RES MILITARIS
REVUE EUROPEENNE D ETUDES EUROPEAN JOURNAL OF MILITARY STUDIES
Social Science Journal

Online Food Delivery Apps' Impact as Third-Party Logistics Providers on Malaysian Restaurants' Business Models

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Abstract

The entire landscape of the restaurant business has entirely evolved because of technological advancement. It has increased the use of online food delivery services and allowed us to compare rates, order food from the convenience of our homes and utilize these services easily. Food delivery apps have also improved their services by giving their customers more options which is delivery times and deliverymethods such as 'contactless delivery.' Some food delivery services even provide specialized options for specific dietary requirements. From this research paper, we would be able to understand the importance of the third-party logistics on the operations of restaurant business while this study also will identify the influence of the delivery app on the inventory management on the operation of the restaurant business. This research also will list out some issues of the delivery app that faced by the restaurant owner which helps the restaurant to upgrade their operation system to provide a better customer service to the customersthat automatically increase their profits.

Keywords: Entire landscape, Technological advancement, online food delivery, Contactless delivery, Third-party logistics, Inventory management.

Introduction

1.1 Background of Study

Before the rise of meal delivery apps, customers could place orders with restaurants directly over the phone or in person. Apps that facilitate the delivery of food to your door have gotten better, too, with features like flexible scheduling and "contactless delivery" to give customers greater control over their experience. And for those with more particular dietary needs, many online meal delivery businesses provide tailored menus. As more eateries joined the network throughout the MCO period, the landscape of food delivery applications was further bolstered. I. Background (Oppotus, 2022).

There are two categories of distributors in Malaysia who offer OFD services through the food delivery app. Some examples of the former type of store in Malaysia are McDonald's, KFC, and Pizza Hut. Foodpanda, Grab, and Halo are just a few examples of the many restaurant delivery intermediates that fall under the second heading. A functional food and drink service is the result of combining these two OFD applications. Among young Malaysians, those in the 25-34 age range preferred the Foodpanda app, which is owned by Delivery Hero SE and situated in Berlin. (Zolkiffli et al., 2021)

Food delivery businesses, which rely on customers placing orders via smartphone or computer, have thrived in recent years thanks in large part to Malaysia's rapidly expanding Internet user base and rising smartphone ownership rates. Online food delivery (OFD) refers to a platform where consumers may place orders from many restaurants and have them delivered to their door. It manages the billing, payment, and process tracking but not the actual food preparation. Customers will often conduct a search for a preferred dining establishment, select an item from the menu, and then input their delivery address. (Zolkiffli et al., 2021) As a result of 2019's epidemic, both Foodpanda and GrabFood have seen their restaurant listings expand to meet the rising demand. Because of this, researchers zeroed in on OFD providers in Kelantan to examine how OFD apps affect the food service industry there. (Ray et al. 2019).

1.2 Problem Statement

The need for online food delivery services has increased nowadays. This is evident from the risein the usage of meal delivery services like Foodpanda and GrabFood in the Kelantan area. The community has chosen online food delivery services to make it simpler for them to buy the food theywant without having to leave home or the workplace. As a result, a poorly functioning online food delivery service will have a negative impact and interfere with Kelantan's restaurant industry.

All online food delivery businesses must create and maintain a specific application for a food delivery system. Poorly designed and difficult-to-use food delivery services will have a detrimental impact on the restaurants that work together with them. This is because clients who utilize the food delivery apps will place fewer food orders. Due to this, it will be challenging for the restaurant to maintain regular business operations and find customers. (Techtic, 2018).

The cost of online food delivery services is one of the key problems. After adding food to the cart and adding delivery fees, the estimated price of the food is close to the actual pricing. Forresolving problems with online food delivery applications, it is important to continuously learn and update the app. When the pricing established by the Kelantan online food delivery application is notreasonable for the consumer, the customer will either cancel the transaction or lose interest in using the online food delivery application to place future orders. This will be extremely detrimental to Kelantan's restaurant industry. (Kohar & Jakhar, 2021).

There are numerous instances in which the rider picks up multiple items in a row from a predetermined place for online food delivery, and after all, pickups have been accomplished, the samerider must transport the item to the appropriate delivery location. (Kohar & Jakhar, 2021). Customerswho utilize the online food delivery application would feel unsatisfied and upset with the service offered if the online food delivery rider fails to deliver the item on time. To enable the movement offood delivery riders to take orders and deliver the order on time to clients throughout Kelantan, a flexible online food delivery application system is required.

A typical arrangement for this kind of issue is perfectly suited to online food ordering services, which are expanding quickly, particularly today when people prefer to buy food

online rather than go out to dine in a restaurant. Multi Pickup and Delivery Problems with Time Windows are issues where some such delivery requests must be fulfilled within a specific time window. (Kohar& Jakhar, 2021). The operations of restaurants in Kelantan will therefore be negatively impacted by online food delivery services that offer subpar service.

Inventory control of perishable goods like food is crucial in the restaurant industry. This is due tothe limited shelf life of perishable goods. The usage of perishable goods after their expiration date isnot advised. The management of the perishable goods inventory in the restaurant sector has become more challenging. The market and application for online food delivery are still developing and confront some difficulties. (Das & Ghose, 2019). As a result, restaurant inventory management for perishable goods in Kelantan is impacted by fluctuations in supply and demand in online food delivery applications.The restaurant sector has suffered because of this issue. Therefore, we conduct this research to analyse and understand the influence of online food delivery apps on the operations of restaurants in Kelantan.

1.3 Research Objective

There are five objectives of this research:

- To investigate the impact of third-party logistics i.e., out of stock food waste and high delivery price on inventory management depends on online food delivery apps adapted by Kelantenese.
- To explore the impact of third-party logistics i.e., out of stock food waste and high delivery price on significant issues depends on online food delivery apps adapted by Kelantenese.
- To examine the impact of third-party logistics i.e., out of stock food waste and high delivery price on operations of restaurants depends on online food delivery apps adapted by Kelantenese.
- To study relationship between inventory management and operations of restaurants depends on online food delivery apps adapted by Kelantanese.
- To study relationship between significant issues and operations of restaurants depends on online food delivery apps adapted by Kelantanese.

Literature Review

2.1 Underpinning Theory

The food delivery industry is booming in the modern day. Like e-commerce, food tech firms rely entirely on various sorts of online infrastructure. To investigate how people like you, the owners and users of various technologies feel about them, researchers created the Technological Acceptance Model (TAM) (Davis, 1989; Davis, Bagozzi, & Warshaw, 1989). Many academics have employed TAM to examine how people respond to and adopt novel technology. Perceived information, service quality, and system efficacy all contribute to the convenience and efficiency of online shopping (Hsu, Wu, Chen and Chang 2012).

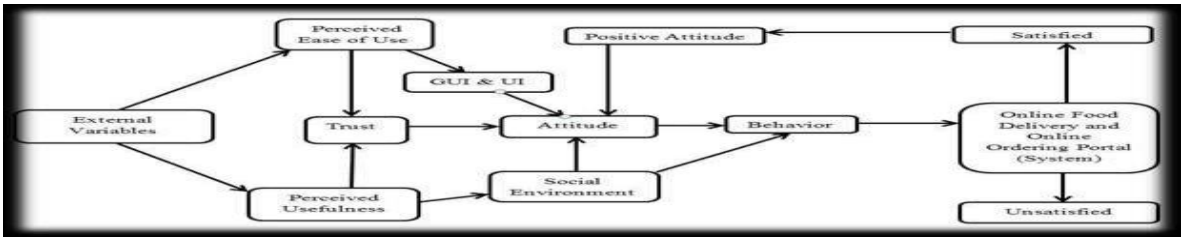

Figure 2.1: *Technology Acceptance Model (TAM) for online food ordering and delivery system*

Above figure shows extended TAM for online food ordering and delivery system by Salunkhe et.al., (2018). The extended TAM in previous research explains about adopting online food delivery systemfrom customer perspective. While exploring the previous literature many factors found are trust that havea direct correlation with ease of use. Using the system, the first thing he will encounter is the graphical interface. Online shoppers see a high level of information about products and services. With the help of graphics how information about restaurants, food and reviews are posted is important.

Therefore, this study will use this theory which is the Technology Acceptance Model (TAM) because this study is related to online food delivery and how the convenience of this online food deliveryservice can affect the operation of a restaurant. However, in food delivery services, delivery agents bringtangible products (food) delivered to customers' doorsteps and food quality is an important aspect of building a more satisfying restaurant operation.

2.2 Hypothesis Statement

- H1: There is a significant relationship between the impact of third-party logistics i.e. out of stock, food waste and high delivery price on inventory management depends on online food delivery apps adapted byKelantenese.
- H2: There is a significant relationship between the impact of third-party logistics i.e. out of stock, food waste and high delivery price on significant issues depends on online food delivery apps adapted by Kelantenese.
- H3: There is a relationship between the impacts of third-party logistics i.e. out of stock, food waste and high delivery price on operations of restaurants depends on online food delivery apps adapted by Kelantenese.
- H4: There is a significant relationship between inventory management and operations of restaurants depends on online food delivery apps adapted by Kelantanese.
- H5: There is a significant relationship between significant issues and operations of restaurants depends ononline food delivery apps adapted by Kelantanese.

2.3 Conceptual Framework

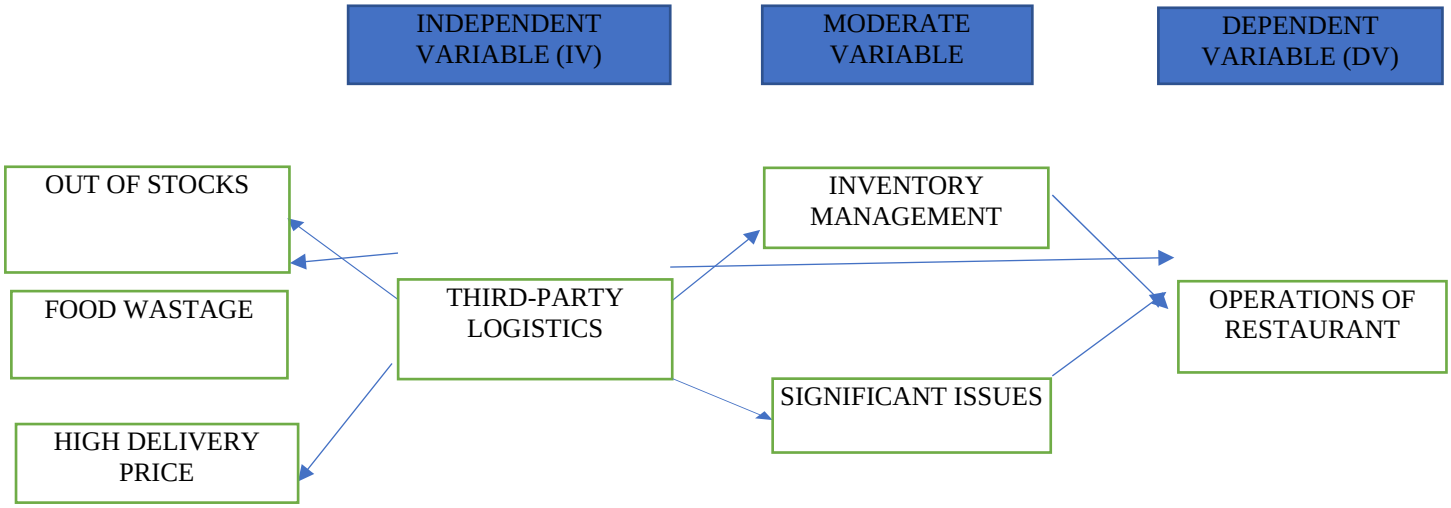

Figure 2.3: *The conceptual framework on the influence of online food delivery apps on the operations of restaurants in Kelantan.*

Methodology

3.1 Research Design

When talking about a study, "research design" refers to the overarching strategy employed to mix its many components cohesively and sensibly. This procedure is carried out to guarantee that the study's primary issue is thoroughly addressed. Data collection, measurement, and analysis are all stages of the research investigation. Kothari (2004) argues that the research design is the backbone of any study since it is both a method of investigation developed to answer specific research questions and a tool for realising the study's overarching goals. In other words, the objective of the study design is to provide a framework for conducting an in-depth investigation of the relationship between the dependent and independent variables.

In order to accomplish the study's aims, it is necessary to collect information about the relevance of third-party logistics, the impact of food delivery apps on inventory management, and the challenges encountered by restaurant owners who offer online meal delivery. As a result, we'll be sending out a series of custom questionnaires to Kelantan's restaurant owners and delivery riders to collect first-hand information about the state of the industry there. Surveys will be used to acquire accurate data for the quantitative method.

3.2 Data Collection Methods

Gathering, collecting, and analysing pertinent insights for study according to accepted protocols is data collection. Scientists can evaluate their working hypothesis in light of the information gathered. No matter what you're looking into, gathering data is always the first and most important step. On top of that, this investigation relied heavily on primary sources. Primary data collection entails obtaining information by means of a study's investigators, such as questionnaires, interviews, and experimental trials. In addition, a Google forms-based online survey will be used for data collection in this investigation. Approximately 250 participants from various populations will be compensated for their time and effort in this study.

On the other hand, the people who will be asked to participate in this study are the managers and employees of restaurants that have adopted an online meal delivery app. Their participation in this study is voluntary, and they were selected because they meet the criteria for becoming responders and because they have expertise with implementing an online meal delivery service in their businesses. Respondents can also be found by distributing Google forms via walk-in and online methods. The respondents will be contacted via walk-in and online channels, where they will be given and emailed Google forms and requested to complete the survey. Information will be gathered during normal business hours over the course of a period of around three to four weeks.

3.3 Sampling Techniques

Kumar (2018) asserts that academics can learn a lot about a group of people by analysing data collected from a representative sample of the entire population. It's easier to obtain high-quality data when there are fewer people involved in the study, and it also helps keep costs and workload down. We can classify sampling methods into two broad categories: probability sampling and non-probability sampling. For probability (random) sampling to work, you need a comprehensive sampling frame that includes everyone from whom you can draw your sample. Having a better chance that all eligible participants will be selected for the sample makes the study's findings more generalizable. Non-probability sampling methods also require more resources and longer processing times than probability sample methods. Given

that non-probability (non-random) sampling does not initiate with a complete sample frame, some individuals will also be omitted. Non-probability sampling, on the other hand, is more conducive to exploratory studies and hypothesis development due to its lower cost and greater usability.

Probability sampling was used to pick participants for this analysis. Probability-based sampling methods are preferable because they maximise generalizability of study results to the target population (Aruna Nigam, 2013). On the other hand, when we speak about "probability sampling," we suggest that each person of the population has an equal chance of being selected for the research. Random sampling, systematic sampling, stratified sampling, cluster sampling, multiphase sampling, and multistage sampling are all types of probability sampling. Samples will be selected at random in this investigation. Using a random number table or a computer-generated list of random numbers, this process ensures that each respondent has an equal chance of being selected from the population to comprise the sample.

Data Analysis And Findings

Descriptive Analysis

This section included summary statistics for the study's dependent variable, restaurant operations, and the study's independent variables, which come from third-party logistics and include shortages, spoilage, and excessive delivery costs. The average and standard deviation of each variable and question for each variable in each section of the questionnaire beginning with section B are shown here.

4.1.1 Dependent Variable and Independent Variables

Table 4.1.1: *Descriptive Statistics of Dependent Variable and Independent Variables*

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
IV	30	4.20	21.00	16.1000	5.14312
DV	30	4.20	21.00	15.5867	5.24514
Valid N (listwise)	30				

Detailed descriptive statistics for both the dependent and independent variables were displayed in Table 4.1.1. The mean value of the independent variable, which comes from third party logistics and includes things like running out of food and paying a much for its delivery, is 16.10. The mean for the restaurants' operations dependent variable, however, was measured at 15.59. In addition, the standard deviation shows how dispersed the data is around the mean. Table 4.1.1 indicates that the independent variable has a standard deviation of 5.14. The dependent variable, restaurants' operations, has a standard deviation of 5.25.

Operations of Restaurants

Table 4.1.2: *Descriptive Statistics of Operations of Restaurants*

Descriptive Statistics

	N	Mean	Std. Deviation
1) The website of online food delivery app should be well organized and all the necessary information should be available / Laman web aplikasi penghantaran makanan dalam talian haruslah teratur dan semua maklumat yang diperlukan harus tersedia.	30	3.77	1.431
2) Strong distribution channel which ensures timely delivery of selected food makes me loyal to the online food delivery apps / Saluran pengedaran yang kukuh yang memastikan penghantaran makanan terpilih tepat pada masanya menjadikan saya setia kepada aplikasi penghantaran makanan dalam talian.	30	3.67	1.269
3) Online food delivery application helps me a lot in ensuring efficient management of food orders and improving punctuality / Permohonan penghantaran makanan dalam talian sangat membantu anda dalam memastikan pengurusan pesanan makanan dengan cekap dan meningkatkan ketepatan masa.	30	3.60	1.354
4) The online food delivery application helps the business to increase sale and get more customers / Aplikasi penghantaran makanan membantu perniagaan anda meningkatkan jualan dan mendapatkan lebih ramai pelanggan.	30	3.80	1.324
5) Controlling the food preparation process by ensuring that workers are in a clean condition to maintain food quality when preparing ordered food / Mengawal proses penyediaan makanan dengan memastikan pekerja dalam keadaan bersih bagi menjaga kualiti makanan ketika menyediakan makanan yang dipesan.	30	3.77	1.223
Valid N (listwise)	30		

The five dependent statements and their descriptive statistics pertaining to restaurant operations were displayed in Table 4.1.2. With a mean of 3.80 and a standard deviation of 1.324, the statement "The online meal delivery application enables the business to improve sale and gain more clients." stands out as the most popular among the sample. When comparing means and standard deviations, the statement "Online food delivery application helps me a lot in assuring efficient handling of food orders and enhancing punctuality." has the lowest mean value (3.60) and standard deviation (1.354). Therefore, most respondents think that "The online meal delivery application enables the business to increase sale and gain more clients." is the most influential statement that best describes the behaviour of respondents with respect to the operation of restaurants. In contrast, the statement "Online food delivery application helps me a lot in ensuring efficient management of food orders and improving punctuality" is viewed by respondents as the least clear and least influenced statement that best describes their behaviour when it comes to the operation of restaurants.

4.1.3 Customer Behaviour

Table 4.1.3 *Descriptive Statistics of Third-Party Logistics.*

Descriptive Statistics

	N	Mean	Std. Deviation
1) Third-party logistics service providers assist the restaurant in food delivery. / Penyedia perkhidmatan logistik pihak ketiga membantu restoran anda dalam penghantaran makanan.	30	3.87	1.196
2) Third-party logistics service provider helps the restaurant in order fulfillment. / Pembekal perkhidmatan logistik pihak ketiga membantu restoran anda dalam pemenuhan pesanan.	30	3.93	1.311
3) Third-party logistics help the restaurant in building a brand image. / Logistik pihak ketiga membantu restoran anda dalam membina imej jenama.	30	3.70	1.418
4) Third-party logistics help in the promotion of the restaurant. / Logistik pihak ketiga membantu mempromosikan restoran anda.	30	3.83	1.262
5) A third-party logistics service provides the best service for restaurant. / Perkhidmatan logistik pihak ketiga menyediakan perkhidmatan terbaik untuk restoran anda.	30	3.83	1.367
Valid N (listwise)	30		

Third-party logistics descriptive statistics for the five statements of independent variable were displayed in Table 4.1.3. With a mean and standard deviation of 3.93 and 1.311 respectively, the statement "Third-party logistics service provider aids the restaurant in order fulfilment" is the most statistically significant. The statement "Third-party logistics aid the restaurant in establishing its brand image" has the lowest mean value (3.70) and standard deviation (1.1418) of all the statements. Considering this, it can be concluded that "Third-party logistics service provider supports the restaurant in order fulfilment" is the most influential statement impacting Kelantan's third-party logistics industry. In addition, respondents believe that "Third-party logistics support the restaurant in developing a brand image." is the least clear and least impacted statement that affects third-party logistics in Kelantan.

Reliability Test

The validity of the survey used in this study to gather information about restaurant operations (the dependent variable) and third-party logistics (3PL) (the independent variable) was discussed. Cronbach's Alpha for each question in each variable in each section of the questionnaire beginning with section B was calculated and given here. This reliability test was carried out to determine if the items in the questionnaire remained reliable after collecting replies from the real number of respondents, which was 300, as opposed to the pilot test, in which only 30 responses from 30 respondents were gathered.

4.2.1 Operations of Restaurant

Table 4.2.1: *Reliability Statistics for Operations of Restaurant*

Reliability Statistics

Cronbach's Alpha	N of Items
.959	5

For the purpose of this study, restaurant operations served as the dependent variable, and four questions served as the test's items. The 0.959 value for the restaurant's Cronbach's Alpha coefficient shown in Table 4.2.1 suggests a satisfactory level of internal consistency. All questions utilised for this variable are genuine and dependable since the coefficient produced for the questions of restaurant operations has an adequate consistency and stability.

4.2.2Third Party Logistics

Table 4.2.2: *Reliability Statistics for Third Party Logistics*

Reliability Statistics

Cronbach's Alpha	N of Items
.957	5

The five questions that make up this assessment of third-party logistics serve as the independent variable in this study. As can be shown in Table 4.2.2, the internal consistency of surveys of third-party logistics is fairly strong, with a Cronbach's Alpha of 0.957. All questions utilised for this variable are valid and dependable since the coefficients acquired from customer behaviour surveys have high consistency and stability.

4.3. Normality Test

Table 4.3: *Test of Normality of All Variables*

Tests of Normality

	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
IV	.196	30	.005	.848	30	<.001
DV	.258	30	<.001	.838	30	<.001

a. Lilliefors Significance Correction

The SPSS programme was used to verify for and analyse data normality. This research used the Kolmogorov-Smirnova and Shapiro-Wilk tests to check for data normality. Normal and atypical distributions are two different ways to think about and understand distribution. Information about abnormality was any variable with a p-value of less than 0.05. The Kolmogorov-Smirnova and Shapiro-Wilk tests reveal that all study variables are normally distributed (Table 4.3). A p-value of 0.001 (less than 0.05) indicates statistical significance across all tests, indicating that the data is not normally distributed. This finding suggests that Spearman correlation analysis, rather than Pearson correlation analysis, should be used for hypothesis testing when defining the relationship between the two variables in this study (Newson, 2002).

4.4 Hypotheses Testing (Spearman Correlation Analysis)

When a declaration of the bivariate normal distribution cannot be made with confidence, the Spearman correlation is often used as an alternative (Artusi, Verderio, &

Marubini, 2002). The examination of correlation coefficients showed that the influence of third-party logistics on Kelantanese restaurants is correlated with certain independent variables. Each table in the hypothesis result presents a summary of the correlational findings between the independent and dependent variables.

Third Party Logistics

- **H0**: There is a significant relationship between impact of third-party logistics i.e. out of stock,food waste and high delivery price on inventory management.
- **H1**: There is no significant relationship between impact of third-party logistics i.e. out of stock,food waste and high delivery price on significant issues.
- **H2**: There is a significant relationship between impact of third-party logistics i.e. out of stock, food waste and high delivery price on operations of restaurants.
- **H3**: There is a significant relationship between inventory management and operations ofrestaurants depends on online food delivery apps adapted by Kelantanese.
- **H4**: There is a significant relationship between significant issues and operations of restaurantsdepends on online food delivery apps adapted by Kelantanese.

Table 4.4 *Correlation Coefficient between third party logistics and operations of restaurants.*

Correlations

			IV	DV
Spearman's rho	IV	Correlation Coefficient	1.000	.824**
		Sig. (2-tailed)	.	<.001
		N	30	30
	DV	Correlation Coefficient	.824**	1.000
		Sig. (2-tailed)	<.001	.
		N	30	30

**. Correlation is significant at the 0.01 level (2-tailed).

Table 4.4 displays the results of a Spearman's correlation analysis, including the p-value, the number of respondents (300), and the significance level. The p-value of less than 0.01 suggests a positive correlation between third-party logistics and restaurant operations; if the p-value is less than 0.05, the hypothesis is accepted. There is a robust relationship between the use of third-party logistics and the management of restaurant platforms, as indicated by the high value of the correlation coefficient (0.824). After using Spearman's correlation, it was concluded that the null hypothesis was valid.

Recommendations / Suggestion For Future Research

Researchers can improve the study's precision and reliability by increasing the size of their sample in future investigations. With the current sample size, there is a 5% margin of error for the study's findings to be considered credible at a 95% confidence level. Because sampling affects data utility, selecting a sufficient sample size is crucial (Salkind,2003). Studies in the future could use a larger sample size and/or a longer time to increase the number of respondents who have engaged in microtransaction spending at least once throughout their lifetime. In addition, future studies can concentrate on a few data collection approaches, such as employing the various evaluation devices, such as the survey, central gatherings, top-to-bottom meetings, and open-finished polls. Using both a direct interview and an open-ended questionnaire, the researchers can learn more about the factors that influence consumers' attitudes towards online meal delivery applications than they could with just one method. Several methods of estimating can be combined to produce a more realistic estimate than would be possible with only one. Recommendation on the variables suggests that in future research,

researchers may select any other independent factors that have a robust relationship with the dependent variable, here restaurant operations. Future researchers are encouraged to dig deeper into the histories of all responder demographic profiles to better understand the factors that have the most impact on restaurant operations when it comes to third-party logistics. Better insight into this problem will be provided by future studies that determine the correlation between this independent variable (restaurant operations) and a new independent variable (retailer expertise, for example).

Overall Conclusion Of The Study

This study aimed to determine how the use of third-party logistics affects the daily operations of Kelantan restaurants and to establish a connection between the factors of stock-outs, food waste, and expensive deliveries. To collect data from a specific subset of users who meet the criteria for the study, researchers have used social media sites including WhatsApp, Instagram, Twitter, and Facebook to disseminate Google Form questionnaires to them. There are four hypotheses in this research that examine possible associations between the dependent and independent variables. Stratified sampling has been used to obtain respondent data because it is more suitable for samples that are geographically distributed and hence more difficult to sample adequately. This study requires a minimum of 300 participants for analysis. The researcher has, however, collected data from a total of exactly 300 respondents. IBM SPSS 25 was used to conduct a descriptive analysis, reliability tests, test of normalcy, and Spearman correlation.

Third-party logistics (out-of-stock, high delivery price, and food waste) are significantly correlated with their respective dependent variables, as determined by the findings of a Spearman correlation study (operation of restaurant). Restaurant owners, consumers, residents of Kelantan, and the study's researchers can all benefit from the fresh insights and information gleaned from this research.

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