Impact of Covid-19 Outbreak on Consumers' Grocery Purchasing in East Coast of Malaysia

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DECLARATION

I hereby declare that the work embodied in this report is the result of the original research except the excerpts and summaries that I have made clear of the sources.

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ABSTRACT

Covid-19 pandemic has a great impact on a wide range of economical and industrial sector which includes the grocery purchasing among the consumers in East Coast of Malaysia. Therefore, this survey was carried out to investigate the effects of Covid-19 on the frequency of grocery purchasing among Malaysian people with different income status and household size, and to examine the changes in the pattern of grocery shopping among Malaysian consumers. The questionnaire was constructed based on KAP Model and was distributed through online medium to 207 respondents in Kelantan, Pahang and Terengganu. Findings were analyzed through Statistical Package for the Social Science (SPSS). The reliability of the questionnaire was identified by using Cronbach's Alpha test and the result was 0.725. Descriptive analysis was used to analyze demographic profile of respondent. Chi-Square Test revealed that there are relationships between household size and income status of consumers with their attitude and practices of grocery purchasing during the Covid-19 outbreak. From this study, the most significant factor that influence the consumers in their frequency of grocery purchasing during Covid-19 outbreak turned out to be the knowledge factor which accounted the highest percentage of variance explained. Understanding the impact of Covid-19 especially in terms of consumers' grocery purchasing would help food and grocery items producers in the supply chain to make innovation and improvement on their business in order to adapt to the changes made by the consumers due to the new norms during the Covid-19 outbreak.

Keywords: *Covid-19 outbreak, frequency, grocery purchasing, consumer, impact*

Kesan Wabak Covid-19 terhadap Pembelian Barangan Runcit Dalam

Kalangan Pengguna di Kawasan Pantai Timur Malaysia

ABSTRAK

Pandemik Covid-19 memberi impak yang besar kepada pelbagai sektor ekonomi dan perindustrian termasuk pembelian barangan runcit di kalangan pengguna di Pantai Timur Malaysia. Oleh itu, tinjauan ini dijalankan untuk menyiasat kesan Covid-19 terhadap kekerapan pembelian barangan runcit dalam kalangan rakyat Malaysia yang mempunyai status pendapatan dan saiz isi rumah yang berbeza, dan untuk mengkaji perubahan dalam corak membeli-belah runcit dalam kalangan pengguna di kawasan Pantai Timur, Malaysia. Soal selidik dibina berdasarkan Model KAP dan diedarkan melalui medium dalam talian kepada 207 responden di Kelantan, Pahang dan Terengganu. Dapatan dianalisis melalui *Statistical Package for the Social Science* (SPSS). Kebolehpercayaan soal selidik dikenal pasti dengan menggunakan ujian Alpha Cronbach dan keputusannya ialah 0.725. Analisis deskriptif digunakan untuk menganalisis profil demografi responden. Ujian Chi-Square mendedahkan bahawa terdapat hubungan antara saiz isi rumah dan status pendapatan pengguna dengan sikap dan amalan pembelian barangan runcit semasa wabak Covid-19. Daripada kajian ini, faktor paling signifikan yang mempengaruhi pengguna dalam kekerapan pembelian barangan runcit semasa wabak Covid-19 ternyata adalah faktor pengetahuan yang menyumbang peratusan varian tertinggi yang dijelaskan. Memahami kesan Covid-19 terutamanya dari segi pembelian barangan runcit pengguna akan membantu pengeluar makanan dan barangan runcit dalam rantaian bekalan membuat inovasi dan penambahbaikan terhadap perniagaan mereka untuk menyesuaikan diri dengan perubahan yang dibuat oleh pengguna berikutan norma baharu. semasa wabak Covid-19.

Kata kunci: *Wabak Covid-19, kekerapan, kesan, pembelian barangan runcit, pengguna*

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LIST OF ABBREVIATIONS AND SYMBOLS

DF	Degree of Freedom
DOSM	Department of Statistics Malaysia
KAP	Knowledge, Attitude and Practice
KMO	Keiser-Meyer-Olkin
MERS-CoV	Middle East Respiratory Syndrome Coronavirus
MOH	Ministry of Health
SARS-CoV	Severe Acute Respiratory Syndrome Coronavirus
SD	Standard Deviation
SPSS	Statistical Package for the Social Sciences
WHO	World Health Organization
N	Population Size
s	Sample Size

CHAPTER 1

INTRODUCTION

1.1 Research Background

The global Covid-19 outbreak, which is an infection caused by a new coronavirus (SARS-CoV-2), is amongst the most major difficulties that the world has faced without prior warning. Covid-19 is not just about a public health problem, but is also an unexpected economic collapse due to the rapid drop in economic growth. The outbreak is creating significant changes in people's social behaviors all over the globe, which will leave lasting scars. Furthermore, the Covid-19 outbreak has raised concerns about food security issues (Hirvonen et al., 2021). The uncertainty about what will happen in the near future, as well as food shopping, and consuming behavior of individuals as a result of the lockdown and social isolation orders, is one of the reasons why the Covid-19 pandemic has resulted in substantial alterations.

Many areas and nations have "locked down" to stop the spread of the virus and infection, including initially Wuhan in China, and countries such as the United States, United Kingdom, Germany, India, Poland, New Zealand and Malaysia. Individuals are just permitted to leave their houses throughout these lockdowns for absolutely required business, such as for important work, health treatment, or the purchase of groceries or necessities. Thus, the tight restriction measure implemented by governments throughout the world raised fears about the availability of food supplies, which encouraged family grocery purchasing and stockpiling behavior.

The discovery of Covid-19 has also had a substantial impact on global food systems at several levels, including farmers, retailers, and consumers (Cranfield, 2020; Qi et al., 2020; Xie et al., 2020). Significantly, as the virus spread, there is a shift in both consumption patterns and consumer behavior (Celimli and Adanacioglu, 2021; Eger et al., 2021; Yuen et al., 2020). This supply chain has been interrupted by the coronavirus issue, resulting in disruptions in food deliveries. Furthermore, the lockdowns implemented in reaction to the Covid-19 outbreak have resulted in mass unemployment, delays in transportation, and instability in demand for and availability of the food (Pantano et al., 2020; Rizou et al., 2020).

1.2 Problem Statement

Movement Control Order (MCO) during Covid-19 pandemic has the potential to disrupt our food supply chain system (Surendan, 2020) and alter our eating patterns. For example, in order to minimize the spread of infection, border and other logistical regulations restricting the movement of goods and people has increased the risk of food shortages due to disrupted supply chains, including those caused by labor shortages.

Since the pandemic, there are many small food business owners and retail shops are affected. This is due to the restricted movement control order and also the fear of going out and having closed contacts with other people (Deloitte,2020) that have made people to not physically going out to buy food and other stuffs at shops anymore, like before. This situation has undoubtedly affected the customers as they will be facing difficulties to obtain their necessities, as well as the physical food store business owners as most of them are relying on their business for their source of income. The problem of unemployment is also significant in Malaysia as many employers have been firing their employees due to the economic and financial instability in an organization. This scenario may also have impact to the grocery purchasing frequency among lower income generators in Malaysia as some of them have lost their source of incomes. Hence, this survey is intended to discover how people in Malaysia purchase their

groceries during this pandemic and does the different income status give effect on their groceries purchasing pattern.

1.3 Hypothesis

H_0: There is no relationship between demographic factor with knowledge, attitude and practices of consumers towards frequency of grocery purchasing in East Coast of Malaysia

H_1: There is a relationship between demographic factor with knowledge, attitude and practices of consumers towards frequency of grocery purchasing in East Coast of Malaysia

1.4 Research Question

The questions that had been constructed were able to assess the consumers' understanding mainly about the impact of Covid-19 specifically in grocery purchasing area. From their answers, it was possible to evaluate whether there is a relationship between the demographic background namely educational level, income status and household size of consumers' with their attitude and practices in grocery purchasing during Covid-19 outbreak. It was also practicable to determine level of knowledge, attitude and practices

towards their frequency of grocery purchasing among consumers during the pandemic. Furthermore, from the answers by respondents would also help in determining the most significant factor influencing their frequency of grocery purchasing.

1.5 Objective of the Study

i) To identify the level of knowledge, attitude and practice towards the impact of Covid-19 outbreak on frequency of grocery purchasing among consumers in East Coast of Malaysia

ii) To investigate the relationship between demographic factors with attitude and practices of consumers towards frequency of grocery purchasing in East Coast of Malaysia

iii) To determine the most significant factor that influence the consumers in their frequency of grocery purchasing during Covid-19 outbreak

1.6 Scope of Study

This study will identify the changes related to consumers' grocery purchasing pattern during the Covid-19 outbreak in Malaysia. These include the changes in frequency of grocery shopping and the shift in the way of purchasing food stuff. The household income status of the respondents will also be observed in order to know if it there is any effect that influence the frequency of grocery purchasing among consumers. The sample that will be observed consist of the head of a household or the one who economically supports a family, who are living in the East Coast of Malaysia. This construction of the questionnaire for this survey will be based on Knowledge, Attitude and Practices (KAP) Model.

1.7 Significance of Study

The findings from study will be useful and will give positive inputs to many parties as those data can be collected for future use for development of similar research studies. Food manufacturers and food based entrepreneurs will also get benefit from this survey as the data can be used for Research and Development (R&D) in their products, can be used to improve their methods of selling their products and also they will be aware about the shift

of food products categories chosen by consumers in Malaysia. Therefore, they can increase their production more on specific products such as non-perishable products like processed or dried food as demanded by the consumers which will help to provide more food with longer shelf life for consumers' consumption, especially during the restricted movement order.

1.8 Limitation of Study

This study is only focusing in the East Coast of Malaysia which includes Kelantan, Pahang and Terengganu, and this study did not consider respondents from any other states other than these three states. So, this study was not enough to conclude and interpret all pattern and changes of consumers in Malaysia in the terms of their grocery purchasing during this Covid-19 outbreak.

Furthermore, there were only 207 respondents obtained for this study that represents the East Coast of Malaysia. A more precise result can be achieved if there are more respondents that participated in this study. Other than that, this study can only be conducted through an online medium, due to the movement control order and not being able to physically distribute this questionnaire to the public to get more respondents.

CHAPTER 2

LITERATURE REVIEW

2.1 Covid-19 Outbreak

Coronavirus disease 2019 (Covid-19) is a disease caused by a novel coronavirus which is now known as Serious Acute Respiratory Syndrome CoronaVirus 2 (SARS-CoV-2; previously known as 2019-nCoV) which was distinct from SARS-CoV and MERS-CoV. It was first detected in Wuhan City, Hubei Province, China, during an outbreak of respiratory illness cases. It was first declared to the World Health Organization (WHO) on December 31, 2019 (Wang et al., 2020) and then the Covid-19 disease was announced as a world health epidemic on January 30, 2020. Covid-19 was clarified a global pandemic by the WHO on March 11, 2020, the first time since H1N1 influenza was declared a pandemic in 2009.

Since the first Covid-19 positive case in Malaysia that was reported on 25th of January 2020 that involved 3 Singaporean Chinese, the number had risen up to 29 cases by the end of February 2020 which mostly involving overseas travelers. Early in March,

Malaysia experienced a massive cluster associated with a three-day religious event attended by nearly 16,000 people, including 1500 non-Malaysians. This cluster was also associated to at least six other cases in Southeast Asia.

On March 16, 2020, the number of positive cases surpassed 553, prompting Malaysia's Prime Minister to declare a Movement Control Order (MCO) under Prevention and Control of Infectious Diseases Act 1988 and the Police Act 1967 (MOH, 2020). To slow the dissemination of Covid-19, social distancing was to be implemented for 14 days (18th March to 31st March 2020). Since March 18, 2020, the government has prohibited citizens from travelling to other states especially the Covid-19 affected countries. On 25th of March 2020, the MCO was prolonged for 14 days to the 14th of April 2020 since the number of positive cases were still comparatively high.

The outbreak of Covid-19 has interrupted the food supply chain due to the lockdown constraint implemented to stop the spread of Covid-19 (Chin, 2020). It also has varying effects on food demand based on consumers' sociodemographic factors which has influenced where and how customers shop and what they buy.

2.2 Grocery Purchasing during Covid-19 Outbreak

Grocery means the food items sold at a store. This Covid-19 pandemic has badly affected so many industries worldwide such as food industries and businesses. At the early stage of lockdown, many restaurants and other food related businesses have been forced to close. Since this pandemic, there are undoubtedly so many food businesses that are affected to the extent where many of them have chosen to close up their restaurants.

In terms of retail grocery prospect, the changes that can be clearly seen during the outbreak are almost all grocery shops and supermarkets having reduced hours or restricting the number of customers in the store at one period, transaction costs associated with on-line purchasing, and others. It is possible that some consumers will keep on buying and stockpile inventories at home for their convenience. Some households may also enhance their home stocks in order to decrease the number of future shopping visits and thus restraining their perceived risk of vulnerability to be infected by the Covid-19 virus (Cranfield, 2020). Other than that, since the restricted movement control order, people have no choice but to cook more at home. This situation has made the people to eat more at home which had led them to buy more groceries per shopping trip.

2.3 Malaysians Income Status

In Malaysia, the household income status of its people can be classified into 3 categories which are Below 40 (B40), Middle 40 (M40) and Top 20 (T20). According to the Department of Statistic Malaysia (DOSM) 2022, B40 groups are those people whose monthly household income range are below than RM4850, M40 groups are people whose monthly household income range are in between RM4850 and RM10, 959 and lastly T20 are people with the monthly household income range is more than RM10, 959 (as shown in Table 1.1). During the pandemic, there are so many cases where employees especially who work in factories have been fired due to economic issues faced by the employers. This situation has made them to lose their source of income and this will definitely give great impact towards their frequency of grocery shopping in their household.

Table 1.1: Monthly Income Range by Household Group

Household Group	Income Range 2019 (RM)	Income Range 2016 (RM)
T20	>10,959	>9,619
M40	4,850 – 10,959	4,360 – 9,619
B40	<4,850	<4,360

Source: DOSM (2022)

In January 2021, the unemployment rate increased by 0.1 percent to 4.9 percent, compared to the past month when the number of unemployed increased by 1.3 percent, or 9.7 thousand people, to 782.5 thousand (DOSM, 2022)

In February 2021, the unemployment rate fell 0.1 % to 4.8 %, compared to January 2021. The number of unemployed fell by 0.6%, or 5.0 thousand people, to 777.5 thousand people (January 2021: 782.5 thousand people). Whereas, compared to the same month the previous year, the rate of unemployment in February 2021 increased by 1.5 percentage points to 3.3 percent from 3.3 percent in February 2020. The number of unemployed rose by 252.3 thousand people (February 2020: 525.2 thousand persons) (as shown in Figure 1).
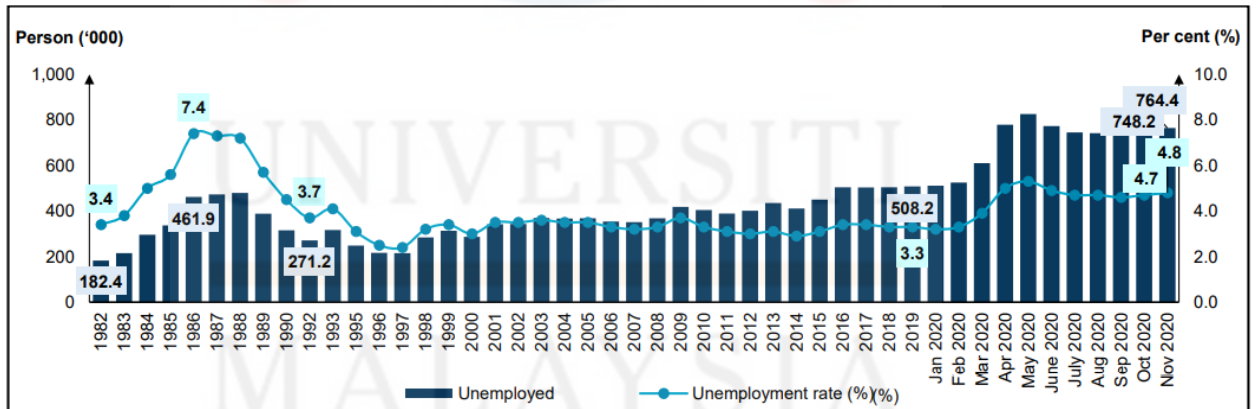
Figure 1.1: Unemployed persons and unemployment rate, 1982 - 2019 and January - November 2020 (Source : DOSM, 2022)

2.4 Government Measure in Tackling Covid-19 Outbreak

Since the first announcement made by Malaysia's Prime Minister regarding the enforcement of MCO in Malaysia, the government has also prescribed some restrictions (Covid-19: Movement Control Order imposed with only essential sectors operating, 2020) Movement Control Order to be compliant by the citizens which are; attendance at mass meetings such as ceremonial, sporting, educational, and cultural activities was forbidden, both places of worship and businesses were temporarily closed, people, however, may still purchase their necessities at malls, markets, grocery stores, and convenience stores, for those who return from abroad, they were needed to undergo health screening for the identification of Covid-19 and to self-isolate, foreign tourists and visitors were prohibited from entering Malaysia, kindergartens, public and private schools, as well as day schools, including boarding schools international schools, tahfiz centres, and other primary, secondary, and pre-university institutions, were all shut, public and higher education colleges, as well as skill training institutes, have been closed, and, public and private buildings were closed except for necessary utilities such as health, safety, defense, retail and food supply.

2.5 Impact of Covid-19

2.5.1 Consumers' Behavior during Lockdown

Before the starting of official lockdown implementation, many government officials and food producers assured the public that the supply chains of supermarkets were operating properly. However, many people started panicking due to the lack of food and supplies. They started to panic buying and buying products such as gloves, staple food, canned food, hand sanitizers and toilet paper in bulk (Mao, 2020).

Panic buying is a typical reaction to fear and uncertainties. Despite the fact that the government had confirmed that supply chains were running fine, panic buying created shortages of numerous items on grocery counters. Obviously, people are strongly influenced by their peers' actions during times of uncertainty (Smith et al., 2007), witnessing others started panic buying worsened the situation. Misleading information and rumors communicated over the internet and SMS messages were also associated to waves of panic purchasing during the SARS pandemic (Ding, 2009).

2.5.2 Disruption in Supply Chain

The unexpected enforcement of the MCO had a significant impact on the food supply chain to the local open markets (Chin, 2020). Food supply chains especially those in urbanized regions were affected in the first week following the MCO's adoption due to traffic and market operating hour limitations (Surendan, 2020). Food supply to Malaysian cities is mostly reliant on ground transport, such as lorries, to convey items from farms, which are often located a distance away from the cities. Farm goods are delivered to wholesale markets before being redistributed to stores, malls, and marketplaces.

Restrictions on people's movement, border constraints, staff turnover, and lockdowns are all leading to mass unemployment in many nations, reducing yields in some regions of the world (OECD, 2020). Moreover, transportation inefficiencies and instability in distribution networks, as well as limited access to markets for selling goods, have resulted in unsold farm products and notable increases in food loss and waste, particularly of perishable products like fruits and vegetables, fish, meat, and dairy items (FAO, 2020). Farmers in various countries have begun burying perishable goods and dumping milk as a result of supply chain interruption and decreased customer demand (United Nation, 2020). Covid-19's outbreak has undoubtedly jeopardized the proper operation of food supply systems.

As a result, the outbreak has highlighted the need of short food supply chains and local production (Cappelli & Cini, 2020). Furthermore, in addition to enabling availability to nutritious food during the Covid-19 pandemic, short food supply chains and local production may have environmental benefits by assuring access to sufficient and sustainable foods (Recchia et al., 2020). Also, while international food businesses are well supported (FAO, 2020), protectionist policies such as food export controls during the pandemic could cause food scarcity around the world, increasing global food market volatility, raising global food prices, and resulting in a global food crisis (OECD, 2020).

2.5.3 Consumers' Shift to Online Grocery Purchasing

The emergence of the novel Coronavirus outbreak has also substantially modified consumers' buying habits and pattern. It has shifted the pattern of grocery purchasing that has been done which are from physical buying at stores to online buying. People can hardly go out like the old times to buy groceries and other basic things so this has risen the use of the Internet to substitute the physical shopping. People prefer online purchasing more during this time of pandemic as it is more convenient and easy to be done. They do not need to go out to buy the items needed and at the same time are lowering the risk of

contagiousness with other people as the interactions are much less with online grocery shopping.

This shift can also be proved by a noticeable rise in online shopping since the announcement of the movement control order by the government as a measure to reduce the spread of the virus (Baarsma & Groenewegen, 2021). This shift from physical to online shopping can be seen in most consumers throughout the globe, as a form of response to Covid-19 outbreak. According to Baarsma & Groenewegen (2021), this rapid turn to online grocery shopping is a comparatively new phenomenon both internationally and in the Netherlands. Until 2006, few people bought food online; in 2017, the proportion of Dutch customers who purchased for groceries online was the greatest in the EU, at about 30 percent (Statistics Netherlands, 2018). Up-to-date figures on pandemic trends are not yet available for the Netherlands, however online sales of food goods grew dramatically in other countries during the outbreak (the United Nations Conference on Trade & Development, 2020).

Supermarkets and other grocery shops in the Netherlands stayed open during the outbreak. According to Andersen et al. (2020), it is possible that individuals have begun to avoid physical stores due to virus spreading concerns. Golec et al. (2020) find that in the Netherlands, aggregated purchase on online grocery is actually greater in more seriously

affected towns. Grashuis et al. (2020) discovered that in the United States, where Covid-19 is spreading at a rising pace, customers are typically less likely to purchase inside food shops and prefer to shop online instead.

2.6 Theoretical Framework

One of the most significant components of the research process was the theoretical framework, which included the ideas presented to analyze the findings and interpret the outcomes (Kivunja, 2018). Furthermore, theory was an idea that presented a comprehensive overview by defining the relations between variables, resulting in explanation and prediction of things. The theoretical framework is the structure that aids or supports the research study's hypothesis. It is necessary for subject selection, the formulation of research questions, the emphasis of the literature review, the design strategy, and the analytic design for the research project (Grant & Osanloo, 2014). The theory used in this research is Knowledge, Attitude and Practice (KAP) Model to investigate the relationship between knowledge, attitude and practice of consumers with the frequency of grocery purchasing in the East Coast of Malaysia.

2.6.1 KAP Model

The knowledge, attitude, and practice (KAP) model was developed for the first time in the 1950s for surveys in the disciplines of population studies and family planning. "K" reflects the level of knowledge about public health concerns, according to the KAP survey model. The letter 'A' symbolize an attitude toward disease and a health issue, whereas the letter 'P' reflects treatment-seeking practice in the illness or health issue. These are closely linked and have a direct impact on one another (Launiala, 2009).
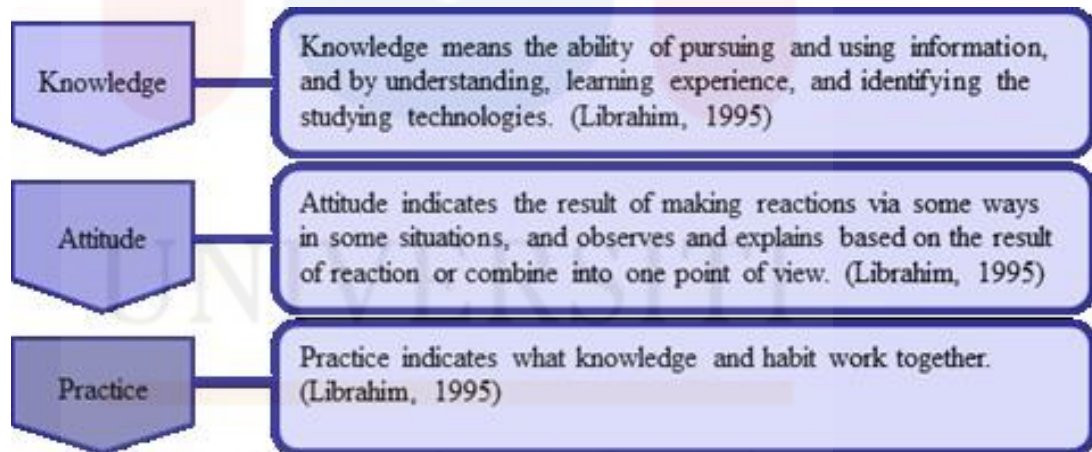
(Adapted model from Chien-Yun et al., 2012)

Figure 2.1: The diagram of KAP Model

CHAPTER 3

METHODOLOGY

3.1 Conceptual Framework
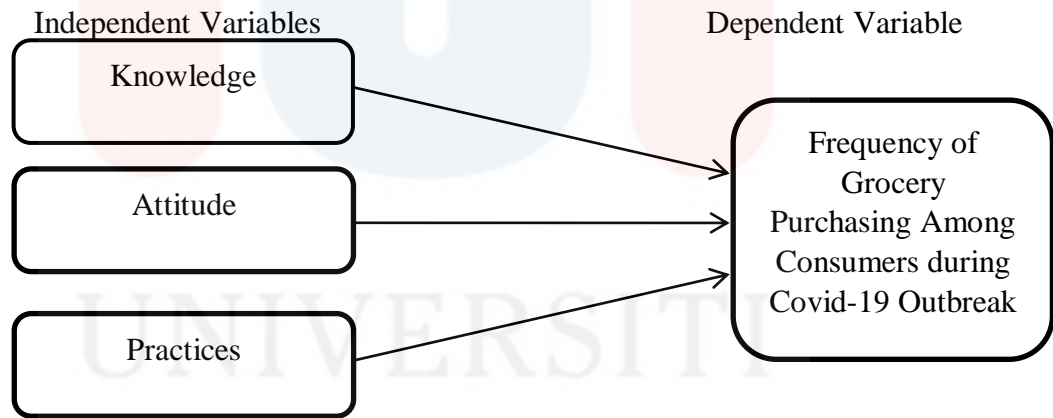
Figure 3.1: Conceptual Framework based on KAP Survey Model

Figure 3.1 shows two types of variables, namely independent and dependent variables that had been used in this research. The independent variables include knowledge, attitude and practices of consumers while the dependent variable was the frequency of grocery purchasing among consumers during the Covid-19 outbreak in the

East Coast of Malaysia. The survey questionnaire was constructed based on knowledge of consumers towards grocery purchasing during the Covid-19 outbreak, attitude of consumers during their grocery purchasing and their practices when purchasing their grocery for their household during Covid-19 outbreak. The demographic profile of consumers was used as intermediate variable to identify the relationship of dependent variable and independent variables.

3.2 Data Collection

Data Collection refers to the process of obtaining and gathering information and responses that stated research question, hypothesis testing and evaluating the outcome. This research was conducted in the East Coast of Malaysia which was in Kelantan, Pahang and Terengganu states. The sample size achieved for this study was 207 respondents where the questions were distributed to identify the level of knowledge, attitude and practice towards the impact of the Covid-19 outbreak on the frequency of grocery purchasing among consumers, the relationship between demographic factors with attitude and practices of consumers towards frequency of grocery purchasing and the most significant factor that influence consumers in their frequency of grocery purchasing during Covid-19 outbreak.

3.2.1 Sampling Methods

This research utilized the purposive sampling method which refers to nonprobability sampling technique that was used to pick the sample of subjects from the population (Etikan, Musa & Alkassim, 2016). It was designed and targeting the ones that support the family economically, or the head of a household. This is in order to achieve the objectives of this survey which is to investigate the relationship between demographic factors such as different income status (B40, M40 and T20) with attitude and practices of consumers towards the frequency of grocery purchasing. The ones who usually do the grocery shopping in a household is the ones who are already having a job, which are the ones that support the family. Since different people are having different jobs, therefore the income status in their household will also differ and through this questionnaire, it is possible to detect the correlation of people with different income status with their pattern in their household grocery purchasing during the pandemic.

3.2.2 Sample Size

In 2021, the population in Kelantan was 1,923,000, the population in Pahang was 1,683,300 and the population in Terengganu was 1,269,700. According to Krejcie & Morgan (1970), the sample size increases as the population size increases. Table 3.2 illustrates the number of sample size needed based on the population size of the chosen area. For the population of 1,000,000, a total of 384 respondents was needed to be obtained for an accurate result. However, due to the time restriction and the inability to physically distribute the survey questionnaire to the public, the desired total of respondents could not be fulfilled. Furthermore, Gorsuch (1974) described the size of the sample exceeding 200 as large and sample sizes less than 50 as small while Cattell (1978) stated that 500 would be a decent sample size to aim for, but that in the context of most situations, 200 or 250 would be sufficient, thus, this survey was proceeded with 207 sample of respondents.

Table 3.2: Adapted Table of Sample Size Value with Respective Population Size given by

Krejcie & Morgan (1970)

N	s
100	80
500	217
1,000	278
2,000	322
4,000	351
8,000	367
10,000	370
50,000	381
75,000	382
1,000,000	384

Note: N is population size

s is sample size

3.2.3 Instrument Method

A set of questions had been designed through Google Form application and the link was distributed to various social media platforms such as WhatsApp, Instagram, and Facebook in order to get the engagement with the public. This method was chosen as it will ease both parties; the respondents could easily answer the survey questions anytime and everywhere they were, and the survey conductor could easily access to the forms that had been filled by the respondents through laptop or even mobile phone. Conducting online questionnaire could help to save budget as it required less cost in the terms of questionnaire printing.

As this survey was in questionnaire form, the respondents would be the literate ones, in order to make sure that they can read, understand and answer the questions proposed in the questionnaire well. The questionnaire was constructed in a single language form, where the questions were presented in Bahasa Malaysia language. It was due to the Malaysians' first language is Bahasa Malaysia. Therefore, this approach would help the respondents to have a better understanding of the questions asked before answering the questionnaires.

The questions that would be asked in this survey are closed-ended questions which consist of question and a range of Likert Scale answer options to be selected by the respondents. Constructing the closed-ended questionnaire questions required researchers to really study about the possible answers that may be responded by the respondents, and were often used when researchers were looking for a well-defined set of variables, such as participants' degree of compliance with an argument, risk beliefs, or frequency of certain behavior. Closed-ended questions were more difficult to ask since they must have a suitable range of answering options. They were, however, relatively convenient for participants to complete. They were also much easier to interpret for analysts because the answers could be quickly translated to numbers and inserted into a database. Closed-ended products were much more popular for these reasons.

In this research, the questionnaire was comprised into 3 sections:

Section A: This section contained 9 questions asking about the demographic background of the respondents.

Section B: This section contained 6 questions asking for the knowledge of the consumer in grocery purchasing during the Covid-19 outbreak.

Section C: This section contained 6 questions asking for the attitude of the consumer during their grocery purchasing during the Covid-19 outbreak.

Section D: This section contained 10 questions asking for the practices of the consumers during the grocery purchasing during the Covid-19 outbreak.

3.3 Pilot Study

The survey questionnaire was pre-tested before being used for this study. This pre-test was conducted by distributing this questionnaire set to the head of their household to ensure possible responses and outcomes were obtained. Thirty heads of families were achieved to become the respondents and it was sufficient to measure the viability of the questionnaire. To interpret the data obtained, the Statistical Package for Social Science Software (SPSS) was utilized to know whether the questionnaire set was understandable before being widely distributed to the head of a family around the East Coast of Malaysia which was Kelantan, Pahang and Terengganu.

3.4 Data Analysis

Analysis of data is a process of interpreting and evaluating the data obtained from the respondents by using statistical and analytical tools to analyze the data. The data analysis was done by determining the frequency and descriptive statistics as well as encoding and entering data. By using SPSS software, descriptive statistics including mean, frequency, percentage and the standard deviation measurement were calculated. In this study, the analysis that had been used were reliability test, chi-square test and factor analysis.

CHAPTER 4

RESULT AND DISCUSSION

4.1 Reliability Test

Table 4.1 presented the summary value of Cronbach's alpha for independent variable that include knowledge, attitude, practices and overall questions. The results of Cronbach's alpha for knowledge, attitude, practices and overall were 0.721, 0.678, 0.710 and 0.725, respectively. The ideal value for an instrument must be more than 0.7, while values greater than 0.6 are still valid (Gay, 1996). Hence, the questionnaire was considered as reliable as the overall variable achieved were exceeding 0.6.

Table 4.1: Reliability Statistics for Pilot Study

Variables	Reliability Statistic (Cronbach's Alpha)	Number of Items
Knowledge	0.721	6
Attitude	0.678	6
Practices	0.710	12
Overall	0.725	24

4.2 Descriptive Analysis of Respondents' Demographic Background

The data was obtained and collected by the self-administered survey containing demographic profile of the respondents such as gender, age, education level, state, living area, household size, the working sector, income status and lastly, to know whether they have experienced losing their job during the Covid-19 outbreak.

Table 4.2 represents the demographic background of the respondents. Out of 207 respondents, 106 female and 101 male respondents were participated in this survey, which contributes to the percentage of 51.2% and 48.8%, respectively. The age range was categorized into 5 groups. In this study, the age group of 41-50 years had the highest number of respondents which were 72 respondents that constituted 34.8% of the samples, whereas the lowest age percentage is coming from the age range of above 60 (7.2%) which was 15 respondents.

For the education level of the respondents, the bachelor had the highest number of respondents which were 145 and contributed to 70% of the total percentage. The second highest group was SPM/STPM with 34 respondents which contributed to 16.4%. The group of foundation/matric/diploma had the least number of respondents which were 13 which contributed to 16.4% of the total percentage. The majority of the respondents were from

Terengganu with frequency of 136 respondents which contributed to 65.7%, followed by Kelantan with 55 respondents, contributing to 26.6% and Pahang had the least number of respondents which was 16 (7.7%). Out of 207 respondents, 101 of them, which represents the highest percentage of 48.8% stated that they were living in the sub-urban area, while 57 of them which contributed to 27.5% stated that they lived in urban area and lastly, the other 49 respondents (23.7%) stated that they lived in the rural area.

Household size was categorized into 3 groups. The majority of the respondents, which were 173 of them which contributed to 83.6%, chose the second group which was 3-7 persons in their household. The other 19 (9.2%) and 15 (7.2%) of the respondents stated that their household size was more than 7 persons and 1-2 persons, respectively. There were 4 categories under working sector. A total majority of 138 respondents which made up 66.7% were working in government sector. 23.7% of the respondents stated that they were jobless, and 6.8% of them were self-employed. While the least total of 6 respondents (2.9%) were working in the private sector. For household income status, the majority of the respondents were from M40 group, which comprised of 87 (42%) respondents, while the least total of respondents were from T20 group, which comprised of 55 (26.6%) of respondents. While the other 65 (31.4%) of the respondents were from B40 group. The majority of the respondents which were 187 (90.3%) stated that they had never experienced

any loss of job during the Covid-19 outbreak while the other 20 (9.7%) stated that they had

lost job during the Covid-19 outbreak.
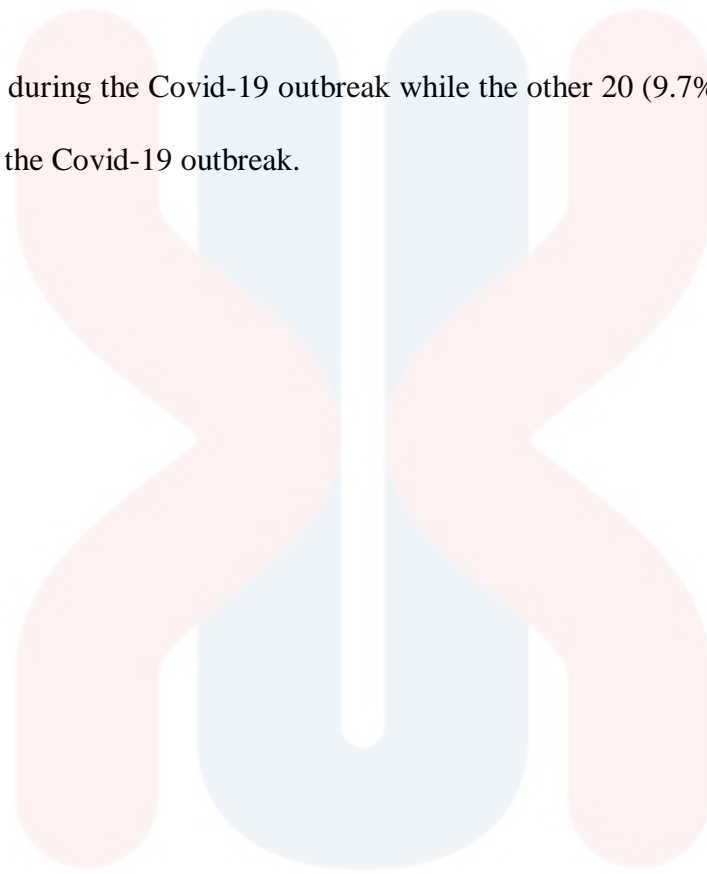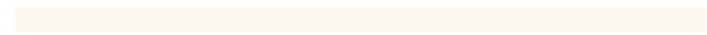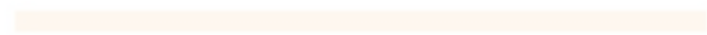
Table 4.2: Demographic Background of Respondents

	CHARACTERISTICS	FREQUENCY (s=207)	PERCENTAGE %
GENDER	MALE	101	48.8
	FEMALE	106	51.2
AGE	BELOW 30	47	22.7
	31-40	20	9.7
	41-50	72	34.8
	51-60	53	25.6
	ABOVE 60	15	7.2
EDUCATION LEVEL	SPM/STPM	34	16.4
	FOUNDATION/MATRIC/DIPLOMA	13	6.4
	BACHELOR	145	70.0
	MASTER/PHD	15	7.2
STATE	KELANTAN	55	26.6
	PAHANG	16	7.7
	TERENGGANU	136	65.7
AREA	URBAN	49	23.7
	SUB-URBAN	101	48.8
	RURAL	57	27.5
HOUSEHOLD SIZE	1-2	15	7.2
	3-7	173	83.6
	MORE THAN 7	19	9.2
WORKING SECTOR	GOVERNMENT	138	66.7
	PRIVATE	6	2.9
	SELF EMPLOYED	14	6.8
	JOBLESS	49	23.7
INCOME STATUS	B40	65	31.4
	M40	87	42.0
	T20	55	26.6
HAVE LOST JOB	YES	20	9.7
	NO	187	90.3

4.3 Consumers' Knowledge on Impact of Covid-19 towards Grocery Purchasing

For this study, the first objective was to identify the level of knowledge, attitude and practice towards the impact of the Covid-19 outbreak on frequency of grocery purchasing among consumers in the East Coast of Malaysia. Table 4.3 shows the mean score of consumers' knowledge on grocery purchasing during the Covid-19 outbreak where the mean score was divided into two categories, namely low (1.00-2.00) and high (2.10-3.00).

From Table 4.3, all 6 statements obtained high mean values which were exceeding 2.10. The first statement, "I know that groceries refer to basic necessities such as food items sold in a grocery store or supermarket" and the second statement, "I know during the movement control period, only the head of the family is allowed to go out to buy necessities" both obtained the highest mean value which were 2.97. The high value of mean indicates that most of the respondents were aware of the definition of groceries and they were also alert with the governments' announcement that stated that only the head of a family is permitted to leave their house to buy their basic needs and medication during the MCO (Tang, 2020).

The forth statement which was "I know that the attitude of consumers who buy goods excessively will disrupt the supply chain of goods" obtained a mean value of 2.87. It also reflects that most of the respondents understand the effect of panic buying to the supply chain since most of the respondents were having degree, master and PhD in their

educational background. According to Zheng et al., (2020), from the retail side, the attitude of panic buying, especially during the pandemic will affect the overall supply chains management.

Table 4.3: Consumers' Knowledge on Impact of Covid-19 towards Grocery Purchasing in East Coast of Malaysia

STATEMENT	MEAN
1. I know that groceries refer to basic necessities such as food sold in a grocery store or supermarket.	2.97
2. I know during the movement control period, only the head of the family is allowed to go out to buy necessities.	2.97
3. Besides physically going out to buy groceries, consumers can purchase basic necessities through online mediums.	2.92
4. I know that the attitude of consumers who buy goods excessively will disrupt the supply chain of goods.	2.87
5. There are many types of essential goods such as rice and cooking oil becoming limited since the Covid-19 outbreak.	2.79
6. There were groceries that experienced price increases during the Covid-19 outbreak.	2.90
Total mean score	2.90

*Notes: Mean values correspond to 1.0 - 2.00: Low; 2.10 - 3.0: High.

4.4 Consumers' Attitude in their Grocery Purchasing during Covid-19 Outbreak

Table 4.4 shows the mean score of consumers' attitude in their grocery purchasing during the Covid-19 outbreak where the mean score was divided into three categories, namely low (0 - 2.33), moderate (2.34 - 3.66) and high (3.67 - 5.00). Out of six statements in this section, three of them obtained moderate mean values while the other three statements obtained high mean values.

The first statement which was "I plan my purchases carefully before buying groceries for my household" obtained a mean value of 4.62, which was the highest mean value among all. This indicates that the majority of the respondents only stick to the grocery items that they intended to buy according to their list. This is also related to the second statement which was "I always buy unplanned items when buying groceries" which obtained the lowest mean value of 3.17, which describes that they mostly avoided buying unplanned items during their grocery purchasing.

The third statement which was "I always check the price of groceries before I buy them" obtained the second highest mean value of 4.42. This high value of mean indicates that most of the respondents become more alert of the price for the grocery items which also explained how they were aware about the price increase during the pandemic.

The forth statement which was "I am worried there is a shortage of food in my area, hence I tend to buy stock in bulk" obtained a mean value of 3.54. This indicates that more than half of the respondents tend to stockpile their groceries due to the fear of food shortages during the Covid-19 outbreak. This is also related to statement 5 which was "Buying groceries in bulk makes me feel safer" which obtained a mean value of 3.63, which explained why they tend to buy groceries in bulk. As food is clearly the most important commodity, panic buying is a typical human reaction to a crisis that is not caused by a lack of food, but instead by a fear of suddenly running out of food (Grasso, 2020).

Table 4.4: Consumers' Attitude in their Grocery Purchasing during Covid-19 Outbreak

STATEMENT	MEAN
1. I plan my purchases carefully before buying groceries for my household.	4.62
2. I always buy unplanned items when buying groceries.	3.17
3. I always check the price of groceries before I buy them.	4.42
4. I am worried there is a shortage of food in my area, hence I tend to buy stock in bulk.	3.54
5. Buying groceries in bulk makes me feel safer.	3.63
6. I was worried the groceries I bought could potentially carry the Covid-19 virus.	3.76
Total mean score	3.86

* Notes: mean values correspond to 1.0 - 2.33: Low; 2.34 - 3.66: Moderate; 3.67 - 5.0: High.

4.5 Consumers' Practice in their Grocery Purchasing during the Covid-19 Outbreak

Table 4.5 shows the mean score of consumers' practice of grocery purchasing during the Covid-19 outbreak where the mean score was divided into three categories, namely low (0 - 2.33), moderate (2.34 - 3.66) and high (3.67 - 5.00). Out of ten statements in this section, five of them obtained moderate mean values while the other five statements obtained high mean values.

The second statement "If I go out to buy groceries physically at the store, I try to shop quickly" obtained the highest value of mean which was 4.51. This indicates that most of the respondents agrees that they will quickly buy their groceries if they physically go out to the store. This might be due to the reason of fear to the spread and infection of the virus which has led them to behave in such way.

The tenth statement which was "After buying, I always make sure to refrigerate and freeze meat, poultry, eggs, seafood and other perishable items such as fruits and vegetables within 2 hours of purchase" obtained the second highest mean value which was 4.36. This reflects that majority of the respondents were aware of safety and perishable characteristics of food, hence they will make sure to keep their food fresh and safe to be consumed by

immediately refrigerating and freezing their newly bought groceries once they arrived their house.

The sixth statement which was "Since the Covid-19 outbreak, I have bought more local food items" obtained the third highest value of mean which was 4.21. This indicates that many respondents started buying more local food items as improving immunity has been a serious concern for consumers during the COVID-19 outbreak. Local foods achieve these aims for customers since they are free of preservatives and chemicals, and they are perceived as natural and nutritious. Such characteristics are thought to offer health benefits (Memery et al., 2015). As a result, intrinsic quality is a major driver for consumers to buy local food during the pandemic (Mesi et al., 2020; Shveda, 2020).

Statement 7 which was "I bought and ate more fresh fruits and vegetables during the Covid-19 outbreak" and statement 8 which was "Since the Covid-19 outbreak, I have bought and eaten more staple foods (rice, wheat, corn, potatoes)" obtained the mean values of 4.16 and 4.08, respectively. This result can be supported by the research of Ben Hassen et al. (2020) which has evaluated the influence of Covid-19 on food intake and behavior in Qatar. Because of food safety concerns, consumers adopted better diets and boosted their intake of domestic food, according to their findings. The other research of Celik and Dane (2020) investigated the effects of the Covid-19 pandemic on food consumption habits

which identified that consumers' first meal choice has switched from meat and bread to fruits and vegetables.

Statement 4 which was "Since the Covid-19 outbreak, I started buying groceries in bulk" obtained a mean value of 3.57. This moderate value of mean indicates that some of respondents started to stockpile on food products since the outbreak. This might be due to the fear of food shortages in their area. This result can be supported by a research by Baker et al. (2020), which found that American consumers raised their purchases during the Covid-19 outbreak in order to stockpile essential household products such as food. As food is clearly the most important commodity, panic buying is a typical human reaction to a crisis that is not caused by a lack of food, but instead by a fear of suddenly running out of food (Grasso, 2020).

Statement 1 which was "Since the Covid-19 outbreak, I started buying groceries online" obtained a mean value of 3.42. This indicates that consumers started to shift to online purchasing to acquire their groceries for their household. Grashuis et al. (2020) studied grocery purchasing patterns during the Covid-19 pandemic. Covid-19 generated considerable changes in food buying choices, according to their findings. When Covid-19 is spreading at a rapid pace, customers are less likely to purchase at grocery shops. Furthermore, as physically purchasing at a grocery store carries a perceived threat and

instils worries of being in close contact to others, customer purchasing patterns have swiftly switched to online shopping. (Deloitte,2020)

Statement 9 which was "Since the Covid-19 outbreak, I have bought and eaten more fast foods and canned foods" obtained a mean value of 3.22. Some of the respondents admitted that they had eaten more unhealthy food since the pandemic. So it is true that dietary quality is also being impacted by the Covid-19 outbreak. Increased consumption of foods such as convenience foods (candy, soft drink, etc), junk foods, snacks, and prepped meals is increasing as a result of panic shopping for items with an extended shelf life and supply chain disruptions (IPES-Food, 2020)

Statement 5 "The amount of my grocery purchases became more than usual during the Covid-19 outbreak" obtained a mean value of 3.57 and statement 3 "I bought groceries more often than usual during the Covid-19 outbreak" obtained the lowest mean value of 2.61. This indicates that many respondents were not buying their groceries more often than usual, which means that they reduced their shopping trips while increasing their purchases during each trip. This can be supported by a study by Cranfield (2020) that identified that it is suspected that some customers stockpile food in order to reduce the number of future buying visits, purchasing more from each trip in order to limit store visits, and therefore decreasing their perceived risk of exposure to Covid-19.

Table 4.5: Consumers' Practice on Grocery Purchasing during the Covid-19 Outbreak in the East Coast of Malaysia

STATEMENT	MEAN
1. Since the Covid-19 outbreak, I started buying groceries online.	3.42
2. If I go out to buy groceries physically at the store, I try to shop quickly.	4.51
3. I bought groceries more often than usual during the Covid-19 outbreak.	2.61
4. Since the Covid-19 outbreak, I started buying groceries in bulk.	3.57
5. The amount of my grocery purchases became more than usual during the Covid-19 outbreak.	3.57
6. Since the Covid-19 outbreak, I have bought more local food items.	4.21
7. I bought and ate more fresh fruits and vegetables during the Covid-19 outbreak.	4.16
8. Since the Covid-19 outbreak, I have bought and eaten more staple foods (rice, wheat, corn, potatoes).	4.08
9. Since the Covid-19 outbreak, I have bought and eaten more fast foods and canned foods.	3.22
10. After buying, I always make sure to refrigerate and freeze meat, poultry, eggs, seafood and other perishable items such as fruits and vegetables within 2 hours of purchase.	4.36
Total mean score	3.77

* Notes: mean values correspond to 1.0 - 2.33: Low; 2.34 - 3.66: Moderate; 3.67 - 5.0: High.

4.6 Chi-Square Analysis Test

The cross-tabulation table indicates the relationship between demographic factors with knowledge, attitude and practices. The chi-square test was done to know whether the hypothesis can be accepted or rejected through the p-value obtained. The null hypothesis will be rejected if the significant reading achieved is below than 0.05 which indicates that there is a relationship between demographic factors with the knowledge, attitude and practices of consumers during their grocery purchasing in the Covid-19 outbreak. However, if the significant reading obtained is exceeding 0.05, it can be concluded that there is no relationship between the variables. Therefore, the null hypothesis will be accepted when there is no significant different.

4.6.1 Educational Level and Attitude and Practices of Consumer during Grocery Purchasing

Table 4.6 shows the summarized values of chi-square of the relationship between educational level with attitude and practices of the consumer during grocery purchasing in Covid-19 outbreak. The null hypothesis for this section was "There is no relationship between educational level of the consumer with attitude and practices of grocery purchasing during Covid-19 outbreak". The significant values of education level of the consumer for both attitude and practices are exceeding 0.05, hence the null hypothesis is failed to be rejected. Which means, there is no significant relationship between educational

level of consumer with attitude and practices of grocery purchasing during Covid-19 outbreak. This indicates that educational level of consumer do not have any influence to their attitude and practices during their grocery purchasing.

Table 4.6: Relationship between educational level with attitude and practices of the consumer during grocery purchasing in Covid-19 outbreak

Education Factor	Chi-square	Degree of freedom	Significant	Decision
Attitude	56.431	51	0.279	Fail to reject H_o
Practices	66.072	68	0.830	Fail to reject H_o

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4.6.2 Income Status and Attitude and Practices of Consumer During

Grocery Purchasing

The chi-square values were summarized in Table 4.7 to identify the relationship between income status with attitude and practices of the consumer during grocery purchasing in Covid-19 outbreak. The null hypothesis for this section was "There is no relationship between income status of consumer with attitude and practices of grocery purchasing during Covid-19 outbreak". The significant values of income status for both attitude and practices are below than 0.05. Hence, the null hypothesis is rejected. This indicates that there is a significant relationship between income status with attitude and practices of the consumer during grocery purchasing during Covid-19 outbreak. For example, income status will influence the attitude and practices of consumers in the term of the frequency of their grocery purchasing per month and their tendency to stockpile on grocery items for their household.

Table 4.7: Relationship between income status with attitude and practices of consumer during grocery purchasing in Covid-19 outbreak

Income Status Factor	Chi-square	Degree of freedom	Significant	Decision
Attitude	49.476	34	0.042	Reject H_o
Practices	77.616	52	0.012	Reject H_o

4.6.3 Household Size and Attitude and Practices of Consumer during

Grocery Purchasing

The summary of the chi-square result of the relationship between household size with attitude and practices of consumer during grocery purchasing in the Covid-19 outbreak was shown in Table 4.8. The null hypothesis for this section was "There is no relationship between household size of consumer with the attitude and practices of grocery purchasing during Covid-19 outbreak". The significant values of household size for both attitude and practices are below then 0.05, hence the null hypothesis is rejected. This indicates that there is a significant relationship between household size with attitude and practices of consumers during their grocery purchasing during Covid-19 outbreak. For example, the household size will influence consumers' attitude and practices in the terms of their purchase planning and the tendency to stockpile grocery items in order to make sure that the amount of grocery items purchased will be sufficient to their household needs.

Table 4.8: Relationship between the household size with attitude and practices of the consumer during grocery purchasing in Covid-19 outbreak

Household Size Factor	Chi-square	Degree of freedom	Significant	Decision
Attitude	61.368	34	0.003	Reject H_o
Practices	73.481	52	0.027	Reject H_o

4.7 Factor Analysis

The third objective of this research study was to determine the most significant factor that influence the consumers in their frequency of grocery purchasing during Covid-19 outbreak by using the factor analysis. Factor analysis was used to analyze the inclination factor of knowledge, attitude and practices of consumers towards their grocery purchasing. The Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy and Bartlett's Test of Sphericity were utilized to determine the sampling adequacy and correlation between the variables before proceeding to factor analysis. The KMO test will aid to measure the proportion of variance between the variables while Bartlett's test of Sphericity will aid to identify the relationship strength between the variables. If the KMO value exceeds 0.6 and Bartlett's Test of Sphericity were less than 0.05, it shows that factor analysis was rational for this study (Hadi, Abdullah, & Sentosa, 2016). Then, for the factor loading, if the value is lower than 0.4, it should be suppressed as it gives a low contribution to the factor variance while a factor loading value higher than 0.4 suggested a better relationship between the factors (Kalender et al., 2019).

4.7.1 Measure of Sampling Adequacy

Table 4.9 showed the Keiser-Meyer_Olkin (KMO) Measure of Sampling Adequacy and Bartlett's test of Sphericity for all variables of knowledge, attitude and practices which were 0.758, 0.687 and 0.854, respectively. All of the three values were exceeding 0.6, so the data was suitable for further research. As a consequence, the findings of this research were significant. Meanwhile the Barlett's test of Sphericity indicates the significant values for knowledge, attitude and practices were all 0.000 which means the factor analysis of the data can be run as this test was designed for variances equality toward samples.

Table 4.9: KMO and Bartlett's Test

		KNOWLEDGE	ATTITUDE	PRACTICES
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.758	.687	.854
Bartlett's Test of Sphericity	**Approx. Chi-Square**	727.777	443.094	761.974
	Df	15	15	45
	Sig.	.000	.000	.000

4.7.2 Contributing Factor on Consumers' Knowledge on Impact

 of Covid-19 Outbreak towards Grocery Purchasing

In this section, there are 6 statements regarding the knowledge of consumers on impact of Covid-19 outbreak towards their grocery purchasing in the East Coast of Malaysia where all the statements obtained factor loading values greater than 0.4.

Table 4.10 shows the factor analysis for the knowledge of consumers on impact of Covid-19 outbreak towards their grocery purchasing in the East Coast of Malaysia where the factor loading values were 0.887 for "I know that groceries refer to basic necessities such as food sold in a grocery store or supermarket", 0.874 for "I know that groceries refer to basic necessities such as food sold in a grocery store or supermarket", 0.729 for "Besides physically going out to the store, consumers can purchase basic necessities through online mediums", 0.737 for "I know that the attitude of consumers who buy goods excessively will disrupt the supply chain of goods", 0.529 for "There are many types of essential goods such as rice and cooking oil becoming limited since the Covid-19 outbreak", and 0.701 for "There were groceries that experienced price increases during the Covid-19 outbreak". Based on the result obtained, consumers have high knowledge on grocery purchasing which will influence how they react in the term of grocery purchasing during the Covid-19 outbreak.

Table 4.10: Factor Analysis for Consumers' Knowledge on Impact

of Covid-19 Outbreak towards Grocery Purchasing

Statement	Factor Loading
1. I know that groceries refer to basic necessities such as food sold in a grocery store or supermarket.	0.887
2. I know during the movement control period, only the head of the family is allowed to go out to buy necessities.	0.874
3. Besides physically going out to the store, consumers can purchase basic necessities through online mediums.	0.729
4. I know that the attitude of consumers who buy goods excessively will disrupt the supply chain of goods.	0.737
5. There are many types of essential goods such as rice and cooking oil becoming limited since the Covid-19 outbreak.	0.529
6. There were groceries that experienced price increases during the Covid-19 outbreak.	0.701
VARIANCE	56.6%

4.7.3 Contributing Factor on Consumers' Attitude in their Grocery Purchasing during Covid-19 Outbreak

The second factor was consumers' attitude in their grocery purchasing during the Covid-19 outbreak. In this section, there are 6 statements regarding the attitude of consumers on grocery purchasing during Covid-19 outbreak where 5 out of 6 statements obtained factor loading values greater than 0.4.

Table 4.11 shows the factor analysis for the attitude of consumers in their grocery purchasing in the East Coast of Malaysia where the factor loading values were 0.545 for "I plan my purchases carefully before buying groceries for my household", 0.612 for "I always check the price of groceries before I buy them", 0.885 for "I am worried there is a shortage of food in my area, hence I tend to buy stock in bulk", 0.846 for "Buying groceries in bulk makes me feel safer" and 0.704 for "I was worried the groceries I bought could potentially carry the Covid-19 virus". From the result obtained, it can be seen that the attitude of consumers during their grocery purchasing during the Covid-19 outbreak might be influenced by their psychological and emotional feelings. This can be explained by their attitudes that are mostly due to the fear of food shortages and the spread of the virus.

Table 4.11: Factor Analysis for Consumers' Attitude of Grocery Purchasing during the Covid-19 Outbreak.

Statement	Factor Loading
1. I plan my purchases carefully before buying groceries for my household.	0.545
2. I always buy unplanned items when buying groceries.	0.273
3. I always check the price of groceries before I buy them.	0.612
4. I am worried there is a shortage of food in my area, hence I tend to buy stock in bulk.	0.885
5. Buying groceries in bulk makes me feel safer.	0.846
6. I was worried the groceries I bought could potentially carry the Covid-19 virus.	0.704
VARIANCE	45.67 %

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4.7.4 Contributing Factor on Consumers' Practice in their Grocery Purchasing during Covid-19 Outbreak

The third factor was the consumers' practice of grocery purchasing during Covid-19 outbreak. In this section, there are 10 statements regarding the practice of consumers on grocery purchasing during Covid-19 outbreak where 9 out of 10 statements obtained factor loading values greater than 0.4.

Table 4.12 shows the factor analysis for the practice of grocery purchasing among consumers in the East Coast of Malaysia where the factor loading values were 0.545 for "If I go out to buy groceries physically at the store, I try to shop quickly", 0.436 for "I bought groceries more often than usual during the Covid-19 outbreak", 0.738 for "Since the Covid-19 outbreak, I started buying groceries in bulk", 0.796 for "The amount of my grocery purchases became more than usual during the Covid-19 outbreak", 0.780 for "Since the Covid-19 outbreak, I have bought more local food items", 0.745 for "I bought and ate more fresh fruits and vegetables during the Covid-19 outbreak", 0.752 for "Since the Covid-19 outbreak, I have bought and eaten more staple foods (rice, wheat, corn, potatoes)", 0.646 for "Since the Covid-19 outbreak, I have bought and eaten more fast foods and canned foods", and 0.678 for "After buying, I always make sure to refrigerate and freeze meat, poultry, eggs, seafood and other perishable items such as fruits and vegetables within 2

53

hours of purchase". From the result obtained, it can be seen that some of the consumers started to shift to a healthier practice in the term of their consumption which indicates that they are more concerned about their health in order to boost their immunity during the Covid-19 outbreak. However, the consumption of fast food and canned food have also increased. This might be due to the reason that consumers were trying to get food with a longer shelf life in order to reduce their shopping trips for their household grocery needs.

Table 4.12: Factor Analysis for Consumers' Practice in Grocery Purchasing in the East Coast of Malaysia

Statement	Factor Loading
1. Since the Covid-19 outbreak, I started buying groceries online.	0.391
2. If I go out to buy groceries physically at the store, I try to shop quickly.	0.545
3. I bought groceries more often than usual during the Covid-19 outbreak.	0.436
4. Since the Covid-19 outbreak, I started buying groceries in bulk.	0.738
5. The amount of my grocery purchases became more than usual during the Covid-19 outbreak.	0.796
6. Since the Covid-19 outbreak, I have bought more local food items.	0.780
7. I bought and ate more fresh fruits and vegetables during the Covid-19 outbreak.	0.745
8. Since the Covid-19 outbreak, I have bought and eaten more staple foods (rice, wheat, corn, potatoes).	0.752
9. Since the Covid-19 outbreak, I have bought and eaten more fast foods and canned foods.	0.646
10. After buying, I always make sure to refrigerate and freeze meat, poultry, eggs, seafood and other perishable items such as fruits and vegetables within 2 hours of purchase.	0.678
VARIANCE	44.25%

4.7.5 Variance Explained

In this study, the variance explained percentage was used to measure the total variance for each factor. According to Statistics Solution (2018), if the variance explained was higher than 30%, it was regarded the minimal consideration level, greater than 40% was the most essential level, and greater than 50% was considered practically significant. Hence, Table 4.13 displays that attitude and practices factors were considered as the most essential level where percent of variance explained were 45.67% and 44.25%, respectively, while the knowledge factor was considered as practically significant where its percentage of variance explained was 56.6%. From this data, it can be concluded that knowledge is the most significant factor that influence consumers in their grocery purchasing during the Covid-19 outbreak. This is because, people will normally behave according to their knowledge in the certain area. In this case, knowledge of consumers especially about Covid-19 influences how do they react and behave during their grocery purchasing.

Table 4.13: Result of Variance Explained

Dimension (Factors)	Variance (percent of explained)
Consumers' Knowledge on Impact of Covid-19 towards their Grocery Purchasing in the East Coast of Malaysia	56.6 %
Consumers' Attitude of Grocery Purchasing in the East Coast of Malaysia during the Covid-19 Outbreak	45.67 %
Consumers' Practice in Grocery Purchasing in the East Coast of Malaysia during Covid-19 Outbreak	44.25 %

4.8 General Discussion

Based on the findings, it can be concluded that majority of the respondents were female and most of them aged between 41-50 years. They were mostly a degree holder living in Terengganu. The household size of most of the respondents were 3-7 persons. The majority of the respondents work in the government sector and their income status were mostly in the range of RM4850 to RM10,959 (M40). Most of them never experienced loss of job during the Covid-19 outbreak.

This survey has succeeded to point out the most significant changes and shift made by consumers as their response to the Covid-19 outbreak. Firstly, in the terms of grocery purchasing, it can be seen that consumers started to buy groceries online. This might be due to the fear of the spread of the virus which has made them to prefer online purchasing rather than physical buying. They also tend to panic buying and stockpile grocery items as they were worried that there might be food shortages in their area, which explained why consumers had reduced their purchasing frequency during the Covid-19 outbreak.

Next, is the changes in the terms of consumers' food consumption during the outbreak. It can be seen that consumers started to adopt a healthier diet, where the majority of them admitted that since the outbreak, they bought and consumed more fresh fruits and vegetables. It might be due to the awareness to stay healthy and to boost their immune system in order to reduce the possibility to get infected by the virus. However, there are

also consumers who confessed that their consumption of convenience food such as canned and fast food had increased since the pandemic. It might be related to their panic buying action, where they stockpile grocery items which have longer shelf life. Since canned food has longer shelf life compared to other food which is more perishable, they opted to stockpile on this kind of grocery items.

CHAPTER 5

CONCLUSION AND RECOMMENDATIONS

5.1 Conclusion

In conclusion, in terms of consumers' knowledge on impact of Covid-19 outbreak towards grocery purchasing, all statements obtained high values of mean which reflects that most of them were having a good understanding towards the impact of Covid-19 specifically in the term of grocery purchasing. This result also describes that most of them were aware of the announcements made by the government regarding the new rules and adaptation with the new norms as we all known, most people are now having the accessibility to the Internet access. Hence it explains the source of consumer' knowledge and awareness especially in the term of grocery purchasing during the outbreak of Covid-19. It can also be confirmed that the respondents are having a deep understanding within this issue as according to the result of variance explained, it shows that the knowledge factor obtained the highest percentage of variance which was considered as practically significant, followed by attitude and practice factors.

In the terms of the relationship between demographic background with the attitude and practices of consumers, the findings from the chi-square test shows that there is no significant relationship between the education background of consumers with the attitude and practices during their grocery purchasing during the Covid-19 outbreak. However, it was found that there are relationships between consumers' income status and household size with their attitude and practices during their grocery purchasing. While through the factor analysis, it can be concluded that among knowledge, attitude and practices factors, knowledge was the most significant factor that influence consumers' behavior in their grocery purchasing during the Covid-19 outbreak as it obtained the highest percentage of variance explained.

Lastly, it is important for the food and grocery item producers in the supply chain to be aware of the changes and shift made by consumers in their grocery purchasing pattern especially during this Covid-19 outbreak. It is to make sure that they can supply and fulfill sufficient products as demanded by the consumers, as well as to make sure that they are not experiencing any loss in their business.

5.2 Recommendation

There will be a recommendation to be suggested in order to get improvement for future research. It is to conduct this survey to all states in Malaysia. Since this study is only conducted in the East Coast of Malaysia which only consisted of three states which were Kelantan, Pahang and Terengganu, the data cannot represent the whole consumers in this country. As a result, the validity of the result might be affected as the data was only limited to consumers within these three states only. Having more respondents from all over the country might help to interpret the data in order to obtain a better and more accurate result.

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APPENDICES A

UNIVERSITI
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Dear respondents,

I am Nor Ain Nadia Binti Lokman, a bachelor student in Universiti Malaysia Kelantan. I am currently doing my Final Year Project entittled:

Impact of Covid-19 Outbreak on Grocery Purchasing Among Consumers in East Coast of Malaysia

This study focuses on analyzing the impact of Covid-19 outbreak towards consumers' grocery purchasing in East Coast of Malaysia. Covid-19 outbreak has a great impact on a wide range of economic sector which includes the grocery purchasing among the consumers. Therefore, this survey aims to investigate the effects of Covid-19 on consumers' grocery purchasing among people with different income status and household size, and to examine the changes in the pattern of grocery shopping among the consumers.

Your participation in this survey is entirely voluntary. You have the right to refuse to participate in this study or to withdraw from it at any moment without incurring any consequences. Please be assured that all information will be treated with strict confidential and used solely for academic purposes. Thank you very much for your cooperation.

Sincerely,

....

Nor Ain Nadia Binti Lokman

Faculty of Agro Based Industry,

Universiti Malaysia Kelantan,

17600 Jeli, Kelantan.

APPENDICES B
SECTION A: DEMOGRAPHIC INFORMATION

Please tick (/) in the appropriate box to indicate your answer.

1	Gender	☐ Female ☐ Male
2	Age	☐ Below 30 years ☐ 31-40 years ☐ 41-50 years ☐ 51-60 years ☐ Above 60 years
3	Education Level	☐ SPM/STPM ☐ Foundation/Matriculation/Diploma ☐ Bachelor ☐ Master/PhD
4	State	☐ Kelantan ☐ Pahang ☐ Terengganu
5	Area	☐ Urban ☐ Sub-urban ☐ Rural
6	Household size	☐ 1-2 persons ☐ 3-7 persons ☐ More than 7 persons
7	Working sector	☐ Government ☐ Private ☐ Self-employed ☐ Does not have a job
8	Income Status	☐ Below RM4 (B40) ☐ RM ☐ More than RM10,959 (T20)
9	Have lost job during the pandemic?	☐ Yes ☐ No

Instruction: This section aims to find out the knowledge of consumers about the purchasing of groceries during the Covid-19 outbreak. Please read each question below and mark your answer according to the scale given which is 1 (I don't know) to 3 (I know).

SECTION B: KNOWLEDGE OF CONSUMERS ABOUT THE PURCHASING OF GROCERIES DURING THE COVID-19 OUTBREAK

I don't know	Not sure	I know
1	2	3

I know that		1	2	3
1	Groceries refer to basic necessities such as food sold in a grocery store or supermarket.			
2	During the movement control period, only the head of the family is allowed to go out to buy necessities			
3	Besides physically going out to buy groceries, consumers can purchase basic necessities through online mediums.			
4	The attitude of consumers who buy goods excessively will disrupt the supply chain of goods.			
5	There are many types of essential goods such as rice and cooking oil becoming limited since the Covid-19 outbreak.			
6	There were groceries that experienced price increases during the Covid-19 outbreak.			

Instruction: This section is to observe the attitudes of consumers while buying groceries during the Covid-19 outbreak. Please read each question below and mark your answer according to the scale given which is 1 (Strongly disagree) to 5 (Strongly agree).

SECTION C: ATTITUDE OF CONSUMERS WHILE BUYING GROCERIES DURING THE COVID-19 OUTBREAK

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

No	Statement	1	2	3	4	5
1	I plan my purchases carefully before buying groceries for my household.					
2	I always buy unplanned items when buying groceries.					
3	I always check the price of groceries before I buy them.					
4	I am worried there is a shortage of food in my area, hence I tend to buy stock in bulk.					
5	Buying groceries in bulk makes me feel safer.					
6	I was worried the groceries I bought could potentially carry the Covid-19 virus.					

Instruction: This section is to find out consumer practices when buying groceries during the country hit by the Covid-19 outbreak. Please read each question below and mark your answer according to the scale given which is 1 (Strongly disagree) to 5 (Strongly agree).

SECTION D: PRACTICES OF CONSUMERS DURING GROCERIES PURCHASING IN COVID-19 OUTBREAK

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

No	Statement	1	2	3	4	5
1	Since the Covid-19 outbreak, I started buying groceries online.					
2	If I go out to buy groceries physically at the store, I try to shop quickly.					
3	I bought groceries more often than usual during the Covid-19 outbreak.					
4	Since the Covid-19 outbreak, I started buying groceries in bulk.					
5	The amount of my grocery purchases became more than usual during the Covid-19 outbreak.					
6	Since the Covid-19 outbreak, I have bought more local food items					

7	I bought and ate more fresh fruits and vegetables during the Covid-19 outbreak.					
8	Since the Covid-19 outbreak, I have bought and eaten more staple foods (rice, wheat, corn, potatoes).					
9	Since the Covid-19 outbreak, I have bought and eaten more fast foods and canned foods.					
10	After buying, I always make sure to refrigerate and freeze meat, poultry, eggs, seafood and other perishable items such as fruits and vegetables within 2 hours of purchase.					

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