

Understanding Consumers' Willingness to Use Food Delivery Applications: A Diffusion of Innovations Perspective

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ABSTRACT

The growing use of food delivery applications has increased the importance of understanding the factors that influence consumers' adoption decisions. Drawing on the Diffusion of Innovations (DOI) theory, this study examines the effects of relative advantage, compatibility, complexity, trialability, and observability on Malaysian consumers' willingness to use food delivery university students' willingness to use food applications: A diffusion of innovations delivery applications. A quantitative cross-sectional survey was conducted with 149 university students, and the data were analyzed using multiple linear regression. The results show that relative advantage ($\beta = .178$, $p = .026$), compatibility ($\beta = .276$, $p < .001$), and trialability ($\beta = .342$, $p < .001$) significantly and positively influence behavioral intention, whereas complexity and observability have no significant effects. The model explains 58.0% of the variance in behavioral intention ($R^2 = .580$), with trialability emerging as the strongest predictor. In conclusion, students' willingness to use food delivery applications is primarily driven by opportunities to experience the services, compatibility with their lifestyles, and perceived practical advantages.

Keywords: Behavioral Intention; Diffusion of Innovation Theory; Food Delivery Applications; Innovation Attributes; Willingness to Use

INTRODUCTION

In recent years, the rapid development of digital technology has significantly transformed how businesses interact with consumers, particularly through social media platforms (Kaplan & Haenlein, 2010; Dwivedi et al., 2021). In Malaysia, this transformation is evident in the growing use of food delivery applications such as GrabFood and Foodpanda, which have become part of consumers' daily lives. This trend is particularly noticeable among younger consumers, who spend considerable time on social media platforms such as Instagram and TikTok. Consequently, marketing strategies have also evolved. Rather than relying solely on traditional online advertising, companies increasingly employ creative approaches, including influencer collaborations, short-form videos, and user-generated content, to attract and engage consumers.

Social media plays an increasingly important role in shaping consumer behavior, highlighting the need to understand the factors influencing consumers' willingness to use food delivery applications. Previous studies have examined the relationship between social media marketing and consumer behavior, often applying theoretical frameworks such as the Theory of Planned Behavior (TPB) and the Technology Acceptance Model (TAM) to explain how attitudes and perceptions influence behavioral intentions (Ajzen, 1991; Davis, 1989). However, much of the existing research has focused on general online purchasing behavior or digital marketing rather than examining the innovation attributes that may influence consumers' willingness to use food delivery applications.

Existing literature identifies several factors that may influence consumers' adoption of digital services, including social media engagement, electronic word-of-mouth (eWOM), perceived benefits, and compatibility with consumers' lifestyles (Lou & Yuan, 2019; Filieri et al., 2018). However, limited research has examined consumers' willingness to use food delivery applications through the five innovation attributes proposed by the Diffusion of Innovations (DOI) theory, particularly among university students in Malaysia. Furthermore, food delivery applications represent a distinct digital service context that combines mobile technology, food services, and real-time delivery. Therefore, examining DOI attributes in this context may provide a more comprehensive understanding of consumers' adoption decisions.

Therefore, this study examines consumers' willingness to use food delivery applications in Malaysia through the five innovation attributes of the DOI theory, namely relative advantage, compatibility, complexity, trialability, and observability. The study further considers these attributes within the context of contemporary social media marketing, through which food delivery platforms communicate their benefits, compatibility, trial opportunities, and visibility to consumers. By applying the DOI framework to the food delivery context, this study seeks to provide a more specific understanding of the factors influencing university students' behavioral intention to use food delivery applications.

LITERATURE REVIEW

Innovative Social Media Marketing and Consumer Behavioral Intention

The influence of social media marketing on consumer behavior has been extensively examined, particularly in the context of food delivery applications (Dwivedi et al., 2021). In Malaysia, the rapid growth of platforms such as GrabFood and Foodpanda has increased the popularity of food delivery applications among consumers. While previous research primarily focused on traditional online advertising, recent studies have increasingly examined innovative social media marketing strategies, including influencer marketing, short-form videos, and user-generated content (Dwivedi et al., 2021). These

strategies leverage social media to shape consumer perceptions and behavioral intentions.

Several factors have been identified as important components of social media marketing. [Lim et al. \(2022\)](#) demonstrated a positive relationship between visually appealing and engaging content on platforms such as Instagram and TikTok and consumer interest in food delivery services. [Lou and Yuan \(2019\)](#) found that influencers perceived as trustworthy can significantly influence consumer choices. Electronic word-of-mouth (eWOM), particularly online reviews, also plays an important role in enhancing consumer confidence when selecting food delivery applications ([Filieri et al., 2018](#)). [Lok et al. \(2024\)](#) further demonstrated that social media influences consumer behavior toward fast-food brands such as McDonald's in Malaysia, highlighting the role of digital marketing strategies in shaping youth consumption patterns. Similarly, [Ng et al. \(2023\)](#) found that social media and key opinion leaders (KOLs) influence purchasing behavior in Malaysia's food and beverage industry. Collectively, these findings indicate that social media marketing can play an important role in shaping consumers' willingness to use food delivery applications.

Theoretical Framework: Diffusion of Innovations

This study adopts the Diffusion of Innovations (DOI) theory developed by [Rogers \(1995\)](#) as its primary theoretical framework. DOI theory explains how innovations are communicated and adopted over time and proposes that innovation adoption is influenced by five key attributes: relative advantage, compatibility, complexity, trialability, and observability ([Moore & Benbasat, 1991](#)). These attributes provide a theoretical basis for understanding consumers' perceptions and behavioral intentions toward food delivery applications.

The DOI framework has been widely applied in information systems and consumer behavior research. [Khin and Kee \(2022\)](#) identified relative advantage and compatibility as significant drivers of Industry 4.0 adoption among manufacturing SMEs in Malaysia. Similarly, [Wong and Kee \(2022\)](#) found that compatibility and observability play important roles in shaping Industry 4.0 readiness among manufacturing SMEs. In the context of digital services, [Ng and Kee \(2026\)](#) highlighted trialability and relative advantage as important factors influencing continuance intention and trust in digital health technologies. These findings demonstrate the applicability of DOI attributes in explaining technology adoption across different digital platforms and services.

Relative Advantage

Relative advantage refers to the degree to which an innovation is perceived as superior to the idea or practice it replaces ([Moore & Benbasat, 1991](#)). In the context of food delivery applications, relative advantage reflects the extent to which consumers perceive these applications as offering greater benefits than conventional methods of purchasing food. These benefits may include convenience, time savings, accessibility, and promotional value.

Social media can communicate these advantages through promotional content, demonstrations, user experiences, and influencer endorsements. When consumers recognize clear benefits associated with food delivery applications, they may be more willing to use them. [Gan et al. \(2025\)](#) found that relative advantage significantly influences consumers' behavioral intention to use digital mobility platforms in Malaysia, supporting the relevance of this attribute in digital service adoption. Therefore, the following hypothesis is proposed:

H1: Relative advantage positively affects consumers' willingness to use food delivery applications.

Compatibility

Compatibility refers to the extent to which an innovation is consistent with consumers' existing values, experiences, needs, and lifestyles (Moore & Benbasat, 1991). In the context of food delivery applications, compatibility reflects how well these applications fit consumers' daily routines and digital lifestyles.

For university students, food delivery applications may provide services that correspond with their academic schedules, mobile technology usage, and preference for convenient digital services. Social media platforms such as TikTok and Instagram may further reinforce this compatibility by integrating food delivery promotions into consumers' existing digital activities. Kee et al. (2023) demonstrated that customer satisfaction and brand trust influence purchase intention among young consumers in Malaysia. Furthermore, Singh et al. (2023) identified lifestyle integration and digital compatibility as important factors influencing fast-food purchase intention among Malaysian youth. Therefore, the following hypothesis is proposed:

H2: Compatibility positively affects consumers' willingness to use food delivery applications.

Complexity

Complexity refers to the degree to which an innovation is perceived as difficult to understand or use (Moore & Benbasat, 1991). In the context of food delivery applications, complexity may involve difficulties in navigating the application, understanding its functions, placing orders, making payments, or completing transactions.

Applications that are perceived as simple and intuitive may encourage adoption, whereas applications perceived as complicated may discourage consumers from using them. Social media content that demonstrates the simplicity and convenience of application usage may also reduce perceived complexity. Kee et al. (2022) found that perceived ease of use contributed to customer satisfaction with Foodpanda in Malaysia and Nigeria. Similarly, Aryani et al. (2022) highlighted the importance of reducing complexity through intuitive interfaces in influencing consumers' behavioral intention toward food delivery services. Therefore, the following hypothesis is proposed:

H3: Complexity negatively affects consumers' willingness to use food delivery applications.

Trialability

Trialability refers to the extent to which an innovation can be experimented with before users make a more permanent adoption decision (Moore & Benbasat, 1991). In the context of food delivery applications, consumers may have opportunities to try different applications and evaluate their features, convenience, and benefits before deciding whether to continue using them.

Promotional strategies such as first-time user vouchers, referral rewards, discounts, and limited-time promotions may encourage consumers to experiment with food delivery applications while reducing perceived risks associated with initial adoption. Kee et al. (2022) demonstrated that trialability through promotional incentives can enhance adoption intention in the context of digital wallet adoption. Kee et al. (2023) also highlighted the role of trial-based promotions and first-time user incentives in reducing

consumer uncertainty and encouraging platform adoption. Therefore, the following hypothesis is proposed:

H4: Trialability positively affects consumers' willingness to use food delivery applications.

Observability

Observability refers to the extent to which the use and benefits of an innovation are visible to others (Moore & Benbasat, 1991). In the context of food delivery applications, observability may occur when students observe their peers using these applications or encounter food delivery services through social media and their university environment.

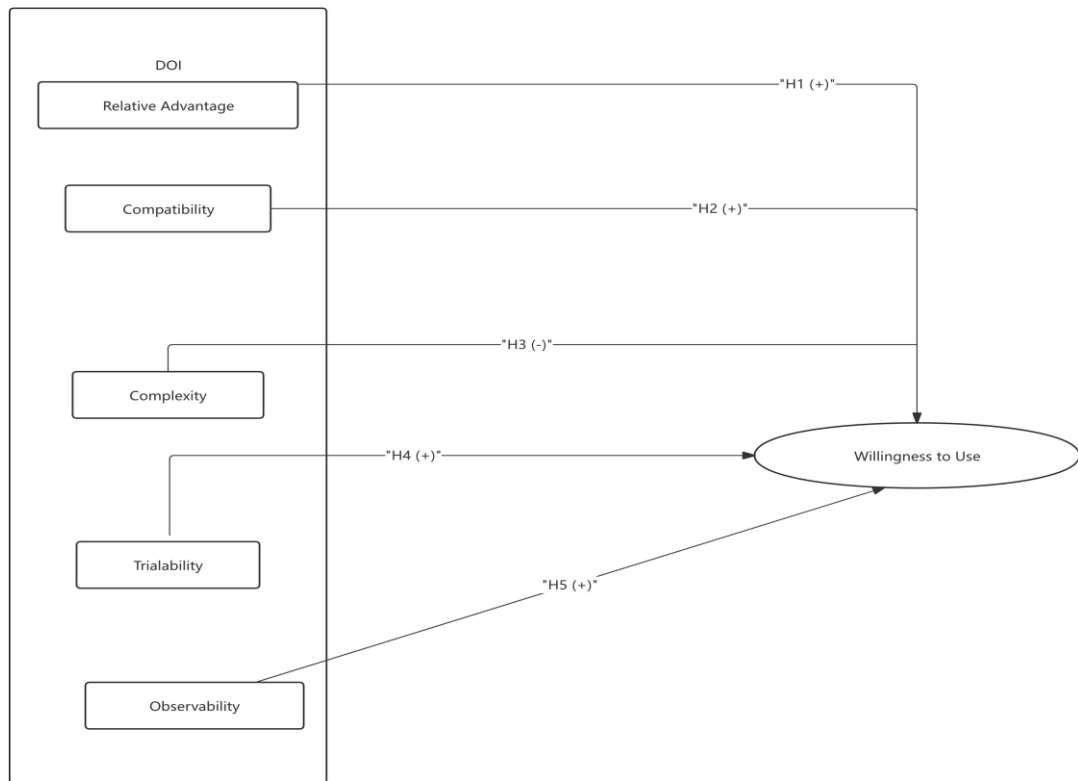
Social media can increase the visibility of food delivery applications through user-generated content, reviews, recommendations, shared experiences, and peer endorsements. Greater visibility may increase consumers' awareness of the applications and reinforce perceptions that their use is common and socially accepted. Ghosh et al. (2024) highlighted the role of social visibility and peer influence in shaping consumer decisions in the fast-food industry. Furthermore, Kee et al. (2025) demonstrated the importance of social media exposure in digital marketing and customer loyalty within e-commerce contexts. Therefore, the following hypothesis is proposed:

H5: Observability positively affects consumers' willingness to use food delivery applications.

Conceptual Framework

Based on the Diffusion of Innovations (DOI) theory and the hypotheses developed above, this study proposes a conceptual framework examining the influence of relative advantage, compatibility, complexity, trialability, and observability on consumers' willingness to use food delivery applications. Relative advantage, compatibility, trialability, and observability are hypothesized to have positive effects on consumers' willingness to use food delivery applications, whereas complexity is hypothesized to have a negative effect. The proposed conceptual framework is presented in Figure 1.

Figure 1. Research Framework



RESEARCH METHOD

Research Design

This study adopted a quantitative empirical research design to examine the factors influencing behavioral intention to use mobile food delivery applications among university students in Malaysia. The study was grounded in the Diffusion of Innovations (DOI) theory developed by Rogers (1995) and employed a cross-sectional survey design, in which data were collected from the target population at a single point in time. This approach is appropriate for hypothesis testing, deductive reasoning, and examining the relationships between innovation attributes and behavioral intention (Kee et al., 2025).

Population and Sampling

The target population comprised higher education students enrolled at Malaysian universities who had experience using mobile food delivery applications. A purposive non-probability sampling technique was employed to select respondents who had direct experience with the phenomenon under investigation.

Respondents were required to meet two predetermined screening criteria: (1) currently enrolled as tertiary students in Malaysia and (2) having prior experience using a major mobile food delivery platform, such as Foodpanda, GrabFood, or ShopeeFood. A total of 149 valid responses were collected and included in the analysis.

Measures

Primary data were collected using a structured, self-administered online questionnaire. The questionnaire consisted of two sections.

Section A: Demographic and Behavioral Profile

This section collected information on respondents' demographic characteristics and food delivery application usage. The information included gender, age group, average monthly allowance in Malaysian Ringgit, primary mobile food delivery platform used, such as GrabFood, Foodpanda, or ShopeeFood, and the primary social media platform, such as TikTok, Instagram, Facebook, or YouTube, through which respondents most frequently encountered food delivery application advertisements.

Section B: Measurement Constructs

This section measured the theoretical constructs included in the conceptual framework. All measurement items were assessed using a five-point Likert scale ranging from 1 (Strongly Disagree) to 5 (Strongly Agree).

Relative Advantage refers to the extent to which food delivery applications are perceived as better than conventional methods of purchasing food. The construct was measured using eight items adapted from [Moore and Benbasat \(1991\)](#), covering efficiency, convenience, functional utility, and promotional value. A sample item was, "Using food delivery apps enables me to get my meals more quickly."

Compatibility refers to the extent to which mobile food delivery applications align with university students' values, daily activities, and digital lifestyles. The construct was measured using four items adapted from [Moore and Benbasat \(1991\)](#), covering lifestyle integration and behavioral compatibility. A sample item was, "Using food delivery apps is compatible with all aspects of my university life."

Complexity refers to the perceived cognitive or procedural difficulty associated with using food delivery applications. The construct was measured using six items adapted from [Moore and Benbasat \(1991\)](#), covering interface navigation, clarity of use, and mental effort. Negatively worded items were reverse-coded before analysis. A sample item was, "I believe that food delivery apps are cumbersome to use."

Trialability refers to the extent to which users have opportunities to explore and experiment with food delivery applications before adopting them regularly. The construct was measured using five items adapted from [Moore and Benbasat \(1991\)](#), focusing on opportunities to test and explore food delivery applications with minimal risk. A sample item was, "I have been given a lot of chances to experiment with different food delivery applications."

Observability refers to the extent to which the use of food delivery applications is visible within students' peer groups and university environments. The construct was measured using four items adapted from [Moore and Benbasat \(1991\)](#), focusing on peer visibility and the social presence of food delivery applications. The negatively worded item OB3 was reverse-coded before analysis. A sample item was, "Food delivery apps are not very visible in my university environment."

Behavioral Intention refers to respondents' intention to continue using food delivery applications in the future. The construct was measured using three items adapted from the Unified Theory of Acceptance and Use of Technology 2 (UTAUT2) developed by [Venkatesh et al. \(2012\)](#). The items assessed future usage intention, continued use, and platform adoption. A sample item was, "I plan to continue using food delivery apps in the future."

Data Analysis Procedures

The quantitative data were analyzed using IBM SPSS Statistics in four stages. First, data screening was conducted to identify incomplete or invalid responses. The negatively worded items, CX5 and OB3, were reverse-coded using the formula $(6 - X)$ before subsequent analysis.

Second, descriptive statistics, including frequencies and percentages, were used to describe the demographic and behavioral characteristics of the 149 respondents.

Third, the internal consistency of the measurement scales was assessed using Cronbach's alpha, with a threshold of 0.70. The corresponding measurement items were then averaged to generate composite scores for Relative Advantage (Mean_RA), Compatibility (Mean_CP), Complexity (Mean_CX), Trialability (Mean_TR), Observability (Mean_OB), and Behavioral Intention (Mean_BI).

Finally, Ordinary Least Squares (OLS) multiple linear regression was employed to examine the effects of relative advantage, compatibility, complexity, trialability, and observability on behavioral intention and to test H1 through H5. The explanatory power of the regression model was assessed using the coefficient of determination (R^2), while the statistical significance of the proposed relationships was evaluated at $p < 0.05$.

RESULTS

Table 1. Summary of Respondents' Demographic Information (N = 149)

Variable	Response	Frequency	Percentage (%)
Gender	Male	60	40.3
	Female	64	43.0
	Prefer not to say	25	16.8
Age Group	18–21 years old	67	45.0
	22–25 years old	41	27.5
	Above 25 years old	27	18.1
	Under 18 years old	14	9.4
Monthly Allowance	Below RM500	43	28.9
	RM501–RM1000	38	25.5
	RM1001–RM1500	36	24.2
	Above RM1500	32	21.5
Most Used Food Delivery App	GrabFood	66	44.3
	Foodpanda	45	30.2
	ShopeeFood	38	25.5
Primary Social Media Platform for Food Delivery Ads	Instagram	59	39.6
	TikTok	35	23.5
	Facebook	29	19.5
	YouTube	26	17.4

Note: Percentages may not sum exactly to 100% due to rounding.

Table 1 presents the demographic and behavioral characteristics of the 149 respondents. In terms of gender, female respondents constituted the largest group ($n = 64$, 43.0%), followed by male respondents ($n = 60$, 40.3%), while 25 respondents (16.8%) preferred not to disclose their gender. Regarding age, respondents aged 18–21 years represented the largest group ($n = 67$, 45.0%), followed by those aged 22–25 years ($n = 41$, 27.5%), above 25 years ($n = 27$, 18.1%), and under 18 years ($n = 14$, 9.4%).

Regarding monthly allowance, respondents receiving below RM500 represented the largest group ($n = 43$, 28.9%), followed by RM501–RM1000 ($n = 38$, 25.5%), RM1001–RM1500 ($n = 36$, 24.2%), and above RM1500 ($n = 32$, 21.5%). GrabFood was the most frequently used food delivery application ($n = 66$, 44.3%), followed by Foodpanda ($n = 45$, 30.2%) and ShopeeFood ($n = 38$, 25.5%). Instagram was the primary social media platform through which respondents encountered food delivery advertisements ($n = 59$, 39.6%), followed by TikTok ($n = 35$, 23.5%), Facebook ($n = 29$, 19.5%), and YouTube ($n = 26$, 17.4%).

Table 2. Descriptive Statistics, Cronbach's Alpha Coefficients, and Zero-Order Correlations for Study Variables

Variables	1	2	3	4	5	6
1. Relative Advantage (RA)	0.847					
2. Compatibility (CP)	0.664***	0.728				
3. Complexity (CX)	0.505***	0.546***	0.648			
4. Trialability (TR)	0.628***	0.605***	0.596***	0.724		
5. Observability (OB)	0.280***	0.281***	0.505***	0.344***	0.293	
6. Behavioral Intention (BI)	0.627***	0.656***	0.544***	0.680***	0.296***	0.566
No. of Items	8	4	6	5	4	3
Mean	3.342	3.426	3.444	3.481	3.299	3.380
SD	0.752	0.837	0.706	0.797	0.646	0.879

Note. $N = 149$. * $p < .05$, ** $p < .01$, *** $p < .001$. Bold diagonal entries represent Cronbach's alpha coefficients based on standardized items. CX5 and OB3 were reverse-coded (Score = 6 – Original Score) before analysis.

Table 2 presents the descriptive statistics, Cronbach's alpha coefficients, and zero-order Pearson correlations among the six study constructs. Relative Advantage demonstrated good internal consistency ($\alpha = .847$), while Compatibility ($\alpha = .728$) and Trialability ($\alpha = .724$) met the commonly accepted threshold of .70 (Nunnally, 1978). Complexity recorded a Cronbach's alpha of .648, which was slightly below the recommended threshold. Behavioral Intention ($\alpha = .566$) and Observability ($\alpha = .293$) demonstrated relatively low internal consistency. These reliability limitations should be considered when interpreting the subsequent findings.

The mean construct scores ranged from 3.299 ($SD = 0.646$) for Observability to 3.481 ($SD = 0.797$) for Trialability, indicating moderate levels across the measured constructs. Behavioral Intention recorded a mean of 3.380 ($SD = 0.879$). All five predictor variables were positively and significantly correlated with Behavioral Intention at $p < .001$. Trialability demonstrated the strongest bivariate correlation with Behavioral Intention ($r = .680$, $p < .001$), followed by Compatibility ($r = .656$, $p < .001$), Relative Advantage ($r = .627$, $p < .001$), Complexity ($r = .544$, $p < .001$), and Observability ($r = .296$, $p < .001$).

Table 3. Multiple Linear Regression Analysis Predicting Behavioral Intention

Predictor	Standardized Beta (β)
Relative Advantage	0.178*
Compatibility	0.276***
Complexity	0.100
Trialability	0.342***
Observability	0.001

Note. $N = 149$. * $p < .05$, ** $p < .01$, *** $p < .001$. Standardized coefficients (β) are reported. $R^2 = .580$; Adjusted $R^2 = .565$; $F(5, 143) = 39.417$, $p < .001$; Durbin-Watson = 1.987.

Table 3 presents the results of the multiple linear regression analysis examining the effects of the five DOI attributes on Behavioral Intention. The overall regression model was statistically significant, $F(5, 143) = 39.417$, $p < .001$. The five predictors collectively explained 58.0% of the variance in Behavioral Intention ($R^2 = .580$, Adjusted $R^2 = .565$). The Durbin-Watson statistic was 1.987, indicating no substantial evidence of residual autocorrelation.

Three of the five DOI attributes significantly predicted Behavioral Intention. Trialability was the strongest significant predictor ($\beta = .342$, $p < .001$), indicating that greater opportunities to experience or experiment with food delivery applications were associated with higher behavioral intention. Compatibility was also a significant positive predictor ($\beta = .276$, $p < .001$), indicating that greater alignment between food delivery applications and respondents' lifestyles was associated with higher behavioral intention. Relative Advantage also had a significant positive effect on Behavioral Intention ($\beta = .178$, $p = .026$). Therefore, H1, H2, and H4 were supported.

Complexity did not significantly predict Behavioral Intention ($\beta = .100$, $p = .197$). Therefore, H3 was not supported. Observability also showed no significant effect on Behavioral Intention ($\beta = .001$, $p = .985$), indicating that it did not make a significant unique contribution to Behavioral Intention when the other DOI attributes were included in the regression model. Therefore, H5 was not supported.

DISCUSSION

The findings of this study demonstrate that selected innovation attributes influence Malaysian university students' behavioral intention to use food delivery applications. The regression model explained 58.0% of the variance in Behavioral Intention ($R^2 = .580$), indicating that the DOI attributes included in the model provide substantial explanatory power. Previous studies have highlighted the importance of social media marketing and digital promotional strategies in influencing consumers' adoption of online services and mobile applications (Kaplan & Haenlein, 2010). Among the five attributes examined in this study, Trialability, Compatibility, and Relative Advantage significantly predicted Behavioral Intention.

Trialability was the strongest significant predictor of Behavioral Intention ($\beta = .342$, $p < .001$), supporting H4. This finding indicates that university students are more willing to use food delivery applications when they have opportunities to try and experience the services before deciding to use them regularly. This finding is particularly relevant in the food delivery context, where consumers can easily compare different platforms and experiment with alternative services. Promotional incentives may further encourage consumers to try different food delivery applications, consistent with previous research on consumer behavior toward food delivery applications (Cho et al., 2019).

The descriptive findings further showed that Instagram (39.6%) and TikTok (23.5%) were the primary social media platforms through which respondents encountered food delivery advertisements. These findings highlight the relevance of visually oriented social media platforms for reaching university students, although the descriptive results do not establish a direct effect of these platforms on Behavioral Intention. Previous research has similarly emphasized the importance of social media marketing in consumer engagement (Yadav & Rahman, 2017). Food delivery platforms may therefore utilize social media campaigns incorporating first-time user vouchers, referral rewards, cashback offers, and influencer-based promotional content to encourage consumers to experience their services.

Compatibility was also a significant positive predictor of Behavioral Intention ($\beta = .276$, $p < .001$), supporting H2. This finding indicates that consumers are more willing to use food delivery applications when the services are compatible with their lifestyles and daily routines. Respondents aged 18–21 years constituted the largest age group in the sample (45.0%). Previous research has characterized younger consumers as highly engaged with digital technologies and online services (Priporas et al., 2017). Therefore, food delivery platforms may strengthen compatibility by providing services and marketing strategies that correspond with students' digital lifestyles, including convenient ordering processes, flexible payment options, and student-oriented promotions.

Relative Advantage was another significant positive predictor of Behavioral Intention ($\beta = .178$, $p = .026$), supporting H1. This finding indicates that the perceived benefits of food delivery applications, including convenience, accessibility, promotional value, and time savings, contribute to consumers' intention to use these services. This result is consistent with previous research demonstrating the importance of perceived benefits in the adoption of mobile food ordering applications (Alalwan, 2020). Therefore, food delivery platforms should clearly communicate their practical benefits through social media marketing to strengthen consumers' perceptions of relative advantage.

In contrast, Complexity did not significantly predict Behavioral Intention ($\beta = .100$, $p = .197$); therefore, H3 was not supported. Although H3 proposed a negative relationship between Complexity and Behavioral Intention, the observed coefficient was positive and statistically insignificant. One possible explanation is that university students are already familiar with mobile applications and digital services, reducing the importance of perceived complexity in their adoption decisions. However, this interpretation should be considered cautiously because the Complexity construct demonstrated relatively low internal consistency ($\alpha = .648$).

Observability also did not significantly predict Behavioral Intention ($\beta = .001$, $p = .985$); therefore, H5 was not supported. Although Observability was significantly correlated with Behavioral Intention at the bivariate level ($r = .296$, $p < .001$), it did not make a significant unique contribution when the other DOI attributes were included in the regression model. This finding suggests that the visibility of food delivery application usage may be less influential than factors such as Trialability, Compatibility, and Relative Advantage. Nevertheless, this result should be interpreted cautiously because Observability demonstrated low internal consistency ($\alpha = .293$).

The findings also provide several practical considerations for food delivery platforms. While promotional campaigns may encourage consumers to try food delivery services, excessive reliance on discounts may make it difficult to maintain consumer engagement when promotional incentives are unavailable. Influencer-based marketing also requires careful selection of credible influencers to maintain consumer trust. Furthermore, dependence on social media platforms may expose companies to changes in platform algorithms that can affect content visibility (Nair et al., 2022). Privacy and data security should also be considered because food delivery applications process consumers' personal and location-related information. Maintaining appropriate data protection practices is therefore important for sustaining consumer trust.

Overall, the findings indicate that Trialability, Compatibility, and Relative Advantage are significant determinants of Malaysian university students' Behavioral Intention to use food delivery applications, whereas Complexity and Observability are not statistically significant predictors. The results suggest that students place greater emphasis on

opportunities to experience food delivery services, compatibility with their lifestyles, and the practical benefits offered by the applications. Food delivery platforms may therefore emphasize trial-based promotions, lifestyle-oriented digital experiences, and clear communication of practical benefits when developing social media marketing strategies for university students.

CONCLUSION

This study examined the influence of five Diffusion of Innovations (DOI) attributes, namely relative advantage, compatibility, complexity, trialability, and observability, on Malaysian university students' willingness to use food delivery applications. The findings demonstrate that trialability, compatibility, and relative advantage significantly and positively influence behavioral intention, supporting H1, H2, and H4. Among these factors, trialability emerged as the strongest predictor, indicating that opportunities to experience and experiment with food delivery applications play an important role in encouraging adoption. Compatibility also contributes to behavioral intention, suggesting that food delivery applications are more likely to be adopted when they align with students' lifestyles and daily routines. Similarly, relative advantage confirms the importance of perceived convenience, efficiency, and practical benefits in encouraging application use.

In contrast, complexity and observability did not significantly influence behavioral intention; therefore, H3 and H5 were not supported. These findings suggest that perceived difficulty and the visibility of food delivery application usage may be less influential in students' adoption decisions than opportunities for trial, lifestyle compatibility, and perceived benefits. Overall, the findings support the applicability of DOI theory in explaining food delivery application adoption among Malaysian university students, while also demonstrating that the five innovation attributes do not contribute equally to behavioral intention.

From a practical perspective, food delivery platforms should emphasize trial-based promotions, student-oriented services, and the practical benefits of their applications. Promotional strategies such as introductory vouchers, referral incentives, and other opportunities to experience the service may encourage adoption, while marketing communication should highlight convenience and compatibility with students' digital lifestyles. Future studies may examine broader consumer populations, incorporate additional factors influencing food delivery application adoption, and use more diverse samples to enhance the generalizability of the findings.

LIMITATION

This study has several limitations that should be considered when interpreting the findings. First, the study employed purposive non-probability sampling and focused exclusively on 149 university students in Malaysia. Therefore, the findings may not be generalizable to other consumer groups, age categories, or geographical contexts. Second, the cross-sectional research design captured respondents' perceptions at a single point in time and therefore does not reflect potential changes in food delivery application usage over time. Third, the study relied on self-reported questionnaire data, which may be subject to response bias. Most importantly, some constructs demonstrated reliability coefficients below the recommended threshold, particularly Complexity ($\alpha = .648$), Behavioral Intention ($\alpha = .566$), and Observability ($\alpha = .293$). The low internal consistency of these constructs, especially Observability, may have affected the stability of the measurement and should be considered when interpreting the non-significant effects of Complexity and Observability. Future studies should refine and validate the

measurement items, employ larger and more diverse samples, and consider longitudinal research designs to improve the reliability and generalizability of the findings.

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