

The Relationship between Perceived Value and Intentions to Use Drone Food Delivery Services

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Abstract

Food delivery services are among the new options in logistics and service delivery made possible by drone technology. Although drone food delivery has been adopted in several advanced countries, Malaysia is currently in the early phases of its adoption. For this technology to be successfully used, it is essential to understand consumers' intentions and attitudes. The purpose of this study is to investigate how perceived value, specifically functional, social, emotional, epistemic, and conditional values, relates to Malaysian customers' intentions to use drone food delivery services. An online questionnaire was used as part of a quantitative research method. Malaysian customers aged 18 or older who had previously used food delivery services provided the data. The Statistical Package for the Social Sciences (SPSS) was used to analyze 199 valid responses. Descriptive statistics were used to measure perceived value and consumer intention; reliability analysis was used to evaluate internal consistency; normality testing was performed; and Spearman's rho correlation analysis was used to examine correlations between variables. The findings show that consumers' opinions of drone food delivery services are mostly positive. All five perceived value aspects were shown to have a significant beneficial relationship with consumer intention to use drone food delivery.

1. Introduction

As of 2025, the Fourth Industrial Revolution is still developing and has a significant impact across many industries, including the food delivery business. Advances in digital technology, robotics, and artificial intelligence (AI) have contributed to transforming old business models into more technologically advanced, efficient systems (Shi, 2025).

According to the Federal Aviation Administration, unmanned aerial vehicles (UAVs), commonly referred to as "drones," are described as "an aircraft that is operated without direct human intervention from within or on the aircraft". According to Hendarno (2020), they can be operated remotely by a human operator or independently by onboard computers that have built-in cameras and sensors. Drones are equipment or electronic devices designed to fly continuously while performing tasks without direct human supervision. The Civil Aviation Authority of Malaysia (CAAM) is a key player in regulating drones in Malaysia, overseeing the safety and legal aspects of unmanned aerial vehicle (UAV) operations (CAAM, 2021). According to the Civil Aviation Authority of Malaysia (CAAM), commercial drone pilots are required to get permits under these restrictions, drones weighing more than 20 kg must be registered, and flights are limited to a maximum height of 120 meters and a safe distance from people, airports, and sensitive sites.

Food delivery services are expected to increasingly rely on drones, reducing traffic and accident rates while safeguarding the environment. However, there are several problems with the food delivery services now in use in Malaysia, including road accidents, service delays, and environmental contamination. The number of road accidents involving P-hailing riders, or food delivery riders, has surged as their numbers have grown. Delivery riders engage in unsafe riding behaviours during deliveries due to the growing demand for online ordering and time constraints (Malik, 2023). According to Murad and Mokhtar (2024), it shows that dangerous riding practices are connected to a rise in traffic accidents involving food delivery drivers, highlighting the necessity of raising riders' knowledge of safety as many of them often violate traffic laws, increasing their chance of an accident. Furthermore, the problem is further made worse by the traffic and navigation in cities like Selangor. It is shown that traffic conditions directly affect delivery drivers' ability to meet customer expectations, confirming that traffic congestion is a recurring issue that leads to unexpected delivery times. The impression of waiting times is also influenced by consumer psychology. Customers' patience with longer delivery periods decreases and many of them want the food to arrive in less than 30 minutes. (Ruslan *et al.*, 2024).

Additionally, Malaysia still faces serious motorcycle emissions issues in 2024 (Gidarjati & Matsumoto, 2024), especially in context of the country's fast modernization and transportation expansion in major cities like Kuala Lumpur. Motorcycles continue to be a popular form of transportation and a major source of pollution in the environment (Gidarjati & Matsumoto, 2024). Another worry is the potential health effects of motorcycling exhaust. Urban studies show that vulnerable populations can be severely affected by air pollution from vehicle emissions. Health concerns arise from prolonged exposure to air contaminants, such as trace metals included in particulate matter (PM) (Afandi *et al.*, 2025).

2. Literature Review

2.1 Overview of Drone Food Delivery Services

Malaysia has not yet used drone-delivery services for food. Malaysian marketers must use drones more frequently for food delivery since other nations, including the US, (Ko *et al.*, 2024), Australia (Singh *et al.*, 2022), and China (Zhang *et al.*, 2023). Nowadays, drones have been used to transport food in the US by DoorDash, a delivery of food business based in San Francisco.

As a result, more sectors are using drones for deliveries. Their significant use stems from a focus on preserving freshness and ensuring timely delivery, especially in the food delivery sector (Ko *et al.*, 2024). Food delivery services using drones use was a quick and affordable service delivery method that brought the goods to the customer's door in as little as 30 minutes, so increasing their competitiveness and adaptability in daily life (Sulaiman *et al.*, 2024).

The adoption food delivery services in Malaysia are traditional services using motorcycles. Motorcycles are frequently used by food delivery businesses in Malaysia because they are effective at negotiating clogged urban traffic and can deliver food quickly and on demand (Khalid *et al.*, 2021; Hoh *et al.*, 2023). Customers in Malaysia may order foods from several food service companies, such as Food Panda, Shopee Food, and Grab Food (Rusli, 2022; Nor *et al.*, 2022).

Using drones for food delivery services can reduce pollution. According to World Health Organization (2024), air pollution is one of the greatest environmental risks to child health. The statistics on transportation in Malaysia show how many people registered new vehicles in 2023. According to the Malaysia Transportation Statistics (2023), the total number of new motor vehicle registrations increased slightly by 0.7%, from 1,522,742 in 2022 to 1,533,447 in 2023. A rapid growth was observed in motorcycle registrations, which surged by 11.9% from 736,783 in 2022 to 824,613 in 2023.

2.2 Consumer Intentions to Use Drone Food Delivery Services

There are numerous factors, such as perceived hazards (Eu & Sameeha, 2021), customer attitudes (Azman *et al.*, 2021), and innovativeness (Koay *et al.*, 2023), that impact consumers' intentions to use drone food delivery services. There are also several advantages of adopting drones in Malaysia. Drones can drastically cut delivery times by flying directly through overcrowded urban traffic, ensuring faster, more dependable food deliveries, especially in busy cities. This speed is crucial for perishable food items and urgent deliveries, enhancing customer satisfaction and competitiveness.

According to Mathew (2021), in the Indian context, consumers' intentions towards using drone delivery depend on how they see the advantages and disadvantages of these services. Important findings show that consumers' willingness and intention to use drone delivery services are positively influenced by their perception. It is because drone deliveries' environmentally friendly image improves attitudes and acceptability, this effect is more noticeable when customers believe they have a positive environment.

One significant factor is consumer attitude toward drone delivery services. Users are more likely to accept drone delivery when they have positive views and are motivated by perceived benefits like speed and convenience

(Singh *et al.*, 2024). According to Singh *et al.* (2024), it shows that customers' general opinion of the costs and advantages is a significant factor in their acceptance, showing that those who have a positive cost-benefit analysis are more inclined to use this service.

Examining the many values that affect consumers' decision-making is crucial to understanding their intentions towards using drone food delivery services. Perceived value is a complex concept that reflects the consumer's overall evaluation of the usefulness of a good or service (Phan *et al.*, 2022). Concepts of perceived value are divided into several categories, including functional value, social value, emotional value, epistemic value and conditional value (Kian, 2023). Functional value relating to practicality (Waris *et al.*, 2022), emotional connections tied to the experience (Koay & Leong, 2023), social factors influencing how innovation is seen (Hwang & Kim, 2020), epistemic value reflecting curiosity and knowledge (Koay & Leong, 2023), and conditional elements influencing whether drone adoption is acceptable (Singh *et al.*, 2024).

2.3 Concept of Perceived Value

Customers' overall evaluation of a product or service's usefulness based on their perceptions of what was offered and got is commonly referred to as perceived value. What is offered and gotten in this idea reveals the components of sacrifice and benefit. The basic and external qualities of a product or service, perceived quality, and other higher level applicable concepts like experience or rank are the benefit components of perceived value. Furthermore, both monetary and non-monetary costs, such as time and effort expenditures, are significant components of perceived value (Basaran *et al.*, 2021). The component of perceived value includes functional value, social value, emotional value, epistemic value, and conditional value.

2.3.1 Functional Value

Functional value refers to “the perceived value derived from an alternative's ability to perform physically, functionally, or utilitarianly. When an option has notable functional, utilitarian, or physical characteristics, it gains functional value” (Sheth *et al.*, 1991). A product's functional value is determined by several characteristics, such as price, durability, dependability, and simplicity of use (Koay & Leong, 2023). Functional value in the context of consumers' intentions to use drone food delivery services refers to the usefulness that results from the everyday life advantages that these services offer (Waris *et al.*, 2022).

Firstly, the main elements of functional value are efficiency and speed. Compared to traditional techniques such as motorcycles, drone delivery systems are intended to provide speedier delivery times. Faster food delivery is frequently a key determining element, and customer satisfaction expectations have a major impact on consumer perceptions towards drone delivery (Mathew *et al.*, 2023). Drones also have capacity to avoid traffic and offer direct delivery routes to improve consumer happiness by guaranteeing food freshness, particularly in big cities where traffic delays traditional delivery methods (Ko *et al.*, 2024).

H1: There is a significant relationship between functional value and consumers' intention to use drone food delivery services.

2.3.2 Social Value

Social value refers to “the perceived utility acquired from an alternative's association with one or more specific social groups” (Sheth *et al.*, 1991). Consumers usually base their judgments on a product or service's social value, that is, its favourable social effects and compatibility with their social beliefs.

According to Hwang (2023), how consumers see what their peers and society perceive to be desirable, or acceptable behaviour, can have a big impact on how they feel about drone food delivery services. If people believe that new technology is acceptable in society, social influence including the views and actions of friends and family can motivate them to use it (Koay & Leong, 2023; Valencia-Arías *et al.*, 2022). This emphasizes how crucial it is to leverage social proof in drone delivery service marketing techniques by displaying user testimonials to increase acceptability (Hwang & Kim, 2021).

Social value can also play a role in influencing desire for a 'tech-savvy' person who is skilled and comfortable with using technology, which can lead them to learn new technologies quickly and know how to use them effectively (Waris *et al.*, 2022). When consumers feel that drone food delivery may offer real advantages like quicker service and lower transportation costs, they are more likely to adopt the technology, which is an example of functionally driven innovation (Da Costa & Filho, 2025).

H2: There is a significant relationship between social value and consumers' intention to use drone food delivery services.

2.3.3 Emotional Value

Emotional value refers to “the perceived value gained from an alternative's ability to obtain emotions or affective states. When an option is connected to or sustains emotions, it gains emotional worth. A profile of feelings connected to the alternative is used to measure emotional value” (Sheth *et al.*, 1991). There are a few significant breakthroughs in the consumer services and logistics industries in drone food delivery services. These services have an involved emotional value that has a big impact on customer behavior and market acceptability (Hwang & Kim, 2021).

Emotional value plays a crucial role in consumers' intentions to use drone food delivery services by influencing their feelings and attitudes toward technology (Hwang *et al.*, 2021). Studies show that anticipated positive emotions such as excitement (Koay & Leong, 2023), joy (Waris *et al.*, 2022), and satisfaction (Valencia-Arías *et al.*, 2022) significantly increase consumers' willingness to adopt drone delivery, while negative emotions reduce this intention (Hwang & Kim, 2021). For example, Customers who anticipated feeling good when utilizing environmentally friendly drone food delivery services showed more behavioral intents to use them, according to a South Korean study (Hwang & Kim, 2021).

Furthermore, emotional reactions are influenced by perceived risks, such as safety issues and the reliability of drone technology. Those looking to reduce anxiety and panic around the use of drones for food delivery must be aware of these risks (Osakwe *et al.*, 2022). It is helpful for service providers to identify how customer demographics, including age and gender, influence their perceptions to properly customize their marketing strategy (Hwang *et al.*, 2023). For example, older generations may be hesitant of drone technology because of perceived concerns, whereas younger customers may be more open to its novelty and innovation (Hwang *et al.*, 2023).

H3: There is a significant relationship between emotional value and consumers' intention to use drone food delivery services.

2.3.4 Epistemic Value

Epistemic value is defined as “the perceived value gained from an alternative's ability to spark interest, offer novelty, and/or satiate a need for information. Questionnaire elements pertaining to curiosity, novelty, and knowledge give an alternative epistemic value” (Sheth *et al.*, 1991). A crucial component of technology adoption and user engagement, epistemic value is important to consumers who are motivated by curiosity and a desire to learn (Rakhmanita *et al.*, 2023).

For customers who are ready to try something new and interesting, drones are a novel and revolutionary development in the food delivery industry. Many consumers' natural curiosity and need for discovery are satisfied by this feeling of novelty (Koay & Leong, 2023). For example, Kaur *et al.* (2021) found that the visibility of drone delivery enhances its epistemic value, making consumers more interested in trying the service because it represents a futuristic and innovative experience.

Lastly, it is essential to evaluate customer feedback throughout the trial stage (Jasim *et al.*, 2022). Early adopters of drone delivery services can offer useful information that can guide future development and guarantee that the service meets the needs and preferences of customers (Hwang *et al.*, 2023). As time passes, this continuous approach can improve consumer happiness, streamline the service offering, and promote wider acceptance (Wu *et al.*, 2024).

H4: There is a significant relationship between epistemic value and consumers' intention to use drone food delivery services.

2.3.5 Conditional Value

Conditional value is defined as “the alternative's perceived value because of the context or combination of circumstances the decision-maker is faced with (Sheth *et al.*, 1991). When previous physical or social circumstances increase an alternative's functional or social worth, it gains conditional value. A profile of decision contingencies is used to calculate conditional values” (Sheth *et al.*, 1991).

According to Wu *et al.*, (2024), they state that consumers' tendency to use drone food delivery services is highly influenced by conditional value. For instance, when traditional delivery methods are impractical or unavailable, or when there are severe traffic congestion customers may prefer drone delivery (Koay & Leong, 2023). Additionally, customers are more likely to see drone food delivery favorably if they perceive benefits like faster service (Eu & Sameeha, 2021; Tan & Kim, 2021), fewer expenses (Khanh & Nam, 2023) or less of an impact on the environment and the disadvantages, such as cost worries, dependability problems (Koay *et al.*, 2022), or safety hazards (Harun *et al.*, 2021). For example, someone who has time to cook at home might not find drone food delivery as valuable as a busy professional who needs a quick lunch. But for the busy people who do not have

time to go eat at the restaurants, they might find this new technology, which is drone food delivery services, must have a good advantage (Wu *et al.*, 2024).

H5: There is a significant relationship between conditional value and consumers' intention to use drone food delivery services.

2.4 Conceptual Framework

The research framework presented in Fig. 1 was adopted from a previous researcher (Koay & Leong, 2023). However, the scope change to the five independent variables that consist of a functional value, social value, emotional value, epistemic value and conditional value. The single dependent variable chosen by the researcher is intentions to use drone food delivery services. Illustrating the conceptual framework helps readers have a better understanding of the direction or flow of the study the researcher intends to pursue.

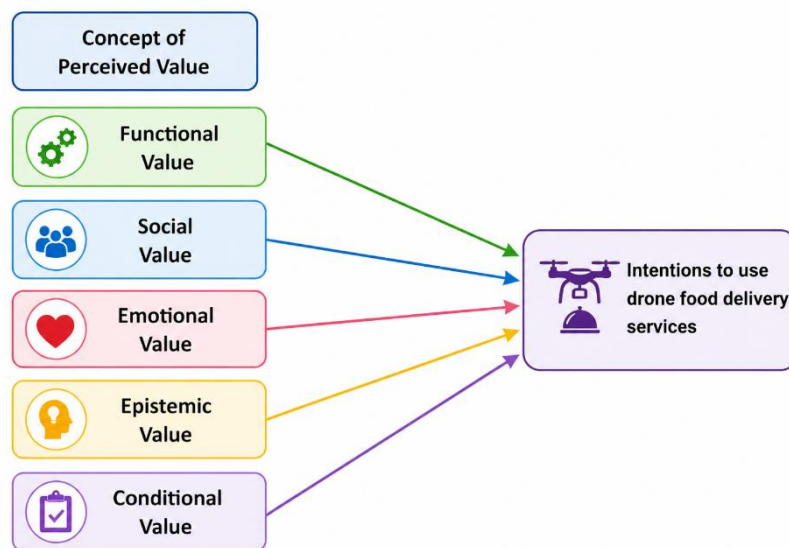


Fig. 1 Conceptual Framework

3. Research Methodology

3.1 Research Design

This study adopts a quantitative approach to achieve the research objectives. The data of this study will collect by using Google Form through the Internet to distribute to the respondents who are 18 years old and above that live in Malaysia.

The researcher utilises a questionnaire with three components for this study: Respondent demographics are covered in Section A, six items measuring the intentions to use drone food delivery services are included in Section B, and twenty-six questions exploring the relationship between functional, social, epistemic, and emotional values on consumers' intentions to use drone delivery services are included in Section C. The study focuses on people who are 18 years old and above who have used food delivery apps. The individuals who often place online food orders and are familiar with new technology must live in Malaysia.

3.2 Research Process

The research process is presented in Fig. 2. It began with identifying the problem statement, followed by a review of relevant literature. Based on this, research objectives, questions, and hypotheses were developed. An appropriate research design was selected, and data were collected using appropriate methods, such as questionnaires. The data were analysed using statistical software such as SPSS, and the findings were presented in the final report, including conclusions and recommendations.



Fig. 2 Research Process

3.3 Population and Sampling

3.3.1 Population

The term "population" refers to the complete group about which researchers are interested and desire to make a conclusion (Willie, 2024). The study targeted individuals age of 18 years old and above and Malaysians who used food delivery apps. This is because adults are legally able to give informed permission and oversee making their own purchase decisions, this group was chosen.

The target population consists of people who are at least eighteen years old, have smartphones, and can use any meal delivery app. Thus, they are the enable responders to gather information. According to the Department of Statistics Malaysia (DOSM), with a growth rate of 1.9%, the predicted total population of Malaysia in 2024 will be 34.1 million, up from 33.4 million in 2023. Since around 53% of this population is 18 years of age and above, we may estimate that 17–18 million people will be 18 years of age and above by 2025.

3.3.2 Sampling Size

This study uses the Krejcie and Morgan table to determine the sample size, which consists of more than 384 respondents. Malaysia is suitable for the data collection that consists of a person who is 18 years and above. This study used convenience sampling to gather responses to a self-administered questionnaire.

3.4 Research Instruments

The research uses a quantitative approach by distributing questionnaires through social media and get 199 respondents. The research questionnaire survey consisted of three main sections (Section A, B and C) as shown in Table 1. Section A represented the respondent's demographic information and drone delivery questions. While in Sections B and C, the ordinal measurement as 5-Likert Scale was adopted in this study to provide respondents to answer independent variables and dependent variables questions based on their opinion. For easier comprehension, the questionnaire's format is written in both simple Malay and English.

Table 1 Questionnaire Development Section B & C

Section	Categories	Number of Items	Sources
A	Demographic Profile	11	
B	Intentions to use drone food delivery services	4	(Koay & Leong,2023), Mathew <i>et al.</i> ,2023)
C	Functional Value	4	(Koay & Leong,2023),
	Social Value	6	(Mathew <i>et al.</i> ,2023),
	Emotional Value	4	(Hwang & Kim,2021)
	Epistemic Value	4	

3.5 Pilot Sample and Procedure

The questionnaire to run pilot study is being created with closed-ended questions to achieve the research's goals. Pilot test was conducted and the questionnaire has been distributed through Google Form through social media. The respondents that we achieved to do the pilot study are 30 respondents. And then, we test the relationship between the study's independent and dependent variables using the Statistical Package for the Social Sciences (SPSS) to obtain the Cronbach's Alpha.

3.6 Reliability Results

Table 2 reports, in independent variables of the questionnaire, Cronbach's Alpha value for the social value is 0.891. This indicated the instrument has a good value since it exceeds 0.8. Therefore, the study is reliable and can be continued. While in independent value and dependent variable of the questionnaire, Cronbach's Alpha value for the functional value, emotional value, epistemic value, and conditional value shows and intentions to use drone food delivery services show the value of above 0.9 in Cronbach's Alpha. This value shows that the questionnaire has excellent structure and reliability for the study. However, because they test the same subject under a different name, some questions can be duplicated if Cronbach's Alpha is abnormally high (>0.90) (Tavakol *et al.*, 2011).

Table 2 Result of Reliability in Pilot Test

Variable	Cronbach's Alpha	Number of Items	Reliability Level
Independent Variables			
Functional Value	0.947	5	Excellent
Social Value	0.891	6	Good
Emotional Value	0.906	5	Excellent
Epistemic Value	0.910	5	Excellent
Conditional Value	0.929	5	Excellent
Dependent Variable			
Intentions to Use Drone Food Delivery Services	0.932	6	Excellent

3.7 Feedback and Improvements

The pilot study's feedback offered insightful information on the clarity, relevance, and effectiveness of the research instruments and procedures, revealing areas that required improvement to enhance the overall quality of the main study. Participants highlighted ambiguous or confusing questions, which were then revised for better comprehension and precision. Table 3 reports, the Cronbach's Alpha value for independent variables has 0.924, 0.891, 0.859, 0.877, and 0.893 respectively. While for dependent variable has value of 0.878. This value indicates that the study had good internal consistency since it exceeded 0.8 based on (Ahmad *et al.*, 2024).

Table 3 Result of Reliability in Pilot Study

Variable	Cronbach's Alpha	Number of Items	Reliability Level
Independent Variables			
Functional Value	0.924	4	Excellent
Social Value	0.891	6	Good
Emotional Value	0.859	4	Good
Epistemic Value	0.877	4	Good
Conditional Value	0.893	4	Good
Dependent Variable			
Intentions to Use Drone Food Delivery Services	0.878	4	Good

3.8 Data Collection Procedures

In this study, the researcher collected primary data from individuals aged 18 years and above residing in Malaysia who had previously used food delivery applications. The structured questionnaire consisted of two sections. Section A measured respondents' intentions to use drone food delivery services, while Section B assessed functional value, social value, emotional value, epistemic value, and conditional value. All items were rated using a 5-point Likert scale. To obtain respondents, the questionnaire was distributed through several online platforms, including Facebook, Instagram, WhatsApp, and Telegram to reach potential respondents.

4. Results and Discussion

This section would go into detail about the response rate, reliability test, descriptive analysis, demographic analysis, normality test and Spearman correlation analysis. This section reports the results from the data collection conducted via the online questionnaire. The questionnaire has been distributed using Google Form through social media. The data was analysed using the Statistical Package for Social Science (SPSS).

4.1 Response Rate

The respondents in this study are people aged 18 and above who have used food delivery apps. The individuals who often place online food orders and are familiar with new technology must live in Malaysia. Table 4 shows the response rate for this study.

Table 4 Response Rate

Items	Explanation
Population 18 years old and above	17-18 million
Sample size	384
Questionnaire distributed	384
Questionnaire collected	199
Respondents can used	199
Rate (%)	51.82%

4.2 Demographic of Respondents

Two types of data analysis were conducted, including descriptive statistics for demographic profile, descriptive statistics for constructs such as intentions to use drone food delivery services, functional value, social value, emotional value, epistemic value and conditional value.

4.2.1 Descriptive Statistics for Demographic Profile

Table 5 presents the demographic information of respondents, including gender, age, race, marital status, highest level of education, employment status, income classification, most frequently used food delivery app, online food delivery usage, state that they are currently living in, and the time when respondents mostly ordered online food delivery. The data obtained from the questionnaire were analysed and summarised in the table, indicating the frequency and percentage for each demographic category.

Table 5 Table information of respondent's demographic

Demographic	Details	Frequency	Percentage (%)
Gender	Male	56	28.1
	Female	143	71.9
Age	18-23	45	22.6
	24-29	81	40.7
	30-36	30	15.1
	37-43	15	7.5
	44-50	14	7
	51-57	4	2
	58 and above	10	5
Race	Malay	172	86.4
	Chinese	16	8
	Indian	9	4.5

	Others	2	1
Marital Status	Single	120	60.3
	Divorced	4	2
	Married	75	37.7
Highest level of education	SPM	24	12.1
	STPM	15	7.5
	Foundation/Matriculation	3	1.5
	Diploma	48	24.1
	Bachelor's degree	98	49.2
	Master	10	5
	Others	1	0.5
Employment status	Student	77	38.7
	Employed (Private)	53	26.6
	Employed (Government)	22	11.1
	Unemployed	9	4.5
	Retired	7	3.5
	Housewife	26	13.1
	Others	5	2.5
Income classification	Less than RM 2,000	114	57.3
	RM 2,001 – RM 2,999	24	12.1
	RM 3,000 – RM 3,999	24	12.1
	RM 4,000 – RM 4,999	13	6.5
	RM 5,000 – RM5,999	9	4.5
	RM 6,000 – RM6,999	2	1
	RM 7,000 – RM7,999	1	0.5
	RM 8,000 – RM8,999	3	1.5
	RM9,000 – RM9,999	2	1
	More than RM 10,000	7	3.5
Which state are you currently living in?	Johor	91	45.7
	Kedah	3	1.5
	Kelantan	2	1
	Melaka	10	5
	Negeri Sembilan	13	6.5
	Pahang	1	0.5
	Perak	9	4.5
	Perlis	2	1
	Pulau Pinang	3	1.5
	Sabah	1	0.5
	Sarawak	3	1.5
	Selangor	51	25.6
	Terengganu	1	0.5
	Wilayah Persekutuan Kuala Lumpur	8	4
	Labuan	-	-
	Putrajaya	1	0.5
Most frequently used food delivery app	Shopee Food	36	18.1
	Food Panda	73	36.7
	Grab Food	86	43.2
	DeliverEat	-	-
	Airasia Food	-	-
	Others	4	2

Online food delivery usage	Once a week	56	28.1
	Once every two weeks	51	25.6
	Once every three weeks	26	13.1
	Once every four weeks	66	33.2
	Never at all	-	-
When did you mostly order online food delivery?	Breakfast	5	2.5
	Lunch	98	49.2
	Dinner	96	48.2

4.3 Reliability Test

Cronbach's alpha is an internal consistency measurement that is also used to assess scale reliability as shown in Table 6. It is to evaluate the consistency of results across items within a single test. It is typically used to measure the reliability of questionnaires or scales (Azreen *et al.*, 2024). The minimum coefficient of internal consistency as generally accepted is 0.70. Therefore, a Cronbach's alpha value of more than 0.70 is often recommended for reputable research. It is advised that some items be eliminated to raise the reliability score if they drop below 0.70. However, if Cronbach's Alpha is excessively high (>0.90), it can indicate that some items are redundant since they test the same question under a different name (Tavakol *et al.*, 2011). Table 7 shows the result of the reliability for the actual study.

Table 6 The Cronbach's Alpha Value

Cronbach's Alpha Range	Reliability Level	Interpretation
0.90 and above	Excellent	Indicates very high internal consistency
0.80 – 0.89	Good	Reflects strong internal consistency
0.70 – 0.79	Acceptable	Indicates acceptable internal consistency
0.60 – 0.69	Questionable	Reflects questionable internal consistency
Below 0.60	Poor	Indicates poor internal consistency

Table 7 Results of the Reliability for the Actual Study

Variable	Cronbach's Alpha	Number of Items	Reliability Level
Independent Variables			
Functional Value	0.902	4	Excellent
Social Value	0.944	6	Excellent
Emotional Value	0.905	4	Excellent
Epistemic Value	0.932	4	Excellent
Conditional Value	0.942	4	Excellent
Dependent Variable			
Intentions to Use Drone Food Delivery Services	0.932	4	Excellent

4.4 Normality Test

Based on Table 8, all the p-values are less than 0.001, which indicates that they are extremely tiny, which displays the normality test findings. The data obviously does not follow a normal distribution because the p-values are less than 0.05. Therefore, all variables for functional value, social value, emotional value, epistemic value, conditional value and intentions to use drone food delivery services do not follow a normal distribution.

Table 8 Normality test

Variables	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Independent Variables						
Functional Value	.114	199	<.001	.949	199	<.001
Social Value	.147	199	<.001	.920	199	<.001
Emotional Value	.167	199	<.001	.916	199	<.001

Epistemic Value	.160	199	<.001	.919	199	<.001
Conditional Value	.220	199	<.001	.884	199	<.001
Dependent Variable						
Intentions to Use Drone Food Delivery Services	.154	199	<.001	.904	199	<.001

4.5 Spearman's Rho Correlation Analysis

The Table 9 shows that the Spearman correlation analysis indicates that the intention to use drone food delivery services is positively and significantly correlated with functional value ($r = 0.738$, $p < 0.01$), social value ($r = 0.671$, $p < 0.01$), emotional value ($r = 0.642$, $p < 0.01$), epistemic value ($r = 0.521$, $p < 0.01$), and conditional value ($r = 0.619$, $p < 0.01$). H1, H2, H3, H4, and H5 are therefore supported.

Table 9 Spearman Correlation Analysis

Spearman's Rho	Intentions to Use Drone Food Delivery Services	Functional Value	Social Value	Emotional Value	Epistemic Value	Conditional Value
Intentions to Use Drone Food Delivery Services	1.000					
Functional Value	0.738**	1.000				
Social Value	0.671**	0.836**	1.000			
Emotional Value	0.642**	0.687**	0.766**	1.000		
Epistemic Value	0.521**	0.510**	0.644**	0.721**	1.000	
Conditional Value	0.619**	0.645**	0.679**	0.692**	0.693**	1.000

5. Discussion and Conclusion

The relationship between consumer intentions to use drone food delivery services in Malaysia and perceived value that is, functional value, social value, emotional value, epistemic value, and conditional value was effectively determined by this study. The results show that consumers' intention to use drone food delivery services is significantly influenced by perceived value.

The strong perception of social, emotional, epistemic and conditional values suggests that innovation, enjoyment, social image and situational advantages are important reasons drawing consumers to drone food delivery services. In the meanwhile, consumers' worries about practical issues including safety and convenience of use were reflected in the modest perception of functional values.

All things considered, the study's findings offer consumers like food delivery service providers, tech companies, and legislators' helpful information for creating more successful plans to launch and advertise drone food delivery services. It is advised that future research uses qualitative methods to better understand the variables impacting consumers' intentions to use drone food delivery services. Drone food delivery businesses in Malaysia can expand and promote sustainable technology growth with proper planning and execution.

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Conflict of Interest

Authors declare that there is no conflict of interests regarding the publication of the paper

Author Contribution

The authors confirm contribution to the paper as follows: **study conception and design:** Nur Ameeroh Muhamad Sukor and Norasmiha Mohd Nor; **data collection:** Nur Ameeroh Muhamad Sukor; **analysis and interpretation of results:** Nur Ameeroh Muhamad Sukor; **draft manuscript preparation:** Nur Ameeroh Muhamad Sukor and Norasmiha Mohd Nor. All authors reviewed the results and approved the final version of the manuscript.

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