoption of food applications because allowing consumers to test the food applications for free would positively affect the adoption rate especially in the Malaysian context. Therefore, the following hypothesis is formulated.

H4: Trialability positively affects consumers' intention to adopt food delivery applications.

3.1.5 Observability

Rogers et al. (2014) demonstrate the extent to which an innovation or the effects of innovation are evident to others is termed as observability. Additionally, observability could improve customers' perceptions of service innovations when they observe the impacts experienced by the previous restaurant's consumers. In this research, observability refers to the degree to which potential consumers can see, explain, or understand the effects of innovation and how this positively affects consumers' acceptance of food delivery applications. Therefore, observability enhances customer attitude to the same degree by providing customers with a sense of trust before using it. So, such hypothesis is suggested.

H5: Observability positively affects consumers' intention to adopt food delivery applications.

4.0   Research Methodology

4.1   Data Collection

The current research explores the factors influencing consumers' behaviour regarding the use of online food ordering applications. This technology's features should be evaluated to better understand consumers' perspectives on applications for food delivery. A conceptual model was proposed based on the literature review. An online questionnaire was also constructed to collect consumer responses. The questionnaire was divided into two parts; the first part included participants' demographic information (including seven questions such as age, education, and gender) and the second part consisted of construct-driven questions (including 19 questions). Likert was used to capture the consumer responses ranging from strongly disagree (one) to strongly agree (five). Since the focus of the research

involved ordering food online, the research also included a web poll to better understand the customer behaviour of food delivery applications. Google Forms was used to create a questionnaire and then distributed via WhatsApp to consumers.

4.2 Research Population

This was quantitative research with a convenient random sampling technique in which participants were chosen based on their interests in online food delivery. The research participants were adults (above 18 years). When selecting participants, no restrictions such as ethnicity, age, race, employment, or income were taken into account. The distribution of survey questionnaires was among individuals in Klang Valley (one of Malaysia's major metropolitan areas).

4.3 Sample Size

Hair et al. (2017) emphasise that a sample size of at least 200 will usually provide reliable results in factor analysis. The larger the sample size, the more reliable the parameter estimates. However, there is a global inconsistency among researchers because there is no agreement as to what is significant. In addition, Hair et al. (2019) indicate that the sample size can be determined using the thumb rules (i.e. ten subjects per variable or 20 subjects per variable). The research scale is a challenging and complicated function. In keeping with Roscoe's sample-determining thumb law, a bulk of work should be carried out with more than 30 and fewer than 500. The following sample sizes are suggested by Hair et al. (2019): 50 (very poor), 100 (poor), 200 (fair), 300 (well), 500 (very good), and 1000 and above. This research, therefore, targeted a sample size of 300 participants.

This research used the rule of thumb that specified 20 subjects per variable. There were fourteen (14) variables in this research. Considering 20 subjects per variable, the basic minimum sample size was 280. Hence, the sample size used in this research met most researchers' minimum requirements.

4.4 Research Instrument

Research instruments were adapted from Moore and Benbasat (1991) to explore the relationship between relative advantage, compatibility, complexity, trialability, and observability of customer behaviour towards food delivery applications. The questionnaire was

distributed to the respondents via online message platforms: Whatsapp, Facebook, Instagram, and Telegram. All these social media platforms are affordable to handle and produce faster responses without geographical limitations. Online surveys are commonly used for primary data collection from respondents over the Internet, and Internet researchers should accept the validity of online research (Hair et al., 2019). As the surveying tool for this research, a self-administered survey was adopted. A questionnaire was open to respondents without extra assistance or request, and the questionnaire could be completed on their own.

5.0   Data Analysis and Results

5.1   Profile of the Respondents

Table 1 shows the demographic profile of the respondents. In terms of gender, there were 122 male respondents (56.0 %), marginally more than 96 female respondents (44.0 %). Of respondents' age, 79 were between 18 and 25, 93 were between 26 and 35, 34 were between 36 and 45, nine were between 46 and 55, and three were above 55.

Table 1 : Demographic Profile of Respondents

Background	Information	Frequency	Percentage (%)
Gender	Male	122	56.0
	Female	96	44.0
Age	18-25	79	36.2
	26-35	93	42.7
	36-45	34	15.6
	46-55	9	4.1
	Above 55	3	1.4
Education Level	Bachelor	99	45.4
	Diploma	26	11.9
	Master	59	27.1
	Other	16	7.3
	PhD	18	8.3

Background	Information	Frequency	Percentage (%)
Occupation	Business	38	17.4
	Freelancer	1	0.5
	Homemaker	5	2.3
	Officer	1	0.5
	Professional	46	21.1
	Student	127	58.3
Monthly Income	Below RM1000	81	37.2
	RM1001 - RM 3000	65	19.7
	RM3001 - RM 5000	43	13.3
	More than RM5001	29	29.8

In terms of education, the majority were undergraduates (99, 45.4 %), followed by postgraduates (77, 35.4 %), diploma holders (26, 11.9 %) and non-specific education or others (16, 7.3 %).

In terms of occupation, the majority were students (127, 58.3 %). There were 47 professionals (21.6 %), 39 were in business (17.9 %), and five were home-builders (2.3 %). Most respondents received below RM1,000 a month (37.2 %) for their personal monthly income. There were 65 respondents earning between RM1,000 and RM3,000 a month (19.7 %). 43 participants earned monthly revenue between RM3,000 and RM5,000 (13.3 %). Finally, 29 respondents (29.8 %) had RM5000 monthly earnings.

5.2   Descriptive Statistics

The means, standard deviations, and variance for each variable were computed to understand the variability, independent of how the respondents in the research responded to the questionnaire questions. A descriptive statistics analysis was conducted to describe and summarise the main characteristics of the data set from the respondent's perspective on each factor.

The mean, standard deviation, and variance of research variables are shown in Table 2. All answers were given on a 5-point Likert scale (1 = far away from, and 5 = pretty well agreed). Based on the average values, the granting standards were used for clarification in describing the degree of agreement between the variables. A mean score of 2.49 or lower was deemed as low, a mean score between 2.50 and 3.49 was rated as moderate, and a mean score of 3.50 or more was labelled as high.

From Table 2, it can be seen that all the variable values of this research can be summarised and considered as high and moderate. Results also revealed that of the five factors of the use of intention on food delivery applications, four were considered a high level because they were perceived highly by respondents. It means that the intention of food delivery applications has a high perception of consumers. The mean scores for the other factors were as follows: compatibility factors (mean = 3.753, standard deviation = 0.827), observability (mean = 3.861, standard deviation = 0.727), relative advantage (mean = 3.844, standard deviation = 0.826), and trialability (mean = 3.586, standard deviation = 0.790).

Table 2 : Descriptive Measures of Variables

Variables	Mean	Std. Deviation	Variance
Compatibility (CP) 1. Using food delivery applications fits my lifestyle. 2. Using food delivery applications is compatible with all aspects of my life. 3. I think that using food delivery applications fits well with the way I like my lifestyle.	3.754	0.827	0.684
Observability (OB) 1. I have seen others order from food delivery applications. 2. It is easy for me to observe others using food delivery applications. 3. I can see many individuals using food delivery applications.	3.861	0.727	0.529
Complexity (CX) 1. Overall, I believe that using food delivery applications are challenging to use. 2. Using food delivery applications requires a lot of mental effort. 3. It wasn't easy to use food delivery applications to order the food I wanted.	2.454	1.009	1.018

Variables	Mean	Std. Deviation	Variance
Relative Advantage (RA)	3.844	0.826	0.683
1. Using food delivery applications has improved the quality of my life.			
2. Using food delivery applications make it easier for my life.			
3. Using food delivery applications has enhanced the effectiveness of my daily life.			
4. Overall, I find using food delivery applications advantageous in my daily life.			
Trialability (TR)	3.586	0.790	0.625
1. I want to use food delivery applications on a trial basis long enough to see what it can do.			
2. I able to try out the use of various food delivery applications satisfactorily.			
3. I have had opportunities to try out various food delivery applications.			

Note: N =218;
Measurement scale: 1 –Strongly Disagree to 5 –Strongly Agree;
Measurement level: 1.00 –2.49, Low; 2.50 –3.49, Moderate; 3.50 –5.00, High

5.3 Measurement Model

5.3.1 Data Reliability and Validity

The loading factors of the final PLS measurement models are shown in Table 3. Factor loadings above 0.70 are considered significant, as suggested by Hair et al. (2019). Items loaded moderately from 0.5 to 0.6 are permitted as long as the latent variable AVE is higher than 0.5. Consequently, most item loadings reported were more than 0.70, as shown in Table 3.

The Cronbach's alpha and composite reliability of the measurement model are also presented in Table 3. The Cronbach's alpha coefficients were higher than 0.70 for trialability (TR), compatibility (CP), observability (OB), relative advantage (RA), complexity (CM), and using intention (UI). The values varied between 0.802 and 0.882, which were greater than 0.70. The results mean that the objects are relatively consistent internally.

As an alternative measure for internal consistency, composite reliability is proposed by Hair et al. (2019) to have a more precise estimate of variance shared between valued measures and the

population limits of Cronbach's alpha. The findings in Table 3 show that the composite reliability value is greater than 0.70, reaching the appropriate explanatory standard of analysis (Hair et al., 2019). The 0.871 (RA) and 0.898 (CX) composite reliability statistics indicated that all reflective constructs reached a high internal consistency rate. While the 0.839 (TR), 0.605 (CP), 0.806 (OB), 0.871 (RA), and 0.898 (CX) composite reliability values showed identical phenomena among the predictor variables. Both Cronbach's alpha and composite reliability values were greater than 0.70, indicating that all the measurements used in this analysis were reliable.

Table 3 : Reliability and Factor Loading

Constructs	Items	Loadings	AVE	Composite Reliability	Cronbach's Alpha
Relative Advantage	RA1	0.803	0.628	0.871	0.876
	RA2	0.761			
	RA3	0.752			
	RA4	0.837			
Compatibility	CP1	0.731	0.529	0.605	0.802
	CP2	0.713			
	CP3	0.867			
Observability	OB1	0.733	0.579	0.806	0.816
	OB2	0.764			
	OB3	0.786			
Complexity	CM1	0.892	0.744	0.898	0.836
	CM2	0.904			
	CM3	0.845			
Trialability	TR1	0.796	0.636	0.839	0.882
	TR2	0.795			
	TR3	0.810			
Using Intention	UI1	0.713	0.608	0.823	0.827
	UI2	0.799			
	UI3	0.795			

5.3.2 Convergent Validity and Discriminant Validity

The average variance (AVE) derived from every construct is shown in Table 3. Each item was higher than 0.50. According to Hair et al. (2019), an AVE value of 0.50 or higher shows that the latent variables illustrate better than the variances in the variance of the indicators. In contrast, an AVE value that is less than 0.50 means that the items have more errors than the defined variance.

On the other hand, discriminant validity defines how each construct is independently built according to scientific standards (Hair et al., 2019). The degree to which a specific construct measure is distinct relates to discriminant validity. An AVE square root can be measured by its correlations with other constructs for each construct (Hair et al., 2019). The analysis was carried out using the two methods of the Fornell-Lacker criterion (Hair et al., 2019).

The validity test criterion for Fornell-Lacker is shown in Table 4. The table indicates that its discriminatory validity is sufficient.

Table 4 : Discriminant Validity

	RA	CP	OB	CX	TR	UI
RA	0.792					
CP	0.406	0.727				
OB	0.315	0.345	0.761			
CX	0.227	0.173	0.697	0.863		
TR	0.338	0.274	0.432	0.132	0.798	
UI	0.586	0.015	0.293	0.421	0.361	0.779

5.4   Structural Assessments

In the bootstrapping process, the replacement value for 5,000 sub-samples was taken to determine the statistical significance of parameter estimates for estimating pathways coefficients (Hair et al., 2019). The critical two-tailed test values were 1.65 (level of significance = 0.10), 1.96 (level of significance = 0.05) and 2.57 (level of significance = 0.01). According to Hair et al. (2019), the significance level depends on the purpose of the particular research and the area of analysis. Researchers also use a significance level of 10 per cent for exploratory studies. Therefore, considering the FDA business model was still in its development stage for the customers in Malaysia, this analysis followed the 10 per cent significance standard (t-value = 1.65) as the statistical determination criteria.

The result of the structural model is shown in Table 5. Again, all hypotheses were supported, and the value of R^2 was 0.503. This shows the 50.3 per cent variant in the use of food delivery applications.

The findings for the path coefficients and hypothesis testing in the structural model are listed in Table 5. The value for the H1 path coefficient was 0.224 and the standard error was 0.70. The empirical t-value was 3,660. A probability error of 1 per cent is greater than the

theoretical t-value of 2.57. It indicates that the relative advantage has a very positive impact on the purpose of adoption by consumers. Similarly, the H4 predicted that the complexity (ß = 0.365) greatly impacted consumer intention and optimistic relationships. The t-value was 6,088 and the path of a p < 0,01. H5 also predicted a valid positive relationship in intention usage (ß = 0.160) with consumer intention. The path coefficient value was 0.160, and the t-value was 2.654, with P<.01. This may also be implied that H1, H4 and H5 have a significant effect at 1 per cent on the use of intention by consumers. The hypotheses were, however, supported.

Table 5 : Result of Path Coefficients and Hypotheses Testing

Hypo thesis	Relationship	β	t-value	Decision
H_1	Relative Advantage -> consumers' use intention	0.224	3.660	Supported
H_2	Compatibility -> consumers' use intention	0.114	1.878	Supported
H_3	Observability -> consumers' use intention	0.139	2.319	Supported
H_4	Complexity -> consumers' use intention	0.365	6.088	Supported
H_5	Trialability -> consumers' use intention	0.160	2.654	Supported

For H3, the observability path coefficient was 0.139. The t-value was 2.319, higher than the 1.96 t-value theoretically, with an error of probability of 5 per cent. However, it indicates that observability is significantly encouraged by the consumer's use of intentions at 5 per cent. Therefore, H3 was also supported.

The path coefficient was 0.114 in terms of compatibility. The empirical t-value was 1.878, more than 1.65 for a 10 per cent probability error. It indicates that H2 has a weak effect on consumer intention to use at the 10 per cent level. This research adopted the 10 per cent significance level as a statistical assessment criterion so, H2 was also supported. Finally, the hypothesis test findings indicate that all hypotheses are supported.

6.0   Discussions

6.1   Relative Advantage and Consumers' Use Intention

The first hypothesis tests show that RA significantly impacted consumer intention toward food delivery applications of ß 0.224 and p < 0.01. This implies that consumers are more likely to order food when they perceive that delivery applications are beneficial. The relative

advantage of the relationship with the consumer intention was found to be the most significant influence. Regarding this research's relative advantage, food delivery service applications can always be justified adequately based on the relative advantage factor. One potential interpretation of this research's relative advantage is the various applications of food delivery service, believing that it has changed significantly better than the previous food online order. The advantage of food delivery applications, including improved applications, is that there are many restaurants for consumers to choose from. One can simply order food from a restaurant in the comfort and convenience of their own home, with faster deliveries, reasonably priced rates, tracking in real-time, and proactive communication. The key advantages overcome limitations, attracting consumers compared to traditional online food ordering. Food delivery applications have shaped the new evolution of food businesses and changed restaurants' perspectives. Nevertheless, a better reputation will motivate customers to use food delivery applications.

6.2   Compatibility and Consumers' Use Intention

In this research, the compatibility of food delivery services with ß 0.114 and p<0.10 positively impacted consumer use intention. The findings are consistent with previous research (see Al Amin et al. 2021; Goh et al., 2020; Limsarun et al., 2021; Troise et al., 2020). The above findings indicate that online reviews and insights allow consumers to reflect on their orders and delivery service. Consumers read online reviews before buying online products or services. This means that compatibility has a substantial impact on the intention of consumers to use food delivery applications.

The adoption decision found that compatibility played a significant role. The construct had a strong positive relationship with the intention of use among consumers. As food delivery applications are faster than the old online food ordering systems, they provide consumers with quick access to restaurants' options and their variety of food with clear information and details. In addition, food delivery applications enhance understanding of the payment form they need to make. According to Al Amin et al. (2021), the IDT research applied groupware and showed that the purpose was greatly affected by relative advantages, complexity and compatibility. However, Lee et al. (2019) applied UTAUT and found compatibility as the highly determinant of consumer intention to test consumers' attitudes towards

virtual shops. The research demonstrates how food delivery applications suit consumer behaviours.

6.3 Observability and Consumers' Use Intention

The observation indicated that the intention of consumers to use food delivery applications with ß 0.139 and $p < 0.05$ had a significant impact. The result shows that before consumers decide to place orders, they prefer to compare group volumes between various food delivery applications. Banerjee et al. (2019) indicate that young consumers are concerned about impression management and peer influence over other age groups. Young consumers are also easily influenced to try new technologies, which may explain the high visibility of food delivery applications, and the desirable results significantly affect their tendency to test innovative food delivery applications. Daim et al. (2013) and E.-Y. Lee et al. (2017) conclude that consumer use of applications would not easily be visible to anyone unless expressly shared with the application's active users and the results of the applications. The survey showed that 99 respondents were students and provided several recognisable food delivery applications through communication and experience for young people. However, the applications are more closely observed by young people. Observability is closely linked to consumer intentions. Technology regarding food delivery applications can be quickly learned from other consumers.

6.4 Complexity and Consumers' Use Intention

The findings showed that the intention to use food delivery with ß 0,365 and $p < 0,01$ was negatively influenced by complexity. The results are consistent with previous research (see Al Amin et al., 2021; Goh et al., 2020; Limsarun et al., 2021; Troise et al., 2020). The studies have found that the development of technologies is negatively affected by complexity. It is not difficult to use the food delivery applications to order foods and have access to their service. Young people are well acquainted with their latest encounters in food delivery applications.

6.5 Trialability and Consumers' Use Intention

Trialability and intention for the use of consumers with a moderate impact of ß 0,160 and $p < 0,01$ were found. This research has also provided evidence for this theory. This finding is consistent

with previous research (see Al Amin et al., 2021; Limsarun et al., 2021; Peemanee & Wongsahai, 2021; Troise et al., 2020). Food delivery applications are free to use in the research so that consumers will offer the new service's value. Customers are supposed to obtain promotions when checking any food delivery applications for the first time. It increases the motivation of behaviour to use a delivery service.

7.0 Implication, Limitation and Recommendation of the Research

7.1 Implication of the Research

This research's findings reveal a relatively strong impact on consumer intentions in food delivery applications through the three main factors: compatibility, relative advantage, and observation. However, complexity and trialability have significant and modest effects on customer behaviour in food delivery applications.

Compatibility implies that consumers prefer to use food delivery applications if they obtain deals from the food delivery application companies, with a variety of restaurants. In addition, food delivery applications can boost a restaurant's sales and encourage more consumers to use by simply improving and giving precise information on their menu.

Regarding trailability, the core aspect is the consumer's impact on the applications for food delivery. Consumers are well-advised to experiment, gain experience, and conduct the trial as much as possible without any constraints to use food delivery applications. Operators also may provide a special discount in their applications to attract consumers with a significant discount rate to order food and use food delivery application services.

Henceforth, the relative advantage is developed as a food delivery tool to attract potential customers. This finding shows that when customers read the published reviews of a restaurant on a food delivery application, they are most likely to order food. In addition, it is convenient because of the fast delivery to consumers' places.

On the other hand, the key component that weakens the customer's perceptions of online food delivery is complexity. Food delivery applications must regularly upgrade their software and maintain security updates. It ensures that a food delivery application is not vulnerable to software or upgrades and fast ordering and food delivery. This research also shows that consumers worry about the

payment method when ordering food from applications. In addition, food delivery application companies need to work closely with merchants. Food delivery application companies should make payment gateways safe for consumers and not complicated. Besides, food delivery companies have to smooth their processes from any complicated process by looking at the restaurants and ends with the food being delivered to consumers. This leads to an improvement in the number of adopters.

Last but not least, observability is proved to have a significant positive impact on food delivery applications' use intention. Before using the service, consumers may have seen others using it or they would search for those who have experimented with it. Further company customers show the programme's positive reviews. Consumers are likely to be looking at reviews of other users and several customers to purchase foods from the restaurants that use the food delivery applications. A community is heavily interested in customer use preferences. Customers can easily see drivers of food delivery companies on the streets, rushing in and out of the restaurants with their portable food bags and a unique uniform representing each company. The food delivery companies should then actively consider spreading their brand to draw the interest of consumers.

7.2   Limitations of the Research

The findings provide a deeper understanding of the elements that motivate or discourage consumers from using food delivery services, which was previously lacking in Malaysia. However, due to the small sample size, this research has several limitations. A larger sample size can create more trustworthy data and insights, but it is still insufficient to accurately represent the population. The studied and context factors, on the other hand, were distinct, adding to the knowledge base for future research.

7.3   Recommendation For Further Research

Thanks to the advances in technology consumers are now positioned on practically every e-commerce website, blog, and application to provide reviews or comments from numerous devices. This research also intends to provide relevant knowledge and views to businesses and scholars in this field. Companies looking to provide food delivery may find the report useful in improving food delivery

applications. Businesses that already conduct food delivery services, on the other hand, will find it valuable for improving operational concerns.

Large samples can be collected for future research to solve deficiencies. Because this study focused on food delivery applications, future research may concentrate on the same field. Finally, comparative studies that recognise and describe the differences between online food delivery customer groups from different ethnics, regions, and cultural characteristics are desirable.

For future research, food delivery systems could significantly simplify the ordering process and allow consumers to position orders across all conceivable channels such as social media platforms, virtual assistants, smart devices, and cars, which are potential for ordering. Workers are no longer a barrier to innovation for food delivery companies, as robots, drones, and even parachutes could drastically speed up delivery and reduce operating expenses.

8.0   Conclusion

Food delivery technology is now an essential part of the management of food companies across the world. Building robust and defect-resistant food delivery systems is crucial for any densely populated region as lifestyles gradually rise and consumers' tolerance for speed of delivery decreases. As the services become more popular, online food delivery provides many part-time jobs, increasing revenue and sales for restaurants and food chains. Their success is built on technology innovators that adapt as much as they can to the workflow of food supply in diverse business ways around the world. This ensures that corporations provide food delivery technology efficiently to create profit and reach the most significant number of people.

Based on IDT by Rogers, this study focuses on Malaysians' determinants of market adoption for food delivery applications. The significant discoveries are investigated, and all hypotheses are supported. This research, however, suggests that it may be technically competent and experienced by Malaysian online shoppers. Food delivery and restaurant industries are expanding at a breakneck speed. This scenario is being supplemented by a growing number of smartphones and food delivery applications. Food delivery applications are now a great hit among Malaysian technical researchers. Several food delivery applications in Malaysia can be downloaded from smartphones to order meals.

Finally, there are five factors which inspire consumers to use food delivery applications. Nevertheless, the primary benefit of online ordering is that consumers can save time and effort. Consumers can finish their orders in seconds or take their time if they choose. There are no order deadlines. Consumers can place their orders at any time. Instead of booking a day-to-day purchase, consumers can use the applications to visit eateries that they want to order from late at night or when they have free time at work and home. Consumers can browse the whole menu and order any food combination with their prices displayed and calculated.

Furthermore, it is easier to make large and intricate orders online since consumers have the time to be attentive, assess their options, and compare alternative pricing schemes. Furthermore, consumers do not need to be concerned with difficulties; for example, if they choose to check out, it saves time compared to queuing in line. Consumers can also take advantage of unique offers presented to online customers by ordering online and frequently finding eateries that are not available on the move.

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