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**THE IMPACT OF COVID-19 ON FOOD ONLINE  
PURCHASING BEHAVIOUR AMONG UNIVERSITY  
STUDENTS IN THE EAST COAST OF PENINSULA  
MALAYSIA.**

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**A thesis submission in fulfilment of the requirement for the  
degree of Bachelor of Applied Science (Food Security) with  
Honours**

**Faculty of Agro-Based Industry  
University Malaysia Kelantan**

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## DECLARATIONS

I declare that this thesis was written entirely by myself and that it has not been presented in any written submission for a degree, in whole or in part. The work offered is all my own, unless otherwise stated by reference or acknowledgment.



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**The impact of Covid-19 on food online purchasing behaviour among university students in the east coast of Peninsula Malaysia.**

**ABSTRACT**

Due to the Covid-19 pandemic, the trends in buying online food are increasing. Along with the technological advancements in the past decade also have changed the choice and ways of people purchasing behaviour especially for university students. The objectives of this research is to assess the frequency of online food purchase among university students during Covid-19. Also, to identify the factors that influence university student online food purchasing behaviour. This research is conducted as there is no complete data or information regarding the trends of university students in purchasing food through online delivery systems. A questionnaire will be developed and distributed to respondents among university students. The obtained data will be analysed using the Statistic Package for the Social Science (SPSS). The expectation outcome from this research is there is an impact that changes the food online purchasing behaviour among university students in Malaysia.

Keywords: purchasing behaviour, online food, technological, choice, student

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## **Kesan Covid-19 Terhadap Gelagat Pembelian Dalam Talian Makanan di Kalangan Pelajar Unversiti Pantai Timur Semenanjung Malaysia**

### **ABSTRAK**

Disebabkan oleh pandemik Covid-19, trend membeli makanan dalam talian semakin meningkat. Seiring dengan kemajuan teknologi dalam dekad yang lalu juga telah mengubah pilihan dan cara gelagat orang ramai membeli terutamanya untuk pelajar universiti. Tujuan penyelidikan ini adalah untuk menilai kekerapan pembelian makanan dalam talian dalam kalangan pelajar universiti semasa Covid-19. Juga, untuk mengenal pasti faktor yang mempengaruhi kelakuan dalam pembelian makanan atas talian di kalangan pelajar universiti. Penyelidikan ini dijalankan memandangkan tiada data atau maklumat yang lengkap berkaitan trend pembelian makanan melalui sistem penghantaran dalam talian. Satu soal selidik akan dibangunkan dan diedarkan kepada responden dalam kalangan pelajar universiti. Data yang diperolehi akan dianalisa menggunakan Statistic Package for the Social Science (SPSS). Jangkaan hasil daripada penyelidikan ini ialah terdapat impak yang mengubah tingkah laku pembelian dalam talian dalam kalangan pelajar universiti di Malaysia

Kata kunci: gelagat pembelian, makanan dalam talian, teknologi, pilihan, pelajar

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## LIST OF ABBREVIATIONS AND SYMBOLS

KAP	Knowledge, Attitude and Practice
KMO	Kaiser Meyer Olkin
SPSS	Statistical Package for Social Science Software
SOP	Standard Operating Procedure
&	And
%	Percentage
$r_s$	Spearman Correlation Coefficient

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## **CHAPTER 1**

### **INTRODUCTION**

#### **1.1 Introduction**

In this study, chapter 1 consists of background research, problem statement, hypothesis, objective, the significance of the study, and organization of the study. This study focuses on the food online purchasing behaviour among university students in the east of Malaysia.

#### **1.2 Research Background**

The trend of ordering food online is rising as a effect of the Covid-19 outbreak. Technological improvements in the last decade have significantly changed people's purchasing habits, particularly among university students (Azanza, 2001). The goal of this study is to see how frequent online food purchases are among university students during Covid-19. Also, to identify the factors that influence university student online food purchasing behaviour. This research is conducted as there is no complete data or information regarding the trends of university students in purchasing food through

online delivery systems. This research will investigate the knowledge of students in access to technology that will affect online food purchasing.

### **1.3 Problem Statement**

Covid-19 pandemic has changed the consumer behaviour toward purchasing food. The government has implemented a standard operating procedure (SOP) in a focus to reduce the virus outbreak. All organisations, institutions, the businesses should have SOP (Akyar, 2012). Some SOP or standard measures that most eateries need to follow are like people need to wear a mask unless they are not permitted to enter the restaurants. Also, people need to have a 1-metre distance when queue and all that standard measure seems to help with the fighting to reduce the spread of the virus. This safety measure seems simple, but many are complaining, and some doesn't even want to follow those rules. Thanks to advanced technology where restaurants and eateries now can operate a systemic order by using the online application (Kapoor, 2018). People especially university students where most of them doesn't have transportation find it more convenient for them to purchase food by using an online food ordering system.

Although the pandemic seems to affect university students in purchasing food, it is necessary to analyse and to study the buying practices towards online food among university students.

## 1.4 Objectives

The objectives of this study are:

1. To evaluate the frequency of online food purchasing among university students in the east coast of peninsula Malaysia during Covid-19.
2. To identify the factors that influence university student online food purchasing behaviour.

## 1.5 Hypothesis of The Study

H0: Covid-19 has no impact on food online purchasing behaviour among university students in the east coast of peninsula Malaysia.

H1: Covid-19 has an impact on food online purchasing behaviour among university students in the east coast of peninsula Malaysia.

## 1.6 Significance of Study

The main contribution of this study is to propose useful information and knowledge to university students and eateries in helping them to develop effective marketing strategies toward online food systems. The information about the student choosing factor is useful for eateries that use online food ordering systems. Moreover,

this study helps to improve the online food system to be more convenient especially in this era of pandemics.

Consumers need to have education and knowledge for them to be aware of their health and shift towards a healthier lifestyle. This study will create information for the student and help them in making a good choice.

### **1.7 Organization of Study**

Chapter 1: This chapter discusses the study's research background, the problem statements, the objective, the hypothesis, the scope, and the importance.

Chapter 2: This chapter covers the findings of the preceding study's literature review on young entrepreneurs' involvement in halal food items. In addition, depending on this study's understanding, this chapter presents related information.

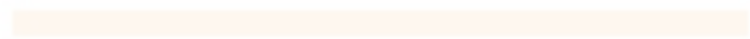
Chapter 3: This chapter discusses the theoretical framework and methods employed in this study, which includes sampling methodologies, research design, and data analysis.

Chapter 4: This chapter summarises the results of the data analysis, which include an examination of the frequency of online food shopping among university students during Covid-19, as well as the identification of factors that affect university student online food purchasing behaviour.

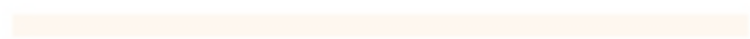
Chapter 5: This chapter focuses on summarising the findings, drawing the conclusions, and making recommendations for future research.



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## CHAPTER 2

### LITERATURE REVIEW

#### 2.1 Introduction

The aim of a literature review is to go over the most important aspects of existing knowledge, such as substantive discoveries and also theoretical and methodological contributions to the research issue. Aside from that, literature reviews, also defined as secondary sources, merely report on previous research and do not present any fresh or original research outcomes.

In this study, there are two objectives have been identified namely evaluation of frequency of online food purchasing amongst university students during Covid-19 and the identification of the factors that influence university student in online food purchasing behaviour. Furthermore, the review of past research aids in the analysis and interpretation of the research topic, question, and hypothesis. In this investigation, the KAP theory was applied. Knowledge, attitude, and practise (KAP) surveys are designed to gather information on what people know, believe, and do about a specific issue from a representative sample of the population. Quantitative data collecting methods aim to



measure and analyse a behaviour by the use of surveys and statistical analysis of the data obtained.

## **2.2 Knowledge, Attitude and Practice (KAP)**

A cross-sectional non-experimental survey design was used to determine the ability of the Knowledge, Attitude and Practice (KAP) model to the impact of Covid-19 on food online purchasing behaviour among university students in the east of Malaysia. Numbers and percentages were used to describe categorical data. The mean and interquartile range of KAP average scores were reported. These preparations can be finalised once the survey procedure has already been prepared and necessary action has been made for ethical approval.

### **2.2.1 Theoretical Framework**

The theoretical framework was a significant part of the research process since it included theories that were stated to analyze data and interpret the findings (Kivunja, 2018). Furthermore, the model was a theory that presented a structured view by defining the link between variables, leading to the analysis and interpretation of phenomena. The conceptual model was the framework that aided or supported the research study's theory. It is critical for topic selection, research question formulation, literature review focus, design strategy, and analytic design in research studies (Grant & Osanloo, 2014).

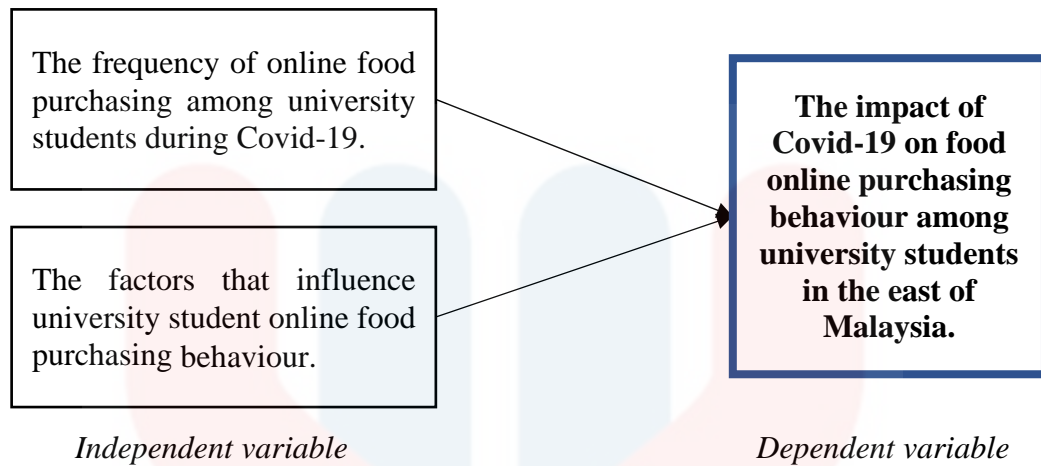


Figure 2.1: Theoretical framework

### 2.3 Defining Online Food Ordering System

An online food ordering system is software that allows the restaurant to accept and manage orders from the online system. An online food ordering system contains two elements which are, a website or application that lets customers view the menu and place an order. The next element is the interface controlled by the admin to receive and create custom orders. During the pandemic, 60% of customers say that they order online food for delivery at least once a week, and 31% purchase online food at least twice (Cybulski, 2021). Retail food delivery is a delivery company in which food is delivered to a customer by a restaurants, store, or takeaway food delivery company. An order is often placed on a restaurant's or grocer's website or over the phone, or through a meal delivery service. Main dishes, sides, drinks, desserts, and grocery goods are among the products often provided in boxes or bags. In most cases, the delivery guy will drive a car, but in larger cities where residences and restaurants are near, they may ride bicycles or motorcycles.

With the advent of the Internet, consumers and businesses all over the world have been more linked than ever before (Sangurde, 2019).

The online system is flexible where it enables the customers to place their orders quickly with just a click. Thus, they will save more time and cost. The system also enables the customers to order a day before and the system will then manage the order at the designed time. Online systems with the advance of technology could hold large amounts of orders at a time. Apart from the conventional system, the upgrade of the online ordering system is that they linked to the customer information with their database that lead to the ordering of customers (inc, 2021). Moreover, the information can be tracked easily from the customer database if they are regular in the system.

Technology has rapidly taken over many jobs but also creates new jobs for businesses. The implementation of an online system requires eateries in hiring some web developers to maintain a website database or application. This will also change the vision and aim of the food business.

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#### **2.4 Restaurant Delivery Systems**

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Profit is the primary purpose of most enterprises. The same applies to restaurants which are not non-profit organisations. Technology, according to King (2014), makes it easier for restaurants to grow sales and revenue by using online delivery services. Many

eateries are adopting new technologies with lightning speed. Restaurants used to have their own food delivery services. However, as "Third-party delivery services," several intermediates now exist primarily to facilitate food delivery to customers. Third-party delivery exists to relieve restaurants of the financial burden of running their own delivery services (King, 2014).

## **2.5 Food Applications Systems**

Food delivery service is the process of buying or ordering food from a restaurant or fast food joint, having it prepared by the establishment, and then having it delivered to the customer's address by a driver or rider. People have become accustomed to food delivery services in today's world. Food ordering apps are another popular modern trend in food delivery. Food ordering apps such as Grab Food and Food Panda are instances of the huge trend of food delivery services, as well as one of its contributions. Consumers who purchase food through food delivery apps are usually expected to make a decision about what they want to eat and expect fixed pricing. Food Panda and other modern meal delivery apps have fix prices of delivery of the food order from one location to another. Often, the delivery service is free, while other times, a delivery fee is required upon delivery of the ordered food (Logistic, 2019). Customers can pay using any method they desire, including cash on delivery, debit or credit card transactions, and even internet banking. The set price can be paid in advance by using credit cards or contactless payments, which is one of the most major benefits of the mobile food firm.

### 2.5.1 Grab Food Apps



Figure 2.2: Grab Food Logo

Grab Holdings Inc., or simply Grab, is a South Asian tech company with offices in Singapore and Indonesia. The company also provides food delivery and online payment services via a smartphone app in addition to transportation. Grab started its Grab Food food delivery service in May 2018 and they offering delicious meals varying from street food to fine dining.

### 2.5.2 Food Panda Apps



Figure 2.3: Food Panda Logo

Food Panda, an online food and shopping delivery service, is owned by Delivery Hero. Food Panda is Delivery Hero's primary brand in Asia, with its headquarters in Singapore. With operations in 12 Asian markets, it is Asia's largest food and grocery delivery system outside of China. Food Panda takes orders and sends them to restaurants that will then deliver them to clients via delivery riders. The service is accessed via web pages and mobile apps. It connects customers with restaurants that deliver meals in their area, allowing them to select, purchase, and pay for food either online or offline. Customers place orders by using their postcodes to search for menus from a list of restaurants on the website. They can prepare meals by looking at restaurant menus and selecting foods to order before entering an address and completing the checkout process. Food Panda send out an SMS to verify orders and estimated delivery times.

## **2.6 Customer Decision Making Process**

Customer loyalty is hard to maintain, but recruiting new customers is considerably more difficult and costly. Customers must progress through the marketing funnel from being only aware to being extremely loyal (Ketler, 2016). As a result, restaurants must become more efficient in their operations in order to attract new customers and keep old ones. In order to communicate more effectively, restaurants must also understand their target market while using internet tools and platforms. Consumer behaviour helps in gaining better understanding and predict not only the subject of purchases, but also their motivations and frequency (Stávková, 2008). Trommsdorff (2002) however does warn that none of the activities related to consuming is more significant for consumer behaviour study than personal traits. According to him, the phrase "consumer," as well as the term

"consumer behaviour," are being used instead of the more appropriate "target customer." Because it must grasp more individual roles – decision-maker, buyer, and customer – this idea poses challenges later on. Aside from the traditional view of consumption as the sole means of meeting basic needs, Solomon (2004) identifies four additional types of consumer activities: consumption as a personal observation (emotive or aesthetic reacts to product consumption), consumption as a function of time, consumption as a function of place, and consumption as a function of place. Consumption as a tool for integration, as a classification scale, and as a game

## **2.7 Implementation of Standard Operating Procedure**

Most of the company in Malaysia has their Standard Operating Procedure (SOP) that are used for workers to work safely under the guideline. SOP is implemented to minimize accidents or hazards in their workplace (Rahmawati, 2019). The procedure is even main to some areas of practice. For instance, the medical practice of pharmacy is requiring more attention as they deal with certain procedures and medication that may have an effect thus, they meet the standard of operating procedure.

The guideline and the process of developing an effective SOP are important for successful implementation. It also needs to consider the input of everyone (Hadiwiyono, 2013). For excellent improvement, the implementation needs continuous and excessive enhancement from both workers and management (Hadiwiyono, 2013). As the SOP has been developed, the next element is to devote to it. Everyone in a certain organisation

should devote themselves to the implantation of SOP. SOP is relevant to any organisation or business. They should be a necessary practice towards an effective management system. SOP assists in efficient and excellent service in the organisations to control and minimize errors in avoiding any uncertainties.

## **2.8 Purchasing Food During Covid-19 Pandemic**

The public may not feel safe to dine in even the restaurants has reopened. During the pandemic, purchasing online has made take out or delivery more convenient than before. Online food ordering seems to create the trend further. The industry has learned its experience during this pandemic mostly when it comes to ineffectiveness and availability (Opinion, 2021). There is a study saying that people now are afraid to dine at restaurants thus they will be buying food on delivery and takeout often than before (Staff, 2020). That is because they have found that ordering online is more convenient and efficient.

Thus, it would be a waste if they have invested in this technology now and simply not implemented them anymore once the pandemic is over.

It is the same concept as when people take out or deliver their order to enjoy them at home with family. The pandemic has made most restaurants realize that having an



online ordering system is one of the ways for them to survive. It is likely said that it is a demand for eateries or restaurants to have an online food ordering system.

## **2.9 Chapter Summary**

This chapter covers a systematic analysis of published and unpublished material from secondary sources linked to aspects that influence customers' online purchase behaviour when it comes to online food purchases. This chapter can be completed by gathering relevant information and citations from other researchers to support the study issue and fill in the gaps in the studies.

## CHAPTER 3

### RESEARCH METHODOLOGY

#### 3.1 Introduction

The purpose of this study is to analyse the demographic of university students in purchasing online food in their daily consumption. It is also aimed to see the relationship between the university student education level and knowledge regarding the online food system. The knowledge will surely affect the choice and purchasing behaviour of online food among university students in the east coast of peninsula Malaysia.

#### 3.2 Research Design

Quantitative research design is used to collect and analyse numerical data. It can be applied for descriptive, correlation or any experimental research. The cross-sectional study also known as a descriptive study will be applied as the research design.

There will be three methods which are case studies, observations, and surveys. Case studies will be focusing on describing the character of a specific subject such as a person, group, or event. The observation method can be done without relying on the honesty and accuracy of the respondent as it allows the data collection on behaviours. The survey is used to collect a big scale of data and the analysis can be done on frequencies, averages, and patterns.

### **3.3 Data Collection Method**

Data collection was a procedure for collecting and measuring information on the applicable sources that stated the research question, hypothesis testing and evaluating the outcome. This research was conducted among university students in the east coast of peninsula Malaysia. The sample size for this study was 35 respondents where the question was distributed to determine the behaviour of university students in purchasing food online. The instrument used in collecting the data needed in this study is a questionnaire. The collected data and information count as primary data as it is obtained directly from the respondents. New information to evaluate the impact of Covid-19 pandemic towards online purchasing behaviour among university students in Malaysia.

The previous study by the researcher regarding the relevant issues counts as secondary data and is helpful in the report writing. The sources may come from journals, articles, and newspapers. The information used will be cited so it will not consider stealing people's work or plagiarism.

### **3.3.1 Sampling method**

This survey will be conducted on random respondents among university students in Malaysia. For convenience sampling, the questionnaire set will be used and distributed directly to the respondent. The questionnaire will be distributed in the online method as it is a fast and organic way of obtaining data at scale. The link will be shared on various social media platforms such as WhatsApp, Facebook, Twitter, and Instagram. This approach of sampling is primary data and a type of non-probability sampling because the sampling unit will be selected randomly.

### **3.3.2 Sample size**

The sample size for this study was 130 university students from Malaysia's east coast. The sample size was calculated using the rule of thumb, according to (Jr, 2011). This guideline said that the sample size should be higher than 30 but not greater than 500 (Sabir, 2014). Furthermore, good quality findings can be achieved if N is less than 50, but not if the sample size is too low (de Winter, 2009). This is because the data being analysed is less precise. However, according to (Littler, 2021), the greater the sample size, hence more data will be acquired because sampling errors can be reduced.

### **3.3.3 Source of Data**

There were two sources of data namely primary data and secondary data. The primary data was collected from the respondents by using several methods such as email and conversation through telephone. The questionnaire encompasses pre-defined factor that obtains from the previous research that have been discussed in the literature review. Next, secondary data was gathered from the different sources of information like journal, book, website and newspaper that have been analysed by the researcher. Apart from that, the statistical data was collected from the government departments' portal or relevant information related to this research.

### **3.4 Questionnaire**

For this research, data will be collected from respondents using the questionnaire. The question items are adapted from previous studies and modified to suit this research context. The questionnaire is divided into three sections which are respondent profiles, student knowledge and perception of the online food systems and online buying behaviour.

The question that will be asked in the survey is the efficiency of students in purchasing food using an online ordering system. This question enables to access the university student skills in handling food applications or websites. The pandemic is

making university student limit their movement especially those that are on campus thus, purchasing food online could lead to the option of buying food. Moreover, the system in online food enables the consumers to track their food at a specific time until the order is delivered. The online food system gives real-time tracking, and this involves trust that will be asked in the survey question. Trust also involves the safety of using online payment methods.

In the questionnaire, students will be questioned about their understanding and factors that influenced students towards the online food system. In what factors could lead university students to purchase food online. The survey will investigate the significance of Covid-19 influencing students buying food online.

For the concept of this questionnaire, there will be multiple choice questions and Likert scale questions. For multiple-choice questions, respondents can choose one answer based on personal relevance. In the Likert scale question, respondents can answer based on scale ranges from 1 until 5 where 1 means strongly agrees and five means strongly disagree.

### 3.5 Instrument Method

This survey question was prepared for university students in the east of Malaysia. The questionnaire was created using data from prior studies that were linked to or like this one. The questionnaire was created using issue statements and literature analysis of university students' socio-demographic variables. The questionnaire for this study consisted of the following sections:

Section A: In this section, the question is to identify the demographic of the respondents. There were 4 questions in this section on demographic information on the participation of university students in the east of Malaysia related to the study which includes gender, age, race, marital status, education level, the state of their university and monthly income.

Section B: In this section, the question is divided into three parts which were Knowledge, Attitude and Perception:

- i. Part A: This section consists of 4 questions to find out the knowledge of consumers using an online food ordering system.
- ii. Part B: This section consists of 3 questions to observe respondents' attitude toward the online food ordering systems.

- iii. Part C: This section consists of 10 Likert-scale questions to perceive consumer perception and preference toward online food ordering systems.

For university students' perceptions of online meal ordering services, the poll used a five-point Likert scale:

1: Strongly Agree, 2: Agree, 3: Neutral, 4: Disagree, 5: Strongly Disagree.

### **3.6 Pilot Study**

Before to be used in this study, the questionnaire was tested. To get the best possible responses and obtain the desired outcome, the test was conducted by sending the questionnaire to university students in November 2022. The questionnaire has received about 35 responses, which is sufficient to determine the questionnaire's viability. The Statistical Package for Social Science Software (SPSS) was used to analyse the data and determine whether the questionnaire was acceptable and easy to comprehend before it was given to university students in Kelantan, Terengganu, and Pahang in Malaysia's east.



### **3.7 Data Analysis**

The practice of interpreting or evaluating data by applying analytical and statistical methods to analyse and prove the data's accuracy was known as data analysis. Examining frequency and descriptive statistics, as well as encoding and inputting data, are all methods for cleaning data. Descriptive statistics such as mean, frequency, percentage, and standard deviation could be used to analyse data using the SPSS application. The reliability test, normalcy test, Spearman correlation analysis, and factor analysis were all used in this work as inferential statistical analysis.

#### **3.7.1 Descriptive analysis**

The essential aspect of the data was described using descriptive analysis in this study. It provides basic summaries of data that are straightforward to analyse and comprehend. To compute the mean of the nominal data acquired during this inquiry, descriptive data was required. This is used to measure the frequency and percentage of university students from various demographic backgrounds in Malaysia's east. The collected data were analysed based on university students' engagement, knowledge, attitude, and perceptions of the online ordering system.

### 3.7.2 Reliability test

The fraction of systematic variation in scale was determined using a reliability test. Cronbach's alpha, which is often used to quantify internal consistency, was employed in this study to determine the reliability of the data using SPSS statistics. This technique is used in a survey with many Likert scale items to create a scale and identify a trustworthy scale. Cronbach's alpha reliability coefficient usually ranged from 0 to 1. The better the internal reliability of the variables in the scale, the closer the coefficient is to 1.0. Table 3.1 has alpha coefficients larger than 0.90 for perception variables. If the Cronbach Alpha values are at least 0.9, the reliable variables are accepted (Taber, 2018).

Table 3.1:Reliability Test

Constructs	No of items	Pilot Study (Cronbach Alpha)
Perception	10	0.964

(Source: Survey, 2022)

### 3.7.3 Factor Analysis

The method of analysing correlations between variables to obtain underlying factors driving data values for a wide range of variables is known as factor analysis. This strategy will aid in the reduction of a big number of variables to a small number of components that explain the variety of factors in this study. The impact of Covid-19 on food online purchase behaviour among university students in Malaysia's east was

investigated using factor analysis. The Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy and Bartlett's Test of Sphericity were used to determine the sample adequacy and correlation between all variables before doing the factor analysis. The fraction of variation between variables that could be related to underlying causes was measured using the KMO test, while the strength of the correlation was determined using Bartlett's tests of Sphericity.

Factor analysis was reasonable for this study if the KMO value was  $> 0.6$  and Bartlett's Test of Sphericity was  $0.000 < 0.05$  (Hadi, 2016). Factor loadings between 0.3 and 0.4 should be suppressed since they contribute little to factor variance, but factor loadings greater than 0.4 show a stronger relationship with the variables (Kalender, 2019)

### **3.8 Chapter Summary**

This chapter covers the study design, demographics and distribution, research instruments, data collection, and analysis techniques. This research is a quantitative data-based evaluation. To answer the study questions, the data collected using questionnaire survey instrument was evaluated and processed using SPSS software.

## CHAPTER 4

### RESULTS AND DISCUSSION

#### 4.1 Introduction

The outcomes and discussion of the study were described in this chapter for this study. A total of 130 university students from Kelantan, Terengganu, and Pahang participated in the study. The data gathered in this study was used for further analysis. The analysis utilised addresses the study's goals, which include determining the frequency of online food purchases among university students during Covid-19 and determining the characteristics that influence university student online food shopping behaviour.

#### 4.2 Demographic Profile of University Students in the East Coast of Peninsula Malaysia.

The demographic profile of university students in the east of Malaysia, which includes Kelantan, Terengganu, and Pahang, was analysed using descriptive analysis to describe their socio-demographic information. Gender, age, race, marital status,

educational level, student's university, and monthly income are just a few examples. According to table 4.1, it shows the majority of university students who participated in the survey were female with 91 people (70%) while male respondents were 39 people (30%). Next, the age of university students is mostly 20 – 25 years old which is 91 people (70%) while the remaining 3 are 19 or under with 7 people (5.4%), 26 – 30 years old with 19 people (14.6) and 13 people age 31 and above with 10%. The race of university students participating in the survey is majority Malays with 125 people (96.2) followed by Chinese 3 people (2.3%) and Indians 2 people (1.5%). The marital status of university students shows that 115 people are single (88.5%) and another 15 people are married (11.5%).

Next, the education level for most university students comes from an Undergraduate (Bachelor's Degree) background with 67 people (51.5%). The remaining comes from SPM with 7 people (5.4), STPM/ A-Level/ Diploma/ Matriculation with 54 people (41.5%) and Postgraduate (Master's Degree, PHD) with 2 people (1.5%). As stated in the research, this survey is conducted to university students in the east of Malaysia. Thus, the result shows that Kelantan and Terengganu have the same amount of people participating which is 50 people (38.5%) and Pahang with 30 people (23.1%). The majority monthly income of university students are below than RM1000 which is 67 people (51.5%) while the other income is RM1000 – RM3000 with 52 people (40.0%), RM3000 – RM 5000 with 9 people (6.9), and more than RM5000 is 2 people (1.5%).

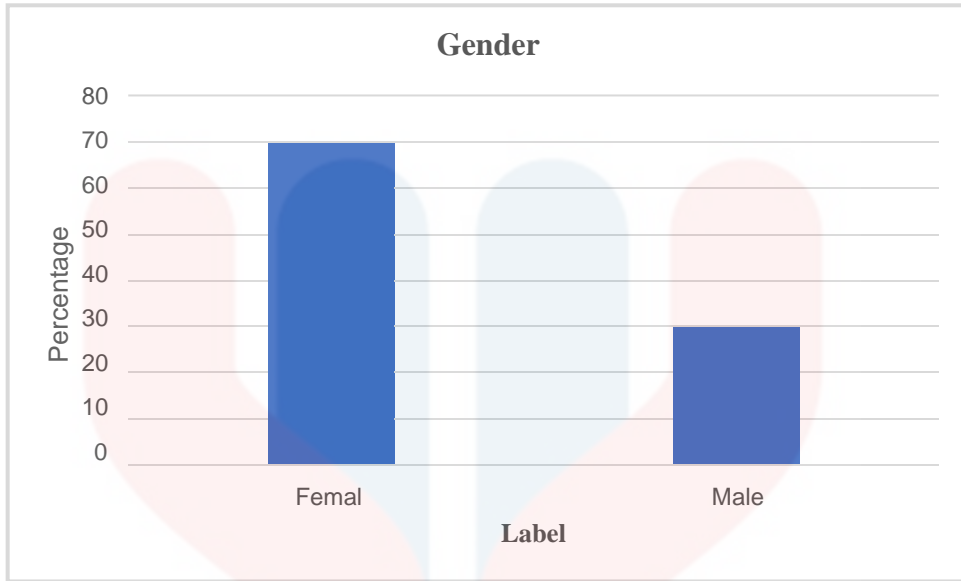


Figure 4.1: Gender

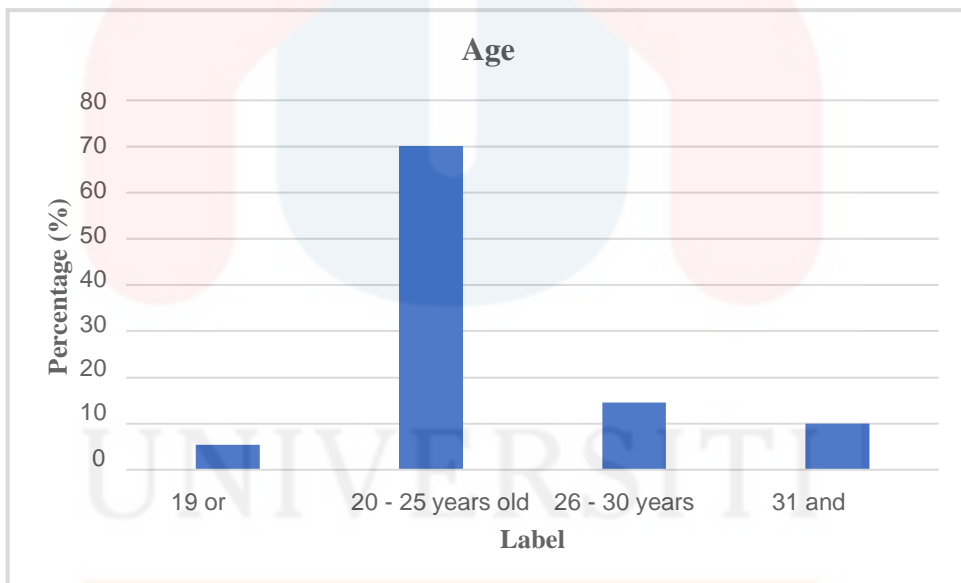


Figure 4.2: Age

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Figure 4.3: Race

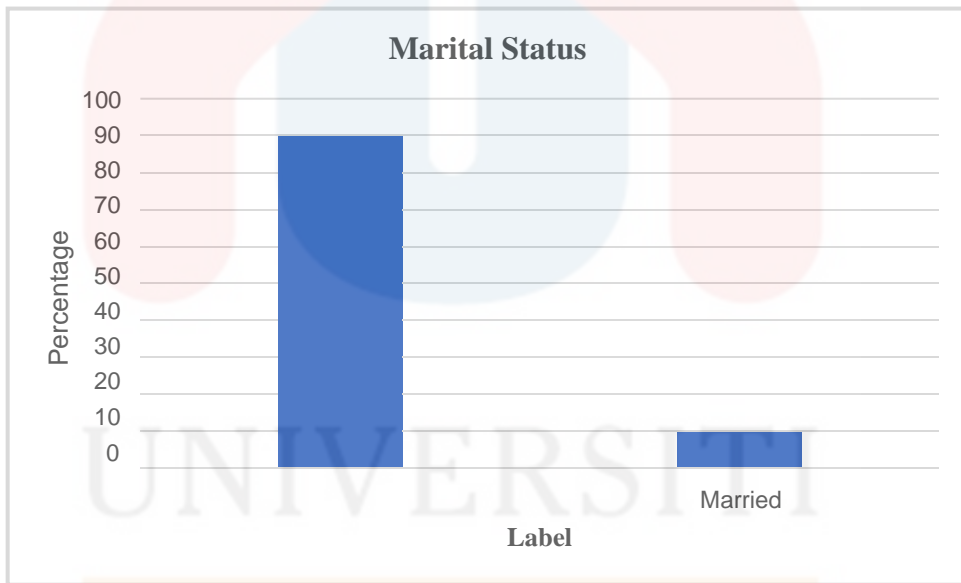


Figure 4.4: Marital status

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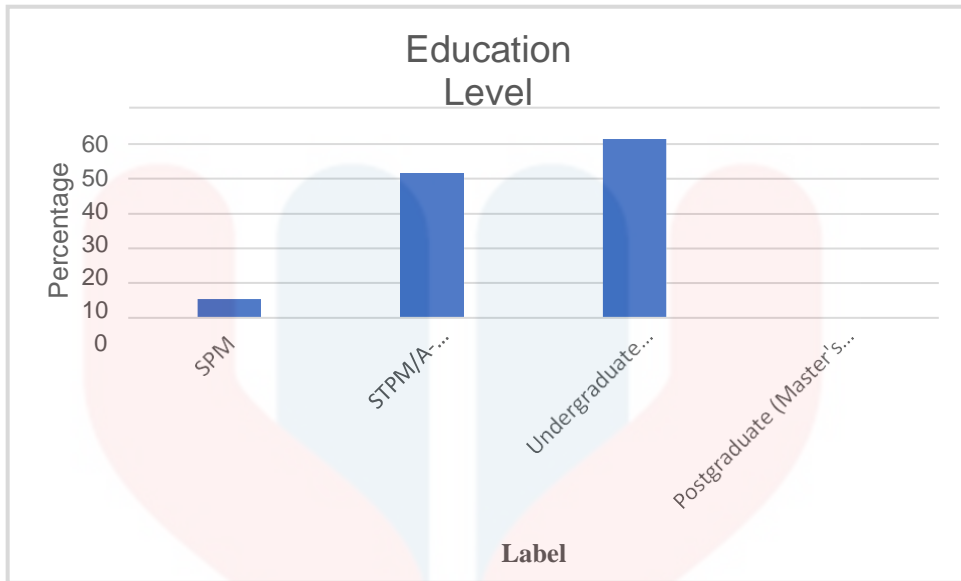


Figure 4.5: Education level

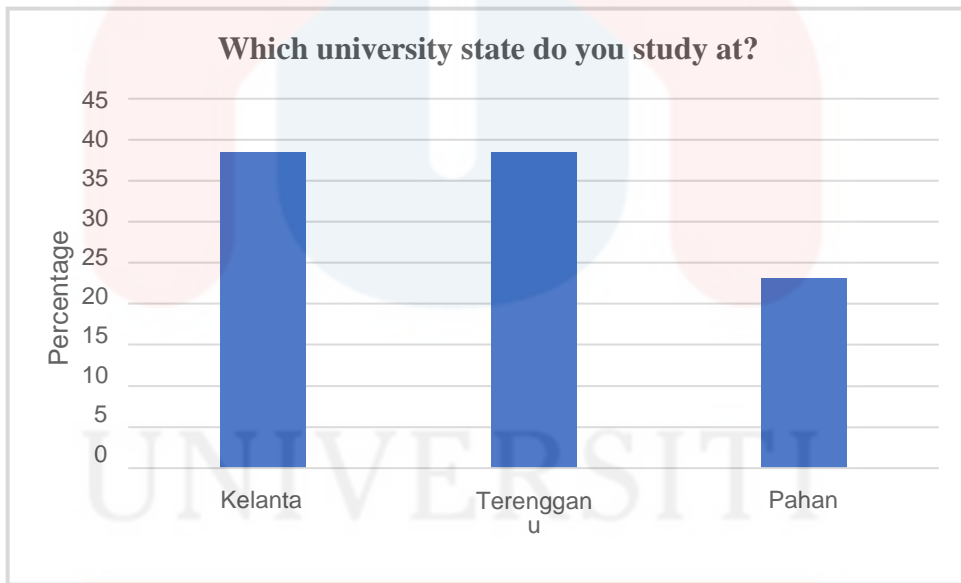


Figure 4.6: State of university

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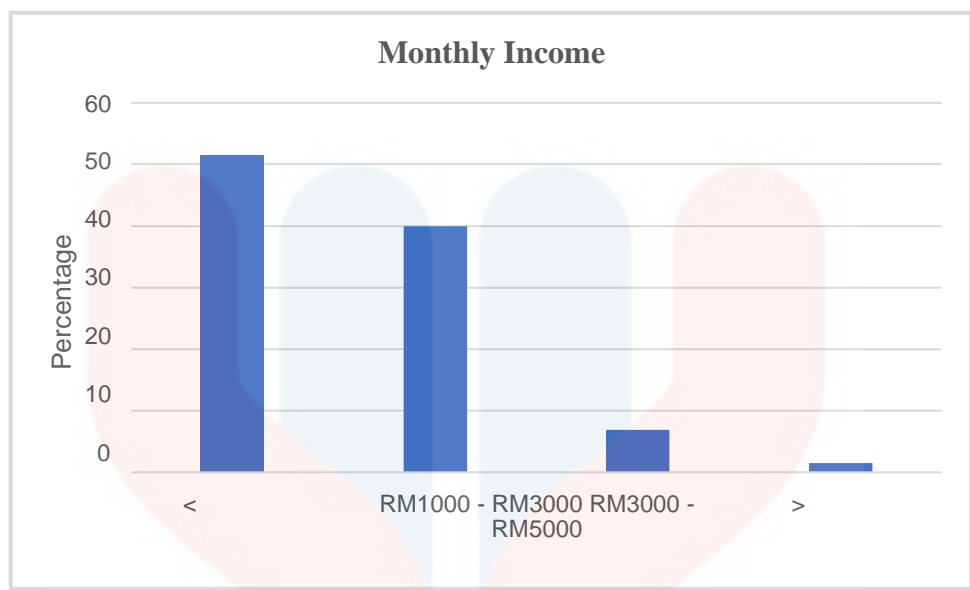


Figure 4.7: Monthly income

Table 4.1: Demographic profile of University Students in the East of Malaysia.

Variables	Frequency	Percentage %
<b>Gender</b>		
Female	91	70.0
Male	39	30.0
<b>Age</b>		
19 or under	7	5.4
20 – 25 years old	91	70.0
26 – 30 years old	19	14.6
31 and above	13	10.0
<b>Race</b>		
Malays	125	96.2
Chinese	3	2.3
Indians	2	1.5
Other	-	-
<b>Marital status</b>		
Single	115	88.5
Married	15	11.5
<b>Education Level</b>		
PMR	-	-

SPM	7	5.4
STPM/A-Level/Diploma/Matriculation	54	41.5
Undergraduate (Bachelor's Degree)	67	51.5
Postgraduate (Master's Degree, PHD)	2	1.5
<b>Which university state do you study at?</b>		
Kelantan	50	38.5
Terengganu	50	38.5
Pahang	30	23.1
<b>Monthly income</b>		
<RM1000	67	51.5
RM1000 – RM3000	52	40.0
RM3000 – RM5000	9	6.9
>RM5000	2	1.5

(Source: Survey, 2022)

#### **4.3 The Frequency of Online Food Purchasing Among University Students in the East Coast of Peninsula Malaysia.**

For this study, the first objective was to evaluate the frequency of online food purchasing among university students during Covid-19. Table 4.3 displays the mean score and standard deviation of university students, with the mean score separated into three categories: low (1.0 - 2.33), moderate (2.34 - 3.66) and high (4.0 - 3.66). (3.67 - 5.0).

Firstly, the mean score for the question “How frequently do you purchase food online before the Covid-19 pandemic?” with (M = 4.27) that conclude (8.5%) purchase a few times a week, (17.7%) purchase two or three times a week, (29.2%) purchase a few times in a month, (27.7%) purchase once a year and (16.9%) had never purchase food

online before the pandemic. This shows that university students purchasing and using the online food ordering system before the pandemic is moderate. They are likely to use the apps as they could easily went to dine in at the restaurant without having the thought of pandemic.

Next. The mean score for the question “How frequently do you purchase food online during the Covid-19 pandemic?” with ( $M = 3.60$ ) which consist of (1.5%) purchasing food daily, (21.5%) purchase a few times a week, (23.1%) purchase two or three times a week, (31.5%) purchase a few times in a month, (13.8%) purchase once a year and a total of (8.5%) had never purchase food online during the pandemic. This shows that university students are often to use online food ordering systems during the Covid-19 pandemic. This could be because the factor of they are afraid of the pandemic. Also, they could be felt not safe by dining in at the restaurant with all the SOP measures. The SOP that are compulsory to be implemented at every restaurant also could lead to the higher purchase of online food ordering systems during the pandemic.

Furthermore, the mean score for the question “During Covid-19 pandemic, how often do you dine at the restaurant?” with ( $M = 3.88$ ) with (3.1%) daily, (6.9%) a few times a week, (26.2%) two or three times in a month, (40.8%), a few times in a month, (9.2%) once a year and a total of (13.8%) had never dined in at restaurant during the pandemic. This shows that a majority university of student dining in at the restaurant in two- or three-times months. This situation results in difficulties for university students to buy food online. In order to use the system, having a strong internet connection is very

important thus the factor that they cant purchase online could be because most of the universities have financial problems so they cant afford to purchase internet data.

Table 4.2: The Frequency of Online Food Purchasing Among University Students.

Statement	Percentage						Mean	S. D	Level
	1	2	3	4	5	6			
How frequently do you purchase food online before the Covid-19 pandemic?	-	8.5	17.7	29.2	27.7	16.9	4.27	1.186	High
How frequent do you purchase food online during the Covid-19 pandemic?	1.5	21.5	23.1	31.5	13.8	8.5	3.60	1.249	High
During Covid-19 pandemic, how often do you dine at the restaurant?	3.1	6.9	26.2	40.8	9.2	13.8	3.88	1.207	High

(Source: Survey, 2022)

#### 4.4 The Factors that Influence University Student towards Online Food Purchasing Behavior.

For the second objective of this study is to identify the factors that influence university student online food purchasing behaviour. According to Table 4.3, shows the mean score and standard deviation on the perception of university students towards food online purchasing with the mean score classified into three categories: low (1.0 - 2.33), moderate (2.34 - 3.66) and high (4.0 - 3.66). (3.67 - 5.0).

Table 4.3: The Factors that Influence University Student towards Online Food Purchasing Behavior.

Statement	Percentage (%)					Mean	S. D	Level
	1	2	3	4	5			
I get on-time delivery by purchasing food through online delivery application.	7.7	24.6	29.2	23.8	14.6	3.13	1.170	Moderate
It is easy to choose and make comparison with other restaurant/application while ordering online.	10.0	22.3	30.0	17.7	20.0	3.15	1.260	Moderate
I am likely to be influenced by offers available on food apps (eg: free delivery/promo).	16.9	26.9	15.4	20.8	20.0	3.00	1.403	Moderate
Online food ordering takes less time to purchase.	9.2	25.4	23.8	26.2	15.4	3.13	1.222	Moderate
During Covid-19 pandemic, I feel more safe and secure to purchasing food online.	16.9	24.6	20.0	20.8	17.7	2.97	1.360	Moderate
Purchasing food online protects me from being exposed to the Covid-19 virus.	16.9	25.4	20.8	20.0	16.9	2.94	1.348	Moderate
I am satisfied with content available through online ordering application.	6.9	30.0	24.6	32.3	6.2	3.00	1.074	Moderate
I am satisfied with the quality of food delivered using online delivery application.	10.0	32.3	21.5	26.2	10.0	2.93	1.179	Moderate
I did not face any problems (issues) when using the online portals.	3.8	25.4	30.0	30.8	10.0	3.17	1.045	Moderate
I am satisfied with the overall process of online ordering of food.	10.0	32.3	20.0	26.2	11.5	2.96	1.206	Moderate

(Source: Survey, 2022)

#### 4.4.1 The Correlation Matrix

The correlation coefficient is the next result of the analysis. A correlation matrix is a rectangular array of data that shows the correlations between one variable and all of the other variables in the study. Because the linear relationship between a factor and itself will always be 1, the correlation matrix's main diagonal is filled with 1s. The correlation coefficients are the same above and below the primary diagonal. The correlation matrix's determinant is shown at the bottom of the table.

Table 4.4: The Correlation Matrix

		P1	P2	P3	P4	P5	P6	P7	P8	P9	P10
Correlation	P1	1.000	.806	.703	.714	.678	.677	.757	.646	.735	.744
	P2	.806	1.000	.833	.747	.748	.725	.795	.731	.709	.813
	P3	.703	.833	1.000	.673	.755	.733	.740	.740	.655	.801
	P4	.714	.747	.673	1.000	.719	.663	.719	.694	.655	.707
	P5	.678	.748	.755	.719	1.000	.865	.779	.781	.608	.811
	P6	.677	.725	.733	.663	.865	1.000	.738	.748	.584	.790
	P7	.757	.795	.740	.719	.779	.738	1.000	.740	.668	.801
	P8	.646	.731	.740	.694	.781	.748	.740	1.000	.669	.843
	P9	.735	.709	.655	.655	.608	.584	.668	.669	1.000	.730
	P10	.744	.813	.801	.707	.811	.790	.801	.843	.730	1.000

a. Determinant = 1.614E-005

#### 4.4.2 Kaiser Meyer Olkin (KMO) and Barlett’s Test

The KMO determines the sampling adequacy, which should be greater than 0.5 in order to run an justifiable factor analysis. The KMO value is 0.949, as seen in the table below. When the sample size is less than 50, Anastasiadou (2011) agrees that factor analysis is unacceptable. Anastasiadou (2011) recommends a minimum of 0.5 (almost acceptable), an acceptable range of 0.7-0.8, and an excellent range of 0.9. Bartlett's test is another indicator of the relationship between variables across variables. In this experiment, the null hypothesis that the correlation coefficient is an identity matrix is tested. The null hypothesis is considered to be rejected. The Bartlett's test of sphericity is significant, as evidenced by the fact that its related probability is smaller than 0.05, as shown in the same table. This indicates that the reliability test is not the same as the identity matrix.

Table 4.5:KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.	.949
Approx. Chi-Square	1377.454
Bartlett's Test of Sphericity df	45
Sig.	.000

### 4.4.3 Total Variance Explained

The following item displays all of the factors that may be derived from the study, along with their eigenvalues, percent of variance associated to each component, and cumulative variance of the factor and prior factors. The first factor, as indicated in the table below, accounts for 76.053 percent of the variation, while the others are inconsequential.

Table 4.6: Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cummulative &	Total	% of Variance	Cummulative %
<b>1</b>	7.605	76.053	76.053	7.605	76.053	76.053
<b>2</b>	.569	5.691	81.744			
<b>3</b>	.366	3.661	85.405			
<b>4</b>	.340	3.398	88.803			
<b>5</b>	.293	2.933	91.736			
<b>6</b>	.244	2.444	94.180			
<b>7</b>	.194	1.943	96.123			
<b>8</b>	.137	1.372	97.495			
<b>9</b>	.127	1.274	98.768			
<b>10</b>	.123	1.232	100.000			

Extraction Method: Principal Component Analysis.



#### 4.5 Analysis of the factors

**I get on-time delivery by purchasing food through online delivery application:**

According to Table 4.3, 29.2 percent of respondents feel that ordering meals using an online delivery app guarantees on-time delivery, while just 7.7% disagree. The average Likert scale score is calculated by multiplying each frequency by the Likert scale score, which ranges from 5 to 1 (strongly agree to strongly disagree), and then dividing the total score by the sample size, which is 130. The better the agreement with the variables, the higher the average scores.

**It is easy to choose and make comparison with other restaurants/application while**

**ordering online:** According to the percentage values in Table 4.3, 20.0% of respondents strongly agree with the statement "It is easy to choose and compare other restaurants/applications while ordering online," whereas 10.0% disagree and 30.0% are neutral with the statement given.

**I am likely to be influenced by offers available on food apps (eg: free delivery/promo):** Table 4.3 shows that 20.0% of the respondent agree with the statement

"I am likely to be influence by offers accessible on food apps (eg: free delivery/promo)," whereas 10.0% disagree and 30.0% are neutral with the statetment.

**Online food ordering takes less time to purchase:** Results on table 4.3 shows that 15.4% of the respondents strongly agree that "Online food ordering takes less time to purchase", 26.2% respondents agree with the statement, 23.8% neutral, 25.4% disagree and 9.2% strongly disagree with the statement. The average score 3.13% shows that online shopping takes less time to purchase as compare to traditional shopping.

**During Covid-19 pandemic, I feel more safe and secure to purchasing food online:** Results on table 4.3 shows that 17.7% of the respondents strongly agree that "During Covid-19 pandemic, I feel more safe and secure to purchasing food online", 20.8% respondents agree with the statement, 20.0% neutral, 24.6% disagree and 16.9% strongly disagree with the statement. The average score 2.97% shows that the respondents feel more safe and secure to purchase food online during the pandemic.

**Purchasing food online protects me from being exposed to the Covid-19 virus:** Results on table 4.3 shows that 16.9% of the respondents strongly agree that "Purchasing food online protects me from being exposed to the Covid-19 virus", 20.0% respondents agree with the statement, 20.8% neutral, 25.4% disagree and 16.9% strongly disagree with the statement. The average score 2.94% shows that the respondents feel more safe and secure to purchase food online during the Covid-19 pandemic.

**I am satisfied with content available through online ordering application:** Results on table 4.3 shows that 6.2% of the respondents strongly agree that “I am satisfied with content available through online ordering application”, 32.3% respondents agree with the statement, 24.6% neutral, 30.0% disagree and 6.9% strongly disagree with the statement. The average score 3.00% shows that the respondents feel more safe and secure to purchase food online during the Covid-19 pandemic.

**I am satisfied with the quality of food delivered using online delivery application:** Results on table 4.3 shows that 10.0% of the respondents strongly agree that “I am satisfied with the quality of food delivered using online delivery application”, 26.2% respondents agree with the statement, 21.5% neutral, 32.3% disagree and 10.0% strongly disagree with the statement. The average score 29.3% shows that the respondents feel more safe and secure to purchase food online during the Covid-19 pandemic.

**I did not face any problems (issues) when using the online portals:** Results on table 4.3 shows that 10.0% of the respondents strongly agree that “I did not face any problems (issues) when using the online portals”, 30.8% respondents agree with the statement, 30.0% neutral, 25.4% disagree and 3.8% strongly disagree with the statement. The average score 31.7% shows that the respondents feel more safe and secure to purchase food online during the Covid-19 pandemic.

**I am satisfied with the overall process of online ordering of food:** Results on table 4.3 shows that 11.5% of the respondents strongly agree that “I am satisfied with the overall

process of online ordering of food”, 26.2% respondents agree with the statement, 20.0% neutral, 32.3% disagree and 10.0% strongly disagree with the statement. The average score 2.96% shows that the respondents feel more safe and secure to purchase food online during the Covid-19 pandemic.

#### **4.6 Chapter Summary**

This chapter summarise that the results of this study are determined by using the descriptive analysis and factor analysis of the participation and perception of university towards online food purchasing behaviour where knowledge, attitude and perception as independent variables. The results show that the perception of university students is the most influential factor influencing their online food purchasing behaviour where the percentage of variance is 76.053% while most of the factor loading was significant for this study.

## CHAPTER 5

### CONCLUSIONS AND RECOMMENDATIONS

#### 5.1 Conclusion

In this study, there were two objectives identified namely to evaluate the frequency of online food purchasing among university students during Covid-19 and to identify the factors that influence university student online food purchasing behaviour.

All the objectives of this study were achieved. The first objective was achieved when the variable indicates a high mean score where the mean score for the frequency of online food purchasing among university students is between mean score corresponding to 3.67-5.0. Also there was a significant value between the relationship of knowledge and perception toward university students in online food purchasing behaviour during the Covid-19 pandemic. Factor Analysis was used to investigate this objective in the research.

Consumers are still concerned about the quality of application security utilised in online food delivery, according to this study. The issue at hand is one of personal

information. As a result, online food app service providers must strengthen customer information security and educate their users on a regular basis. It turns out that people prefer this service since they wish to utilise the application themselves.

In conclusion, the Covid-19 pandemic give an impact on the online purchasing behaviour among university students in the east of Malaysia. Moreover, this research study helps to increase student perception on online ordering systems and enhance the participation of university students in using online food ordering systems in this pandemic. Thus, this study indicates that all factors such as knowledge, attitude and perception influence the university student behaviour to purchase using online food ordering systems.

## **5.2 Limitation of Study**

This study includes limitations, such as the fact that the results were acquired from respondents at a university in Malaysia's east. It is hoped that by conducting additional research in other situations, the study will yield more thorough results and new perspectives. This study did not consider the respondents from any other consumer. The expected number of respondents is 100 people. Thus, a precise result can be obtained if more than 100 respondents were involved in the study. Moreover, some respondents might have given biased answers that could give an impact on the findings of the studies.

The time limitation for this study is also affected as it will be done in just a few months and might affect the overall result obtained.

### **5.3 Recommendations**

Due to the limited time and scope of this study, numerous hypotheses concerning the topic were investigated, but only from a broad perspective in order to provide readers with a comprehensive picture. As a result, if additional research is needed, an in-depth study should be done to meet the research objective. Additional recommendations will be made based on the findings in order to improve future research. As a suggestion, the study may diversity the way of surveying university students, which would help to improve the study's sample size. Furthermore, the sample size might be enhanced by delivering surveys to university students in other states with a large number of students who may use online systems to purchase their food. As a result, if future research is conducted among university students that purchase food online in various states, the results will be various and more accurate.

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## APPENDICES

### APPENDIX A Questionnaire



Dear respondent,

I am doing academic research entitled:

**The impact of Covid-19 on food online purchasing behaviour among university students in the east of Malaysia.**

Congratulations for being chosen as a participant in this study. I'm doing a survey on the impact of Covid-19 on food online purchase behaviour among university students as part of my final thesis. Kindly be informed that all responder information and responses are kept private and will only be used only for academic purposes. We appreciate your feedback and cooperation in responding to this survey. Please read all of the instructions for each part attentively and honestly answer each question. There is no correct or incorrect response. All responses will be kept private and confidential and used solely for the purposes of this academic study. Thank you very much for your cooperation.

Sincerely,

*Arin Sofea binti Nik Shamsudin*

Faculty of Agro-Based Industry,

University Malaysia Kelantan,

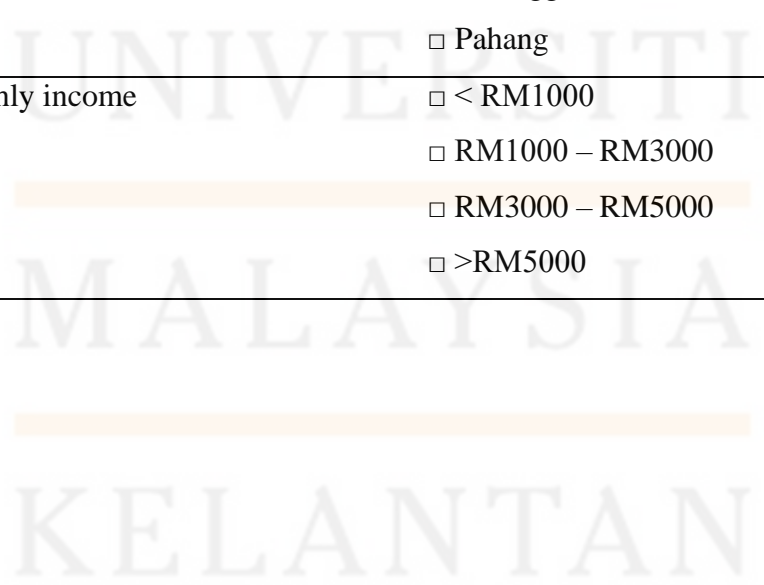
17600 Jeli, Kelantan

email: sofea.f18b0019@siswa.umk.edu.my

**SECTION A: DEMOGRAPHIC PROFILE**

Please answer all question and tick (/) to the appropriate answer.

1.	Gender	<input type="checkbox"/> Male <input type="checkbox"/> Female
2.	Age	<input type="checkbox"/> 19 or under <input type="checkbox"/> 20 – 25 years old <input type="checkbox"/> 26 – 30 years old <input type="checkbox"/> 31 and above
3.	Race	<input type="checkbox"/> Malay <input type="checkbox"/> Chinese <input type="checkbox"/> Indians <input type="checkbox"/> Other
4.	Marital status	<input type="checkbox"/> Single <input type="checkbox"/> Married
5.	Educational level	<input type="checkbox"/> PMR <input type="checkbox"/> SPM <input type="checkbox"/> STPM/A-Level/Diploma/Matriculation <input type="checkbox"/> Undergraduate (Bachelor’s Degree) <input type="checkbox"/> Postgraduate (Master’s Degree, PHD)
6.	Which university state do you study at?	<input type="checkbox"/> Kelantan <input type="checkbox"/> Terengganu <input type="checkbox"/> Pahang
7.	Monthly income	<input type="checkbox"/> < RM1000 <input type="checkbox"/> RM1000 – RM3000 <input type="checkbox"/> RM3000 – RM5000 <input type="checkbox"/> >RM5000



## SECTION B

### PART A: KNOWLEDGE

This section is to find out the knowledge of consumer using online food ordering system.

Please answer all question and tick (/) to the appropriate answer.

1.	Have you ever heard about online food ordering system?	<input type="checkbox"/> Yes <input type="checkbox"/> No
2.	Are you familiar with the food delivery application logo below?	<input type="checkbox"/> Grabfood <input type="checkbox"/> Foodpanda <input type="checkbox"/> Honestbee <input type="checkbox"/> Dahmakan <input type="checkbox"/> Halo <input type="checkbox"/> Hungry
3.	Have you ever purchased food through online delivery application?	<input type="checkbox"/> Yes <input type="checkbox"/> No
4.	Do most of your nearby restaurant uses online delivery application?	<input type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> Don't know



**PART B: ATTITUDE**

Attitude - This section is to observe respondents attitude toward online food ordering system.

Please answer all question and tick (/) to the appropriate answer.

1.	How frequently do you purchase food online before the Covid-19 pandemic?	<input type="checkbox"/> Daily <input type="checkbox"/> A few times a week <input type="checkbox"/> Two or three times a month <input type="checkbox"/> A few times in a month <input type="checkbox"/> Once a year <input type="checkbox"/> Never
2.	How frequent do you purchase food online during the Covid-19 pandemic?	<input type="checkbox"/> Daily <input type="checkbox"/> A few times a week <input type="checkbox"/> Two or three times a month <input type="checkbox"/> A few times in a month <input type="checkbox"/> Once a year <input type="checkbox"/> Never
3.	During Covid-19 pandemic, how often do you dine at the restaurant?	<input type="checkbox"/> Daily <input type="checkbox"/> A few times a week <input type="checkbox"/> Two or three times a month <input type="checkbox"/> A few times in a month <input type="checkbox"/> Once a year <input type="checkbox"/> Never

**PART C: PERCEPTION**

This section is to perceive consumer perception and preference toward online food ordering system.

Please tick on the questionnaires honestly. Grading scale is shown below.

1	2	3	4	5
Strongly agree	Agree	Neutral	Disagree	Strongly disagree

**Statement:**

- |     |          |          |          |          |          |
|-----|----------|----------|----------|----------|----------|
|     | <b>1</b> | <b>2</b> | <b>3</b> | <b>4</b> | <b>5</b> |
| 1.  |          |          |          |          |          |
| 2.  |          |          |          |          |          |
| 3.  |          |          |          |          |          |
| 4.  |          |          |          |          |          |
| 5.  |          |          |          |          |          |
| 6.  |          |          |          |          |          |
| 7.  |          |          |          |          |          |
| 8.  |          |          |          |          |          |
| 9.  |          |          |          |          |          |
| 10. |          |          |          |          |          |



## APPENDIX B Turnitin Result

Thesis Arin Sofea			
ORIGINALITY REPORT			
<b>23%</b>	<b>17%</b>	<b>5%</b>	<b>15%</b>
SIMILARITY INDEX	INTERNET SOURCES	PUBLICATIONS	STUDENT PAPERS
PRIMARY SOURCES			
<b>1</b>	Submitted to Anglia Ruskin University Student Paper		<b>1%</b>
<b>2</b>	Submitted to Asia Pacific University College of Technology and Innovation (UCTI) Student Paper		<b>1%</b>
<b>3</b>	Parameshwar Ganapathi, Emad Ahmed Abu- Shanab. "Customer Satisfaction with Online Food Ordering Portals in Qatar", International Journal of E-Services and Mobile Applications, 2020 Publication		<b>1%</b>
<b>4</b>	Submitted to Cyprus International University Student Paper		<b>1%</b>
<b>5</b>	Submitted to Universiti Teknologi MARA Student Paper		<b>1%</b>
<b>6</b>	Submitted to University of Portsmouth Student Paper		<b>1%</b>
<b>7</b>	Submitted to The Hong Kong Polytechnic University Student Paper		<b>1%</b>

MALAYSIA

KELANTAN