KNOWLEDGE AND ATTITUDE OF CONSUMER TOWARDS ADOPTION OF BIODEGRADABLE FOOD PACKAGING IN KELANTAN

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DECLARATION

I acknowledge that this work is the result of my own work except for excerpts and summaries, each of which I have explained the source.

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Knowledge and Attitude of Consumer towards Adoption of Biodegradable Food Packaging in Kelantan

ABSTRACT

Biodegradable packaging is made from few materials as well as the source of materials used is reliable and safe along its life cycle and most importantly the materials can be used and recycled. Since biodegradable materials are very helpful to save the environment from plastic pollution, then biodegradability is applied to food packaging. However, consumer awareness of this must be increased in order to succeed in the mission of saving the world from plastic pollution. Thus, this study was conducted to measure the level of awareness of consumers towards adoption of biodegradable food packaging in Kelantan. In addition, this study is also to identify the knowledge, attitude and practice of consumers towards biodegradable food packaging. This study was conducted to achieve three objectives which were the first objective was to determine knowledge level of consumer on adoption of biodegradable food packaging. Next objective was to identify the relationship between of demographic factor and attitude of consumer towards biodegradable food packaging and to study the most significance factor influencing consumer awareness towards biodegradable food packaging. Conceptual framework for this study was KAP (knowledge, attitude and practice) model. The method for the study was a questionnaire survey which was distributed in online form. The survey was responded by 200 consumers living in Kota Bharu, Kelantan. Results from data analyzed using Statistical Package for Social Science (SPSS) software indicated that knowledge level of consumer towards adoption of biodegradable food packaging was high. Then, demographic factor that have a relationship with attitude of consumer towards adoption of biodegradable food packaging were only educational level, residence area and occupation. Knowledge was the most significance factor influencing consumer awareness towards adoption of biodegradable food packaging in Kelantan. It can be concluded most consumers in Kota Bharu know about biodegradable food packaging and also affect their awareness of on biodegradable food packaging.

Keywords: Biodegradable, Awareness, KAP Model, SPSS, Kelantan

Pengetahuan dan Sikap Pengguna terhadap Penggunaan Pembungkusan Makanan Terbiodegradasi di Kelantan

ABSTRAK

Pembungkusan biodegradasi dibuat daripada beberapa bahan serta sumber bahan yang digunakan boleh dipercayai dan selamat sepanjang kitaran hayatnya dan yang paling penting bahan tersebut boleh digunakan dan dikitar semula. Memandangkan bahan terbiodegradasi sangat membantu untuk menyelamatkan alam sekitar daripada pencemaran plastik, maka kebolehbiodegradan digunakan pada pembungkusan makanan. Namun, kesedaran pengguna tentang perkara ini mesti dipertingkatkan bagi menjayakan misi menyelamatkan dunia daripada pencemaran plastik. Justeru, kajian ini dijalankan untuk mengukur tahap kesedaran pengguna terhadap penggunaan pembungkusan makanan terbiodegradasi di Kelantan. Selain itu, kajian ini juga adalah untuk mengenal pasti pengetahuan, sikap dan amalan pengguna terhadap pembungkusan makanan terbiodegradasi. Kajian ini dijalankan untuk mencapai tiga objektif iaitu objektif pertama adalah untuk menentukan tahap pengetahuan pengguna terhadap penggunaan pembungkusan makanan terbiodegradasi. Objektif seterusnya adalah untuk mengenal pasti hubungan antara faktor demografi dan sikap pengguna terhadap pembungkusan makanan terbiodegradasi dan untuk mengkaji faktor paling signifikan yang mempengaruhi kesedaran pengguna terhadap pembungkusan makanan terbiodegradasi. Kerangka konsep bagi kajian ini ialah model KAP (pengetahuan, sikap dan amalan). Kaedah kajian adalah tinjauan soal selidik yang diedarkan dalam bentuk dalam talian. Tinjauan itu dijawab oleh 200 pengguna yang tinggal di Kota Bharu, Kelantan. Hasil daripada data yang dianalisis menggunakan perisian Statistical Package for Social Science (SPSS) menunjukkan tahap pengetahuan pengguna terhadap penggunaan pembungkusan makanan terbiodegradasi adalah tinggi. Kemudian, faktor demografi yang mempunyai hubungan dengan sikap pengguna terhadap penggunaan pembungkusan makanan biodegradasi hanyalah tahap pendidikan, kawasan kediaman dan pekerjaan. Pengetahuan merupakan faktor paling penting yang mempengaruhi kesedaran pengguna terhadap penggunaan pembungkusan makanan terbiodegradasi di Kelantan. Dapat disimpulkan kebanyakan pengguna di Kota Bharu mengetahui tentang pembungkusan makanan terbiodegradasi dan juga mempengaruhi kesedaran mereka tentang pembungkusan makanan terbiodegradasi.

Kata kunci: Terbiodegradasi, Kesedaran, Model KAP, SPSS, Kelantan

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LIST OF SYMBOLS

		PAGE
%	Percentage	4
N	Frequency	26
p	Significant value	34
<	Less than	35

LIST OF ABBREVIATIONS

		PAGE
FAMA	Federal Agriculture Marketing Authority	2
SIRIM	Standards and Industrial Research Institute of Malaysia	2
FAO	Food and Agriculture Organization	4
EU	European Union	5
EPA	Environmental Protection Agency	5
IPCC	Intergovernmental Panel on Climate Change	6
KAP	Knowledge, attitude and practice	15
SPSS	Statistical Package for Social Science	21
KMO	Kaiser-Meyer-Olkin	35

CHAPTER 1

INTRODUCTION

1.0 Introduction

This chapter was discussing the background of study about adoption of biodegradable food packaging in Kelantan by examining consumer awareness, knowledge, attitude and practice. This chapter also consists of problem statement, research objective, research question, hypothesis, significance of study and scope of study.

1.1 Research Background

1.1.1 Biodegradable Packaging

Biodegradable packaging is made from few materials as well as the source of materials used is reliable and safe along its life cycle and most importantly the materials can be used and recycled (Rezai et al., 2013; Yaacob and Zakaria, 2011; Sinnappan and Abd Rahman, 2011). Also known as green packaging, it is one of the biggest trends in

our business world, but these trends are still new in Malaysia and others Asian countries (Albert & Yuen, 2014). The research by Noor and Muhammad (2012), the main target market of international marketers is the purchasing power by Asian countries and the increasing on environmental awareness. Not only does it have a positive impact on the environment and is also able to lead to a better future, Kong et al. (2014) stated that it also has a better effect on individuals.

Among the bodies involved and supporting biodegradable packaging is the Department and Federal Agriculture Marketing Authority (FAMA) that have right to implement the sustainable labelling system, that are mostly for agricultural products (Chen and Chai, 2010; Olsen et al., 2014). Other than that, an 'eco-label' service authorization scheme based on environmental requirements that covers a safe plastic packaging materials, provide by the Standards and Industrial Research Institute of Malaysia (SIRIM). In addition, research by Abd Rahim et al. (2012) stated that our country is among the first countries that concern about the environmental issues, and the Environment Quality Act of 1974 was enacted.

In Malaysia, the Ministry of Natural Resources and Environment are the main agency that is responsible to create the awareness among our citizens. The program requires a media strategy to raise general consciousness about the significance of sustainable initiatives. Financial incentives and support by the government, private parties in Malaysia, launched a strong initiative to promote environmentally sustainable lifestyles and facilitate the reduction of plastic bag use (Zhang and Zhao, 2012). A 'No plastic bag day' initiative is held in the hypermarket every Saturday is one of the example. Not just that, but the government urges customers to use their own eco-friendly bags to carry their purchases.

1.1.2 Biodegradable Food Packaging

More research on biodegradable food packaging materials which take less time to decompose in order to maintain environmental safety and meet the growing demand (Majeed et al., 2013; Jayaramudu et al., 2013). A research by Tang et al. (2012) showed, among the materials that have the potential to be developed into biodegradable food packaging materials are biopolymers.

Food packaging made from biopolymers leaves by-products such as carbon dioxide and water, and can also be collected together with bio-waste for the stamping process. However, the adoption of biopolymers as food packaging has disadvantages such as thermal and mechanical properties compared to non-sustainable materials produced from petroleum. Much research has been developed to improve on these weaknesses including the use of nanocomposite concepts (Di Maio et al., 2013; Nafchi et al., 2013; Kanmani and Rhim, 2014; Sadeqh-Hassani and Mohammadi Nafchi, 2014; Reddy and Rahim, 2014).

Among the benefit of this material is that it can remove some bad elements such as oxygen and water vapors and is able to release compounds such as antioxidant agents and microbial agents. Besides, nanocomposites can be among the best food packaging given that it is capable of perceiving processed food properties such as expiry date or microbial contamination (Azeredo et al., 2011).

1.1.3 Development of Biodegradable Plastic

At the start of the 21st century, products from renewable sources are given great importance for their positive nature impact. Market understanding of conventional plastic packaging is growing in general globally, although they are extremely useful but cause enormous pollution, water supplies and the whole ecosystem. A study by Mohatny et al. (2015) shown that environmentally accumulated plastic, reduced arable land, used oil wells, and the releases of gas during combustion led to efforts in the development of biodegradable packaging or plastics.

Currently, about 1% of around 320 million tons of the plastic produced annually is bio plastic. However, the market continues to grow with rising demand and the development of more advanced biopolymers, applications and products. The latest data indicates that the worldwide production capacity of bio plastics in 2017 will rise from approximately 2.05 million to about 2.44 million tons in 2022. (Nova Institute, 2017; European Bioplastics, 2017).

The food industry is the biggest demand market for bio-packaging. A research carried out by Rim, Park & Ha (2013), biopolymers in food packaging can provide physical protection during storage and transit, as well as optimal physicochemical conditions for ensuring safety and quality and prolonging food shelf life. According to the United Nations Food and Agriculture Organization (FAO), nearly one-third of all food produced globally is lost or wasted. Food waste is generated across the food value chain, from the kitchen to production, distribution, retail, and food service operations. Given the limited natural resources available, reducing food waste is more effective than increasing food production. As a result, numerous efforts have been made to design more effective

food packaging solutions (Torres et al.,2018).

1.1.4 Implementation of Biodegradable Plastic in Malaysia

In 2010, Malaysia's household waste is expected to grow from 17,000 to 30 000 tons a day in 2020, estimated by the European Union (EU). Similarly, Environmental Protection Agency (EPA) has emphasized that the present generation of 1.5 million tons of waste paper packaging would increase to more than 13 million tons. This disclosure has made Malaysian consumers aware of food protection when they buy food (Rezai, Phuah, Zainalabidin & Shamsudin, 2012).

The recycling of plastic bags is still very poor, according to Karatu (2015). It is also not regarded in Malaysia as a realistic alternative. Since the use of paper bags is a pollution hazard, as the solution to protect and maintain the environment is not considered an environmental solution. Paper bags actually use 60% more energy and materials than plastic bags and contain 80% more solid waste.

Therefore, a new trend of mixing green and packaging is being implemented in Malaysia as an ongoing attempt to drive society towards green consumerism and environmental conservation. During the 29th SEA and PARA Games 2017, food truck entrepreneurs favored biodegradable packaging materials and encouraged Malaysia's eco-friendly effort for food trucks.

Many participants mentioned approaches they used from government initiatives to match their motivation to utilize eco-friendly packaging materials on a regular basis with the problem of modifying their food preparation to suit eco-friendly packaging. The majority of the food truck businesses' involvement in the ecofriendly packaging effort was motivated internally (Balasubramaniam & Krisnamoorthy,2018).

1.2 Problem Statement

With some 1300 plastics companies, Malaysia is a major player in the plastics industry. By 2016, our exports had amounted to RM30 billion and the resin used to manufacture plastics had amounted to 2.26 million tons. Plastic waste environmental issues have now become a major concern in Malaysia, ranking 8th among the top 10 mismanaged plastic waste countries worldwide. A research estimates that 0.94 million tons of mismanaged plastic waste was generated in Malaysia and between 0.14 and 0.37 million tons were washed into the sea (Jambeck et al. 2015). As a result, the effects of plastic garbage accumulation on natural environments have been a growing worry for consumers (Avery-Gomm et al., 2019; Walker and McKay, 2021).

The IPCC (Intergovernmental Panel on Climate Change) has expressed concerns that environmental issues, for example global warming and ozone depletion, are perceived not only to be local or national issues but to be global. It is also an international topic of discussion. One solution to the waste problem is to use sustainable food packaging (Geueke et al. 2018). Furthermore, there are also concern about problems with species diversity and natural resource destruction. These phenomena make the nations green because they endanger the environment and put the public at risk (Mohammad and Zakersalehi, 2012).

Besides, the approach to single-use plastics is currently not consistent in Malaysia. In taking a united and collective approach, it is necessary to provide political guidance for all stakeholders, including state governments. Though Malaysia remains a fully developed country, it needs to balance economic progress with protecting the environment to ensure sustainability and societal well-being. It is challenging to solve

customers' inability to discriminate between mainstream and green food packaging, and information sharing is crucial for coordinating supply chain dynamics (Walker et.al, 2021). Hence, studies about awareness and knowledge of consumer on biodegradable food packaging are needed to ensure their readiness to accept the adoption.

1.3 Hypothesis

H0: There is no significant relationship between the demographic factors and attitude consumer towards adoption of biodegradable food packaging in Kelantan.

H1: There is a significant relationship between the demographic factors and attitude of consumer towards adoption of biodegradable food packaging in Kelantan.

1.4 Research Question

1. What is the level of consumer knowledge on adoption of biodegradable food packaging in Kelantan?
2. What are the relationship between demographic factors and attitude of consumers towards adoption of biodegradable food packaging in Kelantan?
3. What are the most significant factor of consumer awareness towards adoption of biodegradable food packaging in Kelantan?

1.5 Research Objectives

1. To determine the level of consumer knowledge on adoption of biodegradable food packaging in Kelantan.
2. To identify the relationship between demographic factors and attitude of consumers towards adoption of biodegradable food packaging in Kelantan.
3. To study the most significant factor of consumer awareness towards adoption of biodegradable food packaging in Kelantan.

1.6 Significance of Study

The importance of this study is to identify the extent of readiness of consumers as well as food product entrepreneurs in the acceptance of the application of bio food packaging. Since bio food packaging is not yet widely used, this study was assist in identifying consumers' understanding about biodegradable materials that make them safe for use in food packaging. Furthermore, to investigate consumer knowledge of the use of biodegradable packaging that is already available commercially. It was also assist consumers and food merchants in raising their understanding and awareness of the environmental and food quality benefits of biodegradable food packaging.

In addition, this study also takes the attention of the government and agencies involved to reduce plastic pollution which is increasing every year also causes an impact on the national economy. The government plays an important role in this in order to attract the attention of the people to raise awareness about this. If the awareness of consumers can be increased through this study will help the government indirectly because

awareness is also closely related to the knowledge, attitude and practices of consumers.

1.7 Scope of study

This study was conducted to determine the level of consumer knowledge on adoption of biodegradable food packaging and to identify the relationship between demographic factors and attitude of consumers towards adoption of biodegradable food packaging. Furthermore, this study was carried out to examine the most significant factor of consumer awareness towards adoption of biodegradable food packaging.

This study was conducted in only one district in Kelantan. The area is the Kota Bharu district. The reason only one district was chosen is because the population in Kota Bharu is the highest among other districts recorded in Kelantan and also urban areas that facilitate the search for respondents. However, the selected respondents are among adults who were 18 years and above as the questionnaire developed are not relevant for minors.

CHAPTER 2

LITERATURE REVIEW

2.0 Introduction

The purpose of this chapter to conduct a review of previous research relating to the study's aims which are to determine the knowledge level of consumer, to examine the relationship between demographic factor and attitude of consumer and to evaluate the most significant factor influencing consumer awareness towards adoption of biodegradable food packaging. Furthermore, this review allows for the distinction between the findings of this study and the findings of prior studies on relevant issues conducted by other researchers.

2.1 Awareness of Consumer towards Biodegradability

There was limited research looking at sustainable based packaging and its acceptance among consumers or food operators. Magnier & Schoormans (2015) estimated the effects of appearance and sustainability claims on purchase intent and found that consumer responses to the appearance and sustainability claims of the package

depended on their level of environmental concern. The study showed that consumers with low environmental concerns evaluated conventional-looking packages with a sustainability claims more negatively. In a subsequent study (Magnier et al., 2016) investigated the effect of packaging sustainability on consumers' perceived quality of three product categories and found a more positive perceived quality of a food product when it was packed in a sustainable rather than conventional way.

In another study, showed how packaging sustainability influenced consumer perceptions, inferences and attitudes toward packaged products (Steenis et. al 2017). They demonstrated that consumers often rely on misleading and inaccurate beliefs when judging packaging for sustainability. Most studies acknowledge how the expectations and responses of consumers vary based on the design (shape, orientation, alignment of graphical forms), branding, visual appearance, colour, verbal claims and quality of products (Magnier, et al, 2016; Rebollar et al, 2012; Becker et al., 2011; westerman et al., 2013; Zhang et al, 2021).

Research has shown that consumers decide what to purchase based on extrinsic product characteristics and appearance (Fenko, et al., 2010). Consumer perception of extrinsic product cues such as packaging material and brand name differs from intrinsic product cues such as aroma, flavour and texture (Ng et al., 2013). Packaging and branding as extrinsic product cues have been shown to have an influence on how consumers evaluate food products (Deliza and MacFie, 1996) and can determine consumers' expectations (Guinard, et al. 2001). Thus, it is important that careful attention is given to the design of a package because of its dual role: attracting consumers' attention and creating expectations of the sensorial properties of the product (Ng, et al, 2013).

2.2 Knowledge Level of Consumer towards Biodegradability

Understanding or being knowledgeable of what motivates consumers to behave in a sustainable manner is a vital step toward bringing about societal change. There was research that proves that biodegradability is not successfully communicated perfectly to consumers. The results of a survey conducted show that consumers have no idea about biodegradability as they misunderstand the idea of "bio" as being biodegradable in the environment in packaging covering biodegradable and bio-based results in bio-plastics (Lindh, Olsson and Williams, 2016). Opposed a study by Otto et al. (2021), there was a high level of consumer understanding concerning the recyclability and biodegradability of packaging materials such as glass and paper/cardboard.

Based on the study by Simpson and Radford (2012), many of the consumers misunderstand about the actual meaning of biodegradability even though biodegradable packaging is quite popular nowadays. The more the customer knows about the greener packaging products, the more positive insights into greener packaging products that will increase the intention of purchase for greener packaging products. Malaysia's customers have seen green packaging goods as organic, good for the environment, good taste and smell, good value for money, well marketed, affordable and available in any store, and better in quality compared to traditional products, according to Agarwal & Guansh, and Royne et al. (2011).

Cheah and Phau (2011) emphasized the necessity for consumer education on sustainable packaging and its benefits; consequently, it is not only consumers in underdeveloped countries who require more information. In a study of 52 Polish and 51 French university students conducted by Jerzyk (2016), just 30% of the Polish students

had already heard the term "sustainable packaging," whereas 71% of the French students had. Independent of customers' recycling knowledge and behaviors, they priorities the environmental impact of packaging over other factors such as food waste, packaging design, and efficient transportation (Wikstrom et al., 2019).

2.3 Relationship of Demographic Factor and Attitude of Consumer towards Biodegradability

A research study of Chekima et al. (2016) shown that the demographics such as income levels, education, gender, employment and age also be one of the motivating factors of consumer attitude on biodegradable materials. This statement coincides with a study conducted by Jerzyk (2016) shown that consumer attitude on recyclable packaging such as paper, plastic, glass and aluminum are also influenced by socio-demographic and demographic factors such as gender, familial place, educational background, political party affiliation and age.

In addition, women were more likely to be eco-friendly relative to men in another study by Martinho et al. (2015). In contrast, Saphores and Nixon (2014) found no difference between men and women in the buying of green items or environmental attitudes, however their survey was limited to young individuals. In a study conducted in the United States, Neill and Williams (2016) discovered no significant impact of education on the perception of biodegradability.

Furthermore, several researchers have investigated the impact of age on green sustainability. Klaiman et al. (2016) identified age as an influential factor in purchasing for the sustainability of fruit juice packaging, with younger and older consumers purchasing the most. In contrast to these findings, Neill and Williams (2016) discovered

no significant effect of age on perceptions of biodegradability.

Finally, Scott and Vigar-Ellis (2014) discovered that age had no effect on how customers identified environmentally friendly packaging. In terms of package recycling, elderly persons have been shown to be more likely to recycle than younger ones. Whereas Koutsimanis et al. (2012) discovered that high school and college graduates preferred bio-based materials to bio-based packaging more than other consumers.

2.4 Most Significance Factor of Consumer Awareness towards Biodegradability

In recent years, the idea of consumer awareness has grown in importance in the subject of sustainability, particularly in relation to the question of how sustainability communication influences customers' perceptions of companies and purchasing behavior of products (Dach and Allmendinger, 2014; Galbreth and Ghosh, 2013). Consumer awareness is also becoming increasingly crucial in the management of plastic packaging and the mitigation of the plastic issue (European Commission, 2018a; Pahl et al., 2017).

Essentially, consumer awareness can be influenced by their knowledge, attitude and practices. Several past studies have proven this statement. For instance, a study found that consumer awareness level influences by their understanding, while the latter is also likely to be influenced by other moderating factors. According to the data, knowledge is the most reliable factor of pro-environmental awareness (Gupta & Singh, 2019). Similar findings by Zabkar & Hosta (2013), a data recorded as a result of environmentally consumer awareness has significant potential, which can be altered by one's in-depth knowledge of sustainable development.

2.5 Theoretical of the Study

The questionnaire was constructed in this study by using the KAP conceptual framework (knowledge, attitude, and practice). KAP studies are highly focused evaluations that measure changes in human knowledge, attitudes, and practices in response to a specific action, which is typically communication, demonstrating, or learning process. According to Kwol et.al (2020), the KAP model, knowledge positively influences an individual's attitude, which in turn influences practices or behavior.

In addition, the KAP model is carried out for particular target groups which are chosen from a full sampling framework randomly. It can also be used for surveys by families and individuals (Monde, 2011). In essence, consumer sustainability knowledge has a crucial part in defining their attitudes and, ultimately, their practices of disposing, purchasing, and raising environmental awareness. Several studies have sought to utilize the model to explore consumer awareness in a variety of scenarios over the years.

For instance, a study carried by Royne et. Al (2011), concluded that the more the consumer understands about sustainable packaging, the more positive their practice or attitude toward bio packaging will be, which will improve their intention to purchase bio-based packaging products. Similar findings of a survey done by Lindh, Olsson & Williams (2016), customers have little information about biodegradability, which influences their purchasing and post-purchase decisions.

CHAPTER 3

METHODOLOGY

3.0 Introduction

This chapter describes the approach used to achieve the objectives of the study. This including the theoretical conceptual framework and the model applied to this study. Next, data collection which were included of questionnaire designing, study area, data sampling and pilot test. The most important part was data analysis conducted to presents results data.

3.1 Theoretical Conceptual Frameworks

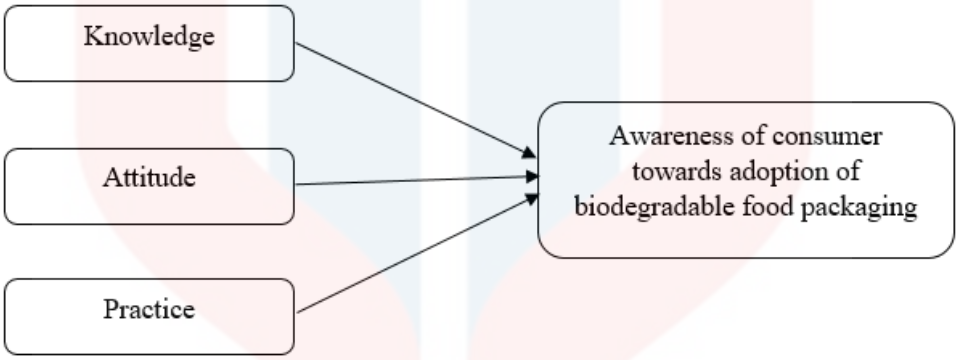

Figure 3.1: The conceptual frameworks of knowledge, attitude and practice model

The figure shows the variable applied in this study. The independent variables for this study are knowledge, attitude and practice. While consumer's awareness towards adoption of biodegradable food packaging is the dependent variables. The questionnaire for this study will be constructed based on this model. KAP was the most congruent because it is evolved to all of the objectives of this study, which are to identify level of consumer knowledge on adoption of biodegradable food packaging, to determine the relationship of demographic factor and consumer attitude towards adoption of biodegradable food packaging, and to define the most significant factor on consumer awareness towards adoption of biodegradable food packaging. Knowledge, attitude, and practice are three conceptually independent factors of consumer awareness toward the adoption of biodegradable food packaging in the modified KAP.

3.1.1 Study Area

The study was conducted in Kelantan, but for more relevant data, the study area focuses on Kota Bharu since it was a municipal area. The area includes 14 regions, namely Pendek, Kubang Kerian, Kemumin, Peringat, Badang, Panji, Banggu, Salor, Limbat, Ketereh, Kadok, Sering, Beta and Kota. Kota Bharu covers an area of 409 square kilometers. An area of 115 kilometers within the area of Kota Bharu Municipal Council - Islamic City and an area of 158 square kilometers within the area of Ketereh District Council - Islamic Municipality.

Figure 3.2: Map of Kelantan

(Source: Official website of Jabatan Pembangunan Negeri Kelantan, 2022)

3.1.2 Instrument

A quantitative questionnaire was designed to analyze consumer awareness on adoption of biodegradable food packaging. The survey was developed specifically for consumers in the Kota Bharu area with a sample size of 200 respondents. The questionnaire developed with four sections include demographic profile. Demographic information of respondent such as gender, age, level of education, residence area, occupation and household income were included in the first section of the questionnaire. All of this data were gathered to study the effect of socio-economic or demographic factor to the awareness of biodegradability. The second section of the questionnaire addresses the consumer knowledge on adoption of biodegradable food packaging. This section was cover the value of biodegradability in terms of consumer knowledge.

The next section contains questions about attitude of consumer towards adoption of biodegradable food packaging. This section also important in order to achieve the objective that based on KAP (knowledge, attitude and practice) model. Last section of the questionnaire comprised of questions about the practice of consumer towards adoption of biodegradable food packaging. Questions in this section to identify the practices undertaken by consumers regarding biodegradable packaging that are already available in the market. The questionnaire is available in Malay as well as in English, with the Likert scale of 1-5. The questions were formulated and designed by referring to the previous report.

3.1.3 Pilot Test

The questionnaire was pre-test before it can be included in this study. This test aims to examine the respondents understanding of the questions developed by analyzing the data using reliability analysis. The data analyzed will indicate values that determine whether the developed question is relevant or otherwise. Sample size for this test was 30 respondents selected at random. Cocks et al (2013) propose a technique for predicting the size of a pilot study that will provide the approval to a wider research. Based on anticipated sample sizes for various scenarios, their basic rule is to recruit 9% of the projected final sample, or 30 participants, whichever is greater, as a pilot.

3.2 Data Analysis

The data obtained from the survey results were analyzed by several appropriate analyzes. To achieve the objectives of this study, the analysis used were reliability analysis, descriptive analysis, Chi-Square analysis and factor analysis. All data analysis was completed using the Statistical Package for Social Science (SPSS) software.

3.2.1 Reliability Analysis

The reliability test was for questionnaires, surveys, observation or other measurement process, resulting in repeated tests with the same results. The coherence of scores over time is also understood. Research shows that the degree of survey response will remain the same over time. There may be a lack of reliability due to variations

between the observer and the calculated attribute instability. In this analysis, the alpha of Cronbach is used for measurement of internal coherence and the measurement of reliability of the independent variables is important in this research. The variables are considered reliable if good response after the test administration was repeated. The variable was said to be reliable when the Cronbach's alpha was at least 0.6 and then if the test was greater it means more reliable (Bonett, 2015).

3.2.2 Descriptive Analysis

The purpose of descriptive analysis in this study is to identify the fundamental feature of all data obtained. It is actual data that is simple to comprehend and interpret. In other studies, descriptive data were used to calculate the mean of the research's nominal data. It is often used to calculate the frequency and backgrounds of the demographics' percentage of consumers. The data was then analyzed to determine consumer knowledge, attitude and practice towards adoption of biodegradable food packaging. Furthermore, descriptive analysis can help with variable comparisons.

3.2.3 Chi-Square Analysis

Pearson's chi-squared method was used to evaluate whether there is a statistically significant discrepancy in one or more categories of a contingency table between expected and observed frequencies. According to Howell (2011), if the value is equal to or less than the alpha value of 0.100, the result is significant (90% confidence). In this study, chi-square analysis was applied to identify whether there was a significant relationship between demographic factor and attitude of consumer towards adoption of biodegradable

food packaging.

3.2.4 Factor Analysis

Factor analysis is a technique for condensing a large number of variables into a smaller number of factors (Weaver & Maxwell, 2014). This method pulls the largest common variance from all variables and converts it into a single score. Exploratory factor analysis was performed to examine the most significant factor of consumer awareness towards adoption of biodegradable food packaging in Kelantan. The KMO sampling adequacy test and the Bartlett's test of Sphericity were being used to verify whether or not the factor analysis could be carried out properly.

CHAPTER 4

RESULT AND DISCUSSION

4.0 Introduction

This chapter describes the data and discussion obtained from the questionnaire's answers answered by the respondents. Data analysis in this chapter, namely reliability analysis, descriptive analysis, chi-square analysis and factor analysis were completed using Statistical Package for Social Science (SPSS) software.

4.1 Reliability Analysis

To determine whether the questions were reliable, the reliability test was performed on each independent variable (knowledge, attitude, and practice). Cronbach alpha is used to assess the amount of variance in a set of test scores that is systematic or consistent. It can vary from 0.00 (if no variance is consistent) to 1.00 (if all variance is consistent), with any number in between being possible.

The table shown that the Cronbach's Alpha for knowledge is 0.876, attitude is 0.678 and practice is 0.883. According to Bonett and Wright, 2015 Cronbach's Alpha

must be at least 0.6 to be considered reliable, and the test must be greater to be considered more reliable. Thus, the reliability test for this study are accepted.

Table 4.1: Cronbach's Alpha of reliability test

Variables	Cronbach's Alpha	Items
Knowledge of consumer towards adoption of biodegradable food packaging.	0.876	8
Attitude of consumer towards adoption of biodegradable food packaging.	0.678	6
Practice of consumer towards adoption of biodegradable food packaging.	0.883	8

4.2 Descriptive Analysis

The descriptive analysis provided information about the respondents' demographics as well as their knowledge, attitude, and practice about biodegradable food packaging. The demographic background of the respondents was analyzed to understand whether those characteristics had an effect on consumer awareness of biodegradable food packaging adoption in the Kelantan area.

4.2.1 Demographic Information

The demographic information included gender, age, educational level, residence area and occupation. The table shows the demographic profile of consumers in Kelantan. Based on the table shown, majority of consumer who participate in this study are male which are 103 respondents (51.5%) while the rest is female about 97 respondents (48.5%).

For respondents' age, 42 respondents (21.0%) are at age of 18-25 years old, followed by respondents at age of 26-30 years old and 31-40 years old. Both of them are recorded 46 respondents (23.0%). At age of 41-50 years old recorded 36 respondents (18.0%) while at age of 51-60 years old recorded 19 respondents (9.5%) and the least recorded respondents are 11 (5.5%) from senior citizens which are at age of 61 years old and above.

The educational level plays an important role in this study to determine whether it can affect knowledge level of consumer towards biodegradable food packaging. Most of the respondents are educated with 92 respondents (46.0%) from university, 42 respondents (21.0%) from pre-university or diploma and foundation study. While the rest have a low level of education which are 34 respondents (17.0%) from secondary school and 25 respondents (12.5%) from primary school. The least recorded for this group are consumers that are no formal education with 7 respondents (3.5%).

As the study area, Kota Bharu is divided into urban and rural areas, their residential areas are also studied to see the impact on consumer awareness towards biodegradable food packaging. Mostly respondents in this study are from urban area, 110 (55.0%) while the rest are from rural area, 90 (45.0%). Majority of the respondents are self-employed and work at private sector with 45 respondents (22.5%). Following by public sector with 40 respondents (20.0%), students with 34 respondents (17.0%), housewife with 29 respondents (14.5%) and others with the least respondents which are 7 (3.5%).

From the data collected, mostly the household income of the respondents is less than RM4,850.00 which are 151 (75.5%), followed by respondents with average of household income, RM4850.00-RM10,959.00 with 43 respondents (21.5%) and the least are respondents with highest household income, more than RM10,959.00 with 6

respondents (3.0%). This is related to the willingness of consumers to purchase food packaged with biodegradable packaging studied in the consumer practice section.

Table 4.2: Demographic information of consumer

Variables	Frequency(N)	Percentage(%)
Gender		
Male	103	51.5
Female	97	48.5
Age		
18-25 years old	42	21.0
26-30 years old	46	23.0
31-40 years old	46	23.0
41-50 years old	36	18.0
51-60 years old	19	9.5
61 years old and above	11	5.5
Educational level		
No formal education	7	3.5
Primary school	25	12.5
Secondary school	34	17.0
Pre-university	42	21.0
University	92	46.0
Residence area		
Urban area	110	55.0
Rural area	90	45.0
Occupation		
Public sector	40	20.0
Private sector	45	22.5
Self-employed	45	22.5
Housewife	29	14.5
Students	34	17.0
Others	7	3.5
Household income		
Less than RM4,850.00 (B40)	151	75.5
RM4,850.00-RM10,959 (M40)	43	21.5
More than RM10,959 (T20)	6	3.0

4.2.2 Knowledge of Consumer

The descriptive analysis was conducted in this study to determine the knowledge of consumer towards adoption of biodegradable food packaging. The analysis result with 8 items was shown in the table. First statement for the knowledge section, “I know about

the biodegradable packaging", most of the respondent agree with the statement which recorded 32.0%.

Majority of the respondents, 41.5% strongly agree with second statement, "Biodegradable packaging is more environmentally friendly". Same goes to the statement, "Biodegradable packaged food is safer than others", 34.0% of the respondents strongly agree with it. Next statement which is "The comprehensive use of biodegradable food packaging can save the world from plastics pollution", most of the respondents strongly agree with the statement which resulted 42.5%.

The statement of "Biodegradable packaging has the potential to reduce water usage, solid waste, electricity and gas emissions" and "Less carbon required to produce biodegradable packaging", 33.5% and 39.0% of the respondents chose neutral for both statement respectively. Majority of the respondents agree with the next statement, "Biodegradable food packaging protects and preserves the quality of the food product" which resulted 37.0%.

Last statement from knowledge section, "I do not know anything about biodegradable food packaging", 44.5% which is most of the respondents chose neutral for this statement. Based on the total average mean of the results, 3.75 shows that knowledge of consumer towards adoption of biodegradable food packaging is consider as high.

Table 4.3: Descriptive analysis for knowledge of consumer

	Statement	Percentage (%)					Mean
		1*	2*	3*	4*	5*	
1.	I know about the biodegradable packaging.	3.0	5.0	30	32.0	30.0	3.81
2.	Biodegradable packaging is more environmentally friendly.	3.0	4.0	17.5	34.0	41.5	4.07
3.	Biodegradable packaged food is safer than others.	3.0	4.0	29.0	30.0	34.0	3.88
4.	The comprehensive use of biodegradable food packaging can save the world from plastics pollution.	3.0	4.0	20.5	30.0	42.5	4.05
5.	Biodegradable packaging has the potential to reduce water usage, solid waste, electricity and gas emissions.	3.0	3.5	33.5	32.0	28.0	3.79
6.	Less carbon required to produce biodegradable packaging.	3.0	6.5	39.0	28.0	23.5	3.63
7.	Biodegradable food packaging protects and preserves the quality of the food product.	2.5	6.0	23.0	37.0	31.5	3.89
8.	I do not know anything about biodegradable food packaging.	13.0	19.5	44.5	15.0	8.0	2.86
				Total Average Mean			3.75

*Indicator: 1 Strongly Disagree, 2 Disagree, 3 Average, 4 Agree, 5 Strongly Agree

4.2.3 Attitude of Consumer

The descriptive analysis was conducted in this study to determine the attitude of consumer towards adoption of biodegradable food packaging. The analysis result with 6 items was shown in the table. Majority of the respondents agree with the first statement of attitude section, “I am aware about the adoption of biodegradable food packaging” which are recorded 40.0%. Most of the respondents, 37.5% chose neutral for the statement, “I am willing to purchase biodegradable packaged food even it is costly”.

Then for the next statement, “I prefer to purchase biodegradable packaged food”, 36.5% which are majority of the respondents agree with it. Same goes to the next statement, “I do not care about the packaging of food that I am consumed”, most of the respondents which are 32.5% also agree with the statement. For the statement “I am aware about the biodegradable materials” and last statement of this section, “I know about the

biodegradable packaging but I do not care about it", 37.0% and 38.0% which are majority of the respondents agree with the both statements respectively. Based on the total average mean of the result shown, 3.53 shows that attitude of consumer towards adoption of biodegradable food packaging is consider as moderate.

Table 4.4: Descriptive analysis for attitude of consumer

	Statement	Percentage (%)					Mean
		1*	2*	3*	4*	5*	
1.	I am aware about the adoption of biodegradable food packaging.	2.0	5.5	27.5	40.0	25.0	3.81
2.	I am willing to purchase biodegradable packaged food even it is costly.	7.0	14.5	37.5	26.0	15.0	3.28
3.	I prefer to purchase biodegradable packaged food.	2.5	8.0	36.0	36.5	17.0	3.58
4.	I do not care about the packaging of food that I am consumed.	3.5	11.0	30.0	32.5	23.0	3.61
5.	I am aware about the biodegradable materials.	2.5	10.0	34.0	37.0	16.5	3.55
6.	I know about the biodegradable packaging but I do not care about it.	2.5	18.5	30.5	38.0	10.5	3.36
				Total Average Mean			3.53

*Indicator: 1 Strongly Disagree, 2 Disagree, 3 Average, 4 Agree, 5 Strongly Agree

4.2.4 Practice of Consumer

The descriptive analysis was conducted in this study to determine the practice of consumer towards adoption of biodegradable food packaging. The analysis result with 8 items was shown in the table. For the first statement in this section, majority of the respondents which are 47.0% chose neutral for the statement "I educate my family members to consume biodegradable food packaged". Second statement, "I choose the store that use biodegradable food packaging", 37.5% of the respondents which are majority agree with the statement.

Next statement, 41.0% of the respondents which are the highest chose neutral for

the statement, “I try to make people understand about the benefits of biodegradable food packaging” while for the statement “I am looking about biodegradable food packaging from authentic source”, most of the respondents agree with it which are recorded 44.0%. Then next statement, 43.0% which are majority of the respondents chose neutral for statement, “I recommend the uses of biodegradable food packaging to my friends”.

Majority of the respondents which are 38.5% agree with the next statement which is “I buy my food without considering the packaging”. “I encourage food vendors to use biodegradable packaging”, this statement was strongly agreed by 37.0% respondents as well as the last statement, “I support sellers who use biodegradable food packaging” also strongly agreed by most of the respondents resulted 53.0%. Based on the total average mean of the results, 3.70 shows that practice of consumer towards adoption of biodegradable food packaging is consider as high.

Table 4.5: Descriptive analysis for practice of consumer

	Statement	Percentage (%)					Mean
		1*	2*	3*	4*	5*	
1.	I educate my family members to consume biodegradable food packaged.	3.5	11.0	47.0	28.0	10.5	3.31
2.	I choose the store that use biodegradable food packaging.	3.5	10.5	36.0	37.5	12.5	3.45
3.	I try to make people understand about the benefits of biodegradable food packaging.	3.0	8.5	41.0	34.0	13.5	3.47
4.	I am looking about biodegradable food packaging from authentic source.	3.5	7.0	21.0	44.0	24.5	3.79
5.	I recommend the uses of biodegradable food packaging to my friends.	2.0	10.0	43.0	28.5	16.5	3.48
6.	I buy my food without considering the packaging.	2.5	10.0	23.0	38.5	26.0	3.76
7.	I encourage food vendors to use biodegradable packaging.	1.0	6.5	24.0	31.5	37.0	3.97
8.	I support sellers who use biodegradable food packaging.	0	2.5	18.5	26.0	53.0	4.30
				Total Average Mean			3.70

*Indicator: 1 Strongly Disagree, 2 Disagree, 3 Average, 4 Agree, 5 Strongly Agree

4.3 Mean Score of KAP

The descriptive analysis was conducted in this study to determine the knowledge level of consumer towards adoption of biodegradable food packaging. The table shown that the mean score of the knowledge, attitude and practice of consumer towards adoption of biodegradable food packaging in Kelantan. The resulted mean score of consumer knowledge was 3.75 which was the highest, followed by consumer practice was 3.70 and the last one was attitude of consumer, recorded mean score was 3.53. Based on the mean score recorded, consumer knowledge recorded the highest mean score which was revealed that the knowledge level of consumers towards adoption of biodegradable food packaging in Kelantan was high. This result was supported by research of Otto et.al (2021) stated that the knowledge about the recyclability and biodegradability of the packaging materials is high.

Table 4.6: Mean score of knowledge, attitude and practice of consumer

Variables	Frequency(N)	Percentage(%)	Mean
Knowledge			3.75
Low	9	4.5	
Medium	72	36	
High	119	59.5	
Attitude			3.53
Low	8	4	
Medium	91	45.5	
High	101	50.5	
Practice			3.70
Low	9	4.5	
Medium	74	37	
High	117	58.5	

4.4 Chi-Square Analysis

The Chi-Square analysis was adapted to evaluate the statistical different of some demographic factors of the consumer with the knowledge, attitude and practice towards adoption of biodegradable food packaging in Kelantan. If the value is equal to or less than the alpha value of 0.100, the result is significant (90% confidence). Table below presents the data of the Chi-Square analysis between demographic with attitude of the consumers towards adoption of biodegradable of food packaging.

Majority of the respondents was male with 51.5%. The result showed that there is no significant relationship between gender and attitude of consumer as the p value was 0.322 which was greater than 0.100. Then, most of the respondents were among the youth as they were aged between 26-30 years old and 31-40 years old with 23.0%. However, there is no significant relationship between age and attitude of consumer because the p value also greater than 0.100. For educational level factor, 46.0% which was majority of the respondents highly educated since they have an education at the university level.

From the result recorded, there is a significant relationship between educational level and attitude of consumer because the p value was 0.000 which was lower than 0.100. Most of the respondents live in urban areas with 55.0% and there is a significant relationship between residence area and attitude of consumer as the p value lower than 0.100. The majority of respondents were self-employed and work in the private sector with 22.5% and there is also a significant relationship between occupation and attitude of consumer as the p value lower than 0.100. For the last demographic factor which was household income, most of the respondents were among B40 group that income less than RM4,850. There is no significant relationship between household income and attitude of

consumer as the p value was 0.260 which was greater than 0.100.

Based on the results obtained, the demographic factor that has a significant relationship with attitude of consumer were only educational level, residence area and occupations while the other factor has no significant relationship with attitude of consumer. This result revealed that educational level, residence area and occupations can affect the attitude of consumer towards adoption of biodegradable food packaging in Kelantan.

According to a study conducted by Chekima et al. (2016), demographics such as income levels, education, gender, profession, and age are also motivating factors in consumer attitudes toward biodegradable materials. This research was consistent with a study carried by Jerzyk (2016), which found that socio-demographic and demographic factors such as gender, familial location, educational background, political party affiliation, and age influence consumer attitudes toward recyclable packaging such as paper, plastic, glass, and aluminum.

Table 4.7: Chi-Square analysis for relationship of demographic factor and knowledge, attitude and practice of consumer

Variables			Knowledge	Attitude	Practice
Gender	Male	Count (%)	51.5	51.5	51.5
	Female		48.5	48.5	48.5
		p-value	0.256	0.322	0.289
Age	18-25	Count (%)	21.0	21.0	21.0
	26-30		23.0	23.0	23.0
	31-40		23.0	23.0	23.0
	41-50		18.0	18.0	18.0
	51-60		9.5	9.5	9.5
	61 and above		5.5	5.5	5.5
		p-value	0.124	0.193	0.002
Educational level	No formal education	Count (%)	12.5	12.5	12.5
	Primary school		3.5	3.5	3.5
	Secondary school		17.0	17.0	17.0
	Pre-university		21.0	21.0	21.0
	University		46.0	46.0	46.0
		p-value	0.000	0.000	0.007
Residence area	Urban area	Count (%)	55.0	55.0	55.0
	Rural area		45.0	45.0	45.0
		p-value	0.016	0.003	0.243
Occupation	Public sector	Count (%)	20.0	20.0	20.0
	Private sector		22.5	22.5	22.5
	Self-employed		22.5	22.5	22.5
	Housewife		14.5	14.5	14.5
	Students		17.0	17.0	17.0
	Others		3.5	3.5	3.5
		p-value	0.023	0.043	0.001
Household income	Less than RM4,850	Count (%)	75.5	75.5	75.5
	RM4,850-RM10,959		21.5	21.5	21.5
	More than RM10,959		3.0	3.0	3.0
		p-value	0.654	0.260	0.010

4.5 Factor Analysis

4.5.1 KMO and Bartlett's Test

For the following result, exploratory factor analysis was performed to examine the most significant factor of consumer awareness towards adoption of biodegradable food packaging in Kelantan. The KMO sampling adequacy test and the Bartlett's test of Sphericity were being used to verify whether or not the factor analysis could be carried out properly. The findings of the Kaiser-Meyer-Olkin (KMO) and Bartlett's Test of knowledge, attitude, and practice of consumer awareness toward the use of biodegradable food packaging are presented in the table. The value for knowledge was 0.889 which was the highest, value of attitude was 0.752 and and practice was 0.887. The KMO test and the Bartlett's Test of Sphericity all obtained significant results. According to Yong & Pearce (2013), value of 0.5 as minimum (acceptable), values between 0.7 and 0.8 as good, and values over 0.9 as excellent. Furthermore, the significant level of $p<0.000$ indicates that the Bartlett's test of Sphericity provided a suitable level for completing factor analysis on the data of each scale.

Table 4.8: KMO and Bartlett's test for knowledge, attitude and practice of consumer

		Knowledge	**Attitude**	**Practice**
Kaiser-Meyer-Olkin Measure of Sampling Adequacy		0.889	0.752	0.887
Bartlett's Test of Sphericity	Approx. Chi-Square	1408.887	445.303	1042.820
	df	28	15	28
	Sig.	0.000	0.000	0.000

4.5.2 Variance Explained

The variance explained was used to measure the total variance explained by the factors. The explanation of variance is shown in the table. The variance explained results are considered satisfactory for this study since they are greater than 50%. Given that knowledge has the greatest variance (68.186%), it is clear that knowledge was the most significance factor influencing consumer awareness towards adoption of biodegradable food packaging in Kelantan. The second most influential factor was consumer practice, which accounted for 59.635%, followed by attitude, which accounted for 48.276%.

Therefore, the most significant factor on consumer awareness towards adoption of biodegradable food packaging in Kelantan was the knowledge factor. This result supported by a study of Gupta & Singh (2019), concluded that consumer awareness level influences by their understanding, knowledge is the most reliable factor of pro-environmental awareness.

Table 4.9: Variance explained of knowledge, attitude and practice

Variables	Variance (percent of explained)
The knowledge towards biodegradable food packaging	68.186
The attitude towards biodegradable food packaging	48.276
The practice towards biodegradable food packaging	59.635

CHAPTER 5

CONCLUSION AND RECOMMENDATION

5.0 Conclusion

The result data obtained based on three objectives of this study which were the first objective was to determine the knowledge level of consumer towards adoption of biodegradable food packaging in Kelantan. Second objective was to identify the relationship between demographic factor and attitude of consumer towards adoption of biodegradable food packaging in Kelantan and the last objective was to study the most significant factor influencing consumer awareness towards biodegradable food packaging in Kelantan. All these objectives have been achieved after some analysis has been done.

Survey questions in this study were answered by 200 consumers aged 18 years and above who live in the district of Kota Bharu, Kelantan. In terms of demographic information, which was analyze through descriptive test, majority of the respondents are male, aged between 26-40 years, have a level of education at the university level, live in urban areas, self-employed and work in the private sector and have an income of less than RM4,850 or known as the B40 group. For reliability test, the questionnaire in this study considered reliable or accepted as the value of Cronbach's Alpha for independent variable

which were knowledge, attitude and practice were greater than 0.6.

For the first objective, result of determination of the knowledge level of consumer towards adoption of biodegradable food packaging were obtained through data analyzing with descriptive test which was same as demographic profile section. Based on the mean score recorded, consumer knowledge recorded the highest mean score, 3.75 which was revealed that the knowledge level of consumers towards adoption of biodegradable food packaging in Kelantan was high.

Chi-square analysis was applied to the second objective, to identify the relationship between demographic factor and attitude of consumer towards adoption of biodegradable food packaging in Kelantan. The relationship identified by referring the alpha value which must lower than 0.100. Based on the results obtained, the demographic factor that has a significant relationship with attitude of consumer were only educational level, residence area and occupations as the alpha value lower than 0.100. Thus, the null hypothesis for educational level, residence area and occupations were rejected.

Data for last objective, the evaluating about most significant factor influenced consumer awareness towards biodegradable food packaging in Kelantan were analyzed with factor analysis. The KMO test and the Bartlett's Test of Sphericity all obtained significant results. The variance explained results are considered satisfactory for this study since they are greater than 50%. Given that knowledge has the greatest variance (68.186%), it is clear that knowledge was the most significance factor influencing consumer awareness towards adoption of biodegradable food packaging in Kelantan.

5.1 Limitation of study

The survey questions conducted in the study are online as the country was still in the pandemic phase of the covid-19 virus so the physical survey is still not allowed or limited. When conducted online, it is quite difficult to reach the target number of respondents within the allotted time. The number of respondents reached as many as 200 people, which is rather little given the population of Kota Bharu. This study was only undertaken in one region in the entire state of Kelantan because Kota Bharu is an urban location and numerous food retailers provide biodegradable food packaging. Because the results were based on how respondents answered and responded regarding their awareness towards biodegradable food packaging, they may be biased. Furthermore, because the answers were based on questionnaires, the respondents did not always provide a comprehensive and accurate response to certain questions, which may have influenced the results obtained. The collection of respondents and data were challenging when it takes a long time to reach the set targets as not all users have the facilities and devices to answer online.

5.2 Recommendation

Since this study was only conducted in one district, it is proposed that future research be conducted in all districts in Kelantan. Although the use of biodegradable food packaging in Kelantan has not been widespread, but research on this can be developed and the data of the study can be used as a reason to further expand the use of biodegradable food packaging throughout Kelantan and not just limited to urban areas. In addition, the

study on this can also be extended to the whole of Malaysia and the data obtained will be more accurate and may also be able to resolve some crises and issues about the environment in Malaysia also increase the awareness of all Malaysians about the biodegradability. Furthermore, apart from the surveys conducted, low consumer awareness about biodegradability can be increased through several programs.

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APPENDIX A

QUESTIONNAIRE SURVEY

SECTION A: Demographic / Demografik

The questions in Section A should be answered by selecting the answers provided/Soalan dalam Bahagian A hendaklah dijawab dengan memilih jawapan yang disediakan.

1.	Gender / Jantina	□ Male / Lelaki □ Female / Perempuan
2.	Age / Umur	□ 18-25 years old/tahun □ 26-30 years old/tahun □ 31-40 years old/tahun □ 41-50 years old/tahun □ 51-60 years old/tahun □ 61 years old and above/tahun dan ke atas
3.	Educational Level / Tahap Pendidikan	□ No formal education/Tiada pendidikan formal □ Primary school/Sekolah rendah □ Secondary school/Sekolah menengah □ Pre-university/Pra-universiti □ University/Universiti
4.	Residence area/ Kawasan kediaman	□ Urban area/Kawasan bandar □ Rural area/Kawasan luar bandar
5.	Occupation/Pekerjaan	□ Public sector/Sektor awam □ Private sector/Sektor swasta □ Self-employed/Bekerja sendiri □ Housewife/Suri rumah □ Students/Pelajar □ Others/Lain-lain
6.	Household Income/ Pendapatan isi rumah	□ Less than RM4,850.00 (B40)/Kurang daripada RM4,850.00 (B40) □ RM4,850.00-RM10,959 (M40) □ More than RM10,959 (T20)/Lebih daripada RM10,959 (T20)

SECTION B: Knowledge Towards Biodegradable Food Packaging/ Pengetahuan Terhadap Pembungkusan Makanan Biodegradasi

The questions in Section B should be answered by choosing answers on a scale of 1 (strongly disagree) to 5 (strongly agree)/Soalan dalam Bahagian B hendaklah dijawab dengan memilih jawapan pada skala 1 (sangat tidak setuju) hingga 5 (sangat setuju).

1= Strongly disagree/Sangat tidak setuju

2= Disagree/Tidak setuju

3= Neutral/Sederhana setuju

4= Agree/Setuju

5= Strongly agree/Sangat setuju

	Statements	1	2	3	4	5
1.	I know about the biodegradable packaging/ Saya tahu tentang pembungkusan biodegradasi.					
2.	Biodegradable packaging is more environmentally friendly/ Pembungkusan biodegradasi lebih mesra alam.					
3.	Biodegradable packaged food is safer than others/ Makanan yang dibungkus pembungkus biodegradasi adalah lebih selamat daripada yang lain.					
4.	The comprehensive use of biodegradable food packaging can save the world from plastics pollution/ Penggunaan menyeluruh pembungkusan makanan biodegradasi boleh menyelamatkan dunia daripada pencemaran plastik.					
5.	Biodegradable packaging has the potential to reduce water usage, solid waste, electricity and gas emissions/ Pembungkusan biodegradasi berpotensi untuk mengurangkan penggunaan air, sisa pepejal, elektrik dan pelepasan gas.					
6.	Less carbon required to produce biodegradable packaging/ Kurang karbon diperlukan untuk menghasilkan pembungkusan biodegradasi.					
7.	Biodegradable food packaging protects and preserves the quality of the food product/ Pembungkusan makanan biodegradasi melindungi dan memelihara kualiti produk makanan.					
8.	I do not know anything about biodegradable food packaging/ Saya tidak tahu apa-apa tentang pembungkusan makanan biodegradasi.					

SECTION C: Attitude Towards Biodegradable Food Packaging/ Sikap Terhadap Pembungkusan Makanan Biodegradasi

The questions in Section C should be answered by choosing answers on a scale of 1 (strongly disagree) to 5 (strongly agree)/ Soalan dalam Bahagian C hendaklah dijawab dengan memilih jawapan pada skala 1 (sangat tidak setuju) hingga 5 (sangat setuju).

1= Strongly disagree/Sangat tidak setuju

2= Disagree/Tidak setuju

3= Neutral/Sederhana setuju

4= Agree/Setuju

5= Strongly agree/Sangat setuju

	Statements	1	2	3	4	5
1.	I am aware about the adoption of biodegradable food packaging/ Saya sedar tentang penggunaan pembungkusan makanan biodegradasi.					
2.	I am willing to purchase biodegradable packaged food even it is costly/ Saya sanggup membeli makanan yang dibungkus pembungkus biodegradasi walaupun harganya mahal.					
3.	I prefer to purchase biodegradable packaged food/ Saya lebih suka membeli makanan yang dibungkus pembungkus biodegradasi.					
4.	I do not care about the packaging of food that I am consumed/ Saya tidak kisah tentang pembungkusan makanan yang saya makan.					
5.	I am aware about the biodegradable materials/ Saya sedar tentang bahan biodegradasi.					
6.	I know about the biodegradable packaging but I do not care about it/ Saya tahu tentang pembungkusan biodegradasi tetapi saya tidak mengambil berat mengenainya.					

SECTION D: Practices Towards Biodegradable Food Packaging/ Amalan Terhadap Pembungkusan Makanan Biodegradasi

The questions in Section D should be answered by choosing answers on a scale of 1 (strongly disagree) to 5 (strongly agree)/ Soalan dalam Bahagian D hendaklah dijawab dengan memilih jawapan pada skala 1 (sangat tidak setuju) hingga 5 (sangat setuju).

1= Strongly disagree/Sangat tidak setuju

2= Disagree/Tidak setuju

3= Neutral/Sederhana setuju

4= Agree/Setuju

5= Strongly agree/Sangat setuju

	Statements	1	2	3	4	5
1.	I educate my family members to consume biodegradable food packaged/ Saya mendidik ahli keluarga saya untuk mengambil makanan yang dibungkus pembungkus biodegradasi.					
2.	I choose the store that use biodegradable food packaging/ Saya memilih kedai yang menggunakan pembungkusan makanan biodegradasi.					
3.	I try to make people understand about the benefits of biodegradable food packaging/ Saya cuba membuat orang ramai memahami tentang kebaikan pembungkusan makanan biodegradasi.					
4.	I am looking about biodegradable food packaging from authentic source/ Saya mencari tentang pembungkusan makanan biodegradasi daripada sumber yang sahih.					
5.	I recommend the uses of biodegradable food packaging to my friends/ Saya mengesyorkan penggunaan pembungkusan makanan biodegradasi kepada rakan-rakan saya.					
6.	I buy my food without considering the packaging/ Saya membeli makanan saya tanpa mengambil kira pembungkusan.					
7.	I encourage food vendors to use biodegradable packaging/ Saya menggalakkan penjual makanan menggunakan pembungkusan biodegradasi.					
8.	I support sellers who use biodegradable food packaging/ Saya menyokong penjual yang menggunakan pembungkusan makanan biodegradasi.					