Determinants of the Intention to Use Online Food Delivery Service among Higher Institution Students

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Abstract
An online food delivery service allows customers to order meals from various restaurants without need to call or visit in person. Customers can browse menus, select meals, customize orders, and pay online. This trend has transformed how students order and enjoy food. Service providers need to understand the factors influencing students' use of these services to enhance customer satisfaction. This study aims to identify the factors affecting students' intention to use online food delivery services. It examines five factors: intention to use, price savings, perceived risk, time savings, and perceived usefulness. The study surveyed 319 students using stratified sampling, with data collected through self-administered questionnaires. Analysis revealed that price savings, time savings, and perceived usefulness significantly influenced students' intention to use online food delivery services. No significant difference was found between male and female students regarding their intention to use these services. The study provides valuable insights for small to medium-sized companies in the food delivery industry to improve their services

Introduction
Online shopping is directly purchasing goods and services from sellers over the internet (Akter, 2022). Due to the COVID-19 pandemic, online shopping has become the norm, with customers increasingly favouring this method (Akter, 2022). The pandemic has provided opportunities for food delivery services to enhance their operations (Kee et al., 2021), leading to a surge in online food delivery (OFD) in Malaysia's food and beverage industry. The convenience of food delivery apps (FDAs) like Grabfood, Lalamove, Foodpanda, and Hallo has increased consumer popularity. However, long delivery times and incorrect orders have affected the consumer experience, emphasizing the need to improve customer satisfaction in online food delivery (Tandon et al., 2021).

Online food-delivery platforms are expanding choice and convenience, allowing customers to order from a wide array of restaurants with a single tap of their mobile phone. Consequently, learning how to increase excellent customer experience with online food delivery has become critical for online food delivery platforms and caterers to compete in this competitive environment. The students enjoy these applications and their delivery services because they bring the greatest convenience to their daily lives. According to Pang (2017), Foodpanda was the first application of food delivery service in Malaysia since 2012 followed by DeliverEat, Honestbee, Dahmakan and so forth.

Based on Statista (2022), revenue in the online food delivery (OFD) market in Malaysia is projected to reach US$2.10bn in 2022. Although the market saw two years of unprecedented growth, 2022 is looking to slow that down with uncertain macroeconomic conditions and consumers looking to save money. However, OFD remains the most efficient way to lure their primary target audiences: students and young bachelors. These target markets are the most lucrative ones for food firms to pursue (See-Kwong et al., 2017). Next, it has been reported that there has been a significant difference in the revenue of meal delivery in Malaysia from 2017 until now. It is also expected to increase in the next coming years (Statista, 2022).

Despite extensive research, there remains a need for further studies to comprehensively understand the factors influencing the intention to use online food delivery services, especially among higher education students. Therefore, this study aims to explore the significant influences of price saving, perceived risk, time saving and perceived usefulness on the intention to use online food delivery. The study offers valuable insights for small to medium-sized business in the food delivery industry to enrich their services.

Literature Review
Intention to use Online Food Delivery
The exponential growth of e-commerce has spawned new ways of business all over the world, as well as changing how tasks and jobs are traditionally performed. The convenience sampling technique, which was applied to gather data from Malaysian consumers, was based on the approach used by Nursiti (2021). Utilizing the partial least squares (PLS) method of structural

equation modelling, data from the questionnaire survey were gathered from 288 respondents. The outcomes show that expectations for perceived control, performance expectancy, and effort expectancy have a positive impact on consumer behaviours toward online food delivery services. (Nursiti, 2021). University students' intentions to use online food delivery services experience increases (Hooi et al., 2021). Ambad et al. (2021) used Structural equation modelling (SEM) to measure the relationship between the variables This research used the UTAUT2 model to investigate e-commerce customer behaviour in the continuous use of mobile delivery app services from a theoretical standpoint. As a result, it can be concluded that the extended UTAUT2 model, enhanced with perceived control, can adequately account for consumers' desire to order, and buy food using delivery apps.

Perceived usefulness

Aryani et al. (2022 explore the relationship between the perceived usefulness and the consumer behavioural intention to use the Foodpanda application and found that the convenience and ease of using the application can increase buying interest among customers. The behavioural intention to use online food delivery services (OFDS) shows that the perceived ease of use has a significant positive relationship with behavioural intention to use OFDS (Mohd Nor et al., 2022; Jaroenwanit et al., 2022; Gunden et al., 2020).

Time Saving

Time saving orientation is found to be related to customer attitude and intention to use the system (Yeo et al., 2017; David et al., 2021; Dazmin and Ho, 2019). Mohd Nor et al. (2022) found that online food delivery service is more convenient and user-friendly than the traditional system because orders placed by customers can be easily viewed and recorded through a mobile application or website.

Price Saving

Recently, large third-party food delivery companies have been offering numerous promotions and price discounts to encourage consumers to make purchases through their apps (Yeo et al., 2017, as cited in Hooi et al., 2021). Customers are more satisfied when food and beverages are affordable, which has led to significantly lower prices on delivery applications (Berliansyah & Suroso, 2018; Qian et al., 2021; Allah Pitchay et al., 2022; Hooi et al., 2021).

Perceived Risk

One of the significant obstacles to online shopping in general is perceived risk. Numerous empirical studies have indicated that perceived risk is negatively related to the intention to shop online (Nguyen et al., 2021). Mohd Nor et al. (2022) found a strong positive correlation between risk perception of food safety and behavioral intention to use OFDS. Poon & Tung (2022) demonstrate that only the moderating impact of perceived physical risk and COVID-19 affects consumers' intention to use OFD services.

Methodology
Ethics Approval
The present study received approval from the UiTM Research Ethics Board under the ethics approval letter BREC/01/2023(UG /MR/06).

Study Framework
The theoretical framework helps illustrate the relationship between independent and dependent variables based on prior research. Figure 1 delineates the factors (independent variables) influencing the intention to utilize online food delivery services, encompassing perceived usefulness, time saving, price saving, and perceived risk. The intention to use online food delivery services is the dependent variable in this investigation.
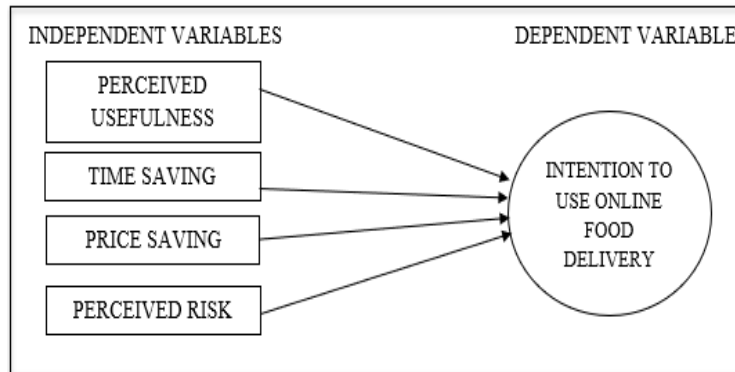

Figure 1: Study Framework

Study Design
A cross-sectional design was employed in this study, utilizing a self-administered questionnaire for data collection. The target population comprised 1177 students from UiTM Kota Bharu in Kelantan, with a 5% margin of error and a 95% confidence interval. A sample of 319 students from UiTM Kota Bharu was selected using a stratified random sampling technique to ensure precision in the analysis.

Instrumentation
The questionnaire consisted of six sections: Part A, Demographic Profile; Part B, Intention to use online food delivery service; Part C, Price Saving; Part D, Perceived Risk; Part E, Time Saving; and Part F, Perceived Usefulness (refer to Table 1). Measurement responses were recorded on a ten-point scale, ranging from 1 (strongly disagree) to 10 (strongly agree).

Table 1
Summary of The Questions

Part	Variable	No. of items	Sources
A	Demographic Profile	6	
B	Intention to use Online Food delivery service	7	Hooi et al., (2013)
C	Price Saving	6	Tan et al. (2021)
D	Perceived Risk	7	Ambad et al. (2022)
E	Time saving	6	Tan et al. (2021)
F	Perceived Usefulness	9	Song et al. (2021)

Data Analysis

Table 2 presents an overview of the data analysis conducted in this study. An independent t-test was employed to address the first objective, while multiple linear regression (MLR) was utilized for the second objective to ascertain the factors contributing to the intention to use online food delivery services.

Table 2
Summary of Data Analysis

Objectives	Method of Analysis
To investigate if there is any significant means difference in students' intention to use online food delivery services between gender.	Independent T-Test
To ascertain the factor(s) that contribute to the intention to use online food delivery services among students.	Multiple Linear Regression

Results

Preliminarily Study

The reliability of the questionnaire was evaluated by analyzing the pilot study, a preliminary investigation conducted on a small scale to assess its effectiveness before the main study. Table 3 displays the outcomes of the reliability assessment for both the pilot study and the main study. It is noteworthy that all variables exhibited Cronbach's alpha values exceeding 0.7, indicative of strong internal consistency reliability for each variable. Consequently, this confirms the reliability of all questionnaire items utilized in the study (Aryani et al., 2022).

Table 3
The Reliability Statistics for All Variables for Pilot Study

Variable	Cronbach's Alpha (Pilot Study)
Price Saving	0.851
Perceived Risk	0.809
Time Saving	0.865
Perceived Usefulness	0.939
Intention to Use Online Food Delivery	0.903

Demographics of Respondent

Table 4 indicates that the majority of respondents were female, accounting for 242 (75.9%) students, while the remaining 77 (24.1%) were male. Among the age groups, students aged 21-23 years old constituted the largest proportion, comprising 73.0% (233) of the sample, whereas the age group with the fewest respondents was 18-20 years old, representing only 1.9% (6). Regarding academic programs, Bachelor of Business Administration (Hons.) Finance (BA242) had the highest number of students with 101 (31.7%), followed by Bachelor of Science (Hons.) Statistics (CS241) with 88 (27.6%), Bachelor of Business Administration (Hons.) Marketing (BA240) with 56 (17.6%), Bachelor of Business Administration (Hons.) Business Economics (BA250) with 33 (10.3%), Bachelor of Business Administration (Hons.) Islamic Banking (BA249) with 29 (9.1%), and Bachelor of Entrepreneurship (Logistic and Distributive Trade) with Honors (CS291) with 12 (3.8%). Semester 6 had the highest number of respondents, comprising 125 (39.2%), while Semester 8 had the fewest, with only 3 (0.9%)

respondents. Additionally, no Semester 1 students were enrolled in any course at Universiti Teknologi MARA (UiTM) Kota Bharu, resulting in zero respondents from this semester.

Table 4
Summary of Descriptive Analysis

Variable	Class Variable	n	Percentage (%)
Gender	Male	77	24.1
	Female	242	75.9
Age	18 – 20 years old	6	1.9
	21-23 years old	233	73.0
	23 – 25 years old	69	21.6
	25 years old and above	11	3.4
Course	BA240	56	17.6
	BA242	101	31.7
	BA249	29	9.1
	BA250	33	10.3
	CS241	88	27.6
	CS291	12	3.8
Semester	1	0	0
	2	6	1.9
	3	36	11.3
	4	76	23.8
	5	48	15.0
	6	125	39.2
	7	20	6.3
	8	3	0.9
	9	5	1.6

Independent T-test
An inferential statistical analysis known as the independent t-test is applied to assess if there is a statistically significant distinction between the means of Intention to Use Online Food Delivery across genders. The findings of the independent t-test are presented in Table 5. The F-value for Levene's test is 0.833 (with a p-value of 0.362 > 0.05), suggesting homogeneity of variance. Furthermore, the independent t-test indicates no notable contrast between Intention to Use Online Food Delivery and gender (t-statistic = 1.993, p-value = 0.159). Consequently, it can be inferred that both males and females exhibit a similar intention to use online food delivery services.

Table 5
Independent T-test Result

Levene's test		Independent t-test		
F-value	p-value	Variable	t-statistics	p-value
0.833	0.362	Intention to Use Online Food Delivery	1.993	0.159

Result of Multiple Linear Regression
ANOVA is employed to assess the significance of the linear regression model in fitting the data. The extent to which the independent variables explain the variance in the dependent variable is measured by the coefficient of determination (R^2). A model is considered fitting when R^2 approaches 1. Table 6 displays the F-statistic value (F = 118.112, p-value < 0.05), indicating the significance of the regression model. Additionally, the R^2 value (0.529) suggests that 52.9% of the total variance in intention to use online food delivery can be elucidated by price saving, time-saving, and perceived usefulness. The remaining 47.1% is attributed to other factors.

Table 6
Analysis of Variance for MLR test

Model	F	p-value	R2
Regression	118.112	<0.001	0.529

Table 7
Coefficient for MLR test

Variable	Unstandardized coefficient	T-statistics	p-value
Constant	1.361	3.909	0.000
Price Saving	0.315	5.564	0.000
Time Saving	0.142	2.337	0.020
Perceived Usefulness	0.339	5.440	0.000

Table 7 presents the finalized regression model coefficients, with all p-values below 0.05, confirming the significance of all variables. The coefficient $\beta 0$ is 1.361, indicating that when there are no changes in the factors affecting students' intention to use online food delivery services, their intention remains constant. Moreover, $\beta 1$ is 0.315, $\beta 2$ is 0.142, and $\beta 3$ is 0.339, suggesting that an increase in the average levels of price saving, time-saving, and perceived usefulness leads to a higher intention among students to use online food delivery services. This study underscores that price savings, time savings, and perceived usefulness significantly influence students' intentions to utilize online food delivery services. Therefore, the final estimated model for this study is as follows:

$$\hat{Y} = 1.361 + 0.315X_1 + 0.142X_2 + 0.339X_3$$

where:
    Y : Intention to Use Online Food Delivery
    X_1 : Price Saving,
    X_2 : Time Saving
    X_3 : Perceived Usefulness.

Model Adequacy Checking
Checks for model adequacy encompass verifying the assumption of linearity between independent and dependent variables, assessing the normality of residuals, ensuring homoscedasticity, and examining multicollinearity.

Homoscedasticity

Figure 2 illustrates that the residuals in the model do not exhibit any discernible pattern, whether they are increasing or decreasing. All data points are randomly dispersed, indicating the absence of any clear pattern. This suggests that the assumption of homoscedasticity is met for the model. To further verify that the model does not display unequal variance of the residuals, we also perform the Breusch-Pagan test to assess the assumption of heteroscedasticity
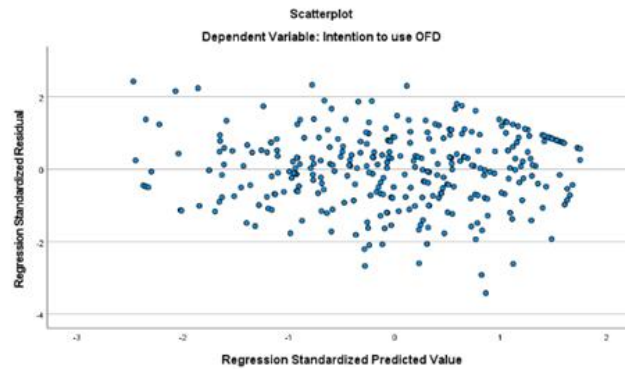

Figure 2: Residual Plot Intention to use Online Food Delivery Service.

The Breusch-Pagan test is used to determine whether or not heteroscedasticity is present in a regression model. Table 8 illustrates that the p-value is 0.4037, exceeding 0.05. Consequently, the model does not display heteroscedasticity, affirming that the homoscedasticity assumption is satisfied.

Table 8
Breusch-Pagan test

Studentized Breusch-Pagan test		
BP: 4.0168	df: 4	p-value: 0.4037

Normality

The normality assumption suggests that the sampling distribution of the mean, or the distribution of the mean across samples, follows a normal distribution. As depicted in Figure 3, most points are dispersed along the line, creating a diagonal pattern. This indicates that the error term normality assumption is met.
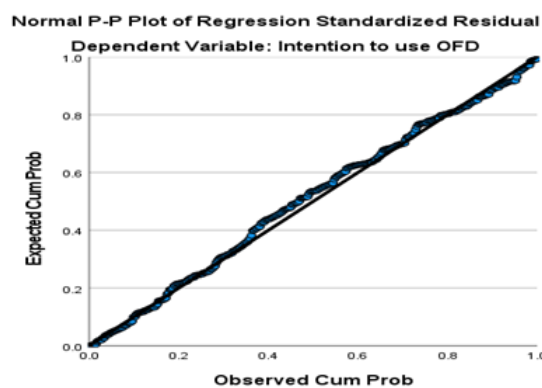

Figure 3: Normal P-P Plot of Intention to use Online Food Delivery Service

Multicollinearity

The multicollinearity test assesses the degree of correlation between independent variables in the model. Table 9 indicates no indication of multicollinearity, as evidenced by the tolerance values exceeding 0.1 for all variables: price saving (0.34), time saving (0.491), and perceived usefulness (0.396). Additionally, the VIF values are all below 10, specifically 2.892, 2.036, and 2.526. Thus, there is no evidence of multicollinearity in this model.

Table 9
Coefficients form multicollinearity assumption

Variables	Collinearity Statistics		Findings
	TOL	VIF	
Price Saving	0.346	2.892	
Time Saving	0.491	2.036	No Multicollinearity
Perceived Usefulness	0.396	2.526	

Conclusion

This research offers both theoretical and contextual contributions to understanding the factors influencing students' use of online food delivery services. Theoretically, the study contributes to the body of knowledge on consumer behavior in the digital food service sector, particularly within a student demographic. By focusing on five critical factors (intention to use, price savings, perceived risk, time savings, and perceived usefulness), it provides a structured framework for analyzing the motivations behind service adoption.

Contextually, the research is grounded in the rapidly evolving landscape of online food delivery, highlighting the specific needs and preferences of students, a key consumer group in this industry. The study's findings, especially the significance of price savings, time savings, and perceived usefulness, offer practical insights for small to medium-sized enterprises (SMEs) in the food delivery market. These insights can help companies refine their strategies to boost customer satisfaction and service efficiency. Additionally, the absence of gender differences in service use shows that online food delivery appeals to all students, making the study's results widely applicable.

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