Understanding the Customer Intention to Adopt Food Delivery Applications

Manad Taraf, Hasimi Sallehuddin

Faculty of Information Science and Technology, Universiti Kebangsaan Malaysia
43600 Bangi, Selangor Darul Ehsan, Malaysia.

Email: akseltaraf@yahoo.com, hasimi@ukm.edu.my

ABSTRACT

Food delivery applications are quickly growing, and in many countries, they have become popular and successful. Nevertheless, particularly in the developed and emerging markets, this sector is still in the early stages of growth. The purpose of this research is to understand the intention of consumers to adopt food delivery applications in Malaysia. In addition, this study aims to explore the customers' experience in using food delivery applications based on diffusion of innovation model, which consist of five characteristics: Relative advantage (RA), Compatibility (CM), Observability (OB), Complexity (CX) and Trialability (TR), were used to assess consumer 's intention in food delivery apps. A total of 218 valid samples had obtained from Malaysian consumers. This study shows a positive influence on the intention, and five attribute perception used to determine the intention to use food delivery applications (apps). These results together 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 efforts to make their applications easy to access, smooth and enjoyable to use.

Keyword: food delivery applications; Diffusion of innovation; Relative advantage; Compatibility; Trialability; Intention to use; Adoption.

INTRODUCTION

In revolutionizing food delivery systems, technology played a crucial role. It helped transform customers' behaviors as it was motivated by their technological reliance to do anything online that involved cooked meals delivered. Convenience is the biggest driver for consumers because ordering is easy as only a few taps on every mobile device. The demand for food production in South-East Asia is massive. While the food industry is a business that is worth a trillion dollars, distribution is just a small fraction (Lau & ng, 2019). This demand was an excellent chance for future growth. An expected USD 956 million in annual sales, one of the fastest-growing food-market markets, will be produced in the food delivery industry by 2020.

Most Malaysian consumers use their mobile devices to shop online. Through their cell phones in 2016, 17.9 million Malaysians were on the Internet. Through 2020, this predicted to reach through 21.1 million internet subscribers (Zhang et al., 2017). Besides, Malaysian food and beverage companies are delivering a continuing new surge of food delivery services (OFD). Online food ordering is not limited to taking and eating out. Many restaurants in Malaysia offer online food delivery services. There are numerous food delivery companies. FoodPanda, the first active company established in Malaysia, is among the firms that offer food delivery services. Other companies on the market are Deliver Eat, Uber Eats, Honest bee, Running Man Delivery and FoodTime and Dahmakan, and major regions like Kuala Lumpur, Klang Valley and Johor Bahru clustered in most of the food delivery services. Furthermore, the additional ease of access to OFD services via their smartphones could encourage consumers, with one single click, Switch to online food delivery (OFD) services from conventional buying of online products. Several types of research were held out on mobile applications in the dining sector on the accessibility of research on the use of mobile technology in food delivery. As the Malaysian society is known for dining in restaurants for a meeting, events, to understand in which variables that consumer' behaviour adopts food delivery application, this means the Malaysian society is turning into ordering food by the applications to their place, and how is it changed within the Malaysian society to not dining in the restaurants. This research seeks to study the adoption of food delivery applications by customers in Malaysia. This study will respond to the issue of the research: "What variables influence the desire of customers to use food delivery applications? “Why Individuals adopt food delivery apps instead of

dining in?" In particular, this research aims to implement the Diffusion of innovation theory (DOI) to analyze the adoption of food delivery applications based on the five variables.

RELATED WORK

Online food delivery is much like e-commerce, but the mechanism is more straightforward, and the products purchased vary from the e-company that sells typical products. Moreover, shipping times are either delivered straight to the consumer faster than e-commerce, or the products or items that are purchased (Shakila Binti Mohd Yusof et al., 2016). (Tobing, 2016) In this case, primarily in Indonesia, many providers of sharing economics such as Go-Jek (go food) and Grab (grave food) are equipped with online food. However, suppliers or restaurants may also offer on-line food, such as KFC, Pizza Hut. The online food delivery apps are on the smartphone of the consumer, which is dependent on the needs of the customer (Yeo et al., 2017).

Diffusion of innovation theory has been used in recent years to study individual use of new information technologies in healthcare. (Helitzer et al., 2003) have used the Innovation Diffusion Theory to evaluate and predict the adoption in rural New Mexico of a telehealth programme. Their research shows that Rogers' theory of creativity is an appropriate method to recognize technology adoption in e-health projects. (Chew et al., 2004) have used IDT to research family physicians' use of Internet healthcare. They found that trialability has been a strong motivational factor in the use by family physicians of Internet services.

(Rogers, 2003) also considers creativity characteristics, but never in the literature on public management. Rogers found out that the rate of innovation adoption increases by five perceived innovation attributes (relative advantage, reliability, complexity (defined as TAM easier to use), trialability and observability). The findings Compatibility and accessibility were often described in analyses of these attributes (Williams et al., 2015).

The recent diffusion of research on innovation centred on technical advances, such as the study of the use of innovation diffusion to integrate emerging technology into corporate and marketing programs (McCorkle et al., 2001). Their research highlighted "technical champion opinion leaders" and revealed that the use of opinion leaders is key to effective dissemination of technological advances by university teachers. Instead of disorganized, inefficient implementing disciplinary-specific innovations, a realistic approach needs that the funding of such technology has given to departmental innovators, who will then be expected to contribute to the delivery of innovations to other faculty, (Alexander, McCorkle and Reardon, 2001) (Li, 2003) proposed that: Rogers' Innovation diffusion examined factors influencing the adoption of Taiwanese electronic newspapers. Data from 1,006 people collected over the telephone: 311 (31%) adopters; 431 (43%) adopters were likely, and 263 (26%) were non-adopters. There have been four critical factors: technical control, creative thinking, demographics and mass media use.

METHODOLOGY

The research currently explores the factors found for influencing the behaviour of consumers on the use of Malaysian food supply applications. A quantitative analysis was performed because of the novelty of the food ordering service through apps. In addition, the features of this service should be evaluated consumer's behaviour to better understand consumers ' perspectives on apps for food delivery. The literature review has proposed the conceptual model that an online questionnaire has been built to collect the consumer's responses. The questionnaire was divided into two sections; the first part included participants ' demographic information (including seven questions such as age, education gender etc.) and the second part, construct-driven items (including 19 questions). From strong disagree (1) to strongly agree (5), a the5-point score of Likert is used to capture the consumers ' response The research was also conducted using a web survey to understand the consumer's behaviour in terms of food delivery applications since the topic study concerned ordering online food. An online reference for the questionnaire was generated using the Google form was emailed/sent on what's app groups.

The Diffusion of Innovation

The degree to which a good or service can see as revolutionary must clarify before the features and models used to characterize the diffusion of innovation had discussed. The book Diffusing 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, 2003), which is possibly one of the most influential works on innovation and diffusion. (Rogers, 2003) He emphasised the idea of perception because the brand must not be "objectively" new. Indeed, it is an invention when the concept looks like new to the individual in the field of knowledge, persuasion and decision to follow the ' latest ' dimension of creativity, as shown in figure 1.

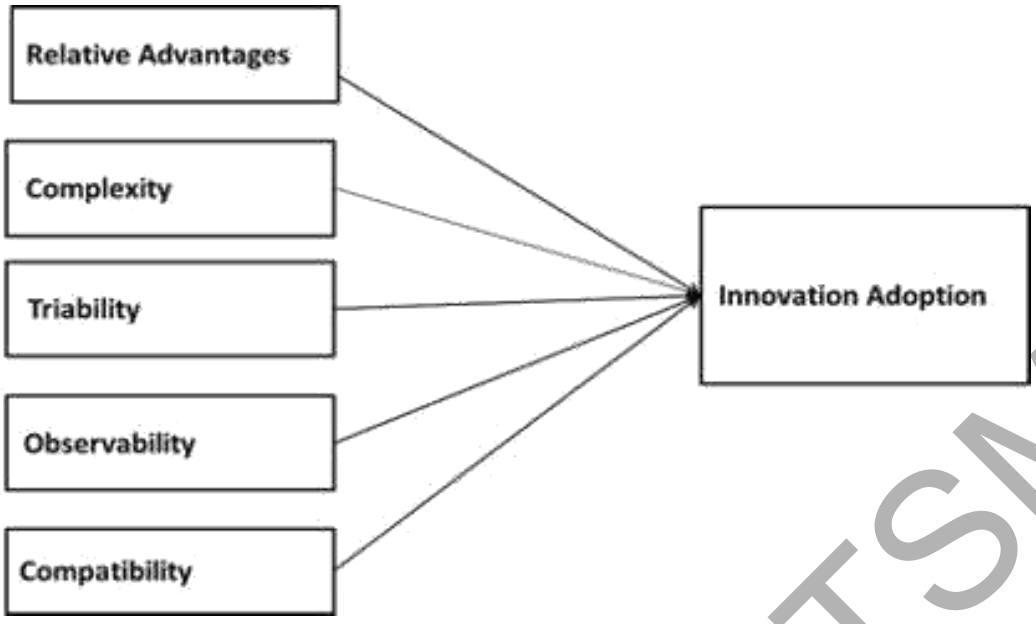

Figure 1 Diffusion of innovation attributes
(Source: Rogers, 1995, 2003)

The relative advantage of the product is the degree to which the customer profits from the new technology or improvements. The degree to which an invention is compatible with the current technological and social environment defined by compatibility the higher the chances for diffusion and adoption are and the more innovation can be integrated or coexist with existing values, knowledge and desires of potential adopters. Complexity tests how difficult innovation is to recognize, execute or use. End-users are more likely to consider less complex technology Trialability is the ability to evaluate innovation without full commitment and limited investment; this reveals that potential adopters will play with the innovation before they commit to it. Individuals are more likely to adopt an innovation of improved trialability. Finally, observability is to what extent potential adopters see the advantages of innovation. Innovation will only implement when the expected results are positive.

Descriptive Analysis

Demographic Profile of Respondents

Table 1 Demographic Profile

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
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/Allowance	Below RM1000	81	37.2
	RM1000 To RM 3000	65	19.7
	RM 3000 To RM 5000	43	13.3
	RM 5000 To RM 8000	29	29.8

Table 1 shows the demographic profile of the respondents. In terms of gender, there are 122 (56.0%) male respondents marginally more than 96 (44.0%) female respondents. For respondents' age, 79 aged between 18 and 25, 93 aged between 26 and 35, 34 aged between 36 and 45 years, 9 aged between 46 and 55, 3 aged above, 9 years between 46 and 55 years of age. In terms of education, the plurality came from undergraduate 99 (45.4%) and postgraduate 77 (35.4 %) separately. The majority of the respondents, 26 (11.9 %) hold diplomas and 16 (7.3 %) non-specific education respondents or others. The majority of students are 127, or (58.3%), in terms of occupation. There are 47 professionals (21.6%) and 39 (17.9%) business, and 5 (2.3%) homebuilders. For the personal monthly revenues, most respondents receive RM1,000 a month (37.2 %) below their rate. Between RM1,000 and RM3,000 a month (19.7%) there are 65 respondents. 43 of the participants earned monthly revenue from RM3,000 to RM5,000 (13,3%). Last but not least, between RM5000 and RM8000 (29,8%) are 29 respondents on monthly earnings.

Descriptive Statistics

Table 2 Mean, Standard Deviation, and Variance values of the study composite variables

Variables	**Mean**	**Std. Deviation**	**Variance**
COMO	3.754	0.827	0.684
OBSV	3.861	0.727	0.529
CPLX	2.454	1.009	1.018
RALA	3.844	0.826	0.683
TRL	3.586	0.790	0.625

From Table 2, it can be seen that all the variables value of this study can be summarized and considered as high and moderate. Results also revealed that of the Five factors for the use intention of food delivery apps, four factors were considered as a high level. Four factors were perceived highly by respondents. It means that the use of intention of food delivery apps 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).

Measurement Model

Data Reliability

Table 3 Loading for each variable

Constructs	**Items**	**Loadings**
Relative Advantage	RA1	0.803
	RA2	0.761
	RA3	0.752
	RA4	0.837
Compatibility	CP1	0.776
	CP2	0.793
	CP3	0.721

Observability	OB1	0.827
	OB2	0.883
	OB3	0.843
Complexity	CM1	0.892
	CM2	0.904
	CM3	0.845
Trialability	TR1	0.850
	TR2	0.762
	TR3	0.810
Using Intention	UI1	0.853
	UI2	0.841
	UI3	0.914

The loading factor of the final PLS measurement models is shown in table 3. Factor loads above 0.50 are considered significant, as suggested by (Hair, 2010b) Loads over 0.7 Recommended rating. Through (Hair, 2010a; Marakarkandy et al., 2017)(Hair, 2014), items loaded moderately from 0,5 to 0,6 can be permitted as long as the latent variable AVE is higher than 0,5. Consequently, the majority of item loads reported are more than 0.50 and are greater than 0.50 for all items shown in Table 3.

Internal Consistency Reliability

Table 4 AVE, Cronbach's Alpha and Composite Reliability Test Result

Construct	**AVE**	**Composite Reliability**	**Cronbach's Alpha**
Relative Advantage (RA)	0.628	0.871	0.876
Compatibility (CP)	0.529	0.605	0.802
Observability (OB)	0.579	0.806	0.816
Complexity(CX)	0.744	0.898	0.836
Trialability (TR)	0.636	0.839	0.882
Using Intention (UI)	0.608	0.823	0.827

The results of the average variance (AVE) derived from every construct were shown in Table 4. Each item is higher than 0.50. The AVE value of 0.50 or higher shows, according to (Hair, 2013), that the latent variables illustrate better than the variances in the variance of the indicators. Conversely, the AVE value less than 0.50 means that the items do have more errors than the variance that is defined.

The findings show in Table 4 that the composite reliability value is greater than 0.60, reaching the appropriate explanatory standard of analysis (Nunally and Bernstein, 1994). The 0,871 (RA) and 0,898 (CX) composite reliability statistics indicate that all reflective constructs reach a high rate of internal consistency. While the 0.839 (TR), 0.605 (CP), 0.806 (OB), 0.871 (RA) and 0.898 (CX) composite reliability values showed the identical phenomenon in the predictor variables (Hair, 2013).

The findings of the alpha and composite reliability analysis of the measurement model were presented in Table 4. The alpha coefficients are higher than 0.70 for the; Trialability TR, Compatibility CP, Observability OB, Relative Advantage RA, Complexity CM, Using intention UI. All of the values vary between 0.802 and 0.882, which is greater than 0.70. The results consequently mean that the objects are relatively consistent internally. In addition, the alpha values under 0.95 of Cronbach are not redundant papers occurring.

Discriminant Validity

The validity test criterion for Fornell-Lacker is shown in Table 5. That latent variable has a value AVE higher than the latent variables squared correlations. It indicates that its validity is discriminatory sufficient.

Table 5 Discriminant Validity of Constructs

	1	**2**	**3**	**4**	**5**	**6**
RAL	**0.792**					
COMP	0.406	**0.727**				
OBSV	0.315	0.345	**0.762**			
CMPX	0.227	0.173	0.697	**0.863**		
TRL	0.338	0.274	0.432	0.132	**0.798**	

UI	0.586	0.015	0.293	0.421	0.361	**0.779**

Structural assessments.

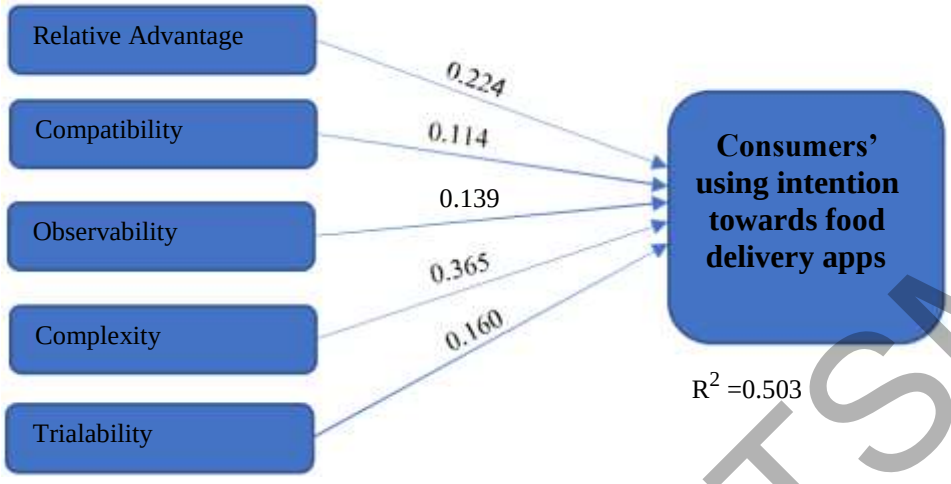

Figure 2 Result of Structural Model

The result of the structural model is shown in Figure 2. The value of R2 is 0.503. This shows the 50,3% variance in the use intention of food delivery applications, meaning that 50,3% of the respondents having the intention to use food delivery applications.

RESULT AND FINDINGS

The findings for the path coefficients and the structural model listed in Table 6, reveals that the relative advantage (H1: ß=0.224: p<0.01) It indicates that the relative advantage has a very positive impact on consumers intention of use towards food delivery applications. Similarly, the complexity (H4: ß = 0.365: p < 0,01) predicts that the complexity has a negatively impact on consumer intention. Also, the results show that the trialability (H5: ß=0.160: P<0.01) also predicts a positive relationship of consumers intention of use of food delivery applications. Moreover, it implied that H1, H4 and H5 have a significant effect on the intention of use for food delivery applications by consumers. The hypotheses are however supported.

Table 6 Result of Path Coefficients and Hypotheses Testing

Hypothesis	**Relationship**	**Beta**	***t*-value**	***p*-value**	**Decision**
H1	Relationship between Relative Advantage and consumers' use intention	0.224***	3.660	0.000	Supported
H2	Relationship between Compatibility and consumers' use intention	0.114*	1.878	0.062	Supported
H3	Relationship between Observability and consumers' use intention	0.139**	2.319	0.022	Supported
H4	Relationship between Complexity and consumers' use intention	0.365***	6.088	0.000	Supported
H5	Relationship between Trialability and consumers' use intention	0.160***	2.654	0.009	Supported

Note: Significant level =***p<0.01; ** p<0.05; * p<0.10; ns not significant.

For observability (H3: ß=0.139: p<0.05) It indicates, however, that the intention of use by the consumer is significant. The H3 is also supported. The result shows that there is a positive relationship between compatibility and consumers intention to use food delivery applications which is (H2: ß=1.878: p<.10). It indicates that H2 has a weak effect on the intention of use by consumers. Therefore, H2 is supported. Finally, the findings above of the hypothesis test

indicate that all theories have been supported, and the consumers intention to adopt food delivery applications.

Relative Advantage And Consumers' Use Intention

The key advantages overcome these limitations and attract consumers compared to traditional online food ordering. Food delivering apps have shaped the new evolution of food businesses and changed the perspective of restaurants, and a better will serve as motivations for customers to use food delivery apps. The first research target is then achieved and the H1 is supported

Compatibility and Consumers' Use Intention

Compatibility had a significant impact on the adoption decision, and the construct had a positive relationship with the consumer's intention to use food delivery applications. The food delivery applications are more convenient than the old online food ordering systems because the application provides easier access to various kinds of foods and restaurants along with clear information and details on the menus. In addition, food delivery applications provide enhanced understanding for the customers on the payment options they prefer. According to (Van Slyke et al., 2002) (Hsu et al., 2017) the diffusion of innovation theory research applied on groupware has shown that the relative advantages, complexity and compatibility have a significant relationship with their adoption intention.

Observability And Consumers' Use Intention

The survey shows that 99 respondents are students and provides a recognizable food delivery app for young people through their communication and experience. However, the application is more closely observed by young people. According to (Lee et al., 2017), observability is closely linked to the intentions of use for consumers. The technology can be easily learned from other consumers when it comes to food delivery apps. The third research target is fulfilled, and the H3 is supported.

Complexity And Consumers' Use Intention

The young people were well acquainted with their latest encounters in the food delivery applications. In previous IT adoption studies such as the ERP, e-business, and electronic commerce of (Luqman & Abdullah, 2011), however, other scientists have considered complexities insignificant. Alternatively, (Vagnani & Volpe, 2017), pointed out that complexity has a negative effect on all decision-makers' behavioral preferences and indicates that enhanced complexity has an adverse impact on beliefs, expectations and management perceptions of the product to be adopted. On the other hand, complexity positively correlated with adoption rate, which means that perceptions of less complexity led to a high rate of adoption. The fourth research target has been achieved, and the H4 is supported.

Trialability And Consumers' Use Intention

This finding is consistent with a study of (Hemlata et al., 2015) in other IT projects such as company applications and customer relationship management in the service sector in Hong Kong by (Arifin & Yazid, 2018) which found that trialability was significant to affect the IT innovation implementation. However, In previous IT Adoption Studies, such as E-business Internet-based ICT and web technology in the supply chain by (Luqman & Abdullah, 2011), (Lin & Bautista, 2017) and several researchers consider trialability insignificant. In the study, the food delivery applications are free to use, So the value of the new service will be offered to consumers. Customers are supposed to obtain promotion for the first time use to check any application for food delivery. It increases the motivation of behaviour to use the delivery service. The fifth research target has been achieved, and the H5 is supported.

CONCLUSION

- The present study found a significant relationship between essential factors when using food delivery apps. And it was recovered from the analysis that the facilities offered by food delivery apps play a significant role in using the app. The most desired tool for the marketing of companies should be social media. The most common method of payment by the respondents currently includes cash delivery, but another digital technology is also growing. Companies also need to ensure that applications are user-friendly and convenient. For the customers to position orders and for the business to draw more buyers, special apps are a simple method, but greater flexibility must give to the user.

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