POLITEKNIK MALAYSIA

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ECO BITE

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DIPLOMA IN BUSINESS STUDIES

DEPARTMENT OF COMMERCE

SUPERVISOR: DR NUR FADILLAH BINTI AHMAD MAHMUD

SESSION 1:2024/2025

DECLARATION OF ORIGINALITY

TITLE: ECOBITE SPOON

SESSION: 1 2024/2025

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2. We verify that ‘this project' and intellectual properties are our original work without any plagiarism from any other sources.

3. We agree to release the project's intellectual properties to the above said polytechnic in order to fulfil the requirement of being awarded a Diploma in Business Studies.

Prepared by:

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……..

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At Politeknik Sultan Salahuddin Abdul Aziz Shah

In the presence of,

(…….)

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As the project supervisor

ACKNOWLEDGEMENT

In the name of Allah S.W.T, the Most Beneficent and Most Merciful.

We extend our deepest gratitude and praise to Allah S.W.T. for granting us the strength, patience, and perseverance to successfully complete this project and final report. This achievement is the result of the dedicated efforts of our group members, who have passionately contributed to every aspect of this work.

A special acknowledgment is due to our supervisor, Dr NurFadillah Binti Ahmad Mahmud, whose encouragement, attention to detail, and expert advice have guided us through every stage of the project, leading to the completion of our product, Eco Bite. Her unwavering support made this work possible.

We also want to express our sincere gratitude to Dr. Noordini Binti Abdullah, the lecturer of Business Project, for her unwavering support and assistance. Thanks to her, every single lesson we took, we left feeling inspired and encouraged. Without her support and direction, this project would not have come to fruition.

We also wish to express our sincere appreciation to all the respondents who provided their helpful feedback. Their willingness to complete the questionnaires given has significantly impacted the direction and success of this project. This achievement would not have been possible without their cooperation.

Our deepest thanks also goes to everyone who contributed directly or indirectly by encouraging and supporting us throughout this journey which have been invaluable to the successful completion of this project.

Finally, and most importantly, we would like to thank our beloved families. Their unconditional love, support, and understanding have been our constant source of motivation and strength throughout the process of completing this project.

ECO BITE

Nur Nadia Sofea binti Mohamad Angsori, Nurul Hanan binti Kasmery, Siti Hajar binti Roslan Kasim, Rahmah Hidayah binti Juprie, Nurfadillah binti Ahmad Mahmud

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ABSTRACT

Malaysia faces a range of environmental concerns that are closely tied to its rapid development, urbanization, and natural resource exploitation. These concerns include deforestation, air and water pollution, waste management, biodiversity loss, and climate change impacts. Most of Malaysia's water pollution and waste management concerns stem from plastic waste, as plastic waste issues in Malaysia come from domestic and imported sources. The objective of this product is to develop a consumable spoon in order to reduce environmental pollution that is durable enough to scoop up food and yet still can be chewed and eaten. To improve product innovation, the ADDIE Model has been used as the guiding framework for the product development process, the acronym "ADDIE" stands for Analyze, Design, Develop, Implement, and Evaluate. It is an Instructional Design model that has withstood the test of time and use. Eco Bite has received positive feedback from respondents through the questionnaire form given. By decreasing the usage of plastic, Eco Bite will benefit the environment and not endanger our world. Unlike other plastic spoons that contribute to environmental pollution, we designed Eco Bite spoons to address the issue of the quantity of non-reusable cutlery manufactured and used on a daily basis. Additionally, Eco Bite is produced with natural ingredients and is safe to consume. Therefore, they are a far healthier option than plastic cutlery, which typically contains dangerous chemicals.

Keywords : Eco Bite, Consumable spoon, Environmental pollution, Plastic waste

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CHAPTER 1:
INTRODUCTION

1.1 INTRODUCTION

Malaysia faces a range of environmental concerns that are closely tied to its rapid development, urbanization, and natural resource exploitation. These concerns include deforestation, air and water pollution, waste management, biodiversity loss, and climate change impacts, most of Malaysia's water pollution and waste management concerns stems from plastic waste as plastic waste issues in Malaysia come from domestic and imported. In 2018, Malaysia experienced a significant increase in plastic waste imports. This is due to China's implementation of the Operation National Sword policy in early 2018, which resulted in problems with global waste trade and recycling (Katz, 2019). Malaysia produces more than 30,000 tonnes of municipal solid waste (MSW) per day, or 1.17 kg per person (International Trade Administration, 2022)

Alternative goods have been developed in reaction to the growing usage of plastics, especially disposable ones, and as consumer awareness of their detrimental effects on the environment has grown. Many entrepreneurs are currently working to provide recyclable or ecologically friendly alternatives for single-use plastics. Sustainable entrepreneurship is, in essence, the realization of sustainable innovations aimed at the mass market and providing benefit to the larger part of society (Schaltegger & Wagner, 2011).

Eco Bite is developed as an environmentally friendly product in Malaysia as it is made from atta flour, oil, salt and water. We designed this product in order to reduce the environmental impact of single-use cutlery. It decomposes quickly compared to the products that made of from plastic, making them more sustainable choice for customers. Eco Bite are part of an early movement to replace plastic use and promoting sustainability in every product.

1.2 PROBLEM STATEMENT

Human exposure to microplastics through various pathways, including food, air, and water, is a growing concern (Praveena 2024). Microplastics may cause inflammation and lead to various health issues, including cancer, heart disease, inflammatory bowel disease, and rheumatoid arthritis (Kumar et al., 2024). To address plastic pollution, edible cutleries offer a new dimension and solution. Edible cutlery is natural, compostable, biodegradable, and has the potential to be nutrient-rich, which aims to resolve the controversy surrounding plastic usage for single-use cutlery (Thagunna et al., 2023).

According to Chowdhury et al., (2021) 'Edible Cutlery' is natural, bio-degradable, and compostable and can be engineered to be nutritious, aiming to eliminate the issue surrounding the use of plastics for disposable cutlery. Edible tableware or edible cutlery seems to the solution for sustainable development and environmental protection in the future (Natarajan et al., 2019).

By providing an environmentally beneficial alternative to single-use plastic cutlery, Eco Bite promotes sustainable consumption habits in line with Sustainable Development Goal 12 (SDG 12): Responsible Consumption and Production. It recognizes that the way we currently produce, consume, and dispose of goods is unsustainable, putting immense pressure on natural resources, ecosystems, and the environment. It encourages efficient use of resources, reducing waste, and promoting sustainable economic practices.

Thus, our plan to lower the problem of plastic waste in Malaysia can now be effectively solved with the introduction of edible cutlery. The detrimental effects of plastic waste on the environment and public health can be lessened by promoting the use of sustainable and eco-friendly alternatives. Therefore, to determine whether the concept of consumable cutlery is practical to reduce the problem of plastic waste, research must be done on the viability of producing edible spoons in Malaysia that are made from natural and reasonably priced ingredients like atta flour. This innovation may contribute to Malaysia's efforts to promote sustainable living and lessen plastic waste.

1.3 OBJECTIVES

- To develop a consumable spoon, Eco Bite to reduce environmental pollution.
- To identify user's level of satisfaction toward the usage of Eco Bite.

1.4 PROJECT QUESTIONS

1. How to develop an Eco Bite?
2. What is the level of satisfaction towards Eco Bite?

1.5 SCOPE AND LIMITATIONS

This study's focuses on the development alongside the evaluation of Eco Bite as a sustainable substitute for plastic cutlery in Malaysia. The goal of the project is to create a spoon that can be eaten by using atta flour. This research will furthermore investigate the viewpoints and satisfaction of Malaysian consumers in favour of using Eco Bite as a sustainable and environmentally beneficial product.

This study will be conducted among Politeknik Sultan Salahuddin Abdul Aziz Shah's commerce department lecturers and students. The selection of research participants will be based on their availability throughout their study period and their desire to engage in this study.

1.6 SIGNIFICANT OF THE PROJECT

This study can help to develop a consumable spoon to reduce environmental pollution. The invention of the Eco Bite, which offers a sustainable substitute for conventional plastic spoons, can aid in reducing plastic waste in light of Malaysia's pressing need to address the growing problem of plastic pollution. Users can enhance their dining experience by using a spoon that's not only eco-friendly but also comes with unique and delicious flavors. This innovative approach also allows you to enjoy your meals while making a positive impact on the environment.

The study's findings can also be used to better understand how consumer's feel and perceive the consumable spoon. This can reveal information about the product's prospective market as well as point out any obstacles or difficulties in its uptake.

1.7 SWOT ANALYSIS

STRENGHTS	WEAKNESS
• **Sustainability**: Eco-friendly alternative to plastic utensils. • **Innovation**: Unique selling proposition that appeals to health-conscious and environmentally-aware consumers.	• **Shelf Life:** Potential concerns about chewable or freshness. • **Market Awareness**: Relatively new product; may require significant marketing efforts to educate consumers.
OPPORTUNITIES	**THREATS**
• **Growing Eco-Consciousness**: Increasing demand for sustainable products. • **Expansion into Food Service**: Potential partnerships with restaurants, catering services, and events.	• **Competition**: Other eco-friendly alternatives may emerge, such as biodegradable or compostable utensils. • **Market Acceptance**: Risk of slow adoption if consumers are hesitant to switch from traditional utensils.

1.8 SUMMARY

Eco Bite will give a good impact to the environment by reducing plastic use and it will not harm our planet. Unlike other plastic spoons that will contribute to environmental pollution, our Eco Bite are made to help the concerns about the amount of non-reusable products that are being produced and used every day. At the same time, Eco Bite is safe to eat because it is made from natural ingredients. This makes them a much healthier alternative to plastic utensils, which usually contain harmful chemicals.

CHAPTER 2:
LITERATURE REVIEW

2.1 ENVIRONMENTAL ISSUES

Disposal of solid waste is a major issue in today's scenario. Many countries are facing massive solid waste management problems due to rapid urbanization and population explosion (Natarajan et al., 2019). Plastic, on the other hand, is nonbiodegradable and has a negative impact on the environment. As a result, the plastic causes some environmental difficulties (Umate, 2024).

Considered in a wide context, the potential implications of accumulated and weakly reversible plastic pollution on the global environment are widespread, that extend both geophysical and biological aspects, and could put further pressure on ecosystems already exposed to various pressures (MacLeod et at., 2021). Malaysia adheres to global trends in both overall plastic trash as well as the consumption of single-use plastics, which have been steadily increasing since the 1970. (Chen et al., 2021).

With a concern over environmental pollution and degradation of people's health due to consumption of plastic, many entrepreneurs have developed innovative tableware which is edible and also bio-degradable. Edible tableware or edible cutlery seems to the solution for sustainable development and environmental protection in the future. (Umate S. K.,2024).

2.2 ECO-FRIENDLY PRODUCT

This research focus on concept and implementation of eco-friendly design-based products over the years. The concept of eco-friendly product design and its impact on customer attitudes has been the topic of many discussions, but the term eco-friendly is still disputed by the public. In the minds of people today, the relationship between environment and design for specific items has become a complex problem. (Sintowoko & Hidayat, 2021). New or different is what is meant by innovation (Tidd et al., 2001). As early as the 1900s, Schumpeter (1939) asserted that innovation is one of the prerequisites for new economic growth. He stated that innovation will appear in the form of new products, new techniques or procedures for production, new markets or new suppliers. The essence of innovation as a desire for change and economic progress has continued despite the fact that the concept of innovation has been widely explored and improved. (Boons et al, 2013,).

The increase in the number of people shows that they are ready to choose products that are environmentally friendly, which is the result of increasing consumer knowledge about these products (Yadav et al., 2019). In addition, many businesses have begun to produce and market environmentally friendly products as a result of stricter and stricter environmental laws imposed on natural resources (Khan et al., 2017; Kumar et al., 2018; Yadav et al. et al., 2019). It is very important for all these businesses to understand how consumers see and choose environmentally friendly products to promote them effectively (Cherrier et al., 2011).

The results of environmentally friendly consumer behavior can be facilitated by fostering positive attitudes towards environmentally friendly products. According to some studies, more than 30% of consumers feel happy about environmentally friendly products. These users know more about food sources, environmentally friendly packaging and other related topics. They are more likely to buy environmentally friendly products because they think they are safer, better for the environment, and better for human health and well-being (Vermeir et al., 2006; Tanner et al., 2003).

The disposal of plastic waste is one of the main causes that are very troubling to the environment. Among them plastic waste, disposal of plastic utensils and more are important and have a huge impact on the environment. The heavy use of plastic can be minimized with better alternatives, as complete elimination is not possible due to dependence and consistent use. So, a better substitute is cutlery that consists of products based on atta flour, oil, salt and water. Edible cutlery is biodegradable and environmentally friendly and is also a better substitute for plastic cutlery. (Roy & Morya, 2022).

This cutlery can contribute to changing an unhealthy lifestyle to a healthier one by reducing health risks such as cancer, endocrine disorders, and weakened immunity due to exposure to leaking plastic food storage containers. The final quest of this paper is to reduce the use of plastic and products made from plastic. It can help to achieve the United Nations' sustainable development goals (SDGs), which include ensuring healthy lives and promoting well-being for all users at all ages (SDG-3) and taking urgent action to combat climate change and its impacts (SDG -13). (Roy & Morya, 2022).

2.3 ECO BITE

Single use plastic is a major contributor to environmental pollution, it takes a long time to decompose and releases harmful chemicals into our ecosystem. Eco Bite has been chosen as one of the innovative solutions to the problem of the increasing use of plastic waste and polluting the environment. Eco Bite are made from Atta flour, oil, water and salt.

The reason Atta flour is chosen because it is made from finely ground wheat, complete from the skin, endosperm (the largest part of the wheat grain that contains a lot of protein, starch, and water), and the essence. (Fajrianti, 2021). Atta has better benefits than wheat flour because it contains a higher amount of protein, dietary fiber, vitamins and minerals. But has a less shelf life due to the presence of oil from germs and fat-breaking enzymes. (Wallace, 2024). For example, carbohydrates, protein, fiber, and vitamin A, vitamin B1, vitamin E, and some minerals. This flour is produced in India and is widely used to make various types of bread. (Fajrianti, 2021).

Among the benefits when using this flour is, it can help keep a person's blood sugar levels low. Foods that contain carbohydrates will be converted by the human body into glucose. Glucose will enter the human blood and supply cells with sugar. Foods that consist of flour contain a high glycaemic index so that the blood quickly gets sugar (Sinarplus,2022). In addition, atta mixed flour shows a low glycaemic index (GI) food value. Therefore, it can be included in the Indian diet to replace existing high GI food options such as refined grains. However, the selection of atta mixture can reduce the glycaemic load of the overall diet which can benefit the population, namely insulin resistance (Radhika et el., 2010).

There are several advantages of using Eco Bite for the environment and individual health. Conventional plastic spoons effect a lot to environment pollution. This Eco Bite is also safe to eat because there are no chemicals. Eco Bite offer a sustainable alternative by encouraging environmentally friendly behavior and reducing plastic use. Since this product consists of natural, safety ingredients, no harmful waste is produced. All consumers can contribute to a greener environment and benefit from creative and useful solutions for daily eating needs by choosing Eco Bite.

2.4 SATISFACTION TOWARDS ECO FRIENDLY PRODUCT

According to (Oliver, 2006), satisfaction refers to the user's perception that the characteristics of the product or service provide a satisfactory level of satisfaction or not. It covers various areas of life, for example, personal achievement, emotional and psychological health well-being, or user experience. Basically, satisfaction is one of the positive emotional responses that some people can feel when something is in line with what they want, whether it achieves their goals, or doesn't meet their tastes (Chang & Fong, 2010).

However, a significant consideration in any form of purchase, including green products, is user satisfaction, which is one of the cognitive analyses of satisfactory service satisfaction when using a certain product (Ahrholdt et al., 2019). To obtain a high degree of pleasure with eco-friendly products, consumers focus on cognitive factors and emotional considerations separately or concurrently. Then it can lead to brand loyalty, delight, and a shift in behaviour toward a better option (Finn. A, 2012). As consumer behaviour is significantly influenced by circumstances, consumer happiness is an important factor that can contribute more clearly to the increased use of green products.

2.5 ADDIE MODEL

The ADDIE model is a prevailing framework for instructional design and development, proposing an organized approach to developing effective educational and training programs. ADDIE is an acronym corresponding to:

I. Analysis

The Analyse phase functions as the foundation for subsequent phases of instructional design. During this phase, the researcher defines the problem, determines the source of the problem, and considers potential solutions. The phase may contain research methodologies such as need analysis, goal analysis, and task analysis. This step frequently produces instructional goals as well as a list of actions to be instructed. These outputs will serve as inputs for the Design phase (Muruganantham, 2015).

II. Design

The design process involves key aspects like research and planning, which include identifying objectives, strategies to achieve them, and selecting effective media and methods (Seels & Glasgow, 1998). Thorough planning in the initial stages prevents redundancy during implementation. Assessment is also crucial in the design process, determining how objectives will be evaluated before implementation. Tanner (2001) emphasized that assessments should align with and support other components of the plan, highlighting a model where assessment is integrated from planning to final evaluation (Peterson, 2003).

III. Development

Designers must now refer to the outcomes of the previous two stages and create a product to communicate the information during the development phase. This transitional stage shifts the designer's responsibility from research and planning to manufacturing mode. The development phase focusses on three areas: draughting, production, and evaluation. During this stage, designers develop or select materials and media, as well as conduct formative evaluations. Evaluations during the development stage have a different focus than the actual evaluation format used during stage 5 of the ADDIE process. Using a formative method, evaluation during

the development phase draws attention to the product and its quality requirements (Peterson, 2003).

IV. Implementation

The ADDIE implementation phase is when learners receive the instruction and materials created in previous stages. It is critical since it is where learning takes place and allows you to assess the performance of the design process while identifying areas for improvement. Before handing over materials to instructors, instructional designers create a training program to ensure instructors understand the course materials, learning outcomes, technology use, and testing procedures. This preparation enables educators to convey the information effectively (Seismic, 2024).

V. Evaluation

Evaluation is essential at every stage of the ADDIE model and continues after the first course delivery. Immediate and ongoing feedback allows for quick improvements. During the evaluation phase, you can formally assess the program through post-assessments, observations, and productivity data, revealing what learners gained, how they applied it, and the outcomes achieved (Van Vulpen, 2023).

2.6 CONCLUSION

In conclusion, environmental issues such as improper waste disposal, plastic waste, and textile waste has a very significant negative impact, not only on nature but can also impact on human and animal well-being. Increase of waste in landfills and oceans is highly discouraged as it will have an impact on pollution problems, habitat destruction, and bioaccumulation of toxic chemicals in the food chain. Hazardous waste, for example in construction and waste disposal is one of the main pollutants to carbon emissions by depleting natural resources. One of the strategies that can help eliminate the pollution that damages our environment today is to reduce the use of single-use plastics that encourage recycling and implement waste reduction programs.

Other than that, businesses and consumers are encouraged to adopt more sustainable practices due to the growing pressure from environmental regulations and the growing awareness of environmentally friendly products. The development of environmentally friendly design is greatly assisted by innovative design, which grow the market towards solutions that not only improve the health of consumers but also reduce the negative impact on the environment. Products such as edible and biodegradable cutlery provide a possible substitute for plastic, reducing the negative impact of plastic waste on the environment and public health. Businesses can make a greater contribution to global sustainability initiatives by creating environmentally friendly alternatives and fostering favourable consumer attitudes. Ultimately, these programs help realize the Sustainable Development Goals (SDGs) of the United Nations, especially those related to health and climate change, promoting a better world and way of life.

This is one of the important benefits that can be realized. It is very important to continue to make a research and produce risk-free, effective long-term solutions in sequence to reduce the negative effects of environmental problems and preserve the planet for the future generation.

CHAPTER 3:

METHODOLOGY

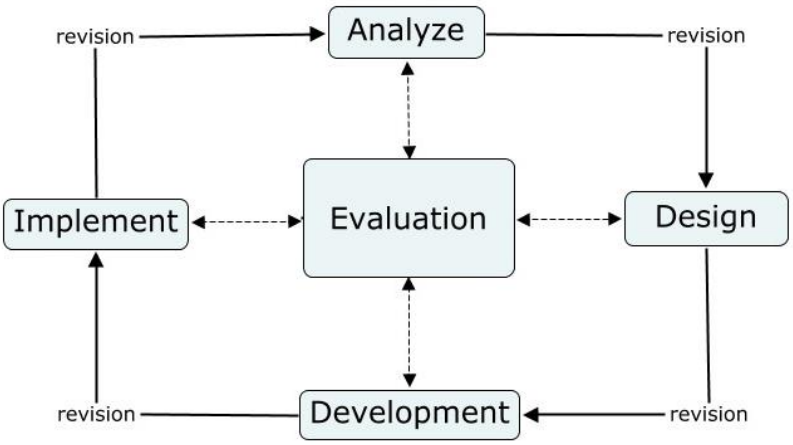
3.1 INTRODUCTION

Research Methodology offers students a thorough overview of various research paradigms and methodologies, highlighting their ontological and epistemological foundations, as well as the associated methods and techniques. This knowledge equips students to design methodologically sound research proposals and enhances their interdisciplinary methodological literacy as future researchers (Verma et al., 2024).

3.2 PROJECT DESIGN

To align with specific product types and improve the management of project innovation, the ADDIE MODEL was selected as the guiding framework for the product development process. A study by (Taqwa et al.,2022) indicates that the ADDIE MODEL was implemented using both qualitative and quantitative approaches, employing data analysis techniques to assess validity, practicality, and effectiveness.

Here is an example of how the ADDIE model could be applied to the development of an Eco Bite spoon:



ANALYZE – Firstly, the researcher needs to identify the need for an eco-friendly spoon and understand the target market.

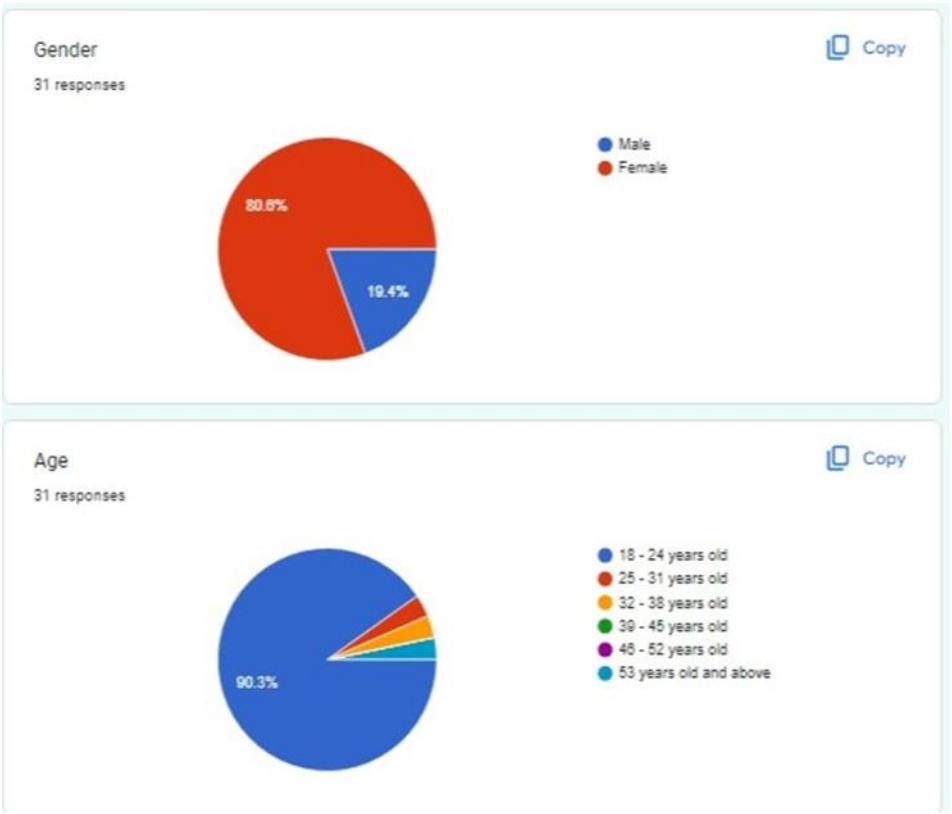
The actual data of this study was collected from a sample of students and lecturers of commerce department. The data was drawn from a wide group regardless of employment and student status. The questionnaire was distributed to respondents using a google form.

So, this is a google form that has been distributed to respondents:

https://forms.gle/EeKhR2d95CKoU1iL6

The survey that has been given is 5 questions. The data were analyzed to obtain a descriptive analysis and then interpret the results using these practical rules: Strongly Disagree, Disagree, Neutral, Agree and Strongly Agree. The data on the number of respondents collected from the questionnaire at this level is as high as 31 people. With that, the team has produced an 'ECO BITE' product and achieved the objective based on the data.

Below is the need analysis along with the answer options provided for the respondent:



Employment Status

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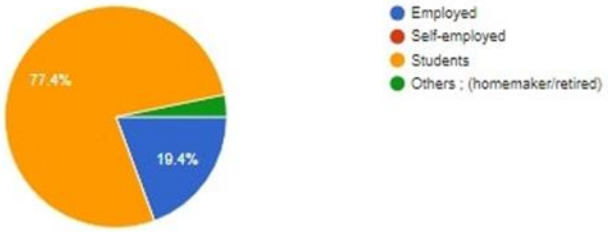
31 responses



1. Products that do not harm the environment are important to use

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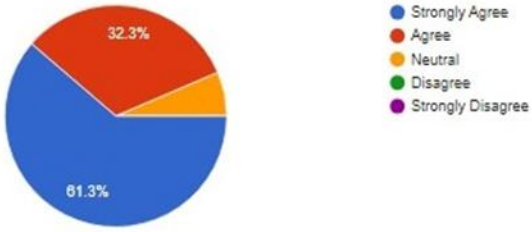

2. I am willing to try using edible spoons if they help reduce plastic waste.

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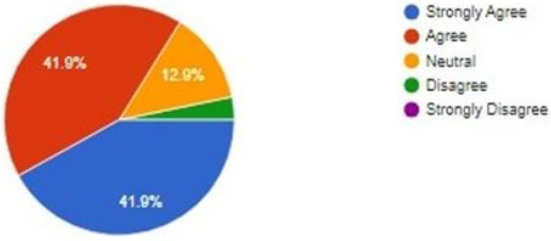
31 responses



3. I would prefer to use edible spoons over plastic spoons if they were easily available.

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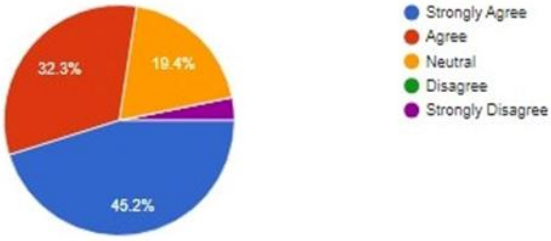
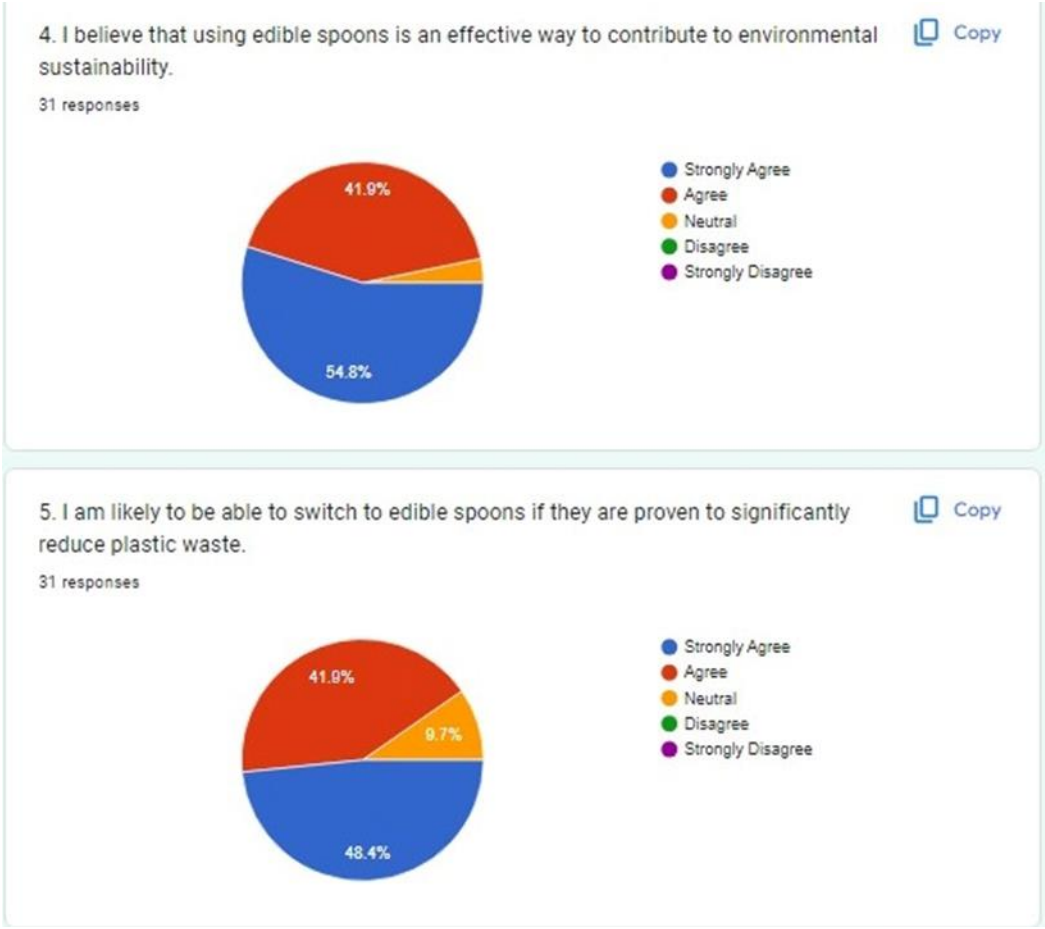
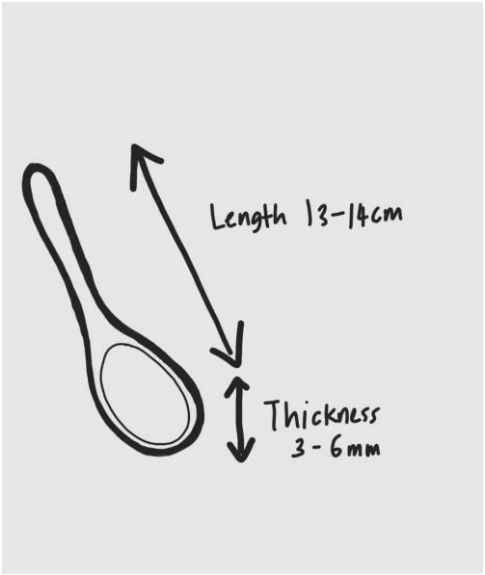
31 responses





DESIGN – During this phase, the team creates initial sketches or digital models of the Eco Bite spoon. These early designs serve as the foundation for developing the prototype. This process involves developing a preliminary design for the spoon, considering factors such as ingredients, size, shape, and texture.



DEVELOPMENT – In this phase, the team develop physical prototypes based on the sketches. This phase involve working with materials and equipment in order to create Eco Bite. Various attempt to identify error in the making of the spoon to improve the quality of Eco Bite.

MATERIALS AND EQUIPMENT

Atta Flour

Atta Flour is main ingredient to make Eco Bite. Atta Flour is a type of flour made from finely ground whole wheat, including all parts of the grain, the bran, endosperm, and germ. This gives atta flour its distinctive brown colour and makes it more nutritious than refined wheat flour. It is rich in carbohydrates, protein, fiber, and essential vitamins such as vitamin A, B1, and E, along with various minerals. Because it retains all the layers of the wheat grain, Atta flour offers more health benefits than regular wheat flour, making it an important part of Eco Bite. Atta flour is different from other wheat flours because of the type of wheat used and its finer texture. This makes it a good choice for making eco-friendly spoons, as the fine texture helps create a strong and sustainable material (Fajrianti, 2021).



Water, Salt and Oil

The core ingredient used in the production of attar flour is blended with flour to achieve the desired dough texture. Salt brings out the best flavor in the dough and enhances its flavor. (Bridenstine,2024). While oil helps to improve the dough's texture and moisture content in the finished Eco Bite Project. Water is essential for starting the dough creation process (Richard Charpentier & Sosland Publishing Co) Furthermore, oil serves as a source of fat within the composition (Mackenzie,2023).

STEP 1 – Ingredients Preparation

Prepare the ingredients and make sure they are measured in the correct quantities. The ingredients needed to make the ‘ECO BITE’ spoons are:

1.2 cups of ATTAR Flour (RM 5.50)

2. 3 tablespoons of salt (RM 3.00)

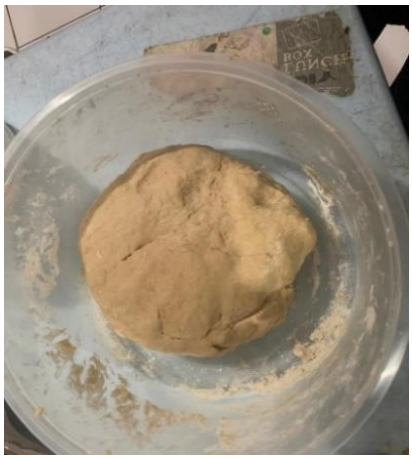
3. 4 Tablespoons of oil (RM 2.70)

4. 250 ml water (RM 2.00)

Using the ingredients and their precise measurements, we can produce at least 200 edible spoons. The total cost for all the listed ingredients amounts to approximately RM19.70.

STEP 2 – Dough Mixing

Water was added to the flour and mix until it combined. Gradually incorporate the oil and a pinch of salt. Keep mixing the dough, then add the rest of the salt and mix again until thoroughly blended. Allow the dough to rest for 10 minutes.



STEP 3 - Shaping

Sprinkle flour on the board to prevent the dough from sticking. Use a rolling pin to flatten the dough. After that, take out a metal spoon as a mould and coat it with oil. Press the dough into the mould to measure and cut it. Use a second mould to help the dough retain its shape during baking. Cut the remaining dough to fit the mould. Finally, place the moulds on a baking tray for baking.

STEP 4 – Baking

Once the moulds are arranged on the baking tray, place them in the oven or microwave. Set the oven to 120°C and bake for 30 minutes. Ensure that the oven or microwave is preheated with heat coming from both the top and bottom. After 30 minutes, remove the tray and let the spoon cool for about 10 minutes. Your edible spoons will then be ready to eat.

STAGE 5 – Testing

Once the prototype is developed, the team will conduct more comprehensive testing of the edible spoons in the lab to ensure they meet all relevant food safety standards and regulations. This will help instil confidence in respondents regarding food standards.

Results of the development:

FIRST ATTEMPT

Comment from the tester:

1. Nice taste
2. Thick to bite and chew
3. Have shape
4. The center of the spoon is not cook

SECOND ATTEMPT

Comments from the tester:

1. Better taste
2. Nice taste and like biscuits
3. The shape needs to be fixed

IMPLEMENTATION – For this stage, the team introduced Eco Bite to the respondents by giving samples.

In the study on Eco Bite, cluster sampling was applied by dividing Politeknik Sultan Salahuddin Abdul Aziz Shah into one cluster which are students and lecturers from Commerce Department. Following the guidelines of Sekaran regarding sampling methods, 51 respondents consist of students and lecturers from Commerce Department were selected to test the effectiveness of Eco Bite. In this regard, the selection of such clusters allowed the study to gather data effectively and avoid the surveying of every individual in the whole population.

The images attach is the process of providing the Eco Bite product sample to respondents. These images shows the respondents engaged with the product, allowing us to observe their honest reactions and gather valuable feedback. This visual evidence supports the data collection, providing insight into the participants' experience with Eco Bite.








EVALUATION – As for the final stage, the team gather feedback from respondent on the 'Eco Bite' performance and analysing the outcomes. Evaluation is needed for find the satisfaction of the respondent towards the product and identifying the improvement.

After the team collected 51 respondents to answer the questionnaire given, the data were transferred to IBM SPSS Statistics version 30.0.0. The reason IBM SPSS Statistics ("Statistical Package for the Social Sciences") were used because it is a software package for statistical analysis, data management and documentation. This chapter introduces SPSS software and provides an overview of its features. Topics covered include data preparation, data import, selection of parametric and non-parametric statistical tests, export and modification of statistical results, and construction of charts and tables (Caplova et el., 2020).

To increase the reliability for this product, nutritional test has been run. This nutritional analysis proof that the edible spoon has a fairly balanced nutrient profile for a food product, with moderate fat and low sugar levels and a relatively high protein content.

The level of fat that contain in the spoon is 4.2 g/100 g which tend to be healthier since it is made from natural ingredients such as grains. As for sugar level, there are 4.4 g /100 g which is relatively low compared to most processed snacks and would not affect the health risk if consumed in moderation. Lastly, the protein that consists in the spoon is 11.0 g/100 g. It shows that the protein content is quite high for an edible spoon and could be a positive health feature. High protein could make the spoon more filling and provide additional nutritional benefits, making it suitable for individuals looking to add more protein to their diet

As for conclusion, based on the provided nutritional data, the edible spoon appears to be a reasonably healthy option, especially in moderation and within the context of a balanced diet. However, further information on ingredient sources and additional nutritional components (like fiber and sodium) would provide a more comprehensive assessment.

3.3 SUMMARY

This chapter begins with an introduction to the methodology, followed by an explanation of the design project. The design framework used for this project is the ADDIE Model, which helps effectively achieve the objectives of the Eco Bite initiative. A questionnaire was administered before implementing the methodology, in order to guide the direction of the subsequent study. The data collected from this questionnaire was analyzed to assess the effectiveness of the Eco Bite product, and the chapter will discuss factors influencing the results.

CHAPTER 4:
DATA ANALYSIS RESEARCH FINDINGS

4.1 INTRODUCTION

In this chapter will show the result that we achieve in order to see the effectiveness of our product Eco Bite which has been produced in the chapter 3 above. The results of the questionnaire we gave to respondents through online were analyzed in more detail to show the conclusions based on our objectives stated.

4.2 RELIABILITY TEST OF QUESTIONNAIRE

Cronbach's alpha reliability coefficient normally ranges between 0 and 1. However, there is actually no lower limit to the coefficient. The closer Cronbach's alpha coefficient is to 1.0 the greater the internal consistency of the items in the scale (Gliem & Gliem, 2003). We tested the reliability of our questionnaire using 'IBM SPSS Statistics software version 30.0.0' and the Cronbach's Alpha result of our questionnaire is 0.845 based on the figure below:

Scale: Reliability Analysis

Case Processing Summary

		N	%
Cases	Valid	51	100.0
	Excluded[a]	0	.0
	Total	51	100.0

a. Listwise deletion based on all variables in the procedure.

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.845	.851	8

4.3 DESCRIPTIVE ANALYSIS

Descriptive analysis is looking for patterns in data to answer questions. It also describes how to approach, perform and communicate quantitative descriptive analysis more efficiently. Whether the goal is to find and characterize population trends and variations, construct new measures of important phenomena, or describe samples in a study to find causal effects, description is important in the scientific process in general, and educational research in particular. This guide is intended primarily for members of the research community who create and publish descriptive and causal studies. (Loeb et el., 2017).

4.3.1 RESPONDENT DEMOGRAPHIC PROFILE

Researchers provide an online questionnaire to the JPG students and lecturers of Politeknik Sultan Salahuddin Abdul Aziz Shah that tested our products and get feedback from them. These questions are related to profile of respondents and their status in society. This project has requested personal information from respondents such as gender, age, and employment status.

Demographic	Category	Frequency	Percentage (%)
Gender	Male	14	27.5%
	Female	37	72.5%
Age	18 - 24 years old	40	78.4%
	25 - 31 years old	-	-
	32 - 38 years old	2	3.6%
	39 - 45 years old	3	5.9%
	46 - 52 years old	6	11.8%
	53 years old and above	-	-
Employment status	Employed	12	23.5%
	Self-employed	2	3.9%
	Students	37	72.5%

Table 4.3.1

Based on table 4.3.1 above, it has shown the demographic profile of respondents for this project. According to gender, there are 27.5% of male and 72.5% of female respondents equivalent for two genders of 51 people. According to the age group, there are 78.4% comes from age 18 - 24 years old, 3.6% comes from age between 32 – 38 years old, 5.9% comes from the age 39 – 45 years old and another 11.8% comes from the age of 46 – 52 years old. According

to the employment status, 23.5% of the respondents are employed, 2% are self-employed and 72.5% are students.

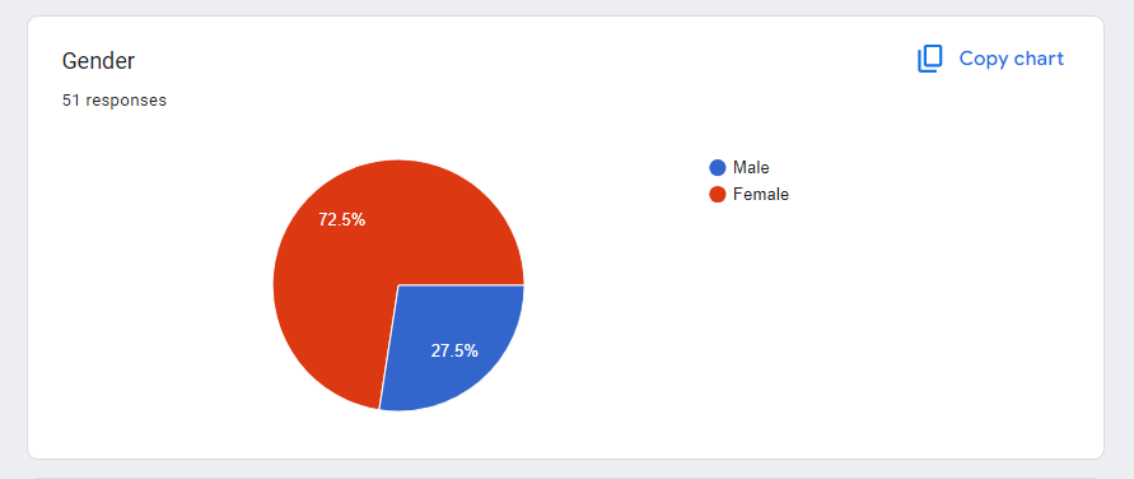


Figure 4.1.1

Figure 4.1.1 above shows the gender of the respondents with 72.5% which equivalent to 37 female respondents and the other 27.5% equivalent to 14 male respondents. Both gender summed up to total of 51 respondents.

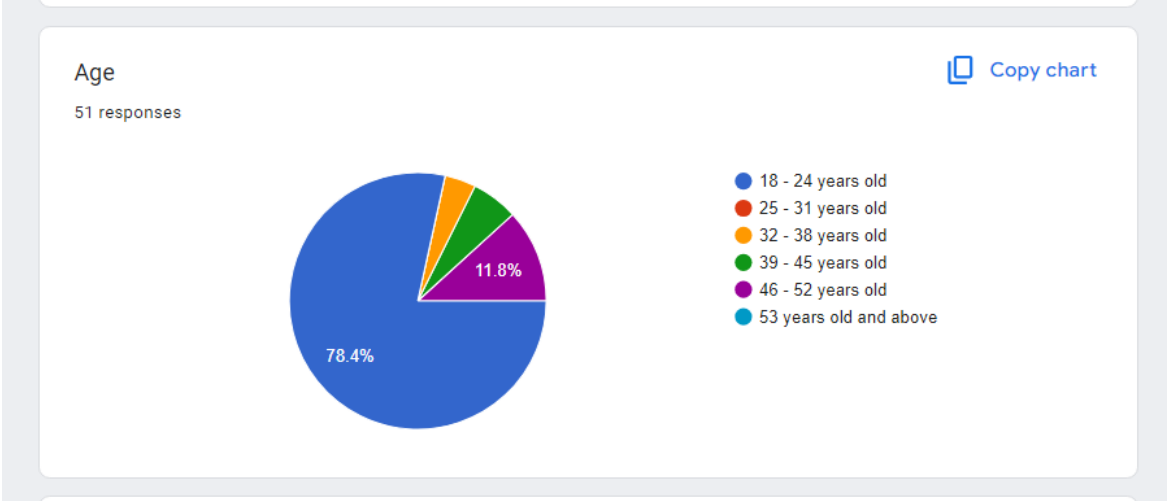


Figure 4.1.2

Figure 4.1.2 above shows the age group of the respondents. Respondents age ranges from 18 to 53 years old and above, and is broken down into 6 groups of ages. 18 – 24 years old are the biggest age group with 78.4% with 40 total respondents, it is because the product tester is mainly the student of Politeknik Sultan Salahuddin Abdul Aziz Shah. 32 – 38 years old are the smallest age group for respondents with 3.9% (2), 39 – 45 years old with 5.9% (3) and 46 – 52 years old with the total of 11.8% percent with 6 respondents.

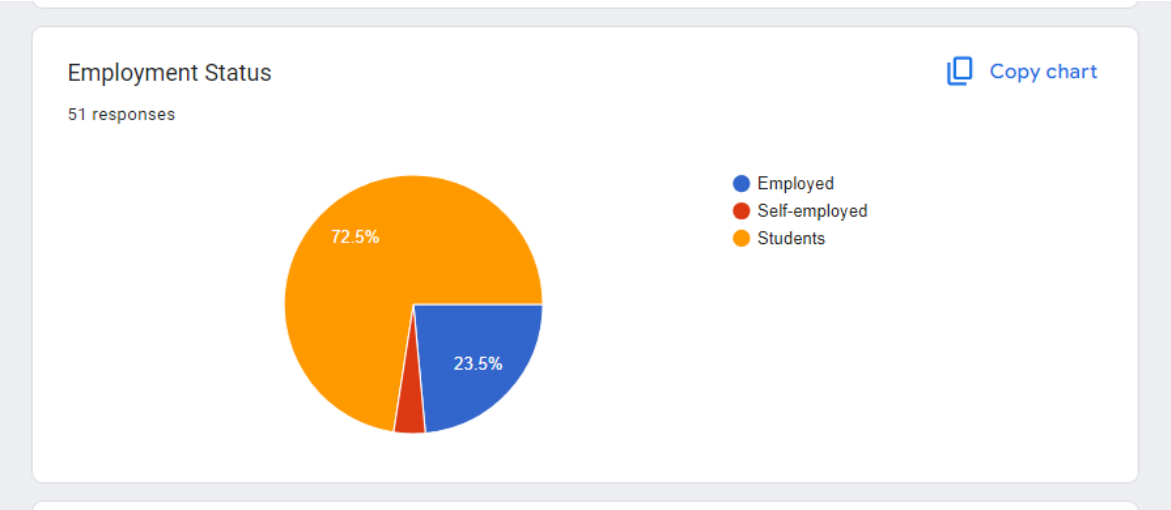


Figure 4.1.3

Figure 4.1.3 above shows the employment status of the respondents. students made up the most of the chart with 72.5% which equal to 37 respondents, this is largely because the research is conducted at Politeknik Sultan Salahuddin Abdul Aziz Shah. Employed is in the second with 23.5% equal to 12 respondents while self-employed 3.9% which is 2 respondents.

4.3.2 Central Tendencies Measurements of Construct

In this section, researcher gave respondents 8 statements that they can value based on their level of satisfaction towards Eco Bite. The mean or average, is a measure of central tendency that summarizes a set of values by calculating the sum of all observations and dividing by the number of observations. It is commonly used in quantitative research to provide insights into the central or value within dataset, allowing researchers to analyze trends and compare different groups (Gliem & Gliem, 2003). The mean will decide each score, and this data showed that the scores were listed as follows:

SECTION 1: ASPECT OF PRESENTATION DESIGN

ITEM	VARIABLES	MEANS (STATISTICS)	LEVEL	STANDARD DEVIATION
1	I am satisfied with Eco Bite as a sustainable and eco-friendly consumable spoon.	4.45	High	0.577
2	Eco Bite's efforts in reducing waste through consumable spoons align with my expectations.	4.59	High	0.536
3	I am satisfied with the quality and taste of the Eco Bite as consumable spoons.	4.22	High	0.730
4	Eco Bite effectively promotes environmentally sustainable practices through its consumable spoons.	4.53	High	0.504
5	I am satisfied with Eco Bite's efforts to minimize the use of traditional plastic spoons.	4.53	High	0.504

6	Using Eco Bite's consumable spoons enhances my overall dining experience.	4.33	High	0.653
7	Eco Bite effectively raises awareness about sustainable consumption through their product.	4.45	High	0.577
8	I am more likely to use Eco Bite as consumable spoons again to encourage sustainability in Malaysia.	4.51	High	0.579
	TOTAL AVERAGE	4.45125		0.5825

Table 4.3.2

Based on the table 4.3.2 above, the highest mean is for item 2 (4.59) with a standard deviation of 0.536. While the lowest mean is for item 3 (4.22) with a standard deviation of 0.730. The mean average for the aspect of presentation design was 4.45125. The researcher will analyze each of the eight items separately and present the findings in a pie chart based on table 4.3.2 above.

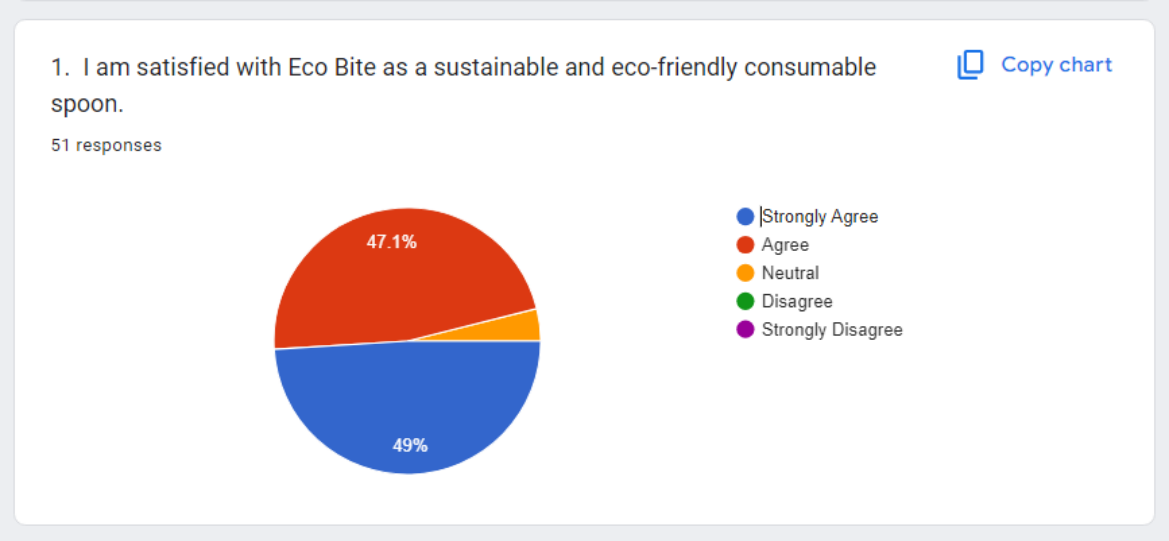


Figure 4.2.1

Figure 4.2.1 above shows the level of satisfaction among respondents regarding Eco Bite as a sustainable and eco-friendly consumable spoon. The largest group, nearly half of the respondent consists of 25 respondent (49%) chose strongly agree that Eco Bite is a sustainable and eco-friendly consumable spoon, 24 respondents (47.1%) chose agree and 2 respondents (3.9%) chose neutral.

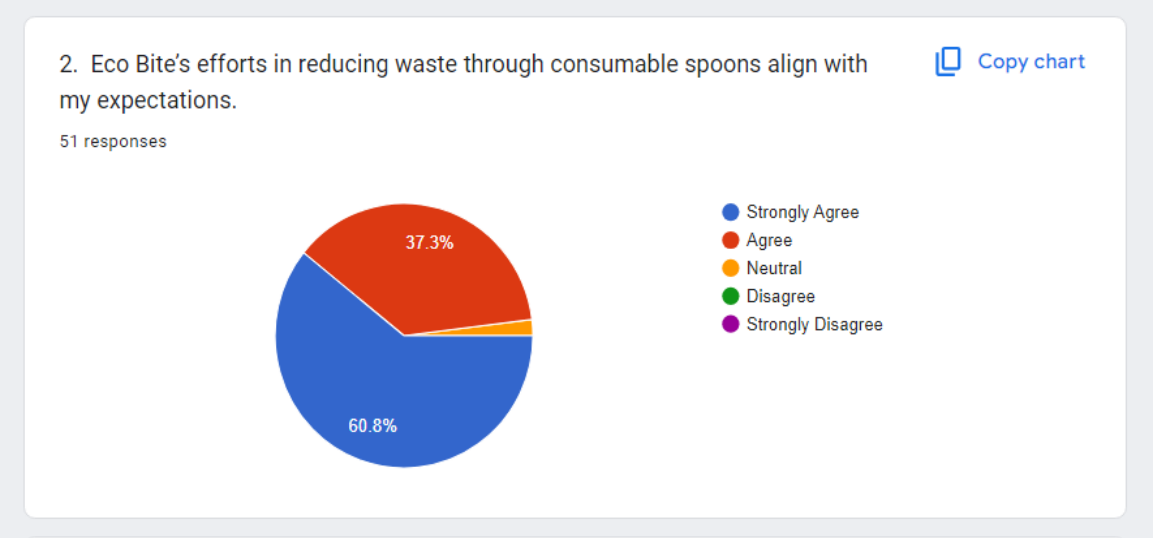


Figure 4.2.2

Figure 4.2.2 above shows respondent's opinion whether Eco Bite's efforts in reducing waste through consumable spoons align with their expectations. The majority of respondents, 31 respondents (60.8%) chose strongly agree that Eco Bite's waste reduction efforts align with their expectations, 19 respondents (37.3%) chose agree and only 1 respondent (2%) chose neutral.

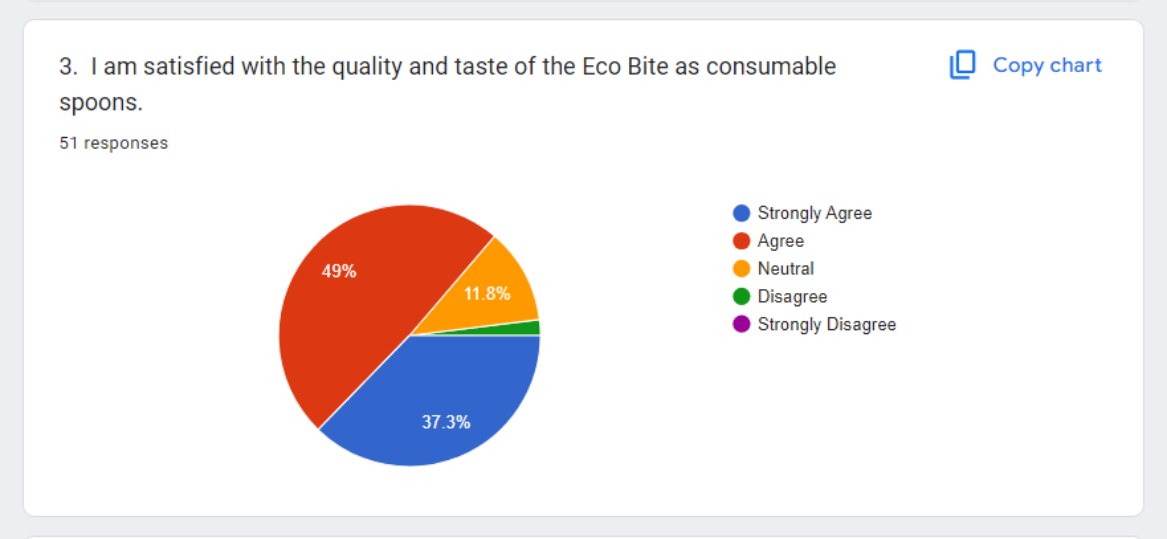


Figure 4.2.3

Figure 4.2.3 above shows respondent's satisfaction with the quality and taste of the Eco Bite as a consumable spoon. Half of the respondents which are 25 respondents (49%) chose agree with the quality and taste of the Eco Bite as consumable spoon, 19 respondents chose strongly agree (37.3%), 6 respondents chose neutral (11.8%), and only 1 respondent (2%) chose disagree.

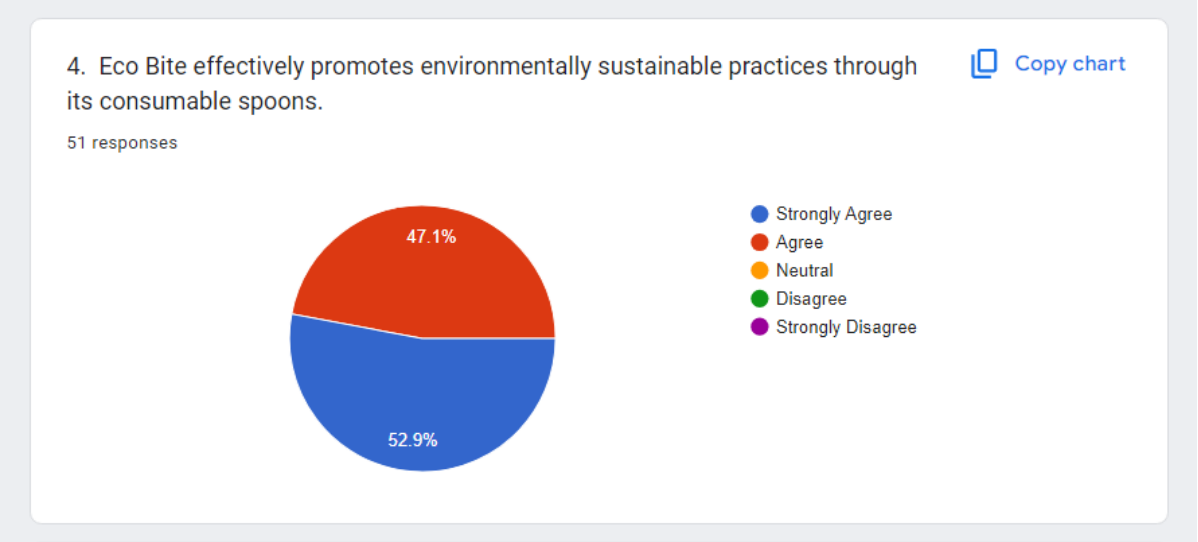


Figure 4.2.4

Figure 4.2.4 above shows respondent's view whether Eco Bite effectively promotes environmentally sustainable practices through its consumable spoons. A little over half of the respondents, 27 respondents (52.9%) chose strongly agree that Eco Bite effectively promotes environmentally sustainable practices through its consumable spoons, and 24 respondents (47.1%) chose agree.

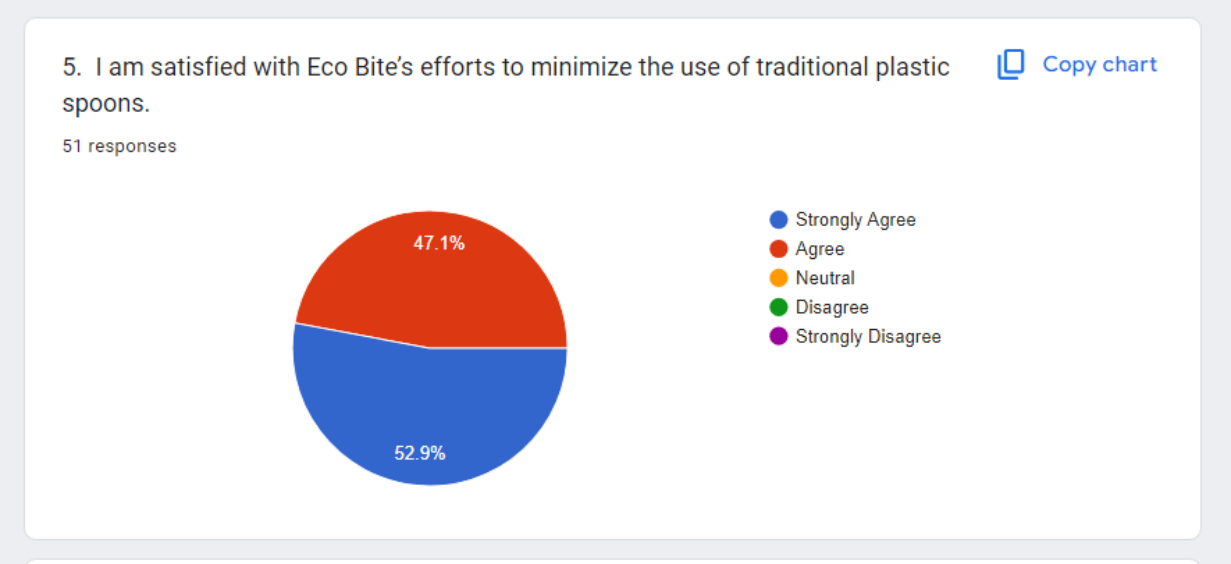


Figure 4.2.5

Figure 4.2.5 above shows the level of respondent's satisfaction with Eco Bite's efforts to minimize the use of traditional plastic spoons. Most of the respondents which are 27 respondents (52.9%) chose strongly agree with Eco Bite's efforts to minimize the use of traditional plastic spoons, and 24 respondents (47.1%) chose agree.

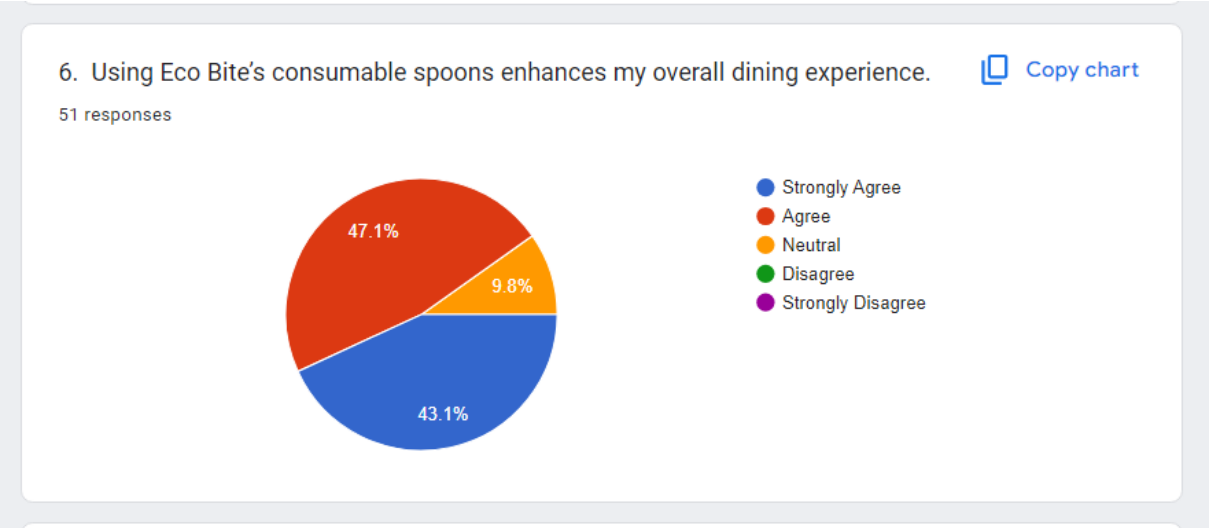


Figure 4.2.6

Figure 4.2.6 above shows respondent's thought on using Eco Bite's consumable spoon will enhance their overall dining experience. 24 respondents (47.1%) agree on using Eco Bite's consumable spoon will enhance their overall dining experience. 22 respondents (43.1%) chose strongly agree, and 5 respondents (9.8%) chose neutral.

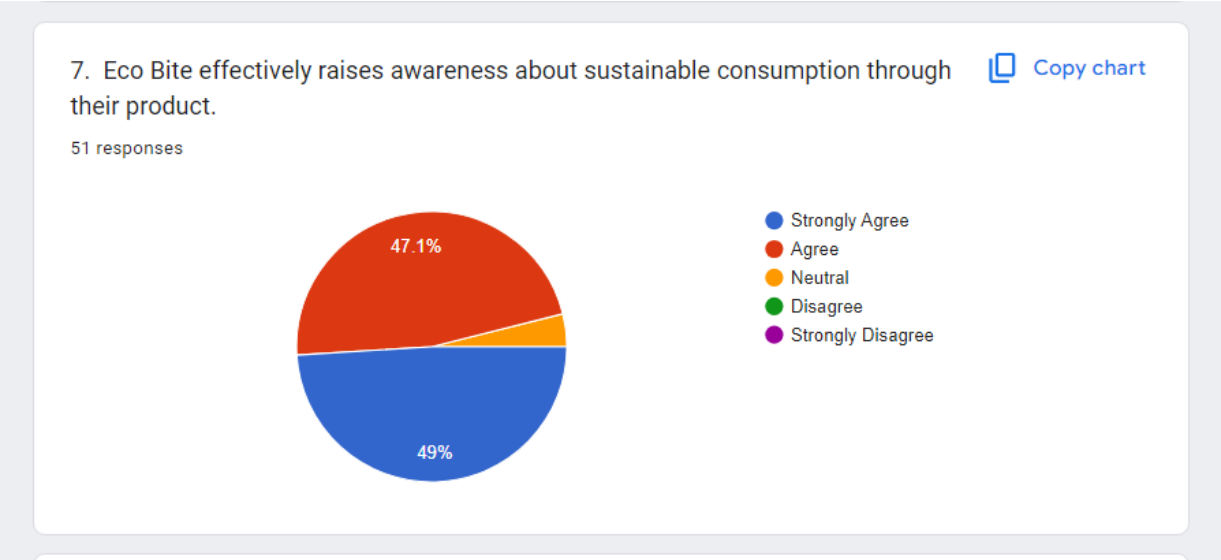


Figure 4.2.7

Figure 4.2.7 above shows respondent's view on whether Eco Bite effectively raises their awareness about sustainable consumption through our product. 25 respondents (49%) chose strongly agree that Eco Bite effectively raises their awareness about sustainable consumption through our product. 24 respondents (47.1%) chose agree, and 2 respondents (3.9%) chose neutral.

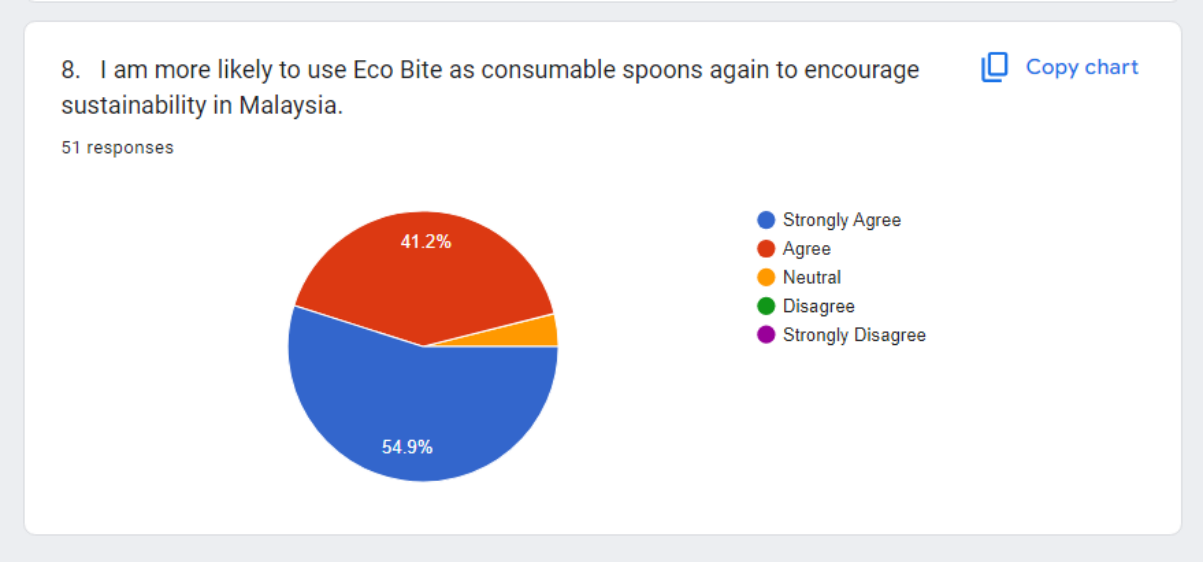


Figure 4.2.8

Figure 4.2.8 above shows how likely respondents would use Eco Bite as consumable spoons again to encourage sustainability in Malaysia. Half of the respondents which are 28 respondents (54.9%) chose agree with using Eco Bite as consumable spoon again to encourage sustainability in Malaysia. 21 respondents (41.2%) chose agree, and only 2 respondents (3.9%) chose neutral.

4.4 Conclusion

To sum up, this chapter has provided a comprehensive overview of the data analysis and research findings. In the table that is presented in detail in this chapter, the explanation and description of the data analysis have also been gathered and expressed through questionnaires that we developed for our testers.

CHAPTER 5:
CONCLUSION AND RECOMMENDATION

5.1 INTRODUCTION

In this chapter will discuss about the findings, limitations, future recommendations, and conclusion for the entire report. This is to ensure that edible spoon products can reach objectives that have been set before the production of edible spoons begins.

5.2 FINDINGS

This chapter will investigate the objectives and market for edible spoons in Malaysia and raise awareness among consumers about sustainability and environmental impact. It discusses how the product is designed to be environmentally friendly and appealing to consumers, thus aiming to have a positive impact on the environment while capturing a significant market share. Edible spoon products have been developed using the ADDIE Model as our framework for the development of edible spoons. The study findings indicate that the intention to use edible spoons as an alternative to plastic spoons is at a high level. This study was conducted using a Google Form questionnaire and distributed to 50 respondents in the commerce department. The research data was analyzed using SPSS and showed that there is attraction and demand for edible spoons as an alternative to plastic spoons**.**

5.3 LIMITATIONS

When it comes about developing innovation, there will always be advantages and disadvantages during the process. For this project, there are some of exception that occur while developing our product. Here is the list of the limitations:

The first limitations during the developing process is when we want to give the testing of Eco Bite to the respondent. To give a taste to respondents is quite challenging for us when lecturers and students are hesitant to taste the spoon and some of them also have other things to do such as having classes, being busy with their task and assignment, and chasing time to complete their work.

The second limitations are we do not have proper packaging for our products due to lack of time and damages to the plastic manufacturing machine at the Politeknik. We only have a sample of packaging that available in the market during the final presentation.

The last limitations throughout the process of making this product is the inconsistent shape and durability of the spoon during the developing process. There are some too hard, not cooked, no spoon shape and some of the spoon also limp, a little overcooked and break quickly.

5.4 FUTURE RECOMMENDATIONS

Despite its limitations, Eco Bite has a potential to advance through additional innovations. Here's a few future recommendations for future advancement on Eco Bite:

The first recommendation would be focusing on improving the texture of Eco Bite. Since edible spoon is still new and uncommon in the market, enhancing its texture would make this product a better initiative to plastic cutlery. By improving the texture of Eco Bite, the product will become more appealing and will satisfy consumer, helping to increase awareness about its benefits and broaden public acceptance.

The second recommendation is regarding the packaging of the product. As our goal is to minimize environmental waste, upcoming research should prioritize the creation of sustainable packaging that is either biodegradable, compostable, or recyclable. By using sustainable materials, such as plant-based fiber, recycled paper, or compostable films, researchers can create a consistent eco-friendly experience for consumers and strengthen the product's environmental appeal. By ensuring the packaging is as sustainable as the product itself, Eco Bite could enhance its appeal towards environmentally aware consumers and widen its market penetration.

Lastly, the future recommendation for future research is to improvise the shape of the product to increase its functionality and better consumer's experience. Researchers may also devise designs that are highly ergonomic and comfortable to hold or put in the mouth but with an

added guarantee that the spoon will be strong enough to withstand holding different types of food without breaking.

5.5 CONCLUSION

Eco Bite will give a good impact to an environment by reducing plastic use and it will not harm the planet. Unlike other plastic spoon that contribute to environmental pollution, our Eco Bite are made to help the concerns about the amount of non-reusable products that are being produced and used every day. On top of that, our Eco Bite are safe to consume because it is made from natural ingredients. This product appears to be a healthier alternative to plastic utensils, which mostly contain harmful chemicals that will affect human's health. Thus, Eco Bite appears to be 100% safe to eat.

REFERENCES

Abdullah, N. A., Cheang, H., & Harun, M. H. (2021). SINGLE-USE PLASTIC: REDUCE OR IGNORE. *International Journal of Law Government and Communication*, *6*(26), 120–126. https://doi.org/10.35631/ijlgc.626010

ADDIE Model Training for Instructional Design | Seismic. (2024, July 26). Seismic. https://seismic.com/enablement-explainers/the-addie-model/#:~:text=on%20to%20implementation.-,Implementation%20phase,where%20the%20learning%20actually%20occurs.)

Bhavsar, R., Maitreya, A., & Modi, N. (2024). AN APPROACH TO SUSTAINABLE LIVING: BIODEGRADABLE FLATWARE. *VIDYA - a JOURNAL OF GUJARAT UNIVERSITY*, *3*(1), 40–50. https://doi.org/10.47413/vidya.v3i1.366

Bodor, A., Feigl, G., Kolossa, B., Mészáros, E., Laczi, K., Kovács, E., ... & Rákhely, G. (2024). Soils in distress: The impacts and ecological risks of (micro) plastic pollution in the terrestrial environment. *Ecotoxicology and Environmental Safety*, *269*, 115807.

Bridenstine, S. (2024b, April 25). The Function of Ingredients in Baking (Baking 101) - Baking Kneads, LLC. Baking Kneads, LLC. https://www.bakingkneads.com/the-function-of-ingredients-in-baking/#:~:text=Salt%20shares%20some%20functions%20with%20sugar%20in%20its%20role%20in#:~:text=Salt%20shares%20some%20functions%20with%20sugar%20in%20its%20role%20in

Čaplová, Z., & Švábová, P. (2020). Ibm Spss Statistics. In *Statistics and Probability in Forensic Anthropology* (pp. 343-352). Academic Press.

Chang, N. J., & Fong, C. M. (2010). Green product quality, green corporate image, green customer satisfaction, and green customer loyalty. African journal of business management, 4(13), 2836.

Charpentier, R. (2022, February 15). Pro Tip: Understand water's functionality in a dough. 2022-02-16 | Baking Business. https://www.bakingbusiness.com/articles/55733-pro-tip-understand-waters-functionality-in-a-dough#:~:text=What%20is%20functionality%20of%20water%20in%20the%20baking%20process

Chen, H. L., Nath, T. K., Chong, S., Foo, V., Gibbins, C., & Lechner, A. M. (2021). The plastic waste problem in Malaysia: management, recycling and disposal of local and global plastic waste. *SN Applied Sciences*, *3*, 1-15.

Chowdhury, G. R., Dutta, S., Pal, N., & Mitra, A. (2021). Edible cutlery: futuristic dining to functional sustenance. *Parana J Sci Educ*, *7*, 84-91.

Coco Chin, K. K., Mahanta, J., & Nath, T. K. (2023). Knowledge, attitude, and practices toward plastic pollution among malaysians: implications for minimizing plastic use and pollution. *Sustainability*, *15*(2),1164. https://doi.org/10.3390/su15021164

De Medeiros, J. F., Ribeiro, J. L. D., & Cortimiglia, M. N. (2014). Success factors for environmentally sustainable product innovation: a systematic literature review. *Journal of cleaner production*, *65*, 76-86.

Fajrianti, A. (2021, August 11). *10 Manfaat tepung atta untuk kesehatan*. Cairo Food. https://cairofood.id/10-manfaat-tepung-atta-untuk-kesehatan/

Gliem, J. A., & Gliem, R. R. (2003, October). Calculating, interpreting, and reporting Cronbach's alpha reliability coefficient for Likert-type scales. In Midwest research-to-practice conference in adult, continuing, and community education (Vol. 1, pp. 82-87).

Haws, K. L., Winterich, K. P., & Naylor, R. W. (2014). Seeing the world through GREEN-tinted glasses: Green consumption values and responses to environmentally friendly products. Journal of Consumer Psychology, 24(3), 336-354.

International Trade Administration. (2022). Malaysia Waste Management Solutions.

Www.trade.gov.https://www.trade.gov/market-intelligence/malaysia-wastemanagement-solutions

Katz, C. (2019, March). Piling Up: How China's Ban on Importing Waste Has Stalled Global Recycling. Retrieved from Yale Environment 360: https://e360.yale.edu/features/piling-up-how-chinas-ban-on-importing-waste-has-stalled-global-recycling

Khan, I. (2023, December 23). Edible Cutlery: A tasty and Eco-Friendly way to enjoy your food. *Fresh Tableware*. https://www.freshtableware.in/post/edible-cutlery-a-tasty-and-eco-friendly-way-to-enjoy-your-food#:~:text=Edible%20knives%20and%20edible%20spoons,harmful%20waste%20is%20left%20behind.

Kumar, S., Libertin, A., Prakash, A., Manikandan, M., & Sharathbabu, S. (2024, January). Study on the different materials for making edible plates for sustainable environment. In *AIP Conference Proceedings* (Vol. 2962, No. 1). AIP Publishing.

Loeb, S., Dynarski, S., McFarland, D., Morris, P., Reardon, S., & Reber, S. (2017). Descriptive Analysis in Education: A Guide for Researchers. NCEE 2017-4023. National Center for Education Evaluation and Regional Assistance.

Mackenzie, L., & Mackenzie, L. (2023, December 24). What happens when you add oil to bread dough? Bakesmartly. https://bakesmartly.com/what-happens-when-you-add-oil-to-bread-dough/#:~:text=Oil%20plays%20a%20multifaceted%20role%20in%20bread-making,%20and%20one%20of

MacLeod, M., Arp, H. P. H., Tekman, M. B., & Jahnke, A. (2021). The global threat from plastic pollution. *Science*, *373*(6550), 61-65.

Muruganantham, G. (2015). Developing of E-content package by using ADDIE model. International Journal of Applied Research, 1(3), 52-54.

Natarajan, N., Vasudevan, M., Velusamy, V. V., & Selvaraj, M. (2019). Eco-friendly and edible waste cutlery for sustainable environment. *International Journal of Engineering and Advanced Technology*, *9*(1s4), 615-623.

Peattie, K. (2010). Green consumption: Behavior and norms. Annual Review of Environment and Resources, 35, 195-228.

Praveena, S. M. (2024). Exploring public awareness, influencing factors and policy implications towards microplastic pollution: Perspectives from Malaysia. *Marine Policy*, *161*, 106042

Radhika, G., Sumathi, C., Ganesan, A., Sudha, V., Henry, C. J. K., & Mohan, V. (2010). Glycaemic index of Indian flatbreads (rotis) prepared using whole wheat flour and 'atta mix'-added whole wheat flour. British journal of nutrition, 103(11), 1642-1647.

Reddy, M. S., Reddy, P. S., Subbaiah, G. V., & Subbaiah, H. V. (2014). Effect of plastic pollution on environment. *J Chem Pharm Sci*, *14*, 28-29.

Roy, T. R., & Morya, S. (2022). Edible cutlery: An eco-friendly replacement for plastic cutlery. *Journal of Applied and Natural Science*, *14*(3), 835-843. https://doi.org/10.31018/jans.v14i3.3627

Rosli, F. A. (2023b, September 26). Malaysia in world's top 10 for throwing plastic waste and rubbish in the ocean [NSTTV]. *NST Online*. https://www.nst.com.my/news/nation/2023/09/959759/malaysia-worlds-top-10-throwing-plastic-waste-and-rubbish-ocean-nsttv#google_vignette

Samsudin, M. R., Sulaiman, R., Guan, T. T., Yusof, A. M., & Yaacob, M. F. C. (2021). Mobile Application Development Trough ADDIE Model. *International Journal of Academic Research in Progressive Education and Development*, *10*(2).

Schaltegger, S. and Wagner, M. (2011), Sustainable entrepreneurship and sustainability innovation: categories and interactions. Bus. Strat. Env., 20, 222-237.

SinarPlus, W. (1970, January 1). Resipi tose mudah guna tepung atta, 6 khasiatnya untuk kesihatan wanita | SinarPlus. SinarPlus. https://sinarplus.sinarharian.com.my/Lifestyle/resipi-tose-mudah-guna-tepung-atta-6-khasiatnya-untuk-kesihatan-wanita

Sintowoko, D. A. W., & Hidayat, S. (2021, November). Eco-friendly for product design: A literature review. In *IOP Conference Series: Earth and Environmental Science* (Vol. 905, No. 1, p. 012023). IOP Publishing.

Smith, O., & Brisman, A. (2021). Plastic waste and the environmental crisis industry. Critical Criminology, 29, 289-309.

Sarker, M., & AL-Muaalemi, M. A. (2022). Sampling Techniques for Quantitative Research. *Principles of Social Research Methodology*, 221.

Sustainable consumption and production | Department of Economic and Social Affairs. (n.d.). https://sdgs.un.org/topics/sustainable-consumption-and-production

Tan, E., Jaafar, N., Tan, S., & Zanuri, N. (2022). A review of plastic and microplastic pollution towards the Malaysian marine environment. *IOP Conference Series: Earth and Environmental Science*, 1013. https://doi.org/10.1088/1755-1315/1013/1/012012.

Taqwa, T., & Raupu, S. (2022). Website-Based Academic Service Development with ADDIE Design in Higher Education. *AL-ISHLAH: Jurnal Pendidikan*, *14*(2), 1511-1526.

THAGUNNA, B., SHRESTHA, G., KARKI, R., BARAL, K., & KAUR, J. (2023). Development and quality evaluation of biodegradable edible cutlery: a replacement for a conventional one. *DEVELOPMENT*, *16*(2).

Umate, S. K. Environmental Sustainability with Ecofriendly Kitchenware's. (2024)

Van Vulpen, E. (2024, May 31). ADDIE model explained: All you need to know [+ FREE template]. AIHR. https://www.aihr.com/blog/addie-model/)

Vermeir, I., & Verbeke, W. (2006). Sustainable food consumption: Exploring the consumer "attitude–behavioral intention" gap. Journal of Agricultural and Environmental Ethics, 19(2), 169-194.

Wallace, D. (2024, February 19). Atta | Baking Ingredients | BAKERpedia. BAKERpedia. https://bakerpedia.com/ingredients/atta/

APPENDIX 1

Activities	Month/Week												
	1												
	2	3	4	5	6	7	8	9	10	11	12	13	14
Title Determination													
Product research													
Consultation with supervisor													
Proposal preparation													
Need Analysis study													
Product design and development													
Product implementation stage													
Final report													
Final report and preparation for final presentation													
*Proposal Presentation will be held on week 6													
**Final Project Presentation will be held on week 13													

APPENDIX 2

Gender *

- Male
- Female

Age *

- 18 - 24 years old
- 25 - 31 years old
- 32 - 38 years old
- 39 - 45 years old
- 46 - 52 years old
- 53 years old and above

Employment Status *

- Employed
- Self-employed
- Students
- Others : (homemaker/retired)

1. Products that do not harm the environment are important to use *

- Strongly Agree
- Agree
- Neutral
- Disagree
- Strongly Disagree

2. I am willing to try using edible spoons if they help reduce plastic waste. *

- Strongly Agree
- Agree
- Neutral
- Disagree
- Strongly Disagree

3. I would prefer to use edible spoons over plastic spoons if they were easily available. *

- Strongly Agree
- Agree
- Neutral
- Disagree
- Strongly Disagree

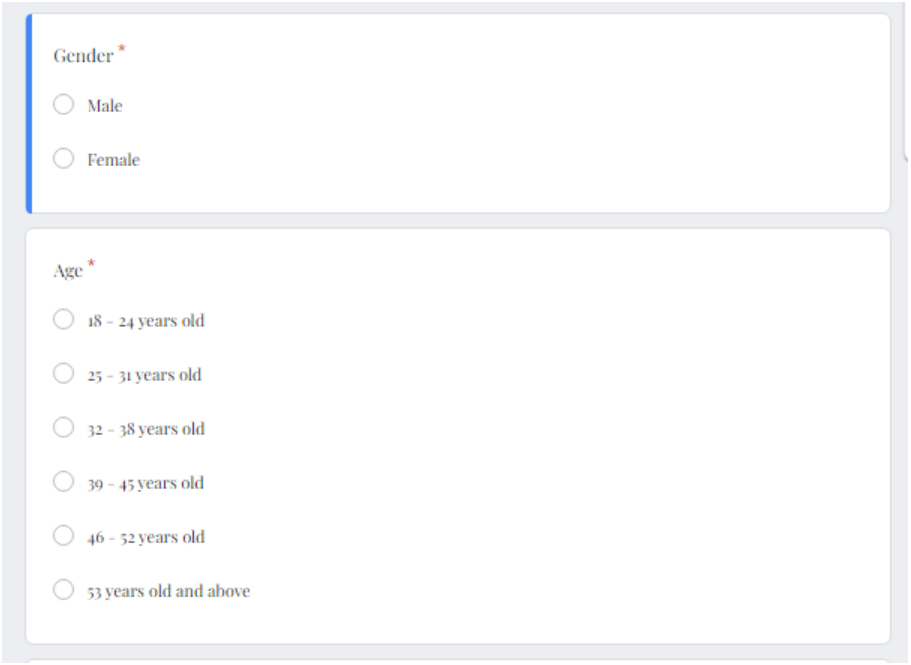
4. I believe that using edible spoons is an effective way to contribute to environmental sustainability. *

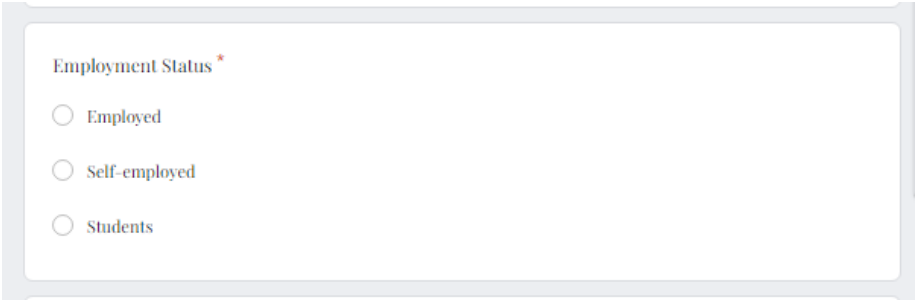
- Strongly Agree
- Agree
- Neutral
- Disagree
- Strongly Disagree

5. I am likely to be able to switch to edible spoons if they are proven to significantly reduce plastic waste. *

- Strongly Agree
- Agree
- Neutral
- Disagree
- Strongly Disagree

APPENDIX 3


Gender *
Male
Female
Age *
18 - 24 years old
25 - 31 years old
32 - 38 years old
39 - 45 years old
46 - 52 years old
53 years old and above


Employment Status *
Employed
Self-employed
Students


1. I am satisfied with Eco Bite as a sustainable and eco-friendly consumable spoon. *
Strongly Agree
Agree
Neutral
Disagree
Strongly Disagree

2. Eco Bite's efforts in reducing waste through consumable spoons align with my expectations. *

- Strongly Agree
- Agree
- Neutral
- Disagree
- Strongly Disagree

3. I am satisfied with the quality and taste of the Eco Bite as consumable spoons. *

- Strongly Agree
- Agree
- Neutral
- Disagree
- Strongly Disagree

4. Eco Bite effectively promotes environmentally sustainable practices through its consumable spoons. *

- Strongly Agree
- Agree
- Neutral
- Disagree
- Strongly Disagree

5. I am satisfied with Eco Bite's efforts to minimize the use of traditional plastic spoons. *

- Strongly Agree
- Agree
- Neutral
- Disagree
- Strongly Disagree

6. Using Eco Bite's consumable spoons enhances my overall dining experience. *

- Strongly Agree
- Agree
- Neutral
- Disagree
- Strongly Disagree

7. Eco Bite effectively raises awareness about sustainable consumption through their product. *

- Strongly Agree
- Agree
- Neutral
- Disagree
- Strongly Disagree

8. I am more likely to use Eco Bite as consumable spoons again to encourage sustainability in Malaysia. *

- Strongly Agree
- Agree
- Neutral
- Disagree
- Strongly Disagree

APPENDIX 4

CERTIFICATE OF ANALYSIS

Work Order	: **MF2427509**	Page	: 1 of 3
Amendment	:	Date Samples Received	: 24-Oct-2024 16:30
Client	: **POLITEKNIK SULTAN SALAHUDDIN ABDUL AZIZ SHAH**	Date Analysis Commenced	: 25-Oct-2024
Contact	: NURUL HANAN	Issue Date	: 04-Nov-2024 13:48
Address	: PERSIARAN USAHAWAN, POLITEKNIK SULTAN SALAHUDDIN ABDUL AZIZ SHAH, 40150 SHAH ALAM, SELANGOR	No. of samples received	: 1
E-mail	: nurulhanan08@gmail.com	No. of samples analysed	: 1
Telephone	: ----		
Facsimile	: ----		
Project	: ----		

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

Signatories

SAMM 147

This laboratory is accredited under STANDARDS MALAYSIA. The tests reported herein have been performed in accordance with laboratory's Terms of Accreditation. This document has been electronically signed by authorized signatories indicated below. Electronic signing has been carried out in compliance with procedure specified in 21 CFR Part 11.

Signatories	Position
ChM. Ch'ng Ai Ying	Lab Manager - Food (IKM No: L/2082/7060/15; MJMM No: 0120)
Nurmaisarah Pauzi	Team Leader - Food (MJMM No.: 001298) Nutrition & Inorganic Section

Analytical Results

FOOD
001 EDIBLE SPOON

Test description	*Method*	*LOR*	*Unit*	*Result*
Nutritional Panel				
Fat	OF/17-010	0.1	g/100 g	4.2
Total Inverted Sugar	OF/17-001 (AOAC923.09)	0.1	g/100 g	4.4
Protein	OF/17-006 (AOAC 960.52)	0.1	g/100 g	11.0