DPB 50163 : BUSINESS PROJECT

PRODUCT INNOVATION OF PHONE HOLDER

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ABSTRACT

Phone holders are small objects used to prop up a mobile device. Phone holders are usually used in offices, cars, classrooms and even homes. Phone holders are designed to make the lives of mobile phone users easier where it could be used by teachers during online classes, influencers for livestreaming, and online business meetings. There are a lot of phone holders that are available for purchase by the public. These phone holders are usually made from aluminium. While aluminium is the most common material for a phone holder, phone holders can also be made from hard plastic, foam, rubber, or wood. Although most of the materials that are being used to make a phone holder is considered safe for the environment, we are adding a twist to it by using cardboard and wood as our main materials. We are also using only used cardboard and ice-cream sticks for this project. We are using cardboard to reduce environment pollution and to help fight global warming. Although most people think that cardboard is a material that is safe to the environment, most people also have no idea that cardboard packaging that is being sent to landfills releases some fugitive methane that is not captured in landfill collection systems. Methane has a global warming potential that is 20 times higher than carbon dioxide over the course of 100 years. Therefore, to overcome these problems, a phone holder that is made from cardboard could reduce the effects of cardboard on the environment and global warming.

Keyword: cardboard, global warming, methane, safe, environment

JUSTIFICATION OF BUSINESS PROJECT SELECTION

First and foremost, the justification of business project selection is because of based on our research, we found that mostly in the market, the products that are offered to customers is not considered environmentally friendly. By using cardboard as the main component of our phone holder, we believe that we could help and encourage more people to reuse, reduce, and recycle. Although our phone holder is made from just cardboard and ice cream sticks, we have added some modifications to it such as making the phone holder foldable, light, and flexible where it could be used anywhere whether it is at the office or classrooms. We chose to innovate the phone holder because we believe that a phone holder is something that everyone actually needs, although they may not realise they need actually need it. We believe that a phone holder is something that can be used by anyone no matter their age or job. Before choosing to make and innovate a phone holder, we made our research regarding the potential dangers of cardboard to the environment. Based on our research, we found out that although cardboard is easily accessible and regularly considered an eco-friendly alternative and biodegradable, recyclable, and is not full of harmful chemicals like plastic, cardboard is not without a few issues of its own. Cardboard is great in many ways, but there are some unsavoury truths about its production. Firstly, to make cardboard, manufacturers need wood pulp, and that requires cutting down trees, which may lead to unpleasing outcomes such as deforestation. As we all know, when forest resources are consumed faster than we can replace them, it affects wildlife too. These animals lose their habitat, become endangered, and are vulnerable to extinction. Apart from that, we also discovered that although cardboards are biodegradable, when decomposed, it releases methane which is one of the top greenhouse gases causing the atmosphere to heat up. Even though cardboard is recyclable, cardboard boxes contaminated with oil and grease (usually from restaurants) cannot be recycled. Therefore, we believe that reusing cardboard to turn it into a reliable phone holder may help reduce the environmental impact that comes out of cardboards.

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CHAPTER 1 INTRODUCTION

1.1 INTRODUCTION

In this digital age, electronic devices have become an essential part of our daily lives, from smartphones to tablets and e-readers. While these devices have made our lives more convenient and connected, holding them for extended periods can be tiring and uncomfortable. This is where the universal device holder made of cardboard comes in.

The universal device holder made of cardboard is an innovative and sustainable solution to your device-holding needs. This holder is crafted entirely from cardboard, a material that is both lightweight and sturdy, making it an excellent option for holding devices of different sizes and weights.

The design of the holder is simple yet practical. It features a slot that can be adjusted to fit devices of different sizes and shapes, allowing you to use it with your smartphone, tablet, e-reader, and other electronic devices. The slot is angled to provide an optimal viewing experience, allowing you to watch videos, read books, or work on your device without straining your neck or arms.

The base of the holder is wide and sturdy, providing a stable and balanced platform for your device, preventing it from slipping or tipping over. The holder is also easy to assemble and disassemble, making it convenient for use at home, in the office, or on the go. And when you're not using it, it can be easily stored away in a drawer or on a shelf.

One of the most significant advantages of the universal device holder made of cardboard is its eco-friendliness. Cardboard is a recyclable and biodegradable material, making this holder an excellent sustainable option for those who want to reduce their environmental impact. Plus, its low cost and availability make it an affordable option for everyone.

In conclusion, the universal device holder made of cardboard is a practical, eco-friendly, and affordable solution to your device-holding needs. It is perfect for those who want to enjoy their devices without experiencing discomfort, while also being mindful of their impact on the environment. Give it a try and see how it can make your life more convenient and sustainable.

1.2 BACKGROUND OF PROJECT

Many of us are curious on why we choose to invent this Eco-Friendly Phone Holder, why? It is to investigate the impact of this eco-friendly solution on reducing electronic waste. The project could involve conducting research on the amount of electronic waste generated globally, the materials commonly used to make device holders, and the potential environmental impact of these materials.

The project could also involve conducting experiments to compare the environmental impact of cardboard device holders with those made from other materials such as plastic or metal. This could include measuring the amount of energy, water, and other resources required to produce and dispose of each type of holder, as well as assessing the biodegradability and recyclability of each material.

Another possible aspect of the project could be to design and test new variations of the universal device holder made of cardboard, such as one that incorporates additional features such as a charging port or a stand. This could involve collaborating with engineers and designers to create prototypes and test their functionality and durability.

Overall, the project could provide valuable insights into the potential of cardboard as a sustainable and cost-effective material for device holders, while also contributing to efforts to reduce electronic waste and promote environmentally friendly solutions.

1.3 PROBLEM STATEMENT

Electronic devices such as smartphones, tablets, and e-readers have become an essential part of our daily lives, but holding these devices for extended periods can be tiring and uncomfortable. Traditional device holders made from plastic or metal can be expensive, environmentally harmful, and difficult to recycle. As a result, there is a need for a more eco-friendly, affordable, and practical solution to device-holding that can provide a comfortable viewing experience for users.

The universal device holder made of cardboard offers a potential solution to this problem. However, there is a need to investigate the effectiveness of this device holder in providing a comfortable and stable platform for electronic devices of different sizes and shapes. Additionally, there is a need to examine the environmental impact of this solution and determine whether it can effectively reduce electronic waste and promote sustainability.

Therefore, the problem statement for this topic could be: How can the universal device holder made of cardboard effectively address the need for a sustainable, affordable, and practical solution to device-holding, and what is its potential impact on reducing electronic waste and promoting environmental sustainability?

1.4 OBJECTIVE OF PRODUCT

Following are the main objectives of our product :

- Producing an eco-friendly product using recycled materials
- Ensuring consumers fully benefit from using our universal device holder
- Ensuring the product is sturdy and easy to carry
- Selling the products at an affordable price

1.5 PROJECT QUESTION

Below are some project questions posed to aid the consumers in achieving the objectives, the questions are as follows :

1. How does the universal device holder made of cardboard compare to traditional device holders made from plastic or metal in terms of cost, durability, and eco-friendliness?
2. How can the design of the universal device holder made of cardboard be optimized to provide a comfortable and stable platform for devices of different sizes and shapes?
3. What is the environmental impact of producing and disposing of cardboard device holders compared to traditional device holders, and how can this impact be minimized?
4. What is the potential market demand for the universal device holder made of cardboard, and how can it be marketed effectively to consumers?
5. What are the potential limitations or drawbacks of using cardboard as a material for device holders, and how can these be addressed?
6. How can the universal device holder made of cardboard be adapted to incorporate additional features such as a charging port or a stand?
7. How can the universal device holder made of cardboard be effectively promoted as a sustainable and eco-friendly solution to device-holding?
8. What is the user experience of using the universal device holder made of cardboard, and how does it compare to traditional device holders in terms of comfort and convenience?
9. How can the universal device holder made of cardboard be effectively distributed and made available to consumers?

10. What are the potential benefits of using cardboard as a material for device holders, and how can this solution contribute to efforts to reduce electronic waste and promote sustainability?

1.6 SCOPE OF PROJECT

The main objective of this project is to create an innovative product that could solve the existing problem.

1. Researching and analyzing the current market for device holders, including the materials commonly used and the demand for eco-friendly and sustainable solutions.
2. Developing a prototype of the universal device holder made of cardboard, considering factors such as design, stability, and compatibility with different devices.
3. Conducting user testing to evaluate the functionality, durability, and user experience of the cardboard device holder, and comparing it to traditional device holders.
4. Analyzing the environmental impact of the cardboard device holder, including the energy and resources required for production, transportation, and disposal, and comparing it to traditional device holders.
5. Developing a marketing strategy for the cardboard device holder, including the target audience, messaging, and distribution channels.
6. Assessing the potential for additional features to be incorporated into the cardboard device holder, such as a charging port or a stand.
7. Evaluating the potential cost savings associated with the use of cardboard as a material for device holders, and comparing it to traditional materials.
8. Investigating the potential for scaling up the production and distribution of the cardboard device holder, including supply chain considerations and logistics.
9. Assessing the potential impact of the cardboard device holder on reducing electronic waste and promoting sustainability and comparing it to traditional device holders.
10. Identifying potential limitations and areas for future research and development of the cardboard device holder.

1.7 SIGNIFICANCE OF THE PROJECT

The dominant significance of this project is to use cardboard. Innovation should be better in every aspect compared to the original ones. The phone stand innovation that is being done does not consume any sort of harsh chemicals or anything that is not environmentally friendly in it. Moreover, this project also illustrates the importance of innovation. In addition, it also shows the creative thinking of students who are successful in extending their innovation capacity and able to help people in the future by contributing their ideas.

1.7.1 PROJECT ADVANTAGES

The phone stand that we innovated only uses cardboard as the main component of the object. Using cardboard as the material helps solve issues regarding cardboard to the environment

The following below is advantages of The phone stand:

- 100% recyclable material
- No chemicals used
- Easy to use
- Easy to carry

The following below is the functions of The phone stand:

- Can be used to stand a phone
- Can be used anywhere (offices, schools etc)

1.7.2 S.W.O.T ANALYSIS

STRENGTHS (S):	WEAKNESSES (W):

• **100% Recyclable Material**
  - Only recyclable materials are used in developing this holder using cardboard and wood
• **Useful and Convenient**
  - Our target market can buy this product with full satisfaction because this product is portable meaning that it can be carried around almost everywhere and anytime
	• **Lack of Capital**
	  - Adding more on the product or testing out the product, we require more capital
	• **Design of the packaging**
	  - New ideas need to be taken so that our clients will be more attracted towards purchasing our product
	• **Less Product Awareness**
	  - New products can be time consuming before it is recognised by the target market since there are many substitute products exist in the market
	• **Lack of Advertisement**
	  - More advertising needed in order to be recognised in the market

OPPORTUNITIES (O):	THREATS (T):

• **Unique**
  - This product is not the same as the other phone stands because this product could function like the other phone stands, but it can also be recycled and it is affordable.
	• **Homogeneous products**
	  - Many similar products are already in the market
	• **Strong Competition**
	  - Since there are similar products in the market, we must show why our product is unique to sell them

1.8 OPERATIONAL DEFINITION

These are the terms and its operational definition :

    i.   Innovation
- Based on Oxford Learner's Dictionaries, innovation refers to new ideas, way of doing something, for example, ' that has been introduced or discovered'.

    ii.   Product Innovation
- Based on the Cambridge's Dictionary, product innovation is the process of designing new products or making improvements to current existing ones.

    iii.   Phone Holder
- A phone holder is an object used to maintain standing position of mobile phone which is a replacement of our hands.

1.9 SUMMARY

The universal device holder made of cardboard project aims to create a sustainable, affordable, and customizable solution for holding electronic devices. The project involves designing, developing, and producing a device holder made entirely of cardboard that can accommodate various device sizes and shapes. The project promotes sustainability by using biodegradable and renewable materials and contributes to innovation in sustainable product design. The device holder is lightweight, portable, and can improve the user experience of holding electronic devices. The project faces challenges such as competition and durability issues but presents opportunities for expansion and growth in the sustainable product market.

CHAPTER 2 LITERATURE REVIEW

2   LITERATURE REVIEW

2.1 INTRODUCTION

This chapter will discuss the ADDIE model, which we utilized to develop our project, "Production Innovation of Phone Stand," as well as earlier projects that were significant to this subject, with the support of citations from academic journals, books, and related websites.

2.2 ADDIE MODEL

The ADDIE Instructional Design technique has long been a favourite among educators and instructional designers who are creating educational and training programmes. The name of this approach is "ADDIE." The phrase means "Analyse, Design, Build, Implement, and Evaluate." On the other hand, this procedure does not mandate that the steps be carried out in a specific order. This approach is popular among educators, instructional designers, and training developers because it makes creating powerful training materials simpler. (2018) (Dr. Serhart Kurt).

a. Analyse

-   This analysing phase could be described as the designer's initial investigation of the present situation. To determine the gaps that need to be addressed, they will paint a clear picture of the situation as it stands at the moment. The choice of learning objectives and goals is supported by a quality analysis. It assists in gathering information about what your audience is already aware of and what they still need to learn. As a result, the designer can inquire about a few things to conduct a quality analysis, including who is the target audience? What is the course about? When is the course launching? Why is this course needed? How will objectives be achieved?

b. Design

- We will analyse all of the data collected in the previous phase during this stage and base our conclusions on it. We should also be conscious of the fact that it frequently takes time and demands careful attention to detail. This stage will help us decide the accurate organization of the information, the most effective tools to employ, the ideal design or shape, the video or graphics to be produced, and many other aspects. Simply put, here is where your background as an instructional designer will be helpful. To help the designer and stakeholders visualize their important ideas, the ADDIE model advises producing a storyboard (Andrew DeBell, Water Bear Learning).

c. Develop

- We will start concentrating on building and developing the product or content in this stage using the design that we established in earlier phases. Your key objective at this point is to actualize those content concepts by carrying out all tasks related to producing the finished goods for your customers. In addition, testing is a crucial component of the work at this stage because it will help prevent future harm to your project. Make sure your stakeholders are involved in a clearly defined testing and review process. To find any mistakes that slip between the cracks, you'll need numerous pairs of eyes (Andrew DeBell, Water Bear Learning)

d. Implement

- The delivery of the educational materials helps learners throughout the implementation phase is the fourth stage in ADDIE Model(Branch, 2010). The implementation phase includes procedures such as preparing educators, allocating learners, and creating a conducive learning environment (Morrison, Ross, & Kemp, 2007). The program's continuing adjustments to ensure maximum effectiveness and superior results are shown in the implementation stage. This phase entails carrying out the instruction, creating the instructional space, and arranging the instructional resources there (The Journal of Continuing Education in Nursing). In this phase, instructional designers (IDs) review, modify, and change the course to ensure effective delivery. "Procedure" is the key word here. Here, IDs and learners work together to learn new tools and continuously evaluate the design for improvement. This is where a lot of the real work is done (Dr. Serhat Kurt, 2018).

e. Evaluate

- The final stage of the ADDIE model is evaluation which includes both formative and summative evaluation. The ADDIE model's development phase evaluation is referred to as formative evaluation. Summative evaluation, on the other hand, refers to the assessment made following the use of the ADDIE paradigm (Branch, 2010). At each stage of the ADDIE model, formative evaluation is a review conducted internally to assess team performance and make adjustments to the way projects are currently being carried out. The exams used in the summative evaluation are made to look at domain standard reference items, programme objectives, and learner feedback. Following completion of the course, summative evaluation assists in determining the outcomes of the students and the effectiveness of design elements (Dick & Carey, 2004). This step involves carefully testing the project to determine whether or not tasks were completed when they were supposed to be. During the evaluation phase, the designer should determine whether any programmatic problems have been resolved and whether the goals have been attained (Dr. Serhat Kurt, 2018).

2.3 SUMMARY

Instructional designers and those who create training materials employ the ADDIE standard process and methodology. Analysis, design, development, implementation, and evaluation are some of the phases of the model. Each stage serves as a dynamic and adaptable benchmark for creating effective performance support tools (McIver, Fitzsimmons, & Flanagan, 2015). ADDIE is regarded as the instructional design model that is now used the most. The paradigm is adaptable to various situations and the five phases interact and relate to one another. We may create adaptable and dynamic models that are effective for instructional designers with the aid of this approach. However, when creating these kinds of models, we must ensure that there are no flaws or gaps in them. The researcher will be able to advance in finishing the product by employing the Addie model.

2.4 REFERENCES

i. https://www.trvst.world/environment/environmental-impact-of-cardboard/

ii. Ellen MacArthur Foundation. (2016). The New Plastics Economy: Rethinking the future of plastics.

iii. Environmental Defense Fund. (2021). Why cardboard is better than plastic.

iv. Thompson, R. C., Moore, C. J., vom Saal, F. S., & Swan, S. H. (2009). Plastics, the environment and human health: current consensus and future trends. PhilosophicalTransactions of the Royal Society B: Biological Sciences, 364(1526), 2153-2166.

v. National Institute of Environmental Health Sciences. (2021). Bisphenol A (BPA).

vi. The Balance Small Business. (2021). Environmental Impact of Cardboard Boxes.

2.5 GANTT CHART

|	Monthly/Weeks													
	February				March				April				May	
	1	2	3	4	1	2	3	4	1	2	3	4	1	2
Consultation with Business project lecturer	■	■	■	■	■	■	■	■	■	■	■	■	■	■
Literature review				■	■									
Consultation with Supervisor		■	■	■	■	■	■	■	■	■	■	■	■	■
Proposal presentation (Supervisor)		■	■	■	■									
Proposal presentation			■	■	■	■	■	■	■	■	■	■	■	■
Instrument preparation & Data collection										■	■	■		
Product development		■	■	■	■	■	■	■	■	■	■	■		
Product test run											■	■		
Data analysis													■	■
Project draft writing						■	■	■	■	■	■			
Revision & final draft											■	■		
Final project submission													■	■

CHAPTER 3 : METHODOLOGY

3 METHODOLOGY

3.1 INTRODUCTION

In this chapter is the process of making 'Eco-Friendly Phone Holder. It also conceives of project design, method, procedure, project production technique, material and equipment and data analysis. There are numerous data analysis techniques accessible depending on the type of investigation. This product is produced and effectively made using a variety of materials.

3.2 PROJECT DESIGN

This Eco-Friendly Phone Holder project has decided to use the best and most effective method to design and develop this project which is the ADDIE model. A questionnaire was distributed to collect some information from others points of view.
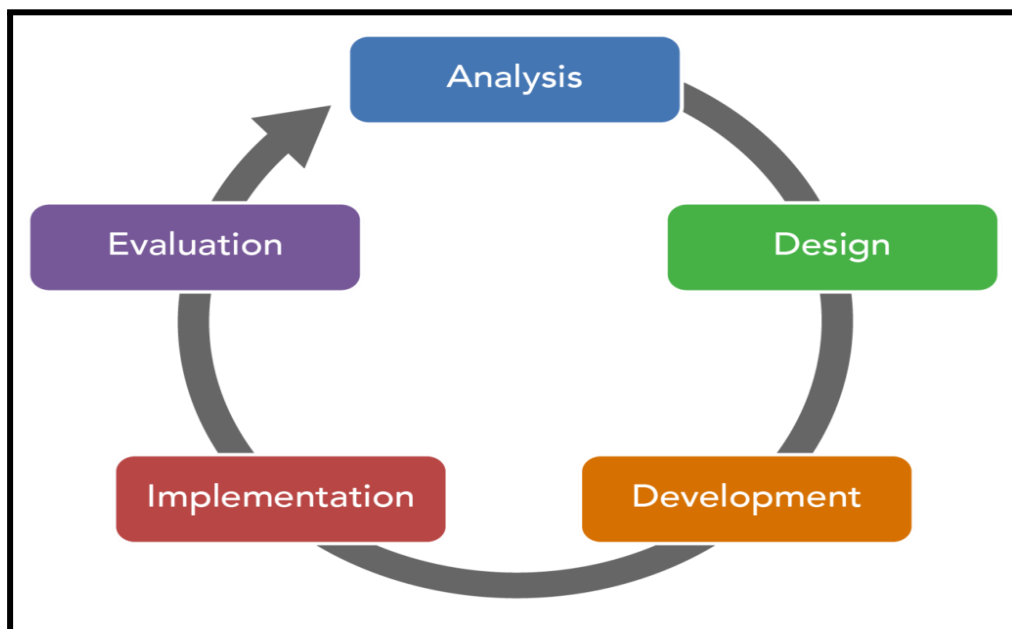
3.2.1 METHOD/ PROCEDURE/ PROJECT PRODUCTION TECHNIQUE

ADDIE model was used to develop this product by following the required steps to avoid ruining this product's result. These are the following steps taken starting from Analysing, Designing, Developing, Implementing and Evaluating. In addition, we can get a clear picture of this process to understand each and every step.

3.2.1.1 ANALYSING

In this phase, it is more about our target market. Our target market includes working staff, students, and the unemployed. Every feedback from our respondent gives a huge impact in this phase because we get to know their opinion. Moreover, this helps to improve our idea for the project. In this phase, we get to ask ourselves how our product can be differentiated from the other products which are already on the market and what are the uniqueness of this product. We were expected to get at least 30 responses from our target market. At the beginning of this questionnaire, we added some questions regarding our respondents' personal details and then followed by the questions regarding our product. Most of the questions were given in a Likert scale format where the answer options were the numbers of 1 to 5. The format of a typical five-level Likert item, for example, could be:

1. Strongly disagree
2. Disagree
3. Neither agree nor disagree
4. Agree
5. Strongly agree

The following below are the questionnaire of the survey and the feedback from respondents:

QUESTIONS	ANSWERS				
1. Are you open to purchasing a product made from recycled materials?	Yes (96.8%)	No (3.2%)			

2. How accessible are recycled products to you compared to regular products?	1 (3.2%)	2 (6.5%)	3 (41.9%)	4 (38.7%)	5 (9.7%)
3. In your opinion, what would be an appropriate price for recycled products?	Less than regular products (77.4%)	Same regular products (22.6%)	Higher than regular products (0%)		
4. Do you believe recycled products have a positive impact on the environment?	Yes (96.8%)	No (3.2%)			
5. Eco Friendly Phone Holder is high in quality	1 (0%)	2 (0%)	3 (48.4%)	4 (29%)	5 (22.6%)

6.	1	2	3	4	5
Eco Friendly Phone Holder is safe to use	**(0%)**	**(0%)**	**(12.9%)**	**(41.9%)**	**(45.2%)**
7. Our Eco-Friendly Phone Holder could be useful	1 **(0%)**	2 **(0%)**	3 **(25.8%)**	4 **(32.3%)**	5 **(41.9%)**
8. The design of our Eco-Friendly Phone Holder is visually appealing	1 **(3.2%)**	2 **(6.5%)**	3 **(22.6%)**	4 **(29%)**	5 **(38.7%)**
9. The demand for our Eco-Friendly Phone Holder among consumers will be high	1 **(0%)**	2 **(6.5%)**	3 **(41.9%)**	4 **(32.3%)**	5 **(19.4%)**
10. Our Eco-Friendly Phone Holder crafted from recycled materials has the potential to substitute the conventional phone holder.	1 **(0%)**	2 **(6.5%)**	3 **(35.5%)**	4 **(35.5%)**	5 **(22.6%)**

11. Our Eco-Friendly Phone Holder made from recycled materials can be accepted by the public	1 (0%)	2 (0%)	3 (29%)	4 (22.6%)	5 (48.4%)
12. A phone holder made from cardboard can be competitive in the market	1 (3.2%)	2 (12.9%)	3 (29%)	4 (29%)	5 (25.8%)
13. I would use the Eco-Friendly Phone Holder in public	1 (0%)	2 (9.7%)	3 (22.6%)	4 (25.8%)	5 (41.9%)
14. I would recommend others to use the Eco-Friendly Phone Holder	1 (0%)	2 (0%)	3 (29%)	4 (35.5%)	5 (35.5%)
15. The Eco-Friendly Phone Holder can be used on devices that I own	1 (0%)	2 (0%)	3 (22.6%)	4 (29%)	5 (48.4%)

3.2.1.2 DESIGNING

In this design phase, we will determine the objective to perform, plan and allocate resources. Firstly, we need to identify the right materials needed for this product which is the Eco-Friendly Phone Holder. Other than that, we need to examine the materials before using it. Selecting the right materials are important in this step which will give the right result.

The following below is a list of equipment and materials used:

EQUIPMENTS	
	1. Cardboard

	2. Ice-cream sticks

	3. Fast Setting Glue
	4. Wrapping paper
	5. Utility knife
	6. Pencil

3.2.1.3 DEVELOPMENT

This phase is where the ideas will be converted into physical products. We will develop and test out the products which will be used. By using the data collected in the previous stages, we will determine the right ingredients, price and other information about these products. All the group members need to participate and give their full attention because it is no more about thinking but about putting effort.

The following below are the steps on how to make an Eco-Friendly Phone Holder

STEP 1: Prepare all the things needed to make Eco-Friendly Phone Holder

STEP 2: Use a pencil to draw the cutting lines on the cardboard.

STEP 3: Use utility knife to cut cardboard into appropriate shape.

STEP4: Assemble the cardboard pieces that were cut with fast setting glue.

STEP 5: Wrap the assembled cardboard pieces with wrapping paper.

STEP 6: Place the ice-cream sticks at the appropriate spot and use fast setting glue to stick the ice-cream stick to the surface of the phone holder.

3.2.1.4 IMPLEMENTATION

In this phase the group members will work on this project to do some adjustment for the product. These actions need to be taken seriously because this will be the result of the project. After we were done with the developing process we still studied more about the product and did some improvements for a better version. By studying the product more, we were able to achieve our goal with a smooth process.

3.2.1.5   EVALUATE

After all the process, we need to evaluate the final result. The product needs to be concluded with many things. For example, is the Eco-Friendly Phone Holder durable, is it flexible, how effective is the phone holder and many more. To know more information about the product we took the feedback from our respondents which was distributed before. This made it easier to achieve our objective.

3.2.2 MATERIAL AND EQUIPMENTS

Materials:

i.   **Cardboard**

Cardboard the main material in this Eco-Friendly Phone Holder. Cardboard is an eco-friendly material as it is made from renewable resources and is highly recyclable. It can be easily recycled and turned into new cardboard products, reducing the demand for virgin materials and minimizing environmental impact.

ii.   Ice-Cream Sticks

Ice cream sticks are a popular choice for craft and DIY projects. They are easy to work with, lightweight, and come in a convenient size. They can be used to make various creative items such as photo frames, coasters, birdhouses, ornaments, and much more.

iii.   Fast Setting Glue

Fast-setting glue creates a strong bond between surfaces, providing excellent tensile and shear strength. Once cured, it forms a durable connection that can withstand impact, vibrations, and temperature changes. Fast-setting glue is suitable for bonding a wide range of materials, including plastics, metals, rubber, ceramics, wood, and more. It can be used in various industries, such as automotive, electronics, crafts, and household repairs.

iv.   **Wrapping Paper**

Birthday wrapping paper offers the opportunity to personalize the gift presentation. You can choose wrapping paper that reflects the recipient's interests, hobbies, or favourite colours, making the gift more meaningful and tailored to their preferences.

Equipments :

i.   **Utility Knife**

ii.   **Pencil**

3.3 METHOD OF COLLECTING DATA

The data for this study was collected by questionnaire distributed to respondents. This questionnaire contains few questions about this product regarding the use, smell and price. This questionnaire was created by using google form which made respondents to answer the questions easily. Most of the respondents are students.

3.4 SUMMARY

The methods of project implementation for the Eco-Friendly Phone Holder are used in coming out with a creative idea and project. In the process of designing a project there are a few elements that should be put under consideration including the materials used, concept of design and quality of product. In this chapter, a questionnaire was made as it plays a major role in collecting more relatable information. A stratified sample approaches strategy was used to produce a cautious selection of substances to be used for the project. The upcoming chapters discuss more specific information about the project.

3.5 REFERENCES

Kurt, S. (2018, December 16). *ADDIE Model: Instructional Design*. Educational

Technology. https://educationaltechnology.net/the-addie-model-instructional-design/

ADDIE Model. (n.d.). ISFET (International Society for Educational Technology).

https://www.isfet.org/pages/addie-model

Wuensch, Karl L. (October 4, 2005). "What is a Likert Scale? and How Do You Pronounce
'Likert?'". East Carolina University. Retrieved April 30, 2009.

Cardboard Packaging Alliance. (n.d.). Environmental Benefits of Corrugated Packaging.
Retrieved from https://www.corrugated.org/sustainability/environmental-benefits/

CHAPTER 4 : DATA ANALYSIS AND RESEARCH FINDINGS

4   DATA ANALYSIS AND RESEARCH FINDINGS

4.1   INTRODUCTION

This chapter represents the results of the study from the statistical analysis conducted on the collected data and hypotheses testing. The first part in this chapter would be the representation on the demographics of gender, age and race of the respondent towards feedback of Eco-Friendly Phone Holder is determined by looking at the factor analysis, reliability analysis and the descriptive analysis. The final part of this chapter would be focused on hypothesis testing, correlation testing, multiple regression testing and hierarchical multiple regression.

4.2   DESCRIPTIVE ANALYSIS

The purpose of descriptive analysis is a branch of analysis. It helps you think about how to utilize your data, help you identify exceptions and mistakes, and see how variables are related, putting you in a position to lead future statistical research. Descriptive analysis is a sort of data research that aids in describing, demonstrating, or helpfully summarizing data points so those patterns may develop that satisfy all of the conditions of the data. It is the technique of identifying patterns and links by utilizing recent and historical data. Because it identifies patterns and associations without going any further, it is frequently referred to as the most basic data analysis.

4.3 RESPONDENTS DEMOGRAPHIC PROFILE

The demographic profile of the respondent contains few personal information about the respondent. There is few basic information about the respondents which we asked in the questionnaire and the questions are as follows gender, age, race, occupation, income level and marital status which can be found in the demographic section. The purpose of these utilised questions is to help them gain knowledge of our Eco-Friendly Phone Holder. This is important as it helps us to identify which group that will use our Eco-Friendly Phone Holder and whether they will support and practice the usage of recyclable materials. The respondent's responses for the demographic section is presented in Table 1.

Table 1 : Background of Respondents (N = 31)

Demographic		Frequency	Percentages (%)
Gender	Male	20	64.5
	Female	11	35.5
Age	18	1	3.2
	19	5	16.1
	20	3	9.7
	21	12	38.7
	22	1	3.2
	23	3	9.7
	25	1	3.2
	26	2	6.5
	28	1	3.2
	32	1	3.2
	44	1	3.2
Race	Malay	27	87.1
	Chinese	2	6.5
	Indian	1	3.2
	Others	1	3.2
Occupation	Private Sector	6	19.4
	Government Sector	1	3.2
	Self-Employed	2	6.5
	Unemployed	2	6.5
	Student	20	64.5
Income Level	Below RM1000	19	61.3
	RM1001 – RM2500	7	22.6
	RM2501 - RM4000	3	9.7
	RM4001 – RM5500	1	3.2
	RM5501 and above	1	3.2
Marital Status	Single	30	96.8
	Married	1	3.2
	Others	-	0

Diagram 1
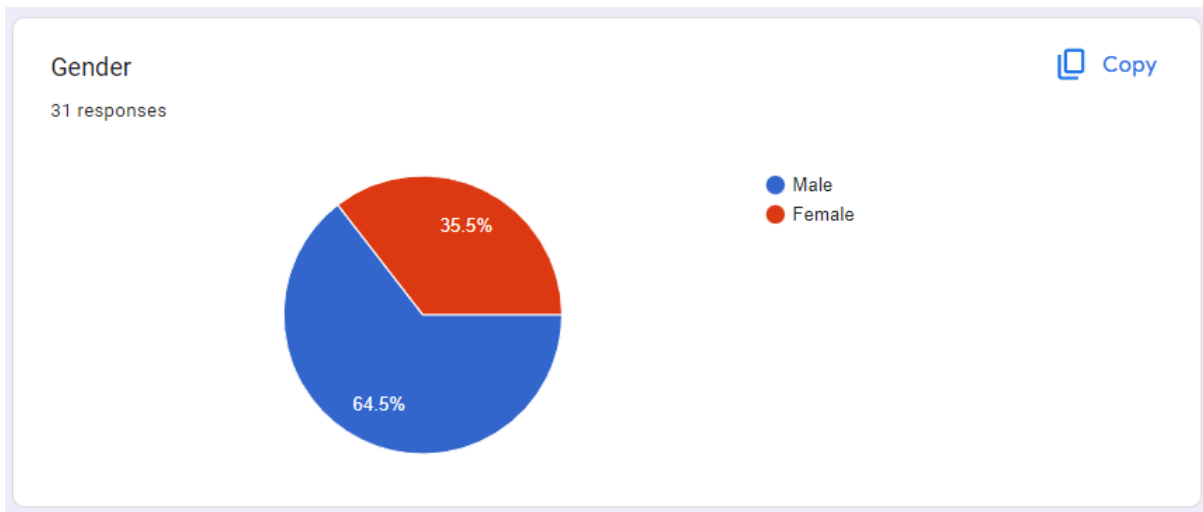
Based on diagram 1, the question that we start off with is asking for their gender and we can see that most of the respondents are male which makes up 64.5% of the pie chart resulting in 20 male person and at the same time the rest 35.5% are female respondents which is 11 person totalling in 31 respondents.

Diagram 2
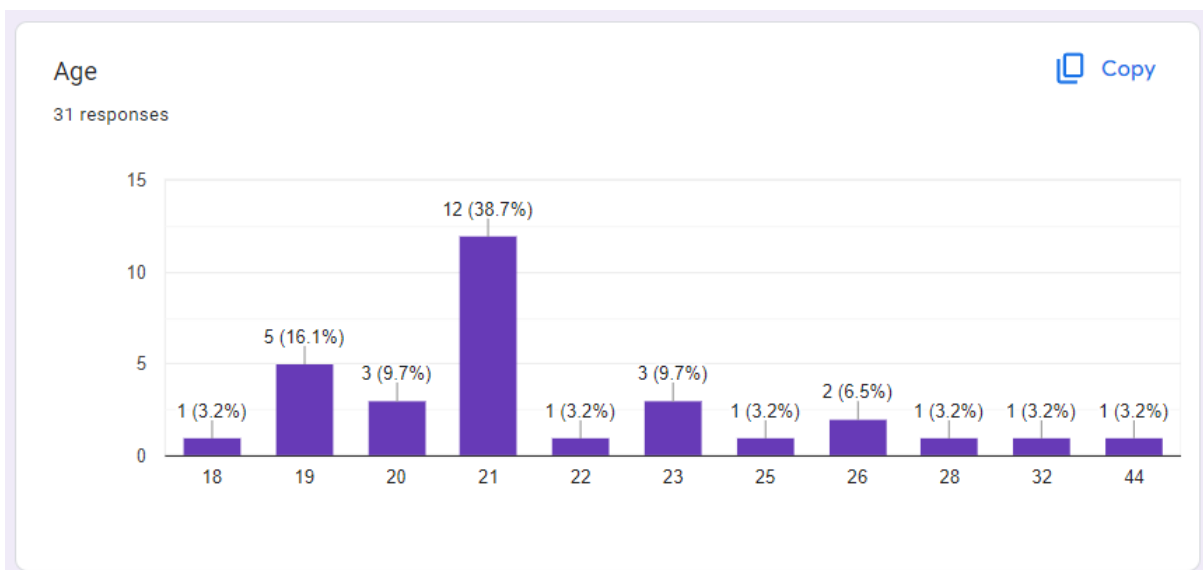
As for diagram 2, we asked for their age. There are few respondents from Gen-X and Gen-Y which are aged 44 and 32. The most frequent age shown is 21 totalling up to 38.7% which makes up 12 person. The next highest frequency is from the age 19 resulting in 5 respondents and making up 16.1%.
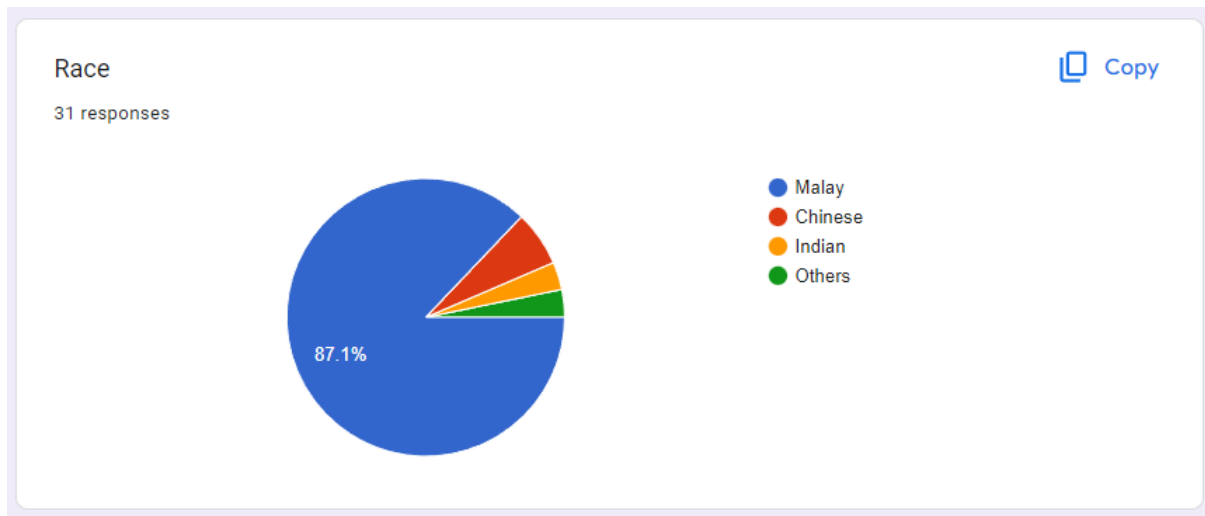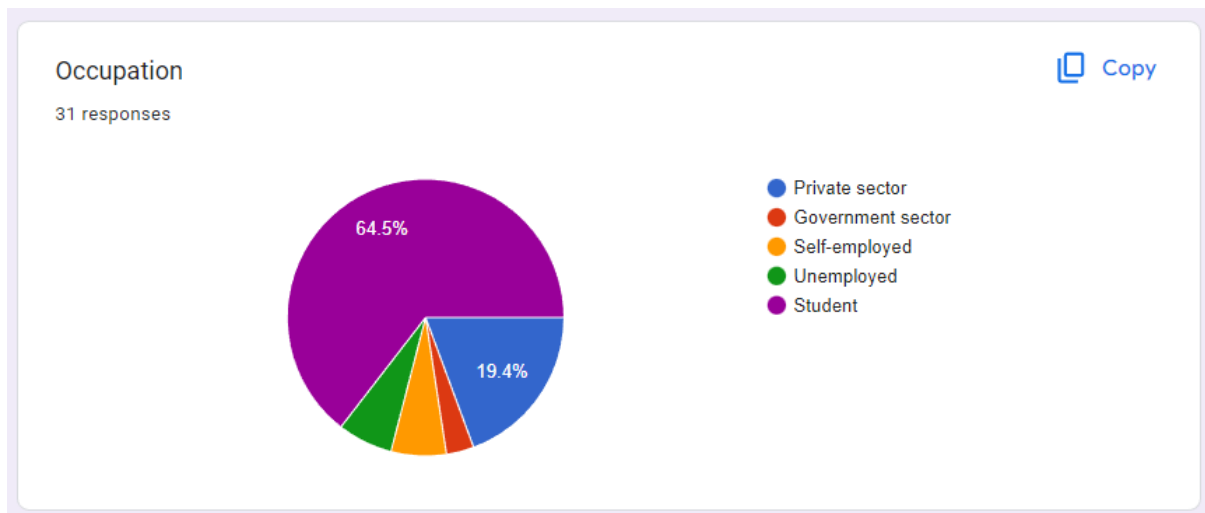
Diagram 3

Diagram 3 shows that most of the respondents are Malay covering 87.1% of the chart which makes up 27 out of 31 respondents and 2 of them are Chinese and the rest 2 respondents are Indian and other races.

Diagram 4

Given the data based on diagram 4, most of our respondents are mostly students making up two-third of the pie chart and 6 of them are working in the private sector covering one-fifth of the chart. The least is working in the government sector and the rest shares the same frequency which makes 6.5% of the chart.
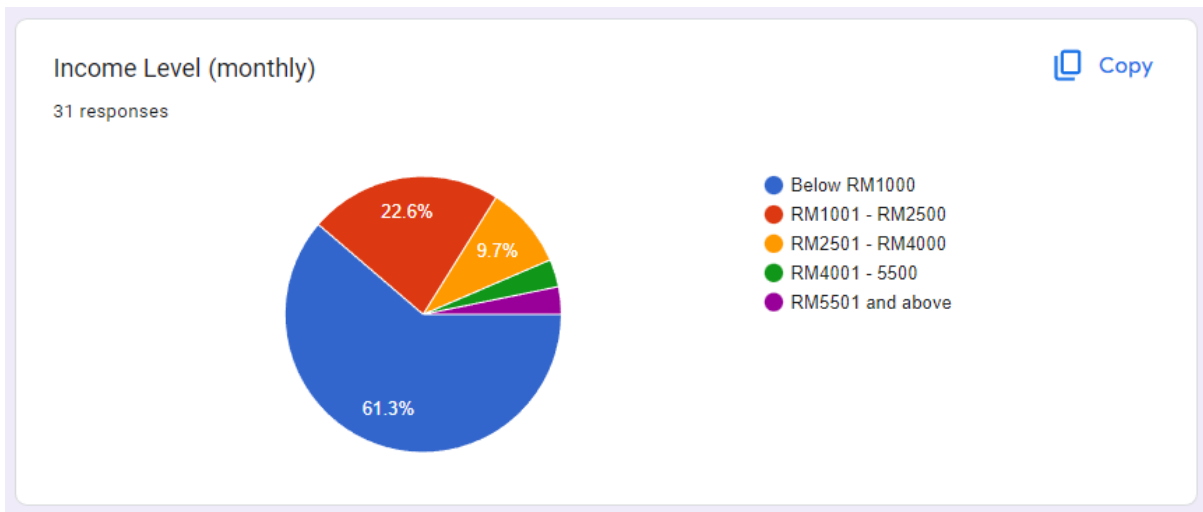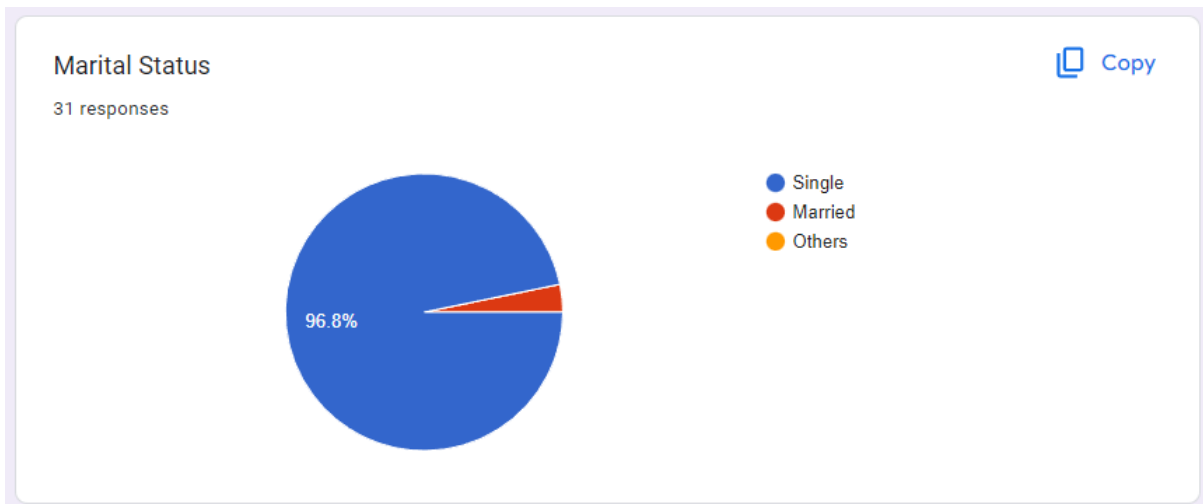
Diagram 5

Diagram 5 provides us with the respondents household income level and we can see that most of them answered "Below RM1000" making up 19 respondents with 61.3% covering the chart. This gives us the audacity to educate them to practice using recyclable materials instead of wasting their savings buying non-recyclable phone holder from e-commerce platform. The next frequent is range between "RM1001 – RM2500" making up 7 person covering 22.6% of the graph.

Diagram 6

Information shown on diagram 6 tells us that most of our respondents are single with the highest frequency of 30 with 96.8% making up the whole chart and the rest 1 respondent is married making up 3.2% of the pie chart.

4.4 DESCRIPTIVE STATISTICS FOR VARIABLE

Descriptive statistics were also calculated for each item and variable to investigate their level among respondents. The 5 categories according to the mean consists of "Very Low" (1.00 – 1.80), "Low" (1.81 – 2.60), "Medium" (2.61 – 3.20), "High" (3.21 – 4.20), "Very High" (4.21 – 5.00). The data source comes from Moidunny (2009).

Table 2 : Mean Score Chart

Mean Score	Interpretation
1.00 – 1.80	Very Low
1.81 – 2.60	Low
2.61 – 3.20	Medium
3.21 – 4.20	High
4.21 – 5.00	Very High

Table 3 : Descriptive Statistics for Evaluation Zone (N = 31)

Description	Mean	Standard Deviation	Level
Are you open to purchasing a product made from recycled materials?	1.03	.180	Very Low
How accessible are recycled products to you compared to regular products?	3.45	.888	High
In your opinion, what would be an appropriate price for recycled products?	1.23	.425	Very Low
Do you believe recycled products have a positive impact on the environment?	1.03	.180	Very Low

Based on Table 3, it shows a descriptive statistic for our Evaluation Zone. In conclusion, we can conclude that the question "How accessible are recycled products to you compared to regular products?" achieved the highest level of mean score of 3.45. Followed by that is the question "In your opinion, what would be an appropriate price for recycled products?" with a mean score of 1.23. The rest 2 questions share the same mean score which is 1.03.

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From the result, we can assume that this Eco-Friendly Phone Holder will make significant impact for those who emphasise on using recyclable materials. This product will suit them as they practice recycling materials instead of throwing it away and pollutes the environment. By introducing this product to the market will make those who are accessible to recycled materials try out our product instead of buying phone holders made from other materials online.

Table 4 : Descriptive Statistics for Product Quality (N = 31)

Description	Mean	Standard Deviation	Level
Eco Friendly Phone Holder is high in quality.	3.74	.815	High
Eco Friendly Phone Holder is safe to use.	4.32	.702	Very High
Our Eco Friendly Phone Holder could be useful.	4.16	.820	High
The design of our Eco Friendly Phone Holder is visually appealing.	4.16	.820	High

Based on Table 4, it shows a descriptive statistic for our Product Quality. To conclude this, we can see that the question "Eco Friendly Phone Holder is safe to use." achieved the highest level of mean score of 4.32. Followed by that is the question "Our Eco Friendly Phone Holder could be useful." and "The design of our Eco Friendly Phone Holder is visually appealing." which shares the same mean score of 4.16. The last question which is "Eco Friendly Phone Holder is high in quality." achieves a mean score of 3.74.

Based on the results, we agreed that we made our product looks aesthetic and at the same time maintains its quality. Our product looks visually appealing and also sturdy with or without a load on it. Our product is also safe to use by everyone without having to take into account about their age or gender because it does not cause harm to anyone.

Table 5 : Descriptive Statistics for Product Potential (N = 31)

Description	Mean	Standard Deviation	Level
The demand for our Eco-Friendly Phone Holder among consumers will be high.	3.65	.877	High
Our Eco-Friendly Phone Holder crafted from recycled materials has the potential to substitute the conventional phone holder.	3.74	.893	High
Our Eco-Friendly Phone Holder made from recycled materials can be accepted by the public.	4.19	.873	High
A phone holder made from cardboard can be competitive in the market.	3.61	1.116	High

Table 5 shows a descriptive statistic for our Product Potential. Conclusion is we see that the question "Our Eco-Friendly Phone Holder made from recycled materials can be accepted by the public." achieved the highest level of mean score of 4.19. Followed by that is the question "Our Eco-Friendly Phone Holder crafted from recycled materials has the potential to substitute the conventional phone holder." with a mean score of 3.74. The next in line is the question which is "The demand for our Eco-Friendly Phone Holder among consumers will be high." that achieves a mean score of 3.65. The last question "A phone holder made from cardboard can be competitive in the market." scored a mean score of 3.61.

In result, we see that our product is highly potential to penetrate the market and be really competitive with other phone holders that are currently sold offline and online. This friendly environment product is invented to make sure those who are currently competing in the market will feel challenged by its new competitor which is really easy to make and can still look very astonishingly good.

Table 6 : Descriptive Statistics for Potential User Adoption (N = 31)

Description	Mean	Standard Deviation	Level
I would use the Eco-Friendly Phone Holder in public.	4.00	1.033	High
I would recommend others to use the Eco-Friendly Phone Holder.	4.06	.814	High
The Eco-Friendly Phone Holder can be used on devices that I own.	4.26	.815	Very High

Based on Table 6, it shows our descriptive statistic for Potential Used Adoption. We conclude that by highlighting the question with the highest mean score of 4.26 which is "The Eco-Friendly Phone Holder can be used on devices that I own." Followed by the second highest mean score of 4.06 with the question that goes "I would recommend others to use the Eco-Friendly Phone Holder." The least mean score is 4.00 which is the question "I would use the Eco-Friendly Phone Holder in public."

Referring to the results, we are happy to say that our product is convenient to use for any devices because in the process we made sure that our product is tailored to suit our user's interest so that they will not have difficulties when placing their phone on the phone holder itself. We also see that our product will be recommended to others and with that we can expand, emphasise and practice the usage of recyclable materials.

4.5 DISCUSSION

Based on the analysis of data, it appears that using cardboard as a material for eco-friendly phone holders is a viable option. Cardboard is a renewable resource that can be easily recycled or biodegraded, making it an environmentally responsible choice. Additionally, cardboard phone holders can be designed to be sturdy and functional, providing a convenient and reliable way to hold and display a phone. Consumers who are attracted to eco-friendly products may appreciate the simplicity and natural aesthetic of a cardboard phone holder. However, it is important to note that using cardboard as a material may have some limitations. For example, cardboard is not as durable as other materials, which could affect the longevity of the phone holder. Additionally, some consumers may perceive cardboard as less valuable or less luxurious than other materials. Overall, the use of cardboard as a material for eco-friendly phone holders is worth considering, but it may not be the best fit for everyone. As with any product development, it's important to carefully consider the needs and preferences of the target audience, and to balance environmental responsibility with quality and functionality.

4.6 SUMMARY

An eco-friendly phone holder made using cardboard is a great way to repurpose an old piece of furniture and keep your phone easily accessible while also being environmentally conscious. To create one, you'll need to remove the cupboard door and install hooks, clips, or other attachments to hold your phone in place. You can then mount the door on the wall or another surface and use it as a convenient phone holder that doesn't take up much space. Not only does this help reduce the amount of waste produced by disposing of the cupboard, but it also provides a unique and functional phone holder that's perfect for any room in your home. Besides that, Eco Friendly Phone Holder a great alternative to fossil fuels, which are non-renewable resources that will never be replaced once depleted. They also don't emit pollution into our air, causing harmful air quality over time because cardboard is one of the most sustainable packaging materials because it is made from the renewable raw material wood. This makes it particularly eco-friendly with respect to extraction and production, as well as use and disposal. From the data analysis of eco-friendly phone holders, we can see that there is a growing demand for products that are sustainable and reduce our impact on the environment. The analysis shows that consumers are willing to invest in eco-friendly options and are particularly interested in products that are made from recycled materials, renewable resources, or are biodegradable.

Furthermore, the analysis highlights that the most popular eco-friendly phone holders are those that are not only sustainable, but also functional and stylish. Consumers are looking for products that not only meet their needs, but also align with their personal values. Overall, the data suggests that there is a real opportunity for companies to develop eco-friendly phone holders that are both environmentally responsible and appealing to consumers.

CHAPTER 5 : CONCLUSION AND RECOMMENDATION

5   CONCLUSION AND RECOMMENDATION

5.1 INTRODUCTION

In this chapter, we will explore the overall performance of our project, the Eco-Friendly Phone Holder. We shall delve into an assessment of our sample group to determine if the project's objectives have been successfully attained. Moreover, we will shed light on the limitations we faced during the development phase of our Eco-Friendly Phone Holder. To conclude, we will offer recommendations to augment the quality of the sample we devised, ensuring future enhancements.

5.2 CONCLUSION

Global warming has emerged as a pressing global concern, demanding our attention. Neglecting its seriousness can result in severe repercussions for society. It is imperative for us all to collectively confront this issue. Commencing with small changes in our personal lives, we can pave the way for meaningful transformation. Thus, the development of the Eco-Friendly Phone Holder holds paramount significance for the community.

To sum up, one of the key objectives of our project was to introduce the Eco-Friendly Phone Holder to society as a means to address the merits of climate change mitigation. It is worth noting that this phone holder is crafted from safe recycled waste, facilitating easier decomposition compared to other phone holders. Based on our survey findings, 96.8% of the 31 respondents agreed that the Eco-Friendly Phone Holder can have a positive impact on the environment. This indicates that the development of the Eco-Friendly Phone Holder contributes positively towards fighting global warming.

The second objective was to implement and evaluate the usage of the Eco-Friendly Phone Holder within the community. Throughout the development process, we employed the ADDIE Model to create and evaluate our product. By conducting surveys, we were able to analyse its effectiveness and comprehend consumers' feedback. Out of the respondents, 38.7% strongly agreed that our product had a strong appeal, drawing potential customers. Furthermore, 55.2% of respondents expressed a strong willingness to recommend the product to their friends once it is available in the market. Thus, these outcomes demonstrate that our product successfully fulfils the study's objectives.

Ultimately, the Eco-Friendly Phone Holder has made a significant impact on its users, providing them with a versatile phone holder suitable for various smartphone models. It has also contributed to mitigating climate change and global warming. Moving forward, we aspire to enhance our product further and eventually bring it to the market, with the aim of benefiting the community at large.

5.3 RECOMMENDATION

After receiving suggestions from a sample of users and group members, we have identified areas for improvement in our product, which will contribute to its future enhancement. All suggestions have been thoroughly considered, and we are confident that by evaluating these ideas, we can effectively improve the product, ultimately benefiting our customers.

The first suggestion entails enhancing the design of the phone holder to cater to various devices such as smartphones, tablets, iPad. An Aesthetically pleasing design plays a crucial role in the success or failure of marketing a product. We firmly believe that this factor is of utmost importance in attracting a larger user base. To achieve this, we propose allowing users to customize the design of the phone holder according to their personal tastes. For instance, customers can choose what colour or pattern on the phone holder that matches their tastes.

Another suggestion aims to enhance the quality of our Eco-Friendly Phone Holder by utilizing an LED light. This recommendation arises from concerns expressed by some users regarding the phone holder's uniqueness. By installing LED lights on the phone holders, we can ensure increased quality and function, thus boosting user confidence in our product.

Finally, we greatly value all feedback received from our user samples, regardless of its nature, be it positive or negative. We sincerely appreciate the valuable insights shared by our users. We are enthusiastic about implementing further improvements to our product, striving to meet the evolving needs of our users in the future.

5.4 LIMITATION

During the development of the Eco-Friendly Phone Holder, we encountered a few limitations that had an impact on its functions and structure. Here are a couple of the limitations we faced:

i.   Limitation in the method and design of inventing the Eco-Friendly Phone Holder:

Initially, the method of creating the Eco-Friendly Phone Holder involved using plastic bottle cuttings as the main material, covering and shaping the structure with them. However, this approach proved to be unsuccessful as the resulting phone holder lacked strength and durability, failing to meet the satisfaction of the group members.

As a solution, we considered changing the main material from plastic bottles to cardboard. Cardboard was chosen for its stronger and more durable properties, capable of supporting weights of up to 2 kg and beyond. This change not only provided a new look for the multipurpose bag but also improved its functionality. The initial design could only accommodate a few smartphone models and was less convenient compared to the revised version. Additionally, the revised design took longer to complete due to the evaluation process carried out by team members. To enhance the phone holder's appearance, a wrapping paper was used to cover the cardboard exterior, resulting in a more appealing product for the market.

ii.   Limitation of cardboard availability:

While we believe the Eco-Friendly Phone Holder has potential in a large market, one of the challenges we faced was the limited availability of cardboard. In order to meet potential high demand, a steady supply of cardboard is necessary. However, sourcing sufficient quantities of cardboard proved to be energy-consuming. Each team member had to visit supermarkets or hypermarkets to search for the suitable cardboard to create a phone holder.

These limitations required us to adapt our approach, seeking alternatives and working within the available resources. Despite the challenges, we remained committed to overcoming these limitations to ensure the success and marketability of the Eco-Friendly Phone Holder.

5.5 SUMMARY

In summary, our project, the "Eco-Friendly Phone Holder", has triumphantly accomplished all the earlier stated objectives. This is evident from the favourable feedback we received from a sample group who tested our product. As anticipated, we have devised a solution that effectively addresses the need to replace the existing phone holder, which pose challenges in disposal and harm the environment. The Eco-Friendly Phone Holder represents a significant advancement in this area.

Its foundation is crafted from cardboard, enveloped by ice cream sticks and wrapped in wrapping paper, rendering it a better alternative. As a result, it contributes to mitigating climate change and global warming. Additionally, the Eco-Friendly Phone Holder boasts environmentally friendly attributes, as it is biodegradable and can be easily disposed of after prolonged use. In essence, the Eco-Friendly Phone Holder project endeavours to combat pollution and preserve the environment.

The successful realization of our objectives, along with the positive response from our test group, validates the effectiveness and relevance of the Eco-Friendly Phone Holder. It serves as a testament to our commitment to finding sustainable solutions and promoting a greener future.