Global Business and Management Research: An International Journal
Vol. 16, No. 3s (2024)

# Factors Affecting Customer Satisfaction with Mobile Food Delivery Applications (MFDAS) Among Muslims in Malaysia

**Wan Rasyidah Wan Nawang***
*Faculty of Economics and Muamalat, Universiti Sains Islam Malaysia*
Email: wrasyidah@usim.edu.my

**Muhammad Solehin Roslan**
*Faculty of Economics and Muamalat, Universiti Sains Islam Malaysia*

**Nur Aqilah Hazirah Binti Mohd Anim**
*Faculty of Economics and Muamalat, Universiti Sains Islam Malaysia*

** Corresponding Author*

**Abstract**
**Purpose:** Modern eating habits have changed, resulting in a brisk market for Mobile Food Delivery Apps (MFDAs). The increasing popularity of MFDAs in Malaysia raises questions about their impact on customer satisfaction, particularly in a Muslim-majority country like Malaysia. While Muslims have a sizable purchasing power, addressing and satisfying their needs can help businesses thrive in this market. This study therefore aims to examine the factors that influence Muslim consumers' satisfaction with MFDAs in Malaysia.
**Design/methodology/approach:** Data were collected via an online survey from a convenience sample of 176 Malaysian Muslim customers who had used MFDAs. To test the hypotheses, a multiple regression analysis was conducted.
**Findings:** The results of the study indicate that perceived price, perceived enjoyment, and convenience are the factors that influence customer satisfaction, while application quality and service quality do not.
**Research limitations/implications:** The study's small sample size of 176 responses and its focus on Muslims may limit its representation of the population, as cultural differences and technology acceptance may affect other ethnicities and religions.
**Practical implications:** This study recommends that MFDA developers, restaurateurs, and mobile payment providers better understand customer satisfaction with MFDAs through attractive pricing offers and app usability and convenience, while supporting the online food delivery industry.
**Originality/value:** This study utilizes the European customer satisfaction framework model (ECSFM) in explaining customer satisfaction towards MFDAs among Malaysian Muslim consumers.

**Keywords**: Mobile Food Delivery Applications, Satisfaction, Muslims, Malaysians

## Introduction

With the development of technology, people's lifestyles have completely changed. One of the things that has drastically altered people's lifestyles is the internet. In the past, the internet was only used as a means of exchanging information, but today its use is broader and covers

all areas of life. It makes people's lives easier, simpler, and more convenient, and is therefore indispensable. While the internet is growing in popularity, smartphones are becoming more prevalent and ubiquitous. This internet- and technology-driven lifestyle change has led to a shift in the way people do things from the traditional to the modern world, from the analogue to the digital, including the way they eat. Due to the availability of dine-in and online options that let customers have food delivered straight to their door, the food delivery industry has has expanded significantly.

Since 2017, the global food delivery market has grown more than threefold (Ahuja et al., 2021), with the pandemic propelling the industry forward by several years in 2020. In 2022, the global food delivery industry was worth $221.65 billion (Grand View Research, 2023) and is expected to reach a market size of $320 billion by 2029 (Curry, 2023). This expansion is undoubtedly due to the impact of technological advancements, the internet, and the advent of smartphones on the online food delivery business and commerce, which has given a significant boost to online food delivery services worldwide. Mobile Food Delivery Apps (MFDAs) are being introduced all over the world to support the online food delivery industry, alongside the increasing use of smartphones. In brief, MFDAs are food delivery services that provide food ordering and delivery via mobile apps.

In Malaysia, the food delivery market has also grown exponentially. Malaysians like to call themselves foodies, and what foodies crave most is great and varied cuisine, and Malaysia is known for its diverse cuisine. Therefore, it is no surprise that the food business in Malaysia is thriving and becoming a major target for many businesses. Statista reported that the Malaysian food market generated MYR206.77 billion ($46.78 billion) in revenue in 2022 and is anticipated to expand by 8.2% per year between 2022 and 2027 (Moh, 2023). Parallel to the growth of the food sector, the development of the food delivery industry, both offline and online, in Malaysia is also quite lucrative. Similar to the rest of the world, MFDAs are becoming more common in Malaysia and are a growing trend to facilitate online food delivery. And the pandemic has certainly given the industry a huge boost. This trend is expected to continue in Malaysia and remain an integral part of Malaysians' daily lives.

In addition to high sales and revenues, consumer behaviour is also a reason for this buoyant trend. Today's consumers are attracted to modernised food delivery platforms that allow them to customise their ordering behaviour. As online food delivery becomes the norm and consumers become acquainted with the various MFDAs, the question arises as to what factors influence Malaysian consumers' satisfaction with these MFDAs.

Several studies have been carried out on mobile food delivery and customer satisfaction in Malaysia (Kajandren et al., 2023; Koay et al., 2022; Nayan & Hassan, 2022; Zhongcao, 2022; Azman et al., 2021; Chong et al., 2021; Ling et al., 2021; Zolkiffli et al., 2021). However, there are differences in research determinants, measurement items, sampling, and sample size, leading to mixed and contradictory results. This field of research is thus still emerging and needs to be further explored in order to document consumers' experiences with online food delivery (Yap & Lee, 2023; Sallehudin et al., 2022; Chai & Yat, 2019; Yeo et al., 2017), which leaves a gap in the literature. As a result, further research is needed on customer satisfaction in relation to MFDAs.

In addition, not only is there a dearth of research on MFDAs in Malaysia (Gani et al., 2023), but there is also a limited focus on Muslim consumers in this regard. Malaysia is primarily populated by Muslims, making the Muslim consumer segment the country's largest. According to the Population and Housing Census of Malaysia 2020 (MyCensus 2020) (Department of Statistics Malaysia, 2020), Muslims account for 63.5%, or 21.5 million, of the total population. As the most populous religious group in the country, its size and high purchasing power benefitting the businesses and the country's economy (Rasit &

Hamjah, 2023), thus making this segment an appealing target for research (see for instance Abd Manaf et al., 2023; Izza, 2022; Khan et al., 2017; Hasan et al., 2016; Mohezar et al., 2016). The Muslim market's significant size and buying power have compelled non-Muslim producers and countries to adapt their products and services to cater to the religious needs of Muslims (Temizkhan, 2022; Laluddin et al., 2019; Sakib, 2019; Lipka, 2017), emphasizing the importance of researching this market and its significance.

Using the European Consumer Satisfaction Framework Model (ECSFM), this study's objective is to explain the impact of MFDAs on customer satisfaction. Specifically, this study investigates the influence of application quality, service quality, perceived price, perceived enjoyment, and convenience on customer satisfaction when using MFDAs. This study's findings are applicable to both academics and practitioners. Theoretically, this study expands on the ECSFM and contributes to the burgeoning literature on consumer behaviour and its determinants of MFDAs. Understanding customer satisfaction in the context of MFDAs and its determinants is therefore of utmost importance for food operators and vendors, marketers, app developers, and those who use or plan to use MFDAs, as well as the government, to better understand customer needs and preferences for MFDAs while contributing to the country's food delivery revenue.

This paper is organised as follows. After this introductory section, section 2 delves into the underlying theory and discusses previous studies related to the study's context and variables. Section 3 describes the methodology applied, and Section 4 provides the results of the study. Section 5 discusses the findings, and Section 6 concludes the paper.

## Literature Review

### *Mobile Food Delivery Applications (MFDAs)*

MFDAs are mobile food delivery apps that allow smartphone users to virtually visit restaurants, cafés, and takeaways, view menus, place orders, pay, and have food delivered to their delivery address from a variety of restaurants without having to interact with staff (Alalwan, 2020; Wang et al., 2019). MFDAs offer many benefits to customers. They enable them to quickly and easily access and order from an array of restaurants at convenient times and locations. Customers can also use the apps to learn more about restaurants and menu options. In addition, customer issues such as long waits, congestion, misunderstandings, late deliveries, and customer complaints can be resolved as they can track the progress of their order at all stages.

There are two types of mobile food delivery service providers in the market today: restaurant owners and third-party intermediaries (Yeo et al., 2017). The former own and run their own network of fast-food restaurants such as Pizza Hut, Kentucky Fried Chicken (KFC), and McDonald's, while the latter provide delivery services to a large number of restaurants such as Food Panda and Grab Food. Food Panda and Grab Food, which debuted in 2012 and 2018, respectively, are Malaysia's largest online food delivery platforms, with Grab Food currently serving as the dominant third-party intermediary (Oppotus, 2023; Statista, 2023).

### *Customer Satisfaction Framework Model*

Customer satisfaction is critical for businesses because it is one of the most important predictors of purchase intentions (García-Salirrosas et al., 2022; Annaraud & Berezina, 2020; Jauhari et al., 2019) and customer loyalty (Tannady & Purnamaningsih, 2023; Tan et al., 2022), both of which aid in the prediction of business growth and sales. The importance of customer satisfaction has led researchers to develop several models of customer satisfaction. One of these is the European Customer Satisfaction Framework Model (ECSFM). The

American Customer Satisfaction Index (ACSI) model served as the foundation for the ECSFM. The ECSFM is a metric for measuring customer satisfaction. According to Grigoroudis and Siskos (2004), the ECSFM was developed in collaboration with the European Organization for Quality (EOQ) and the European Foundation for Quality Management (EFQM).

The ECSFM comprises seven variables, as shown in Figure 1. In this model, the antecedents of satisfaction are image, customer expectation, perceived product quality, perceived service quality, and perceived value of price. Based on the ECSFM, this study attempts to examine perceived product quality, perceived service quality, and perceived price and extend them to other variables that may influence customer satisfaction when using MFDAs.

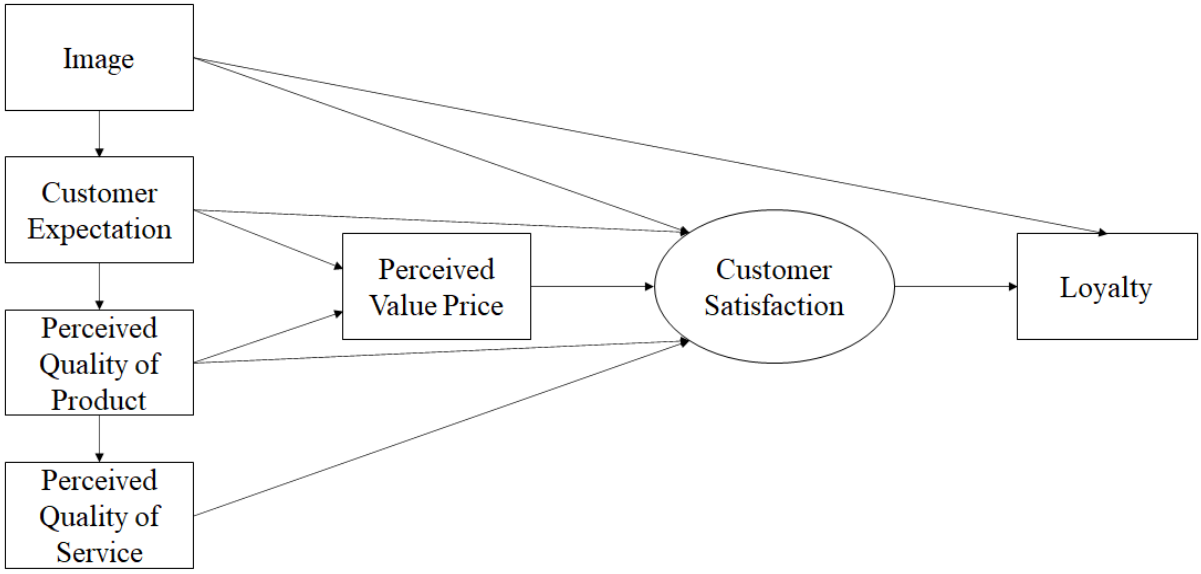


**Figure 1. European customer satisfaction framework model (ECSFM)**
Source: ECSI, 1998

***Customer Satisfaction***

Customers are important in business, and their satisfaction is critical to a company's success, growth, and competitiveness (Dam & Dam, 2020). Research shows that high customer satisfaction leads to greater customer retention (Raza et al., 2020; Maladi et al., 2019), customer loyalty (Koay et al., 2022; Tech, 2020), higher lifetime value (Ouf et al., 2023; Waluya et al., 2019), and a stronger brand reputation (Otto et al., 2022; Sengupta et al., 2015).

Customer satisfaction is defined as a measure of how products or services meet or exceed customer expectations (Dhingra et al., 2020; Fornell et al., 1996). It is the extent to which a product or service meets their needs, and the consumption experience leaves them with positive feelings after using it. In today's dynamic business world, customer satisfaction with a company's products or services is considered the be-all and end-all of business, as it builds a trusting and dense relationship with the customer.

Previous studies have examined the relationship between customer satisfaction and food apps, with different antecedents (Daud et al., 2023; Kajandren et al., 2023; Pal et al., 2022; Zainal Abiddin & Khairuddin, 2022). For example, Kajandren et al. (2023) found that factors like hedonic motivation, price-saving, and time-saving influence satisfaction with food delivery apps. Another study by Pal et al. (2022) focused on the impact of apps design,

including visual design, navigational design, and information design, on university students' satisfaction with food delivery apps. Zhongcao's (2022) study found that perceived severity, ease of use, and information quality are predictors of customer satisfaction. These studies' findings varied due to the diverse factors influencing customer satisfaction.

Within this study context, customers are satisfied with MFDAs if the apps meet their expectations, are useful and beneficial, and prompt them to recommend the apps to others. This study hypothesises that app quality, app service quality, perceived price of food offered in the app, perceived enjoyment of using the app, and app convenience influence customer satisfaction with MFDAs.

***Application Quality***

Application quality is defined as a multidimensional interface that elicits positive or negative user responses based on user interaction with an application (Chi, 2017). This study measures the quality of MFDAs with regards to design and visual presentation, information, transaction process, and app security, which influence customer satisfaction.

The design of a mobile app is especially important in the e-commerce environment, as users expect all search, order, and purchase processes to be completed in a few clicks (Kim & Hwang, 2012). The design of a mobile app refers to its quality, design, and attractiveness, which include images, colours, fonts, shapes, animations, and layout (Cyr et al., 2006). Yang et al. (2004) explained that mobile apps promote ease of use, understandability, and usability and that users have to make an effort to use them. These benefits help customers philtre food and restaurant options, make ordering easier, and provide fast monitoring (Shah et al., 2021). In addition to app design, customers also value security (Su et al., 2022), the payment system, and information quality (Zulkarnain et al., 2015) when using online food delivery apps.

Previous studies have empirically examined the influence of application quality on customer satisfaction. Drawing from past studies on online food delivery apps, systems, and product quality has a significant influence on user satisfaction and is part of the mobile food catering model (Wang et al., 2019). More recently, Zhongcao (2022) and Ling et al. (2021) also found that information and website quality are important variables to foster favourable user satisfaction. Therefore, the following hypothesis is put forward:

*H1: Application quality has a significant positive effect on customer satisfaction with MFDAs.*

***Service Quality***

Service quality, according to service quality experts, is described as the consumer's belief in the superiority of a product (Parasuraman et al., 1988; Zeithaml, 1988), resulting from comparing expectations to the service received (Gronroos, 1988). Because it is the customers who use the products or services, service quality is crucial to customer satisfaction.

Service quality plays a crucial role in shaping customer satisfaction and loyalty in mobile food applications. Within the context of mobile applications, quality is composed of two key dimensions, which are functional quality and technical quality. Functional quality encompasses aspects such as app usability, design, and information accuracy (Trabelsi-Zoghlami et al., 2019). On the other hand, technical quality focuses on app reliability, responsiveness, and precision (Koay et al., 2022; Yusra et al., 2020).

Zainal Abiddin and Khairuddin (2022), Saad (2021), Uzir et al. (2021), and Zulkarnain et al. (2015) reported in their study that the service quality of online food ordering providers has a great impact on customer satisfaction. On the other hand, Ling et al. (2021) and Wang et al. (2019) found that service quality is not a predictor of customer satisfaction. Based on these results, the relationship between MFDAs service quality factor and customer

satisfaction is uncertain. Therefore, further research on these two factors is needed. Accordingly, the proposed hypothesis is:

*H2: Service quality has a significant positive effect on customer satisfaction with MFDAs.*

***Perceived Price***

A price is the sum of money charged for a product or service (Kotler & Armstrong, 2012). Perceived price is thus delineated as the subjective perception of the amount of money charged by customers for a product or service. Consumers always judge the value of a service or product by the price they have paid. The price of online and mobile food delivery services, which includes food, taxes, and delivery price, can influence customers' willingness to pay and their perception of online food delivery services (Prasetyo et al., 2021).

As a result of fierce competition, an increasing number of companies are offering mobile coupons, which raises consumers' price sensitivity; thus, perceived price is critical in the context of food apps (Wang et al., 2019). According to Alalwan (2020), customers believe that ordering food through mobile food ordering apps provides good value for money. Furthermore, customers of online food delivery services value discounts and special offers (Alalwan, 2020), as they ensure that the prices of food offered by food delivery apps are reasonable (Bunarunraksa & Nuangjamnong, 2022).

Previous studies' findings on the influence of perceived price on satisfaction have been contradictory. According to a study conducted by Yoopetch et al. (2022), the perceived price of mobile food delivery apps has been identified as an influential factor in determining customer satisfaction. The study also corroborates the latest study by Bunarunraksa and Nuangjamnong (2022), Prasetyo et al. (2021), and Susanti (2019), which indicates that customers are inclined to express higher levels of satisfaction with an app if they perceive the prices to be reasonable and justifiable. However, Ling et al. (2021) found the opposite, as price is not the main concern when purchasing food through mobile food delivery apps during a pandemic. Therefore, the formulated hypothesis is:

*H3: Perceived price has a significant positive effect on customer satisfaction with MFDAs.*

***Perceived Enjoyment***

Ventakesh and Davis (2000) referred to perceived enjoyment as the amount of fun and pleasure customers feel during activities. The innate enjoyment and pleasure of using mobile technology are related to the perceived pleasure of customers, which determines their attitude and behaviour. Enjoyment is a feeling that a consumer has after using a product or service. Several factors influence innate pleasure with mobile apps, including app navigation, presentation/graphics, content, security, and post-use satisfaction, and marketers seek to provide a pleasurable experience through tailored services (Jun et al., 2022). McLean (2018) discovered that greater enjoyment of mobile apps leads to greater app interaction.

Perceived enjoyment of using the technology refers to the experience consumers have when using the technology. This means that the application is seen as useful and helpful in making customers' lives easier as long as they have fun using the application, which leads to a more positive attitude towards using the application (Yoe et al., 2017). Accordingly, in the context of MFDAs, customers are likely to have a positive behavioural intention if they perceive the MFDAs as pleasant.

A number of previous studies indicated that perceived enjoyment positively influences customer satisfaction in online food applications. For example, Hong et al. (2017) and Chih-Hung Wang (2012) found that perceived enjoyment was a significant predictor of

customer satisfaction among the Chinese community. Similarly, Rouibah et al. (2021) found that perceived enjoyment is a significant precursor to customer satisfaction. Hence, the proposed hypothesis is:

*H4: Perceived enjoyment has a significant positive effect on customer satisfaction with MFDAs.*

***Convenience***

According to Azizul et al. (2019), convenience is no longer an alternative but a must because customers want convenience and are not satisfied with bad, complicated, or cumbersome experiences. In general, convenience refers to the ability and capacity to use something without difficulty or effort. The growing consumer demand for convenience is caused by socio-economic change, technological advancement, and intensifying competition in the business environment (Seiders et al., 2007), both online and offline (Farquhar & Rowley, 2009). Mobile food delivery apps are associated with services provided to consumers. According to Farquhar and Rowley's (2009) comprehensive definition, consumers judge convenience according to whether they have control over the management, use, and implementation of their time and effort to achieve their goals related to accessing and using the service. In the context of MFDAs, convenience is therefore described as the amount of time and effort a customer has to spend to obtain online food services (Chotigo & Kadono, 2021).

MFDAs can provide convenience by allowing customers to compare meal prices at multiple restaurants, thus avoiding restaurant wait times and traffic-related hassles (Kaur et al., 2021). In addition, convenience ensures that a mobile app can be downloaded and used anytime, anywhere to purchase and browse products, as well as evaluate the quality of the mobile application (Cho et al., 2019).

Previous studies by Bao and Zhu (2022), Ling et al. (2021), and Shah et al. (2021) found that convenience significantly influences customer satisfaction. This research suggests that features like up-to-date information, a wide selection of restaurants and menus, and the ability to track orders will encourage customer satisfaction when using the application. Hence, the proposed hypothesis is:

*H5: Convenience has a significant positive effect on customer satisfaction with MFDAs.*

***Conceptual Framework and Hypotheses***

Figure 2 depicts the development of a conceptual framework and hypotheses based on the literature review.

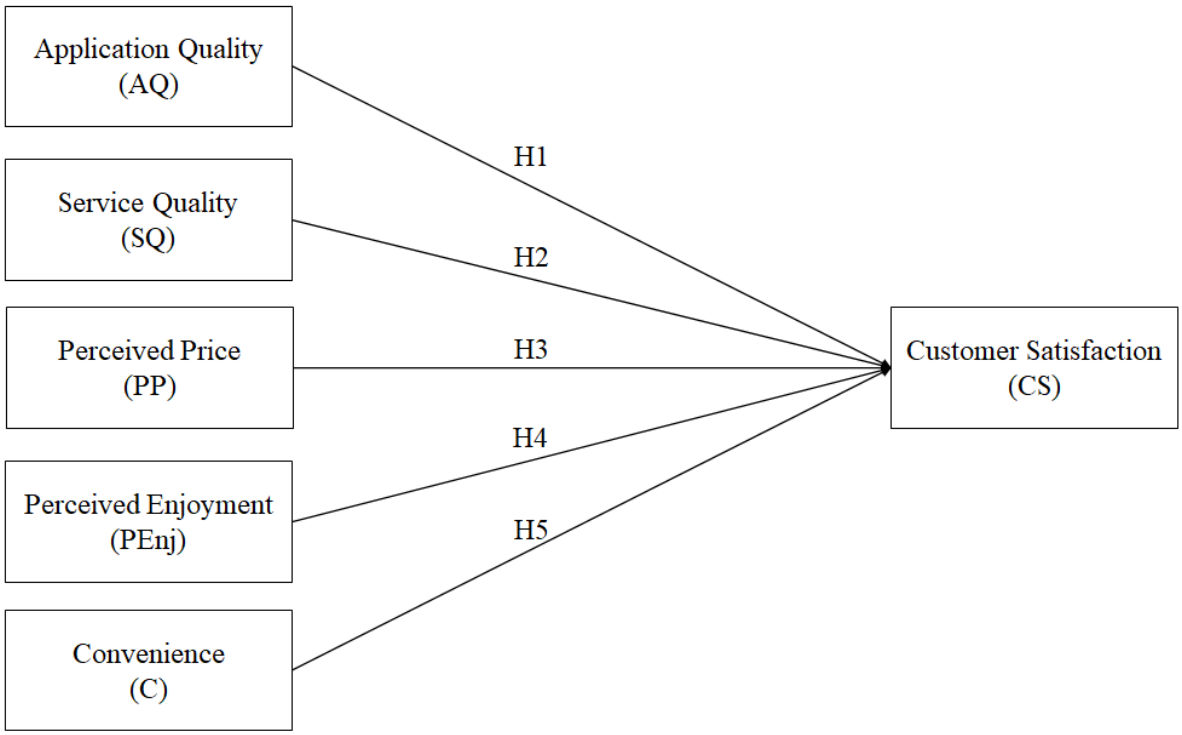


**Figure 2. Conceptual framework and hypotheses**

## Method

### *Study Sample*

As this study is interested in examining Malaysian Muslims' satisfaction with MFDAs, the sample for this study is limited to Muslim consumers. The survey targeted Malaysian Muslims who are familiar with MFDAs and use them for food ordering, with eligibility being established before participation. Non-Malaysians, non-Muslims, and those without prior experience were excluded from the sample. Accordingly, three filter questions, "Are you Malaysians?" "Are you Muslim?", and "Do you have any experience ordering food online using food apps?" were included in the survey to further ensure that only those who were specifically targeted responded.

The non-probability convenience sampling method was used to select respondents for this study. The convenience sampling method was chosen because it is a viable option for collecting a sufficient number of respondents in terms of time, speed, cost, and convenience. A total of 193 responses were collected; nonetheless after data cleaning and screening, only 176 samples were drawn. According to Hair et al. (2018), the general rule of thumb for sample size is at least 50 participants for simple regression analyses and 100 samples for most research situations. Following Hair et al.'s (2018) recommendation, a sample size of 176 is considered appropriate for the regression and correlation analyses that are the focus of this study.

### *Data Collection Method*

The study is quantitative, where a survey was created to collect the information needed to analyse the proposed hypotheses, evaluate them, and validate the final research framework. The survey was distributed online through social media platforms such as WhatsApp, Facebook, and Twitter. The online survey was chosen because it offers several advantages. First, it makes it possible for researchers to collect a sizable amount of data from a substantial

number of people quickly and conveniently while remaining cost-effective. Second, the online survey has useful and necessary validation features to ensure that all questions are answered completely. This way, missing values in the answers can be compensated for.

Prior to conducting the actual fieldwork, a pilot test was conducted to evaluate the questionnaire's reliability and validity (Devisakti & Ramayah, 2019). The questionnaire was distributed to 30 pilot samples for a preliminary survey, as per the recommendation of Johanson and Brooks (2010) and the reliability test was conducted. Table 1 displays the pilot test analysis's reliability scores, confirming a Cronbach's alpha of over 0.7 (Nunally, 1978; Hair et al., 2010), indicating excellent reliability of the research instrument.

The survey's content validity was confirmed by three academic scholars (Jamil et al., 2022) and 15 respondents (Amin & Ramayah, 2010) to eliminate ambiguities Most respondents understood the results without significant changes, indicating its validity. This implies that the variables are suitable for current or future research analysis, demonstrating the instrument's reliability and validity.

**Table 1: Reliability scores of constructs (pilot test)**

| Construct | No. of Item | Cronbach's Alpha |
|---|---|---|
| Application Quality (AQ) | 5 | 0.934 |
| Service Quality (SQ) | 4 | 0.891 |
| Perceived Price (PP) | 5 | 0.881 |
| Perceived Enjoyment (PEnj) | 4 | 0.966 |
| Convenience (C) | 5 | 0.952 |
| Application Quality (AQ) | 5 | 0.943 |

***Measurement Items***

All survey items for all variables used in this study were primarily derived from previously validated scales. Table 2 summarises the measurement constructs, the number of items for each construct, and the sources from which the items were adapted. All survey items and responses were scored on a five-point Likert scale, with answers ranging from 1 (strongly disagree) to 5 (strongly agree).

**Table 2: Measurement constructs and sources**

| Construct | No. of Item | Source |
|---|---|---|
| Application Quality (AQ) | 5 | Choi (2020), Ling et al. (2021) |
| Service Quality (SQ) | 4 | Ling et al. (2021) |
| Perceived Price (PP) | 5 | Ling et al. (2021) |
| Perceived Enjoyment (PEnj) | 4 | Ling et al. (2021) |
| Convenience (C) | 5 | Hussien and Mansour (2020), Kim et al. (2007) |
| Application Quality (AQ) | 5 | Hussien and Mansour (2020), Song et al. (2017) |

***Data Analysis***

The IBM Statistical Package for Social Science (SPSS) version 24 was used to analyse the data using descriptive and multiple regression analysis. This study used multiple regression analysis to test hypotheses and establish a linear relationship between independent variables and dependent variables. It measured the strength of association between consumers' perceptions and satisfaction and determined the percentage of variance in six dimensions of consumer perceptions that significantly explain satisfaction with MFDAs. The data was rigorously screened for errors and cleaned to eliminate outliers and confirm its compliance

with all regression assumptions, before being used for multiple regression analysis (Hair et al., 2018).

## Findings

### *Respondents' Profile*

This study involved 176 Malaysian Muslims. As presented in Table 3, the respondents in this study were almost evenly represented by men (49.4%) and women (50.6%). As for the age categories, the vast majority of respondents were in the 21–30 age group (76.1%), the below-20 age group (21%), followed by the 41–50 age group (6.8%), the 31–40 age group (4.5%), and the smallest proportion (0.6%) in the 51 and older age group. Most respondents were single (83.5%). In terms of education level, holders of a bachelor's degree formed the largest group, accounting for 75.6% of the total sample. In relation to employment, the largest proportion was unemployed or a student at 58%, as they were still studying or continuing their studies at universities. Finally, those with a monthly income of less than RM1,000 made up the lion's share of the income distribution (43.6%).

Respondents were also asked which MFDAs they use regularly. The vast majority of them use Grab Food (61.4%) and Food Panda (34.7%) for their mobile food delivery service. The majority of them use MFDAs one to three times a week (46.6%), and the most frequently ordered meals were lunch (43.8%) and dinner (38.6%).

**Table 3: Respondents' profile**

| Item | Frequency | Percentage |
|---|---|---|
| **Gender** | | |
| Male | 87 | 49.4 |
| Female | 89 | 50.6 |
| **Age** | | |
| 21 and below | 21 | 11.9 |
| 21 - 30 | 134 | 76.1 |
| 31 - 40 | 8 | 4.5 |
| 41 - 50 | 12 | 6.8 |
| 51 and above | 1 | 0.6 |
| **Marital Status** | | |
| Single | 147 | 83.5 |
| Married | 29 | 16.5 |
| **Educational Background** | | |
| No formal education | 1 | 0.6 |
| Primary/Secondary | 4 | 2.3 |
| STAM/STPM/Foundation/ Matriculation/Diploma | 36 | 20.5 |
| Bachelor's Degree | 133 | 75.6 |
| Masters/PhD | 2 | 1.1 |
| **Employment** | | |
| Employed | 41 | 23.3 |
| Self-employed | 33 | 18.8 |
| Unemployed/Students | 102 | 58.0 |
| **Monthly Income** | | |
| Below RM1,000 | 109 | 61.9 |
| RM1,001 - RM2,500 | 26 | 14.8 |
| RM2,501 - RM3,000 | 8 | 4.5 |

| | | |
|---|---|---|
| RM3,001 - RM5,500 | 9 | 5.1 |
| RM5,501 - RM7,000 | 12 | 6.8 |
| RM7,001 and above | 12 | 6.8 |

***Validation***

The reliability of the data was assessed with Cronbach's alpha, which was used to evaluate the internal consistency of each variable's items. Cronbach's alpha values above 0.7 indicate higher reliability of the scale (Nunally, 1978). All variables in this study had Cronbach's alpha values above 0.7, which means that all measurement scales were reliable. In terms of validity, each item was tested using Pearson's correlation. Each item was correlated with the total score derived from the respondents' responses, and the results demonstrated that all items were valid. Table 4 shows the reliability of the constructs.

**Table 4: Reliability of constructs (actual)**

| Construct | No. of Item | Cronbach's Alpha |
|---|---|---|
| Customer Satisfaction (CS) | 5 | 0.897 |
| Application Quality (AQ) | 4 | 0.864 |
| Service Quality (SQ) | 5 | 0.876 |
| Perceived Price (PP) | 4 | 0.950 |
| Perceived Enjoyment (PEnj) | 5 | 0.908 |
| Convenience (C) | 5 | 0.905 |

***Normality of Data and Multicollinearity***

In order to determine the presence of multicollinearity between the independent variables in this study, a tolerance test and a variance inflation factor (VIF) were calculated (Hair et al., 2018; Pallant, 2020). Table 5 shows the collinearity statistics for the data. The results show that none of the tolerance values are less than 0.1 and that all VIF values are less than 10, which are the recommended thresholds. The Durbin-Watson value of 1.888, which lies between the acceptable ranges of 1.5 and 2.5, indicates that there is no autocorrelation problem with the error terms. Hence, the measures used to assess the independent variables in this study are free of multicollinearity issues and autocorrelation problems.

**Table 5: Test of collinearity**

| Construct | Tolerance | VIF |
|---|---|---|
| Application Quality (AQ) | .334 | 2.998 |
| Service Quality (SQ) | .268 | 3.737 |
| Perceived Price (PP) | .403 | 2.481 |
| Perceived Enjoyment (PEnj) | .242 | 4.135 |
| Convenience (C) | .318 | 3.143 |

***Correlation Analysis***

Table 5 shows the descriptive statistics and intercorrelation values for each study variable. As shown in Table 5, the mean score for all variables ranged from 4.0 to 4.5, indicating high agreement with customer satisfaction, application quality, service quality, perceived price, perceived enjoyment, and convenience. Among the factors, convenience had the highest mean (4.52) followed by application quality (4.48), while perceived price had the lowest mean (4.00). The standard deviation (SD) for all variables was well below 1.0, indicating the consistency of the responses.

Table 6 also contains correlation results. Evans (1996) categorised correlation coefficients of 0.00-0.19 as very weak, 0.20-0.39 as weak, 0.40-0.59 as moderate, 0.60-0.79 as strong, and 0.80-1.00 as extremely strong. The results show that the values of the correlation coefficients in this study range from +0.5 to +0.7. Thus, they can be classified as moderately to strongly positive. The correlation results also show that all variables are related to each other. Aside from that, the correlation coefficients are below 0.9, indicating that there is no multicollinearity problem (Hair et al., 2010).

**Table 6: Mean, standard deviation, and inter-correlation values**

| Construct | Mean | SD | CS | AQ | SQ | PP | PEnj | C |
|---|---|---|---|---|---|---|---|---|
| CS | 4.4466 | .55125 | 1.000 | | | | | |
| AQ | 4.4858 | .53031 | .650 | 1.000 | | | | |
| SQ | 4.2966 | .64035 | .688 | .774 | 1.000 | | | |
| PP | 4.0043 | .92716 | .654 | .570 | .706 | 1.000 | | |
| PEnj | 4.4239 | .58368 | .779 | .704 | .759 | .710 | 1.000 | |
| C | 4.5227 | .50995 | .691 | .719 | .691 | .491 | .776 | 1.000 |

***Multiple Regression Analysis***

The hypotheses are designed to determine whether application quality, service quality, perceived price, perceived enjoyment, and convenience have a significant impact on customer satisfaction. With F statistics of 65.144, p = .000, and R2 = .657, these variables statistically significantly predicted customer satisfaction. To test H1, H2, H3, H4, and H5, a multiple regression was performed in which the dependent variable (customer satisfaction) was regressed on the predictor variables (application quality, service quality, perceived price, perceived enjoyment, and convenience). Perceived price, perceived enjoyment, and convenience were added as statistically significant predictor variables at p 0.05. Application quality and service quality, on the other hand, were not significant predictors of customer satisfaction. Table 7 summarises these findings.

**Table 7: Regression results**

| Relationship | Beta Coefficient | t-value | p-value | Result |
|---|---|---|---|---|
| H1: AQ → CS | .083 | 1.021 | .309 | Rejected |
| H2: SQ → CS | .050 | .668 | .505 | Rejected |
| H3: PP → CS | .117 | 2.778 | .006 | Accepted |
| H4: PEnj → CS | .363 | 4.211 | .000 | Accepted |
| H5: C → CS | .215 | 2.500 | .013 | Accepted |

***Notes:*** $p<0.05$.

**Discussion**

This study examined the impact of application quality, service quality, price, perceived enjoyment, and convenience on customer satisfaction. The study found that the model could explain 65.7% of the variance in MFDA satisfaction and was statistically significant. Three hypotheses were confirmed by the hypothesis test, while two others were not. Specifically, the study found that price, perceived enjoyment, and convenience influence Malaysian Muslim customers' satisfaction with using MFDAs. However, application quality and service quality are not predictors of customer satisfaction when using MFDAs. According to the results, perceived enjoyment had the greatest influence on customer satisfaction, followed by convenience.

The result of this study revealed that application quality has no impact on customer satisfaction with the use of MFDAs, and as such, H1 is not supported. The results of this study do not support the studies of Zhongcao (2022), Ling et al. (2021), Hussien and Mansour (2020), and Wang et al. (2019). The quality of MFDAs in terms of design and visual presentation, information, transaction process, and app security does not affect Muslim consumers' satisfaction. Consumers may believe that the various MFDAs available have the same features and presentation; thus, they do not perceive the quality of the app as unique and distinct.

The study discovered that there is no relationship between service quality and satisfaction; therefore, H2 is also not supported. Although the result contradicts the findings of Zainal Abiddin and Khairuddin (2022), Saad (2021), Uzir et al. (2021), and Zulkarnain et al. (2015), it corroborates the findings of Ling et al. (2021) and Wang et al. (2019), who found that service quality does not predict customer satisfaction.

Mobile applications have existed for nearly a decade, and since then, there has been continuous improvement in service quality. Customers no longer consider it a significant concern that would impact their satisfaction. (Ling et al., 2021). Therefore, the other factors namely perceived price, perceived enjoyment, and convenient inferred the effect of service quality as a key determinant to satisfaction.

This study has shown that perceived price has a direct positive impact on customer satisfaction with MFDAs; hence, H3 is supported. This study corroborates other studies such as Bunarunraksa and Nuangjamnong (2022), Prasetyo et al. (2021), and Susanti (2019), who found price to be important. Malaysian Muslims who value perceived price when using MFDAs appreciate app providers who offer coupons, vouchers, discounts, and promotions that make food more affordable and reasonable. MFDA providers thus need to continuously promote their discounts and promotions to constantly encourage customers to use MFDAs.

The study also confirmed that perceived enjoyment has a significant impact on satisfaction, thus supporting H4. This result upholds preceding studies by Rouibah et al. (2021), Hong et al. (2017), and Chih-Hung Wang (2012). It is evident that consumers found MFDAs enjoyable to use, owing to the graphic and visual presentation of the apps.

Finally, this study depicted that convenience has a positive impact on customer satisfaction with MFDAs; therefore, H5 is supported. This result is consistent with the findings of Bao and Zhu (2022), Ling et al. (2021), and Shah et al. (2021), who hypothesised and proved that convenience has a significant influence on satisfaction.

## Conclusion

Meeting customer satisfaction is becoming increasingly important and difficult in the midst of aggressive competition among restaurants. To survive and grow, the restaurant can diversify and innovate, for example, by introducing an online food delivery service via mobile phones. This study has successfully investigated the factors that contribute to customer satisfaction with MFDAs. It was found that perceived price, perceived enjoyment, and convenience are the most important factors influencing customer satisfaction among Malaysian Muslims, while application quality and service quality are not.

### *Implications*

This study has contributed to both theory and practise. From a theoretical point of view, this study contributes to the existing body of knowledge on consumer behaviour, consumer satisfaction, and MFDAs. The result of this study has empirically confirmed that customers value the competitive price of food offered in the apps, the pleasure of using the apps, and the convenience features of the apps. Furthermore, the study emphasised that when other factors

were examined within the same framework, the significance of application and service quality diminished. Users become accustomed to mobile applications to the point where the quality of the application is no longer their primary concern, as developers consistently strive to enhance its quality.

In terms of practical implications, the findings of this study help MFDA developers understand how to serve their customers by focusing on attractive price offers, making the apps user-friendly, and promoting the convenience function of the apps. First, Muslim customers appreciate frugal, fair, and reasonable prices for the food offered in MFDAs. They appreciate the ease with which they can get coupons, discounts, rebates, and special offers. Therefore, MFDA providers and restaurateurs need to ensure that these offers are accessible and appealing at all times. Second, Muslim customers agreed that MFDAs are pleasurable. Thus, keep making MFDAs fun, attractive, interactive, entertaining, and engaging, and they will remain satisfied for a long time.

Third, Muslim customers have confirmed that MFDAs are indeed user-friendly and practical. Therefore, it is crucial for long-term satisfaction that MFDA developers always ensure that the apps are easy to set up, allow for easy information sharing, and provide excellent customer service. The results could also be useful for restaurateurs and mobile payment providers to support the entire process of online food delivery. Finally, this study suggests incorporating information on Islamic principles, food source information, and food handling into apps, such as JAKIM's Halal directory restaurants lists for Muslim consumers. Furthermore, future food app developers should consider including compliance information for food businesses and restaurants that follow Food Acts such as the Food Hygiene Regulations 2009 and Hazard Analysis Critical Control Point (HACCP) to educate customers on the safety, quality, and health of outside food.

### *Limitations and Recommendations*

This study, like any other research, has flaws that must be addressed before it can be repeated. First, with only 176 responses, this study had a small sample size. Therefore, a larger sample should be used in future studies to obtain a more precise representation of the population. Second, the results' applicability to the larger Malaysian market is impacted by the majority of respondents, who came from a participant pool that was dominated by students and in which over 60% of income levels were below RM1000. Subsequent research endeavours ought to guarantee a more inclusive participant pool with respect to demographic characteristics. Third, this study focuses mainly on Muslims, which is also insufficient to represent the population. Therefore, the context only applies to this segment. Because of cultural differences, acceptance of technology, and a variety of other factors, it may differ for other ethnicities and religions. As a result of this, to confirm the model's validity and utility, it should be replicated and tested with different segments.

## References

Abd Manaf, K., Zin, S. M., Ashari, E. H. M. E. H., Alias, W. N. I. W., Mat, R. C., & Othman, N. S. N. (2023). Factors influencing Malaysian young adults' online purchase behaviour. *Journal of Islamic*, *8*(53), 504-515. https://doi.org/10.55573/JISED.085342

Ahuja, K., Chandra, V., Lord, V., & Peens, C. (2021, September 22). Ordering in: The rapid evolution of food delivery. *McKinsey & Company*. https://www.mckinsey.com/industries/technology-media-and-telecommunications/our-insights/ordering-in-the-rapid-evolution-of-food-delivery#/

Alalwan, A. A. (2020). Mobile food ordering apps: An empirical study of the factors affecting customer e-satisfaction and continued intention to reuse. *International*

*Journal of Information Management*, *50*, 28-44. https://doi.org/10.1016/j.ijinfomgt.2019.04.008

Amin, H., & Ramayah, T. (2010). SMS banking: Explaining the effects of attitude, social norms and perceived security and privacy. *The Electronic Journal of Information Systems in Developing Countries*, *41*(1), 1-15. https://doi.org/10.1002/j.1681-4835.2010.tb00291.x

Annaraud, K., & Berezina, K. (2020). Predicting satisfaction and intentions to use online food delivery: What really makes a difference?. *Journal of Foodservice Business Research*, *23*(4), 305-323. https://doi.org/10.1080/15378020.2020.1768039

Azizul, J., Albattat, A., Ahmad Shahriman, I., & Irfan, K. F. (2019). The relationship between food delivery apps attributes towards customer perceived value among young working adults in Shah Alam. *International Journal of Scientific and Technology Research*, *8*(11), 2478-2482.

Azman, N. I., Mashuri, N. A. A., & Wan Ibrahim, S. O. A.-E. (2021). The online food delivery service and their impact on customer satisfaction among university students in Malaysia. *International Journal of Academic Research in Business and Social Sciences*, *11*(6), 1665-1674. https://doi.org/10.6007/IJARBSS/v11-i6/10014

Bao, Z., & Zhu, Y. (2022). Why customers have the intention to reuse food delivery apps: Evidence from China. *British Food Journal*, *124*(1), 179-196. https://doi.org/10.1108/BFJ-03-2021-0205

Bunarunraksa, P., & Nuangjamnong, C. (2022). Factors affecting customer satisfaction with online food delivery application during the COVID-19 outbreak in Bangkok: A case study of top three applications. *AU-HIU International Multidisciplinary Journal*, *2*, 48-61.

Chai, L. T., & Yat, D. N. C. (2019). Online food delivery services: Making food delivery the new normal. *Journal of Marketing Advances and Practices*, *1*(1), 62-77.

Chi, T. (2018). Mobile commerce website success: Antecedents of consumer satisfaction and purchase intention. *Journal of Internet Commerce*, *17*(3), 189-215. https://doi.org/10.1080/15332861.2018.1451970

Chih-Hung Wang, M. (2012). Determinants and consequences of consumer satisfaction with self-service technology in a retail setting. *Managing Service Quality: An International Journal*, *22*(2), 128-144. https://doi.org/10.1108/09604521211218945

Cho, M., Bonn, M. A., & Li, J. J. (2019). Differences in perceptions about food delivery apps between single-person and multi-person households. *International Journal of Hospitality Management*, *77*, 108-116.

Choi, J. C. (2020). User familiarity and satisfaction with food delivery mobile apps. *Sage Open*, *10*(4), 2158244020970563. https://doi.org/10.1177/2158244020970563

Chong, K. L., Nifa, F. A. A., & Cheah, T. Y. (2021). The level of customer satisfaction towards online food delivery service among students in UUM. *Journal of Governance and Development*, *17*(1), 33-41. https://doi.org/10.32890/jgd2021.17.1.3

Chotigo, J., & Kadono, Y. (2022). Are there any key factors that encourage food delivery applications use during the COVID-19 pandemic in Thailand and the role of HRM?. *Human Systems Management*, *41*(2), 177-198. https://doi.org/10.3233/HSM-201140

Curry, D. (2023, May 24). Food delivery app revenue and usage statistics (2023). *Business of Apps*. https://www.businessofapps.com/data/food-delivery-app-market/

Cyr, D., Head, M., & Ivanov, A. (2006). Design aesthetics leading to m-loyalty in mobile commerce. *Information & Management*, *43*(8), 950-963. https://doi.org/10.1016/j.im.2006.08.009

Dam, S. M., & Dam, T. C. (2021). Relationships between service quality, brand image, customer satisfaction, and customer loyalty. *The Journal of Asian Finance, Economics and Business*, *8*(3), 585-593.

Daud, M. R. I., Norhidayah, N., & Jipiu, L. B. (2023). Food delivery mobile apps satisfaction, the influence of familiarity. *International Journal of Social Science Research*, *5*(1), 1-15.

Department of Statistics Malaysia. (2020). *Kawasanku. Learn more about your area today!* https://open.dosm.gov.my/kawasanku

Devisakti, A., & Ramayah, T. (2019). E-Learning usage outcomes among university learners: A pilot study. *Journal of Education and e-learning Research*, *6*(3), 149-155. https://doi.org/10.20448/journal.509.2019.63.149.155

Dhingra, S., Gupta, S., & Bhatt, R. (2020). A study of relationship among service quality of E-commerce websites, customer satisfaction, and purchase intention. *International Journal of E-Business Research (IJEBR)*, *16*(3), 42-59. https://doi.org/10.4018/IJEBR.2020070103

ECSI Technical Committee. (1998). *European customer satisfaction index: Foundation and structure for harmonized national pilot projects.* ECSI Steering Committee.

Evans, J. D. (1996). *Straightforward statistics for the behavioral sciences*. Thomson Brooks/Cole Publishing Co.

Farquhar, J. D., & Rowley, J. (2009). Convenience: A services perspective. *Marketing Theory*, *9*(4), 425-438. https://doi.org/10.1177/1470593109346894

Fornell, C., Johnson, M. D., Anderson, E. W., Cha, J., & Bryant, B. E. (1996). The American customer satisfaction index: Nature, purpose, and findings. *Journal of Marketing*, *60*(4), 7-18. https://doi.org/10.1177/002224299606000403

Gani, M. O., Faroque, A. R., Muzareba, A. M., Amin, S., & Rahman, M. (2023). An integrated model to decipher online food delivery app adoption behavior in the COVID-19 pandemic. *Journal of Foodservice Business Research*, *26*(2), 123-163. https://doi.org/10.1080/15378020.2021.2006040

García-Salirrosas, E. E., Acevedo-Duque, Á., Marin Chaves, V., Mejía Henao, P. A., & Olaya Molano, J. C. (2022). Purchase intention and satisfaction of online shop users in developing countries during the COVID-19 pandemic. *Sustainability*, *14*(10), 6302. https://doi.org/10.3390/su14106302

Grand View Research. (2023). Online food delivery market size, share & trends analysis report by type (platform to consumer, restaurant to consumer), by region (North America, Europe), and segment forecasts, 2023-2030. https://www.grandviewresearch.com/industry-analysis/online-food-delivery-market-report

Grigoroudis, E., & Siskos, Y. (2004). A survey of customer satisfaction barometers: Some results from the transportation-communications sector. *European Journal of Operational Research*, *152*(2), 334-353. https://doi.org/10.1016/S0377-2217(03)00028-6

Gronroos, C. (1988). Service quality: The six criteria of good perceived service quality. *Review of Business*, *9*, 10-13.

Hair, J. F., Black, W. C., Babin, B. J., & Anderson, R. E. (2010). *Multivariate data analysis: Global edition.* Pearson Higher Education.

Hair, J. F., Black, W. C., Babin, B. J., & Anderson, R. E. (2018). *Multivariate data analysis* (8th ed.). Cengage Learning.

Hasan, H., Tamam, E., Bolong, J., Nor, M. N. M., & Ali, A. (2016). An exploratory study on the relationship between involvement and attitude towards tv advertisements with

Islamic symbols and purchase intent. *Jurnal Komunikasi Malaysian Journal of Communication*, *32*(2), 1-15.

Hong, H., Cao, M., & Wang, G. A. (2017). The effects of network externalities and herding on user satisfaction with mobile social apps. *Journal of Electronic Commerce Research*, *18*(1), 18.

Hussien, F. M., & Mansour, N. M. (2020). Factors affecting customer satisfaction towards mobile food ordering applications (MFOAs). *The Scientific Journal of the Faculty of Tourism and Hotels, Alexandria University*, *17*(1), 17-35.

Izza, N. N. (2022). Bibliometric mapping of halal fashion research development with Scopus index. *Journal of Islamic Economic Literatures*, *3*(2). https://doi.org/10.58968/jiel.v3i2.88

Jamil, K., Dunnan, L., Gul, R. F., Shehzad, M. U., Gillani, S. H. M., & Awan, F. H. (2022). Role of social media marketing activities in influencing customer intentions: A perspective of a new emerging era. *Frontiers in Psychology*, *12*, 808525. https://doi.org/10.3389/fpsyg.2021.808525

Jauhari, T., Kusumawati, A., & Nuralam, P. (2019). The impact of website quality on consumer satisfaction and purchase intention. *Jurnal Administrasi Bisnis*, *67*(1), 54-61.

Johanson, G. A., & Brooks, G. P. (2010). Initial scale development: sample size for pilot studies. *Educational and Psychological Measurement*, *70*(3), 394-400. https://doi.org/10.1177/0013164409355692

Jun, K., Yoon, B., Lee, S., & Lee, D. S. (2022). Factors influencing customer decisions to use online food delivery service during the COVID-19 pandemic. *Foods*, *11*(1), 64. https://doi.org/10.3390/foods11010064

Kajandren, R., Ariffin, N. A. B., Manimaran, P., Maniselvan, D., Ravindran, V., & Kanapathipillai, K. (2023). An analysis of the factors that impact the customers' satisfaction on online food delivery services in Petaling Jaya, Selangor, Malaysia. *European Journal of Social Sciences Studies*, *8*(4), 57-84. http://dx.doi.org/10.46827/ejsss.v8i4.1422

Kaur, P., Dhir, A., Talwar, S., & Ghuman, K. (2021). The value proposition of food delivery apps from the perspective of theory of consumption value. *International Journal of Contemporary Hospitality Management*, 33(4), 1129-1159. https://doi.org/10.1016/j.jretconser.2016.12.013

Khan, N. J., Razzaque, M. A., & Hazrul, N. M. (2017). Intention of and commitment towards purchasing luxury products: A study of Muslim consumers in Malaysia. *Journal of Islamic Marketing*, *8*(3), 476-495. https://doi.org/10.1108/JIMA-12-2015-0091

Kim, D. J., & Hwang, Y. (2012). A study of mobile internet user's service quality perceptions from a user's utilitarian and hedonic value tendency perspectives. *Information Systems Frontiers*, *14*, 409-421. https://doi.org/10.1007/s10796-010-9267-8

Kim, J., Fiore, A. M., & Lee, H. H. (2007). Influences of online store perception, shopping enjoyment, and shopping involvement on consumer patronage behavior towards an online retailer. *Journal of Retailing and Consumer Services*, *14*(2), 95-107. https://doi.org/10.1016/j.jretconser.2006.05.001

Koay, K. Y., Cheah, C. W., & Chang, Y. X. (2022). A model of online food delivery service quality, customer satisfaction and customer loyalty: A combination of PLS-SEM and NCA approaches. *British Food Journal*. *124*(12), 4516-4532. https://doi.org/10.1108/BFJ-10-2021-1169

Kotler, P., & Armstrong, G. (2012). *Principle of marketing* (14th ed.). Prentice Hall.

Laluddin, H., Haneef, S. S. S., Saad, N. M., & Khalid, H. (2019). The scope, opportunities and challenges of Halal industry: Some reflections. *International Journal of Economics, Management and Accounting*, *27*(2), 397-421.

Ling, G. M., Tiep, H. S. T., Er, N. Z. (2021). Customer satisfaction towards mobile food delivery apps during Covid-19 pandemic. *Journal of Management and Marketing Review*, *6*(3) 191-201. https://doi.org/10.35609/jmmr.2021.6.3(5)

Ling, K. C., Chai, L. T., & Piew, T. H. (2010). The effects of shopping orientations, online trust and prior online purchase experience toward customers' online purchase intention. *International Business Research*, *3*(3), 63-76.

Lipka M. (2017). Muslims and Islam: Key findings in the U.S. and around the world. Pew Research Center. https://www.pewresearch.org/

Maladi, M., Nirwanto, N., & Firdiansjah, A. (2019). The impact of service quality, company image and switching barrier on customer retention: Mediating role of customer satisfaction. *International Journal of Applied Business and International Management (IJABIM)*, *4*(2), 57-64. https://doi.org/10.32535/ijabim.v4i2.567

McLean, G. (2018). Examining the determinants and outcomes of mobile app engagement-A longitudinal perspective. *Computers in Human Behavior*, *84*, 392-403. https://doi.org/10.1016/j.chb.2018.03.015

Moh, J. (2023, January 5). Mixed reviews on the F&B industry's outlook. *The Malaysian Reserve*. https://themalaysianreserve.com/2023/01/05/mixed-reviews-on-the-fb-industrys-outlook/

Mohezar, S., Zailani, S., & Zainuddin, Z. (2016). Halal cosmetics adoption among young Muslim consumers in Malaysia: Religiosity concern. *Global Journal Al-Thaqafah*, *6*(1), 47-59.

Nayan, N. M., & Hassan, M. K. A. (2020). Customer satisfaction evaluation for online food service delivery system in Malaysia. *Journal of Information System and Technology Management*, *5*(9), 123-136. https://doi.org/10.35631/JISTM.5190010

Nunnally, J. C. (1978). *Psychometric theory* (2nd ed.). McGraw-Hill.

Oppotus. (2023, April 17). Malaysian food delivery apps in 2023 – Food at your fingertips. https://www.oppotus.com/malaysianfooddeliveryappsin2023/

Otoo, F. N. K., Ameyaw, G. E., Kuar, M., & Otoo, E. A. (2022). Evaluation of customer satisfaction attributes on hospitality services. *International Journal of Research in Business and Social Science (2147-4478)*, *11*(5), 188-198.

Ouf, S., Helmy, Y., & Ashraf, M. (2023). Web mining techniques-a framework to enhance customer retention. *International Journal of e-Collaboration (IJeC)*, *19*(1), 1-30. https://doi.org/10.4018/IJeC.315790

Pal, D., Funilkul, S., Eamsinvattana, W., & Siyal, S. (2022). Using online food delivery applications during the COVID-19 lockdown period: What drives university students' satisfaction and loyalty?. *Journal of Foodservice Business Research*, *25*(5), 561-605. https://doi.org/10.1080/15378020.2021.1964419

Pallant, J. (2020). *SPSS survival manual: A step by step guide to data analysis using IBM SPSS*. McGraw-hill Education.

Parasuraman, A., Zeithaml, V. A., & Berry, L. (1988). SERVQUAL: A multiple-item scale for measuring consumer perceptions of service quality. *Journal of Retailing*, *64*(1), 12-40.

Prasetyo, Y. T., Tanto, H., Mariyanto, M., Hanjaya, C., Young, M. N., Persada, S. F., Miraja, B. A., & Redi, A. A. N. P. (2021). Factors affecting customer satisfaction and loyalty in online food delivery service during the COVID-19 pandemic: Its relation with open

innovation. *Journal of Open Innovation: Technology, Market, and Complexity*, *7*(1), 76. https://doi.org/10.3390/joitmc7010076

Rasit, R. M., & Hamjah, S. H. (2023). Muslim consumers behaviour through 'Buy Muslim First' (BMF) Vs. 'Buy Halal First' (BHF) campaign in Malaysia. *Malaysian Journal of Social Sciences and Humanities (MJSSH)*, *8*(1), e001992-e001992. https://doi.org/10.47405/mjssh.v8i1.1992

Raza, S. A., Umer, A., Qureshi, M. A., & Dahri, A. S. (2020). Internet banking service quality, e-customer satisfaction and loyalty: The modified e-SERVQUAL model. *The TQM Journal*, *32*(6), 1443-1466. https://doi.org/10.1108/TQM-02-2020-0019

Rouibah, K., Al-Qirim, N., Hwang, Y., & Pouri, S. G. (2021). The determinants of eWoM in social commerce: The role of perceived value, perceived enjoyment, trust, risks, and satisfaction. *Journal of Global Information Management (JGIM)*, *29*(3), 75-102. https://doi.org/10.4018/JGIM.2021050104

Saad, A. T. (2021). Factors affecting online food delivery service in Bangladesh: An empirical study. *British Food Journal*, *123*(2), 535-550. https://doi.org/10.1108/BFJ-05-2020-0449

Sakib, S. M. N. (2019). A case study of Malaysia : The impact of Islamic tourism on economy (January 9, 2019). Available at SSRN: https://ssrn.com/abstract=3934444 or http://dx.doi.org/10.2139/ssrn.3934444

Sallehudin, H., Taraf, M. E., Mat, A. H., Yahya, F., Baker, R., Fadzil, A. F. M., & Nuh, R. (2022). No more starving with food delivery applications, but why should I?. *Malaysian Journal of Consumer and Family Economics*, *28*, 288-314.

Seiders, K., Voss, G. B., Godfrey, A. L., & Grewal, D. (2007). SERVCON: development and validation of a multidimensional service convenience scale. *Journal of the Academy of Marketing Science*, *35*, 144-156. https://doi.org/10.1007/s11747-006-0001-5

Sengupta, A. S., Balaji, M. S., & Krishnan, B. C. (2015). How customers cope with service failure? A study of brand reputation and customer satisfaction. *Journal of Business Research*, *68*(3), 665-674. https://doi.org/10.3389/fpsyg.2022.919656

Shah, A. M., Yan, X., & Qayyum, A. (2021). Adoption of mobile food ordering apps for O2O food delivery services during the COVID-19 outbreak. *British Food Journal*, *124*(11), 3368-3395. https://doi.org/10.1108/BFJ-09-2020-0781

Song, Y. E., Jeon, S. H., & Jeon, M. S. (2017). The effect of mobile food delivery application usage factors on customer satisfaction and intention to reuse. *Culinary Science & Hospitality Research*, *23*(1), 37-47.

Statista. (2023, June 12). Most used food delivery app orders Malaysia 2023. https://www.statista.com/statistics/1149404/malaysia-favorite-food-delivery-apps/

Tannady, H., & Purnamaningsih, P. (2023). Determinant factors customer satisfaction and its implication on customer loyalty: From the perspective of customers of Vespa. *International Journal of Science, Technology & Management*, *4*(2), 434-438. https://doi.org/10.46729/ijstm.v4i2.786

Tech, J. E. T. (2020). The influence of online food delivery service quality on customer satisfaction and customer loyalty: The role of personal innovativeness. *Journal of Environmental Treatment Techniques*, *8*(1), 6-12.

Temizkan, V. (2022). A Research on the attitude and purchasing behavior of Muslim consumers towards products with halal logo in another Muslim country. *Sosyal Mucit Academic Review*, *3*(1), 123-147.

Trabelsi-Zoghlami, A., Berraies, S., & Ben Yahia, K. (2020). Service quality in a mobile-banking-applications context: do users' age and gender matter?. *Total Quality*

*Management & Business Excellence*, *31*(15-16), 1639-1668. https://doi.org/10.1080/14783363.2018.1492874

Uzir, M. U. H., Al Halbusi, H., Thurasamy, R., Hock, R. L. T., Aljaberi, M. A., Hasan, N., & Hamid, M. (2021). The effects of service quality, perceived value and trust in home delivery service personnel on customer satisfaction: Evidence from a developing country. *Journal of Retailing and Consumer Services*, *63*, 102721. https://doi.org/10.1016/j.jretconser.2021.102721

Venkatesh, V., & Davis, F. D. (2000). A theoretical extension of the technology acceptance model: Four longitudinal field studies. *Management Science*, *46*(2), 186-204. https://doi.org/10.1287/mnsc.46.2.186.11926

Waluya, A. I., Iqbal, M. A., & Indradewa, R. (2019). How product quality, brand image, and customer satisfaction affect the purchase decisions of Indonesian automotive customers. *International Journal of Services, Economics and Management*, *10*(2), 177-193. https://doi.org/10.1504/IJSEM.2019.100944

Wang, Y. S., Tseng, T. H., Wang, W. T., Shih, Y. W., & Chan, P. Y. (2019). Developing and validating a mobile catering app success model. *International Journal of Hospitality Management*, *77*, 19-30. https://doi.org/10.1016/j.ijhm.2018.06.002

Yang, Z., Jun, M., & Peterson, R. T. (2004). Measuring customer perceived online service quality: Scale development and managerial implications. *International Journal of Operations & Production Management*, *24*(11), 1149-1174. https://doi.org/10.1108/01443570410563278

Yap, C. P., & Lee, W. O. (2023). Factors influencing continuance intention to adopt online food delivery services among millennials during the Covid-19 pandemic. In F. Chen, K. S. W. Choo, V. H. Lee, & C. Y. Wei (Eds.), *Proceedings of the 10th International Conference on Business, Accounting, Finance and Economics (BAFE 2022)* (pp. 47-65). Atlantis Press. https://doi.org/10.2991/978-2-494069-99-2_6

Yeo, V. C. S., Goh, S. K., & Rezaei, S. (2017). Consumer experiences, attitude and behavioral intention toward online food delivery (OFD) services. *Journal of Retailing and Consumer services*, *35*, 150-162. https://doi.org/10.1016/j.jretconser.2016.12.013.

Yoopetch, C., Siriphan, P., & Chirapanda, S. (2022). Determinants of customer satisfaction via online food delivery applications. *ABAC Journal*, *42*(2), 70-88. https://doi.org/10.14456/abacj.2022.5

Yusra, Y., Eko, C. R., Agus, A., Azmi, M. A. A., Ugiana, G. P., Ching, C. R., & Lee, Y. (2020). An investigation of online food aggregator (OFA) service: Do online and offline service quality distinct?. *Serbian Journal of Management*, *15*(2), 277-294. https://doi.org/10.5937/sjm15-24761

Zainal Abiddin, N. A., & Khairuddin, I. E. (2022). User satisfaction on food delivery application (FDA) in Klang Valley. *Journal of Information and Knowledge Management (JIKM)*, *12*(2), 161-176.

Zhongcao, C. (2022). Customer's satisfaction: On the food delivery apps. *Journal of Digitainability, Realism & Mastery (DREAM)*, *1*(06), 20-27. https://doi.org/10.56982/dream.v1i06.54.

Zolkiffli, N. N., Ramlan, R., & Wei, C. S. (2021, November 3-5). Online Food Delivery (OFD) apps: What do the customers look at?. In *Proceedings of the International Conference on Industrial Engineering and Operations Management Monterrey, Mexico.* (pp. 1797-1803).

Zulkarnain, K., Ahasanul, H., & Selim, A. (2015). Key success factors of online food ordering services: An empirical study. *Malaysian Institute of Management*, *50*(2), 19-36.