SULTAN SALAHUDDIN ABDUL AZIZ SHAH

RECYCLED JEANS

TOTE BAG

NAME:	MATRICS NUMBER:
SITI NABIHAH BINTI ASBULLAH	08DPM20F2001
NORSHAHIRA BINTI MOHD HAFIAH	08DPM20F2008
ZAHIRAH AMYLIA BINTI MOHD ZAIDI	08DPM20F2028
MUHAMMAD AIDID BIN BASIR	08DPM20F2009

DIPLOMA IN BUSINESS STUDY DEPARTMENT

MARCH 2023

POLITEKNIK SULTAN SALAHUDDIN

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A project report submitted in partial fulfillment of the requirement for

The award of Diploma in Business Studies

COMMERCE DEPARTMENT

MARCH 2023

DECLARATION OF ORIGINALITY

TITTLE: RECYCLED JEANS TOTE BAG

SESSION : MARCH 2023

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2. We certify that "this project" and all of its intellectual properties are wholly original and free of any plagiarism.

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(   )
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LETTER OF AUTHORIZATION

We thus certify that the work contained in this final year project paper was completed in line with Polytechnic rule. Unless otherwise stated or recognised as referenced work, everything is unique and the outcome of our own labour. This thesis hasn't been submitted to another academic or non-academic organisation for a degree or other credential.

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ACKNOWLEDGEMENT

ABSTRACT

This article discusses the significance of denim and its effects on society, manufacturing and landfill issues, denim reuse and recycling technologies, the evaluation of efforts made by numerous organisations worldwide to recycle denim for regenerated textiles and reclaimed products, and a sustainable denim recycling road map.

All denim is created utilising a twill weave and cotton fibres. The distinctive denim material's diagonal ribbing is produced by this manufacturing process. Although all denim has a similar look, several varieties have a few subtle differences. According to (Sandin, 2018) This study also focuses on the creation of jeans made from recycled tote bags. 85 percent of the publications cover recycling, 44 percent cover reuse, and 29 percent cover both reuse and recycling. Recycling of fibres has received the greatest research (57%), followed by recycling of polymers/oligomers (37%), monomers (29%), and fabrics (14%).

This study aims to produce tote bag recycle jeans. This research uses (The Stage Gate Model By Cooper) with: idea generation, concept development, feasibility study, design and development , testing , launch to determine the validity of the product.

Key Words: Environment issues, clothing disposal, environmental economic factor, sustainable fashion

ABSTRAK

Ini berkaitan dengan kepentingan denim dan impaknya terhadap masyarakat, isu pembuatan dan tapak pelupusan sampah, teknologi yang terlibat dalam penggunaan semula dan kitar semula denim, penilaian kerja yang dilakukan oleh banyak organisasi di seluruh dunia untuk mengitar semula denim untuk tekstil yang dijana semula dan produk tebus guna dengan pelan hala tuju untuk kitar semula denim dari segi kemampanan.

Semua denim diperbuat daripada gentian kapas menggunakan anyaman kepar. Fabrik ini mencipta rusuk pepenjuru yang ikonik kepada bahan denim. Walaupun denim akhirnya sama dari segi penampilan, terdapat beberapa jenis denim yang mempunyai sedikit variasi. Menurut (Sandin, 2018) Kajian ini juga memfokuskan kepada pembangunan jeans tote bag kitar semula. Lapan puluh lima peratus daripada penerbitan berurusan dengan kitar semula, 44% dengan penggunaan semula, dan 29% dengan kedua-dua penggunaan semula dan kitar semula. Kitar semula gentian ialah jenis kitar semula yang paling banyak dikaji (57%), diikuti oleh kitar semulapolimer/oligomer (37%), kitar semula monomer (29%), dan kitar semula fabrik (14%).

Kajian ini bertujuan untuk menghasilkan seluar jeans kitar semula tote beg. Penyelidikan ini menggunakan (The Stage Gate Model By Cooper) dengan penjanaan idea, pembangunan konsep, kajian kebolehlaksanaan, reka bentuk dan pembangunan, pengujian, pelancaran untuk menentukan kesahihan produk.

Kata Kunci: Isu alam sekitar, pelupusan pakaian, faktor ekonomi alam sekitar, fesyen lestari

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CHAPTER 1 INTRODUCTION

1.1 Introduction

This chapter provide information development about recycle jeans tote Bag around the community. The part in this chapter would be the representation on the background of the study, problems statement, objective, hypothesis, scope of the study, significant of the study and operation definition. The outlined implementation on the requirement of the course and the suitability of the program in the respective polytechnic.

1.2 Background of Study

Because of the growing wealthy lifestyle and purchasing power, the fast-fashion trend has become more prevalent and is aggravating the trash culture dilemma. The act of throwing away used garments as trash harms the ecosystem. Hence, research into consumer apparel disposal practices is necessary. According to Leonas (2017), by upcycling, old, worn, or discarded materials are transformed into something better and new.

Upcycling is a process that produces a one-of-a-kind, handmade product by combining elements like environmental awareness, creativity, invention, and hard labour. The goal of upcycling is to produce products that are inventive, beautiful, affordable, and sustainable. For instance, downcycling turns used T-shirts into cleaning rags, whereas upcycling transforms the material into a product with new value.

1.3 Problem Statement

In this perspective, we highlight an important issue for the environment is the amount of waste produced today and its negative consequences for the environment. waste that can harm the environment and other community groups if it is not disposed of properly after it has served its purpose for the organization to which it belongs. Perhaps, waste from one industry can be a resource for another industry (Shanthi, 2017). A large amount of

environmental damage and human disease are caused by textile waste water. In the disposal phase, landfilling of waste textiles creates a further problem related to the decomposition offibers (AUTEX, 2015).

Some of the strategies that the textile and clothing industry can use to overcome the difficulties it is facing and to survive in the new, tight and green circular economy that demands the maximum use of resources with little or no waste and zero emissions while stillallowing financial success without harming the environment. (Chen,et al. 2021)

According to Shanthi (2017), denim is one of the most common fabrics used in today's world. Since huge volumes of denim jeans are produced and consumed annually, theenvironmental concerns associated with their production are also very high. However, the increased awareness of textile recycling has paved the way for using recycled materials in denim production.

The American Chemical Society stated in a news release on June 18, 2012, that the manufacture of a pair of jeans uses more than 2,500 gallons of water (including cotton cultivation, dyeing, and denim processing), about a pound of chemicals (in the form of dyes,auxiliaries, and finishing agents), and a significant amount of energy (including the irrigation of cotton and subsequent processes such as spinning, weaving, processing, and sewing). Tocalculate the total annual output of jeans in the world, multiply these numbers by 2 billion. Thus, the issue of sustainable production is raised (Amutha, 2017).

1.4 Objectives

This study aims to produce a good recycle jeans material for tote bag to reduce denim waste in order to save environmental and maintain healthy lifestyle. These are the primary goals of the study:

    i.   To develop bag from recycle jeans

   ii.   To reduce denim waste in order to save environmental and maintain healthy lifestyle

  iii.   To identify customer satisfaction toward our quality product.

1.5 Research Question

This study aims to produce a good recycle jeans material for tote bag to reduce denim waste in order to save environmental and maintain healthy lifestyle. These are the research question of the research:

      i.   How to develop bag from recycle jeans?

     ii.   What is level of customers satisfaction toward recycle jeans product?

1.6 Hypotheses

These were the hypotheses developed to answer all research objectives that being mentioned earlier.

H1: There is a significant relationship between knowledge and practice caring for the environment.

H2: There is a significant relationship between the skill of develop recycled jeans to community   lifestyle accessories.

H3: There is a significant relationship between value and recycling practices, discarded clothes.

H4: There is a significant relationship between attitude and practice of caring for the environment.

H5: There is a significant relationship between the sustainable and practice of caring for the environment.

1.7 Swot Analysis

The SWOT analysis is a common and well-liked technique among corporate marketing and strategy students, as well as several practitioners and marketing researchers. The tool is used to evaluate options and make complicated decision-making circumstances simple, which sustains its use in business and beyond. Strategic planning often begins with the gathering of internal and external challenges in the corporate world.

It can be created quickly and can benefit from multiple viewpoints as a brainstorming exercise. The top row of the 2 £ 2 grid represents internal strengths and weaknesses, and it can contain factors like image, structure, access to resources including natural resources, capability and efficiency, and financial resources. External opportunities and threats, which are listed in the bottom row of the SWOT grid, are consumers, rivals, market trends, partners and suppliers, societal changes and new technology, as well as numerous environmental, economic, political, and regulatory challenges. In order to create appropriate courses for nations, organisations, or other entities to pursue, SWOT analysis helps identify environmental linkages (Proctor, 1992).

The SWOT analysis for this study as below:

Strengths	Weaknesses
- Incentives to recycle more denim waste - Cheaper Price as compact to other competitors - Material makes by recycle denim - Can be used for various purpose	- Competition from well-known brand - Lack of design produced - Lack of production management. - Time consuming on production
Opportunities	Threats
- Made into fashion accessories - Less competitors of recycle jeans tote bag - Maintain the fashion jeans trends. - Utilize social media to educate consumers and raise public awareness.	- Different types of recycled jeans materials. - Different types of recycled jeans colors. - Lack of customers' acceptance towards buying recycled products - Lack of jeans stock quantity

Table 1: SWOT Analysis of Website

1.8 Scope of the Study

This study's focus is on recycled jeans tote bags. A tote bag's primary function is to act as a convenient carryall, especially on days when you have a lot of shopping or errands to run. A canvas tote bag, on the other hand, is any tote fashioned from a robust fabric composed of cotton or linen. Sails, tents, backpacks, and other goods are also made of this material.

1.9 Significance of the Study

The study of the creation of recycled jeans tote bag is important to carry out because it has importance to society. Execution this study opens many newer research projects that can be explored by academics as well polytechnic student. This opportunity should be considered a benefit what the institution will get in the future.

The purpose of this jeans tote bag product was created to save a lot of energy because many things that we recycle can easily be turned into virgin material. In fact, can save a lot of resources. Therefore, the study of recycling jeans can reduce the burden on the environment. When we save energy, less greenhouse gases and oxides are produced to the environment.

So, this study is very important in preparing knowledge and skills to the community on how to care for the environment without throwing away wasted clothes. Research on clothing disposal used still need to be implemented until now. So, this research on the disposal of used clothes or jeans is important, because this research will also be able to contribute a lot of impact and give more understanding to the surrounding community on how to take care of the environment without having a negative impact.

1.10 Operational Definitions

These are the terms and its operational definitions.

a) Environment issues

According to Luiken & Bouwhuis, (2015), Environment issues**,** denim is produced and used in large amounts, and the production, use and disposal of denim has a huge environmental impact.

b) Clothing disposal

According to Muthu (2017)**,** Clothing disposal, this goal helps to change the lifestyle of consumers and develop an attitude to take up natural cycles where all the discarded materials will be designed to become resources for the next set of new products. This can be achieved by designing and managing products that avoid the volume and harm created by waste but conserve and recover all resources.

c) Environmental economic factor

According to Chen, *et al.* (2021), Environmental economic factor, we highlight some of the possible approaches to be undertaken including the need for the creation ofrenewable raw materials sources, rethinking production, maximum use and reuse of textileproducts, reproduction, and recycling strategies, redistribution of textiles to new and parallel markets, and improvising means to extend the textiles lifetime.

d) Sustainable fashion

According to Kristy (2017), Sustainable fashion**,** the focus of this research is to highlight the behavior of individuals who upcycle used clothing, transforming textile waste into fresh fashion. The potential is discussed for upcycling that may fall along a continuum of a do it-yourself activity to a for-profit venture.

1.11 Conclusions

The implementation of this research is made within the problem statement, research objectives and research scope that was mentioned earlier throughout the period of four months starting from February 2023 till March 2023. A Gantt chart has been developed for the purpose of monitoring the planning and implementation of research activities. The Gantt chart of the research is shown in appendix A of the report. The production of recycled jeans tote bag this also a product design with the aim of meeting the current lifestyle, and being able to apply new ideas on a design, clothing design or accessory. The production of recycled jeans tote bag involves a process of repetition, imitation, and innovation to produce new fashion designs. Production of recycled jeans tote bag influenced by culture and society. Popularity a tote bag design according to different fashion for example, according to age, occupation, and the local community. Therefore, it will change over time and the situation of a local community that affects culture nowadays.

CHAPTER 2 LITERATURE REVIEW

2.1 Introduction

This chapter's literature assessment examines academic journals, books, and other materials related to environmental concerns, textile waste management, recycling, denim recycling products, and theoretical framework.

2.2 Environmental issues

i. Water consumption and pollution

Currently, the clothing chain (from manufacturing to use) is wasteful and polluting. The making of apparel, wearing it, and cleaning up afterward all use a lot of water and leave fiber and chemical residue in water sources. According to Morlet et al (2017), the yearly water consumption of the textile industry is roughly 93 cubic meters, which is the same as 37 million Olympic swimming pools. And, separately, it takes roughly 2720 l of water, or what one adult would drink in three years, to produce just one cotton T-shirt (Chan, 2020).

Even during the various cleaning processes that make up the usage cycles, water is still consumed. Regions with less resources can readily feel this high consumption. To make matters worse, it is estimated that the manufacturing processes for dyeing and finishing in the textile industry contribute to 20% of the global water pollution (Kant, 2012). Additionally, most of the clothing and fiber manufacturing occurs in developing nations. Later, the manufactured clothes are shipped to industrialized nations. The procedures by themselves cannot be sustained.

In conclusion, the wasteful and polluting linear economy of the clothing and textile business makes a strong case for sustainability and a circular economy. Industry practices like damping and quick waste accumulation can have a negative impact on the ecosystem and harm human health by allowing micron-sized synthetic fibers to enter water streams and bloodstreams. Additionally, the business uses a lot of water.

ii.   Textile waste

Waste is any material which is of no use to the organization it belongs to and may end up in being thrown away, thereby creating problems to other segments of the society and environment. Waste for one sector may be a prospective reusable resource for another segment. The matter of great concern today to most industries, communities and governments is the magnitude of waste that is generated and its negative impact to the environment. Why is any textile waste a problem? When this question is considered, a multitude of reasons is accompaniments of textile waste, namely the harm to human and environment by waste disposal; lack of space in landfills for any waste including those generated from textiles and apparel; the cost and depletion of valuable resources which are slowly becoming scarce; the moral view associated with waste generation and over consumption and so on (Shanthi, 2017).

The Environmental Agency has classified waste as controlled and non-controlled waste. Waste generated from households, commercial and industrial organizations and from construction come under the category of controlled waste, while waste resulting from agriculture, quarrying, dredging, and mining belongs to the non-controlled waste. Waste has been classified based on generation as pre-consumer textile waste, post-consumer textile waste and industrial textile waste. Pre-consumer waste is the remaining production processes in the industry which includes raw material to finished products ready for market (Shanti, 2017)**.**

This includes offcuts, shearing, selvedges, rejected materials, b-grade garments, export surplus which are homogenous and clean in nature to be used for other purposes. The post-consumer textile waste can include any product that has completed its life cycle and is no longer useful to the consumer in both function and aesthetics. The consumer no longer needs the product and decides to discard it due to wear and tear, damage, ill fit and out of fashion. In most cases the garment or product that is reasonably good can be recovered and used as second-hand clothing and sold to the third world countries which host huge markets for second-hand clothing. Unused products are shredded and converted to raw material for further use in manufacturing (Shanthi, 2017).

iii. Recycling

Recycling and reuse of materials is not new to the textile and apparel industry. Payne distinguishes between recycling and reuse as follows: Recycling 'refers to the breakdown of product into its raw materials for the raw material to be reclaimed and used in new products. In contrast, reuse refers to an existing product being used again within the same production chain. Textile recycling may involve reclaiming pre- consumer waste or post-consumer waste' (Payne, 2015). For centuries, end products were repurposed after they have reached the end of their use in one product.

Recycling involves two primary steps, collection, and processing. To achieve a closed-loop system, the processed waste must then be used in new recyclable products. The collection of waste can occur at various points throughout the textile and apparel supply chain. The textile, apparel, and fashion industry are complex and includes a variety of product categories covering diverse market sectors. Generally, it is accepted that production of fashion and textiles utilizes one of the longest and most complex industrial chains in the manufacturing industry (Hayes, 2011).

Preferences for recycling of textile wastes in the industry appear to the predominantly thermoplastic polymer-based fibers due to the ease and feasibility of reprocessing them. In addition, these materials have the ability to take on different forms and shapes afterrecycling. Natural fibers such as cotton, wool, and silk are also finding their ways into recycling streams. Most of textile wastes reported in the literature included polyester, polyethylene, nylon, p-aramid, carbon, silk, polybutylene terephthalate, bamboo, cotton, andkenaf (Saravanan, 2014).

Recycling adds a new phase to a product, a product which was no longer in use becomes useful. It helps in supplying raw material for production, and a combination of virgin material with the recycled material would help in maintaining the quality of the product (Paul, 2015).

iv.   Denim recycles product

According to (Shanti, 2017), Denim is one of the most widely used material in the world, has significant impact on environment in manufacturing and waste management stage. Denim recycling has opened vast opportunities for savings in the use of raw materials, energy and water consumption, chemicals and auxiliaries and waste water treatment. Reprocessed fibers from denim waste have the coloration from the raw material used, and hence, dyeing and finishing processes can be eliminated to a great extent. Many leading retailers like H & M, Adidas and Nike showcase and market their products with the percentage of recycled material in the product profile; their statistical reports reveal the quantity of clothes they have collected from their shoppers and the amount they contribute to international charity from their proceeds (Shanti, 2017).

Many products can be made by creative designers with aesthetic and technical prowess. Handwoven cotton and denim rugs, table runners, accent rug or door mat, can be woven into washable machine-dried products. Innumerable items like hand-quilted blankets, pillow shams, cushion covers, art objects, wall hangers, pot holders, tote bags, costume jewelry, apparels and accessories are some of the never-ending lists of items that have been upcycled from denim jeans (Lindzy, 2016). Upcycling has been carried out in many under-developed and developing countries, but this technique has opened many avenues for young designers, creative artists, manufacturers and retailers, and this concept is spreading all over the globe in its attempt to create products with an image of sustainability (Shanti, 2017).

2.3 Theoretical/ Conceptual framework and stage gate model

The basic framework of the Theory of Planned Behavior (TPB) was used in this study to examine the purchase behavior of Eco-fashion clothes. Several researchers have used TPB for understanding the purchase intention concerning environmental issues. There are many factors which impact the motivation of the consumer to become involved in environmentalism behavior (Marzie Hatef Jalil, 2019).

Denim is produced and used in large amounts, and the production, use and disposal of denim has a huge environmental impact. A comprehensive summary of the impact of denim was published by the International Solid Waste Association, highlighting the environmental aspects and opportunities to reduce environmental impact. Denim waste can be recycled through several methods. In practice, however, only a few are encountered these are the methods that are economically and ecologically preferred (Luiken, 2015).

In this perspective, we highlight some of the approaches the textile and clothing industry can adopt to overcome the challenges it is facing, for its survival in the new, strict, and upcoming green circular economy which requires maximum use of resources with little or no waste, with zero emissions, but still able to make profits without harming the environment (Wang, et al. 2021).
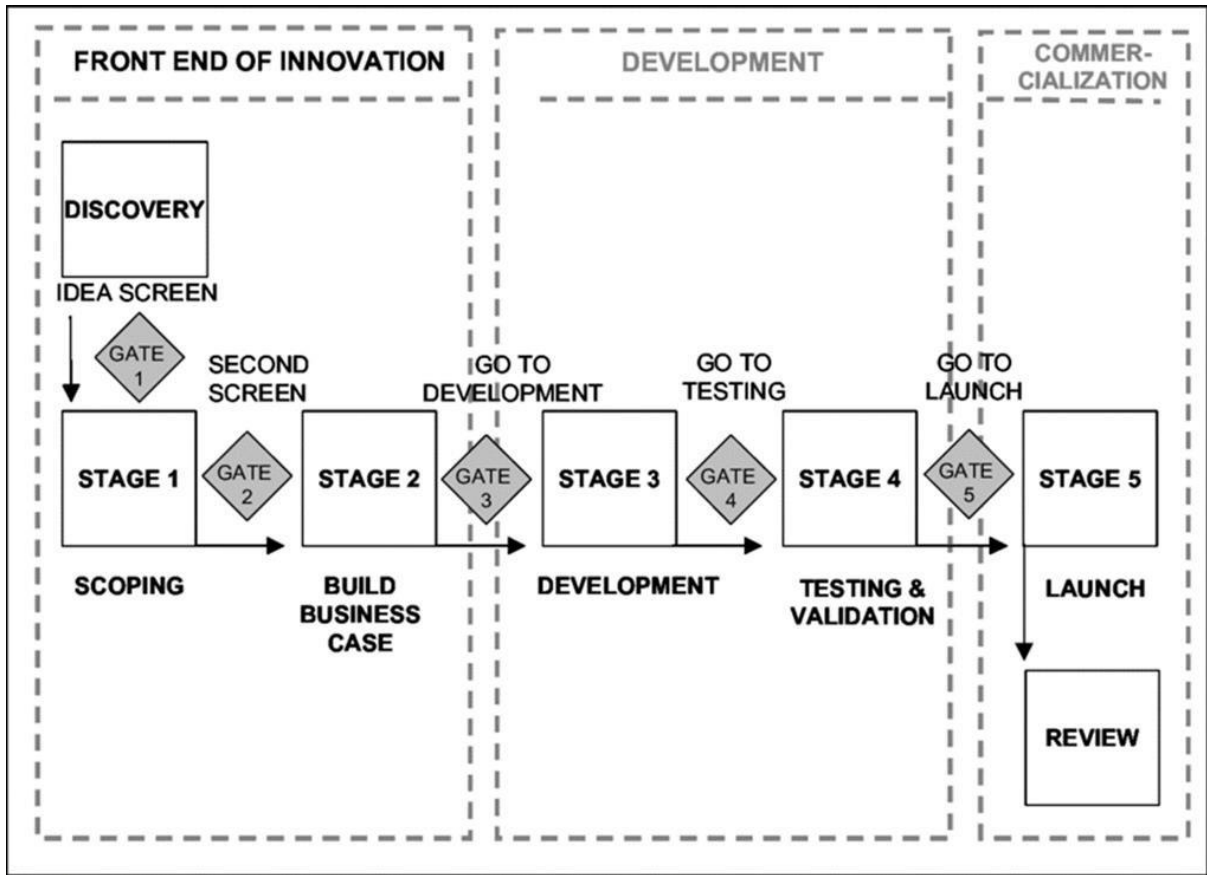
Figure 1: The Stage Gate Model By Cooper

The Stage-Gate model can be used to develop recycled products from denim. The Stage-Gate model is a flexible framework that can be applied to many different types of products, including those made from recycled materials. Here is an example of how the Stage-Gate model could be applied to the development of recycled products from denim:

Stage 1: Idea Generation - The first stage in the Stage-Gate model is to generate ideas for the product. In this stage, the team would brainstorm potential ideas for recycled products from denim. This could include researching existing products in the market, identifying areas for improvement, and considering how denim can be recycled and repurposed.

Stage 2: Concept Development - Once a promising idea for the product has been identified,

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the next stage is to develop a concept for the product. This would involve creating a basic design for the product, considering factors such as the type of recycled denim material to beused, the product's size and shape, and the manufacturing process.

Stage 3: Feasibility Study - In this stage, the team would conduct a feasibility study to determine if the concept for the recycled denim product is technically and commercially feasible. This might include testing the product with a focus group to get feedback on its functionality and identifying potential suppliers for the recycled denim material.

Gate 1: Go/No-Go - Based on the results of the feasibility study, the team would decide on whether to proceed with the development of the recycled denim product or terminate the project.

Stage 4: Design and Development - In this stage, the team would create a prototype of the recycled denim product and test it. They would refine the design based on feedback from product testers, optimize the manufacturing process, and refine the sourcing of the recycled denim material.

Stage 5: Testing - Once the prototype has been developed, the team would conduct more extensive testing of the recycled denim product to ensure that it meets all relevant standards and regulations, such as sustainability and durability.

Gate 2: Go/No-Go - Based on the results of the testing, the team would decide on whether to move forward with the launch of the recycled denim product.

Stage 6: Launch - In the final stage of the Stage-Gate model, the team would launch the recycled denim product into the market, creating a marketing strategy to promote the product to potential customers.

Gate 3: Post-Launch Review - After the launch of the product, the team would conduct a post-launch review to evaluate the success of the product and identify any areas for improvement.

Overall, the Stage-Gate model can provide a structured approach to developing recycled products from denim, helping to ensure that the product is technically and commercially feasible, meets customer needs and expectations, and is environmentally sustainable.

2.4 Conclusion

From the review of literature, the future of recycling relies heavily on the development of new advanced technologies and approaches for material processing (without quality loss), collection, sorting, processing, and utilization in a new product that is also recyclable. Creating a demand for new products with recycled content is critical. It is important to include the recycled content in the design and product development stages of fashion and home products but there is also a need to encourage flows that promote recycling and reuse.

CHAPTER 3 RESEARCH METHODOLOGY

3.1   Introduction

In this chapter, research methodology discusses research sampling and population, research design, location of the study, research procedures, research instruments and validation, research data collection and data analysis. Methodology is part of data or information gathering in order to achieve the research objectives.

3.2   Research of Project Design

3.2.1   Project Method / Procedures

The Stage-Gate model can be used to develop recycled products from denim. The Stage-Gate model is a flexible framework that can be applied to many different types of products, including those made from recycled materials. Here is an example of how the Stage-Gate model could be applied to the development of recycled products from denim:

3.2.2   Analysis

Idea Generation - The first stage in the Stage-Gate model is to generate ideas for the product. In this stage, the team would brainstorm potential ideas for recycled products from denim. This could include researching existing products in the market, identifying areas for improvement, and considering how denim can be recycled and repurposed.

Stage 2: Concept Development - Once a promising idea for the product has been identified, the next stage is to develop a concept for the product. This would involve creating a basic design for the product, considering factors such as the type of recycled denim material to be used, the product's size and shape, and the manufacturing process.

3.2.3 Questionnaire (Pre – test)

Feasibility Study - In this stage, the team would conduct a feasibility study to determine if the concept for the recycled denim product is technically and commercially feasible. This might include testing the product with a focus group to get feedback on its functionality and identifying potential suppliers for the recycled denim material. Wu et al. (2020) highlighted the importance of need analysis in identifying opportunities for innovation and designing products that better meet the needs and preferences of users and consumers. The study uses a combination of surveys and focus groups to identify user preferences and pain points with existing smartwatch interfaces and suggested that need analysis can inform the design of more intuitive and user-friendly smartwatch interfaces (Wu et al., 2020). While Hertzog (2008) recommended that a minimum of 30 participants be required to obtain an estimate of the variability of the outcome measure. Therefore, this study did a feasibility study of the product with 30 respondents as a sample size. The findings of the feasibility study as per diagram below:
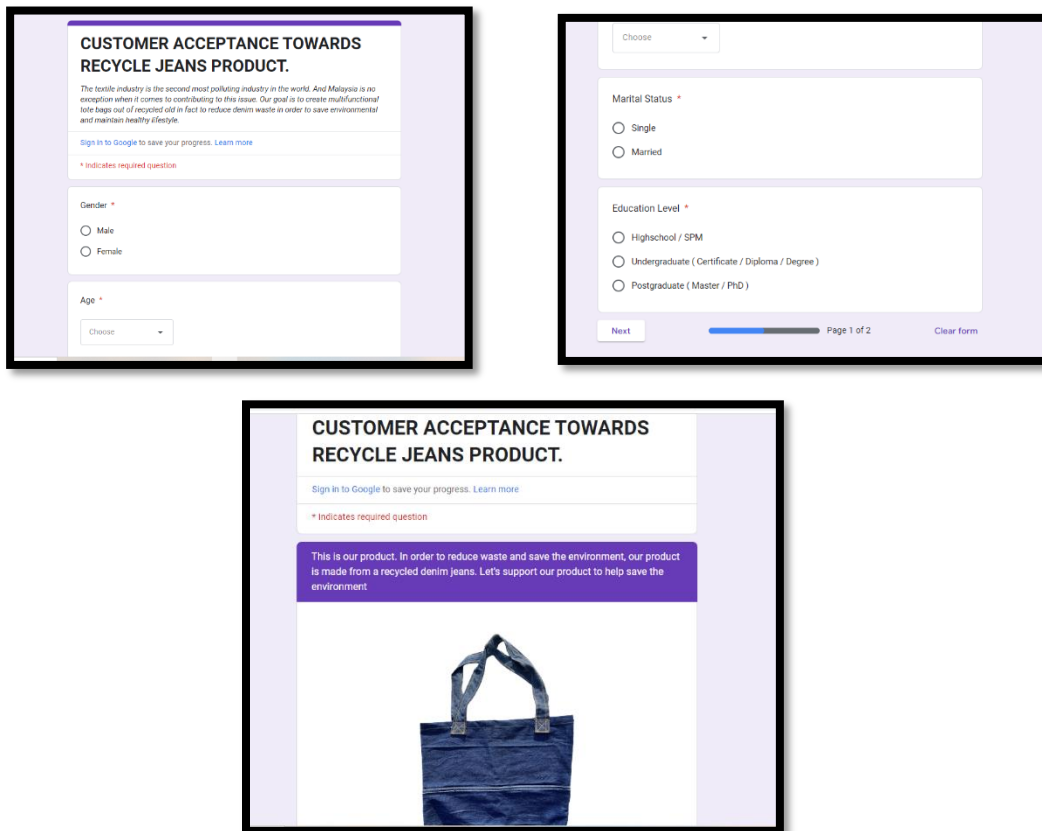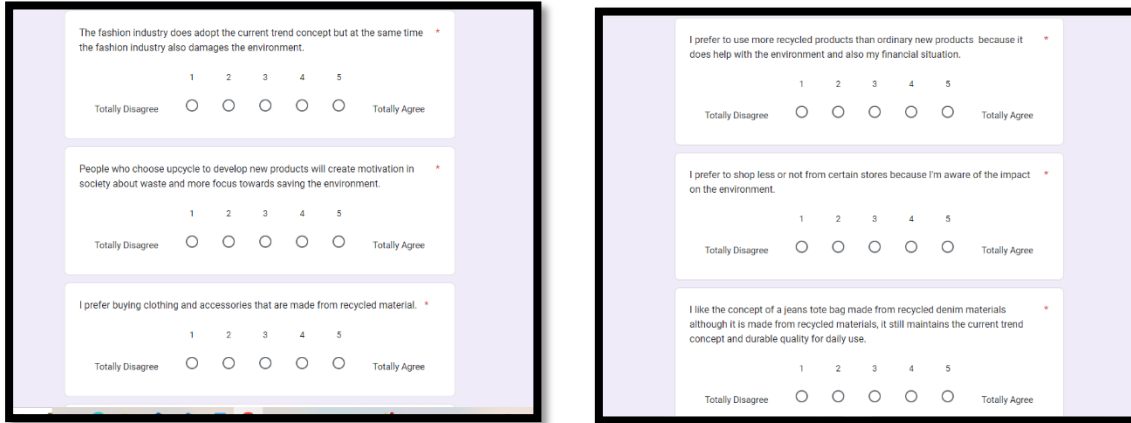
Figure 2: Google Form Questionnaire
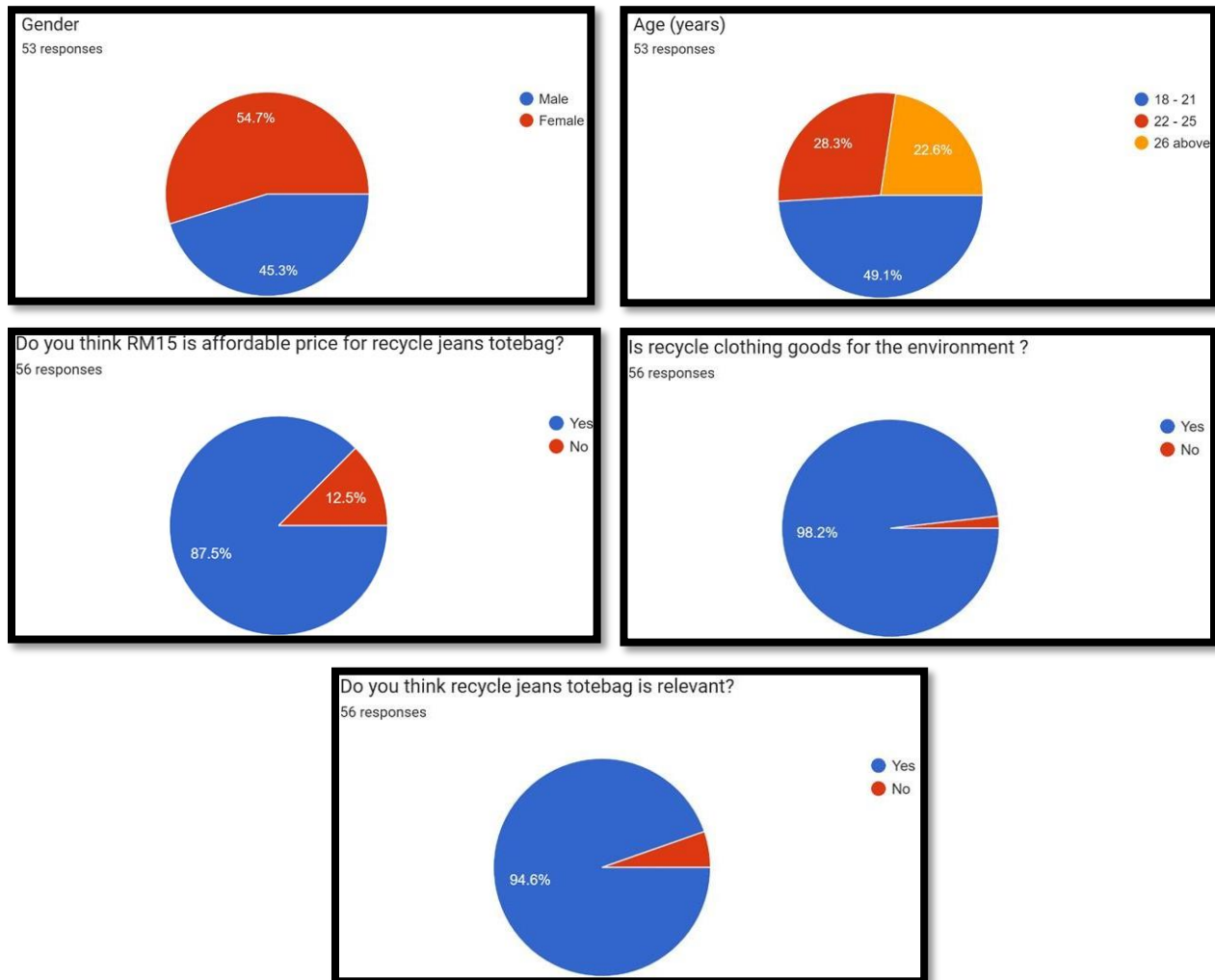
Figure 3: Data Analysis from Google Form Questionnaire

Gate 1: Go/No-Go - Based on the results of the feasibility study, the team would decide to proceed with the development of the recycled denim products.

3.2.4 Design

In this stage, the team would create a prototype of the recycled denim product and test it. They would refine the design based on feedback from product testers, optimize the manufacturing process, and refine the sourcing of the recycled denim material.

| Prototype 1 | Prototype 2 |
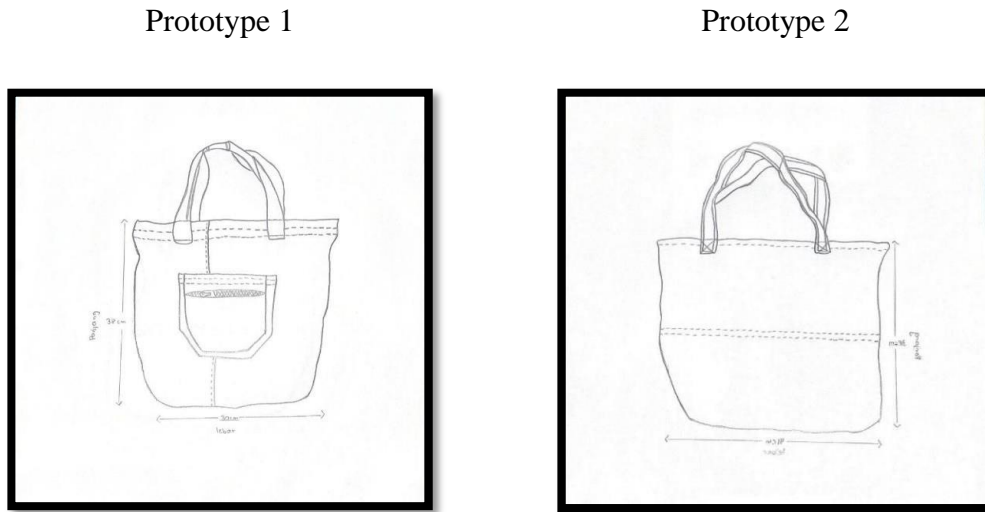
Figure 4: Prototype 1 & Prototype 2

Early sketch of recycled jeans tote bag design.

This is our design sketch for the recycled jeans tote bag. We estimated for the ideal width of prototype 1 would be around 30 cm and for the prototype 2 was around 41cm for length both prototype length is 38cm. with ideals measurement this help with convenience usage of our products.

3.2.5 Development

Figure 5: Denim collection

Step 1: Denim collections

For our product development we need to collect used denim in order to produced our product. We collect used denim from our community and neighbors which include jeans pants, jeans skirts, jeans jackets and more. This helps with raw materials of our product development.

Figure 6: Materials preparations

Step 2: Materials Preparations

Prepare the denim materials and make sure the denim was in the right measurement. The Materials that were used to make the recycled jeans tote bag are:

1.   used denim.

2.   Scissor.

3.   Thread.

4.   Measurement tape.

5.   Tailor chalk.

6.   Sewing machine.

With the number of Materials for sewing recycled jeans tote bag with their accurate measurement above, we confirm that cost per unit is RM 10 per unit.

Figure 7: Production process

Step 3: Production process

After we collected our raw materials and we did confirmation about measurement. We deliver our raw materials to tailor shop and we discuss about production and costing. For production first batch we ordered 10pcs of jeans tote bag which cost about RM100 to produced 10pcs of jeans tote bags. The cost per unit was RM10 as agreed by tailor shop which make our product listed for RM15 per unit.

Stage 4: Testing

Once the prototype has been developed, the team would conduct more extensive testing of the recycled denim product to ensure that it meets all relevant standards and regulations, such as sustainability and durability.

Figure 8: Product Testing

Prototype 1	Prototype 2
First attempt: • Cost per unit is expensive. • Hand holder was too short. • Vertical orientation makes it difficult to insert items. • The size is quite small makes it not convenience to use.	Second attempt: • Cost per unit is cheaper than prototype • Longer hand holder makes it easy to wear. • Horizontal orientation design help with insert items easily. • Bigger sizing makes it much convenience to use.

Gate 2: Go/No-Go - Based on the results of the testing, the team would decide on prototype 2 and move forward with the launch of the recycled denim product.

Stage 6: Launch - In the final stage of the Stage-Gate model, the team would launch the recycled denim product into the market, creating a marketing strategy to promote the product to potential customers.

Figure 9: Product Launching

3.2.6 Evaluation

Post-Launch Review - After the launch of the product, the team would conduct a post-launch review to evaluate the success of the product and identify any areas for improvement.

37

Chat 1:

> salam kak boleh tak saya nk feedback tentang beg kami
> 10:19 PM

> Wsalam.. Iyee bolehh
> 10:19 PM

> setakat ni akak guna beg tu bwk pergi beli barang groceries , akak letak byk barang dlm beg tu & beg tu sgt tahan yee... heee suka lah 😘 so far sangat puas hati lah dgn beg tu😍😍😍
> 10:21 PM

> Akak bagi 10/10 dik
> 10:22 PM

> ❤️❤️❤️❤️
> 10:22 PM

> wahh thank you kak 🤍🤍🤍🤍🤍🤍
> 10:22 PM

Chat 2:

> salam ziq sorry do kacau aku nak feedback totebag haritu okay tak kau guna?
> 11:00 PM

> Yowww wsalam did
> 11:02 PM

> Ha sorry doh aku baru teringat la🤭
> 11:04 PM

> so far aku bawak pegi class.. aku bwk laptop pun tahan mmg terbaik beg yg kau jual 👍🏻👍🏻👍🏻
> 11:05 PM

> padu do ziq thanks tau support business aku 🤭👍🏻👍🏻
> 11:07 PM
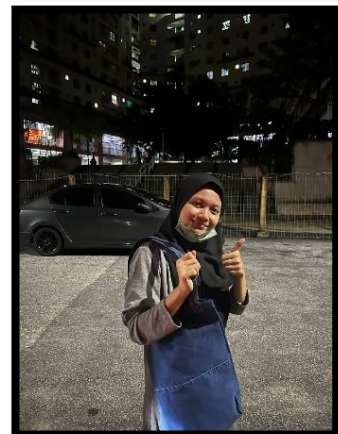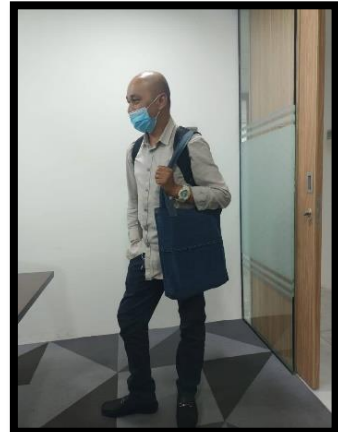
Overall, the Stage-Gate model can provide a structured approach to developing recycled products from denim, helping to ensure that the product is technically and commercially feasible, meets customer needs and expectations, and is environmentally sustainable

3.3 Methods of Quantitative Data Analysis

The analysis methods adopted for the research were descriptive and inferential statistical methods. A descriptive statistical method was used to provide an initial view ofdata gathered during the preliminary stage of the data collection phase. Meanwhile All ofthese analyses were conducted using the google form software.

Section A: Demographic Profile

Marital Status
31 responses

● Single
● Married

93.5%

Education Level
31 responses

● Highschool / SPM
● Undergraduate (Certificate / Diploma / Degree)
● Postgraduate (Master / PhD)

90.3%   9.7%
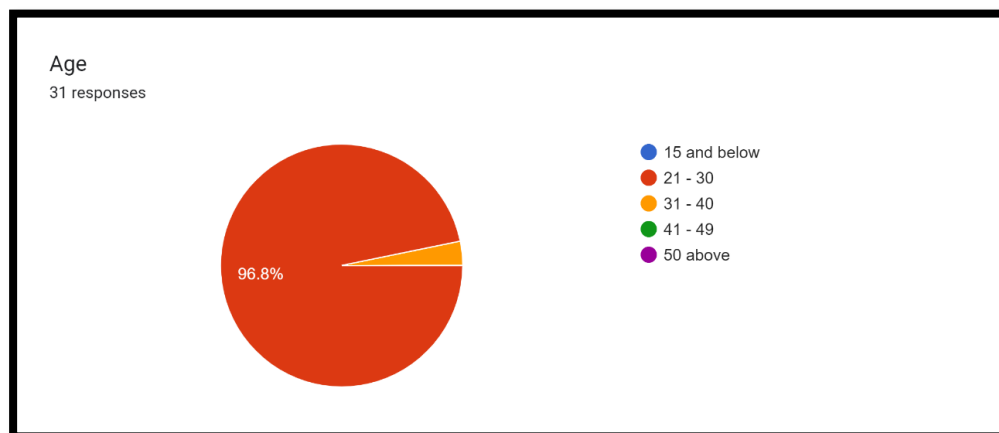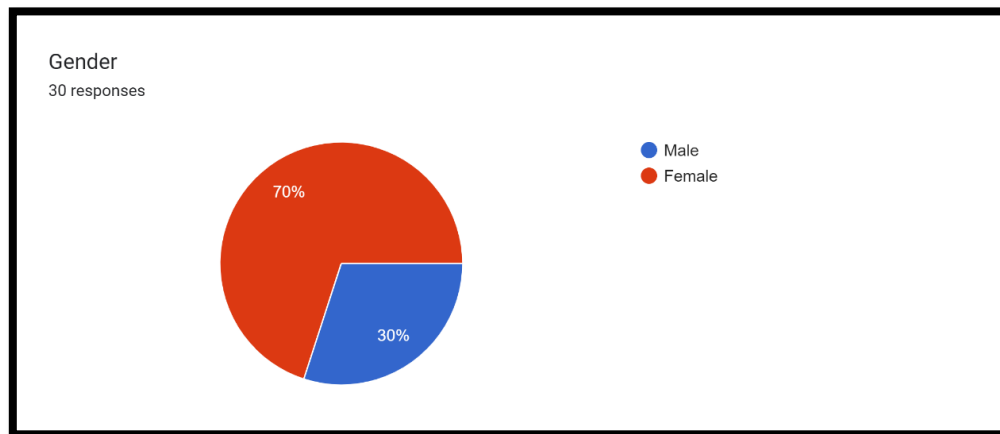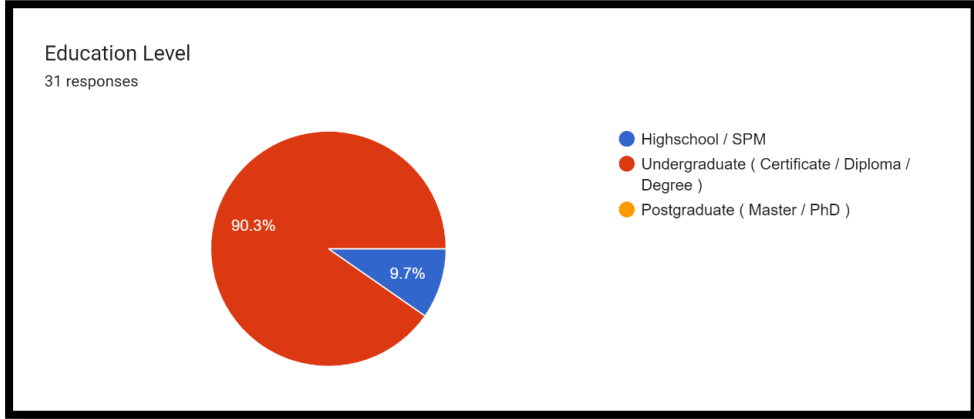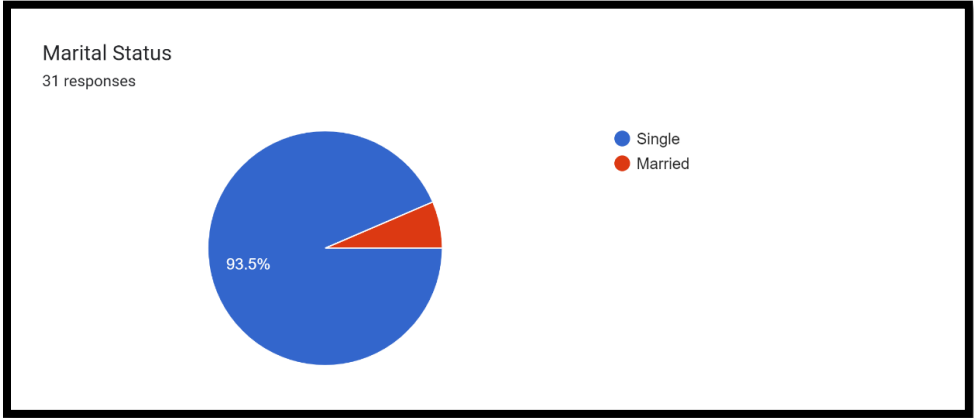
Section B: Dependent Variable Question

The fashion industry does adopt the current trend concept but at the same time the fashion industry also damages the environment.
31 responses

Question 1

People who choose upcycle to develop new products will create motivation in society about waste and more focus towards saving the environment.

31 responses

Question 2

I prefer buying clothing and accessories that are made from recycled material.

31 responses

Question 3

I prefer to use more recycled products than ordinary new products because it does help with the environment and also my financial situation.

31 responses

Question 4

I prefer to shop less or not from certain stores because I'm aware of the impact on the environment.
31 responses

Question 5

I like the concept of a jeans tote bag made from recycled denim materials although it is made from recycled materials, it still maintains the current trend concept and durable quality for daily use.
31 responses

Question 6

The material used in the process to develop jeans tote bags are made from recycled denim material making them environmentally friendly and does help...th denim waste that will harm the environment.
31 responses

Question 7

3.4 Conclusion

This chapter highlighted a clear view of the whole research methodology of the recycled jeans tote bag product development. Starting from the adoption of quantitative methods as the research design to the simple random sampling observation on customer satisfaction by using the questionnaire to the end of product development explanation anddescription of types of analysis has been stated clearly in the chapter.

CHAPTER 4 ANALYSIS AND RESEARCH FINDINGS

1.1 Introduction

This chapter will represent the results that has been obtained to see the effectiveness of our project, tote bag made from recycled jeans materials which has been produced in the Chapter 3. The result from our online questionnaire on customer acceptance towards recycled jeans tote bag were analyzed in more detail to draw the conclusions based on our objectives which has been stated. This project will be conducted by using non-probability under purposive sampling technique which include 30 random respondent use on our product. There are several aspects that are the focus in this project namely Respondent Demographic Profile, dependent variable question to Constructs and Measurement Scale.

1.2 Reliability Analysis of Questionnaire

The reliability of a questionnaire refers to the degree to which it consistently and accurately measures the intended constructs or variables. In other words, it is a measure of the stability and consistency of the questionnaire's results over time and across different conditions or populations. Reliability is crucial in questionnaire design because it ensures that the instrument is dependable and produces consistent results. It helps researchers and practitioners have confidence in the data collected from the questionnaire and the conclusions drawn from it.

Case Processing Summary

		N	%
Cases	Valid	30	100.0
	Excluded[a]	0	.0
	Total	30	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
.944	.946	7

Figure 6: Reliability Statistics

A feedback survey was distributed to 30 people. Before deploying the questionnaire, it is critical to examine its dependability. A questionnaire's reliability is evaluated by its Cronbach's alpha value, which must be greater than 0.7. The results of the reliability study are shown in the table above. Cronbach's alpha score of 0.70 or above suggested that the instruments had great internal consistency. The results show that all 30 things are legitimate. Cronbach's alpha is 0.944, which is more than 0.7, indicating excellent questionnaire reliability.

4.3 Descriptive Analysis

The process of statistically and visibly characterizing a key aspect of the data is known as descriptive analysis. Descriptive analysis is a statistical technique used to summarize and describe the main features of a dataset or a sample. It involves organizing, analyzing, and presenting data in a meaningful way to gain insights and understand its characteristics. Descriptive analysis focuses on providing a concise summary of the data, rather than making inferences or drawing conclusions about the larger population.

In descriptive analysis, various measures and methods are employed to describe different aspects of the data. These can include measures of central tendency such as mean, median, and mode, which provide information about the typical or average value in the dataset. Measures of dispersion, such as range, standard deviation, and variance, help assess the spread or variability of the data points. Other descriptive techniques involve summarizing categorical data using frequency tables, bar charts, or pie charts. The descriptive analysis is a sort of data analysis that helps to explain, illustrate, or summaries' data points in a constructive way so that patterns can develop that satisfy all the data's conditions. It is one of the most crucial procedures in statistical data analysis. This analysis comprising of the gender, age, marital status, and education level.

4.3.1 Respondent Demographic Profile

Researchers sent online surveys to Polytechnic Sultan Salahuddin Abdul Aziz Shah students and collected replies from them. These questions on the respondents' behavior are designed to test their capacity to retain information. This project has sought personal information from respondents such as gender, age, marital status, and education level polytechnic students take for their diploma.

Demography	Category	Frequency	Percentage %
Gender	Male Female	9 21	30 70
Age	15 and above 21-30 31-40 41-49 50 above	- 29 1 - -	- 96.7 3.3 - -
Marital	Single Married	28 2	93.3 6.7
Education	Highschool Undergraduate (Certificate/Diploma/Degree) Postgraduate (Master/PhD)	3 27 -	10 90 -

Table 1

Based on the table 1 above, it has shown that the profile of respondents for this project. According to the gender, there are 30% of male and 70% of female respondent which equivalent for two genders to 30 people. According to the age group, there are 96.7% that comes from the ages between 21 until 30 years old and 3.3% comes from the ages between 31 until 40 years old. According to the marital status, there are 93.3% of single and 6.7% of married status. According to the education group, the largest percentages come to undergraduate (Certificate / Diploma / Degree) which is 90% with 27 respondents continued with high school with 10% (3 respondents).

Figure 6: Reliability Statistics

Figure 6: Reliability Statistics

Figure 6: Reliability Statistics

Figure 6: Reliability Statistics

Gender
35 responses

- Male
- Female

68.6%

31.4%
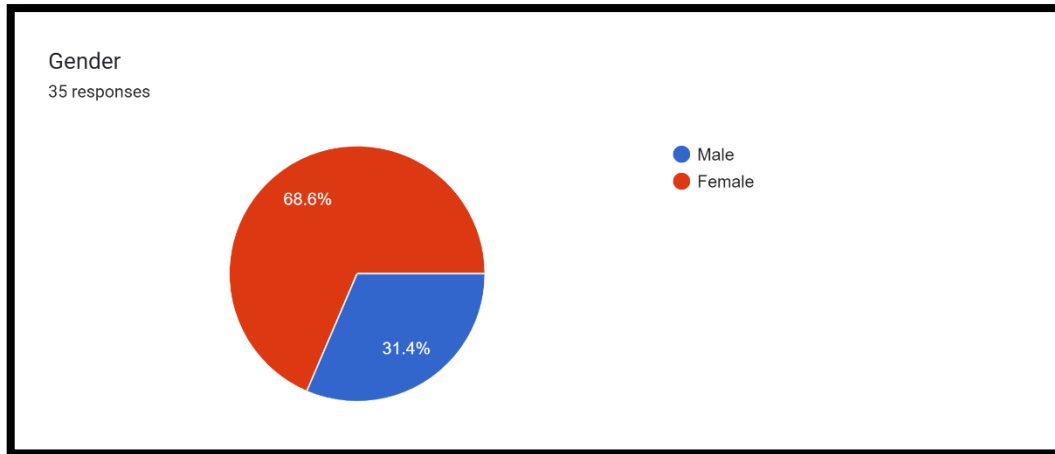
This survey had 30 respondents, with 21 people (70%) of them women and the remaining (30%) men (9 people). We can infer from the Figure 4.1.1 above that there are generally more female respondents than male respondents. This is a result of the gender imbalance in student enrolment. Finding the exact same number of responders by gender is really challenging.

Age
35 responses

- 15 and below
- 21 - 30
- 31 - 40
- 41 - 49
- 50 above

94.3%
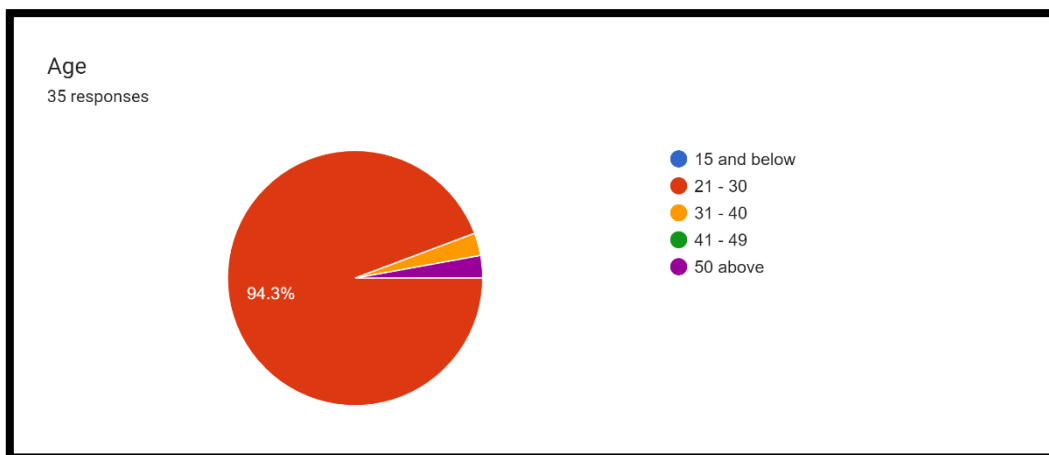
The age of the respondents is depicted in the Figure 4.1.2 above. The respondents' ages range from 15 to 50 above and are broken down into 5 age groups. The first circle is made up of the department's 96.7% (29 persons) of people between the ages of 21 to 30. There are no age categories for those between the ages of 15 and above, those between the ages of 41 to 49 and age of 50 and above. The second level comes from the group of respondents aged 21 to 30, which comprises 3.3% (1 persons) of respondents for the entire department. In conclusion, the respondents' ages range from 18 to 39 on average.

Marital Status
35 responses
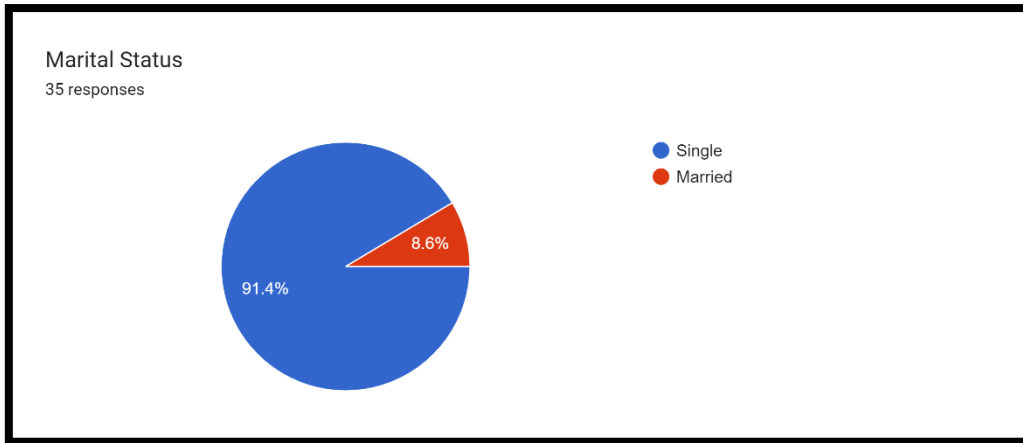
The respondent's marital status is displayed in Figure 4.1.3. 2 individuals (6.7%) married status, while 28 individuals (93.3%) were single. It demonstrates that the bulk of responders come from single marital status.

Education Level
35 responses
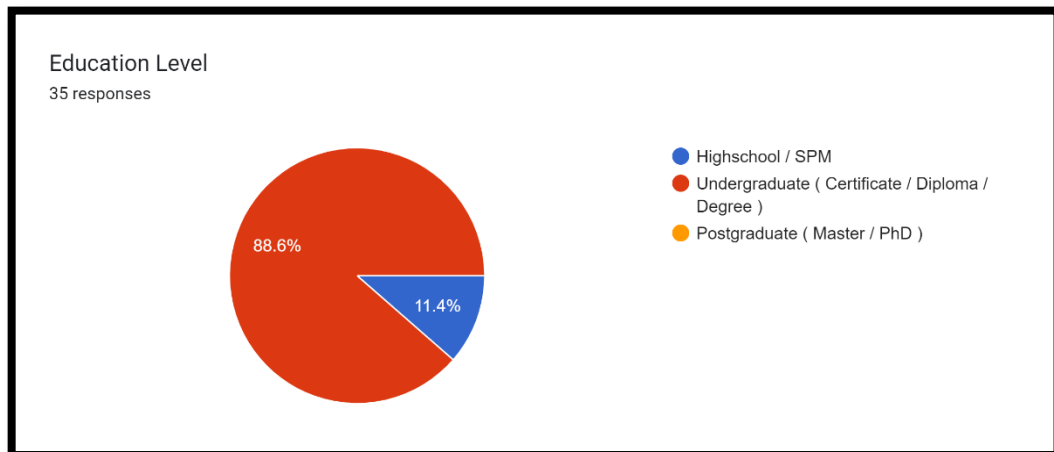
The respondent's education level is displayed in Figure 4.1.3. 10 individuals (10%) are from high school, while 27 individuals (90%) were undergraduate (Certificate/Diploma/Degree). It demonstrates that the bulk of responders come from undergraduate (Certificate/Diploma/Degree).

4.3.2 Dependent Variables Questionnaire

In this part, the researcher gave respondents 7 short questions to them to answer. The central tendency measurement of constructs refers to measures of center or central location is a summary measure that attempts to describe a whole set of data with a single value that represents the middle or center of its distribution. In this project, we can see that the mean is measuring and describing by the standard deviation. Each score will be determined of the mean and as evidence from this data were listed as followed:
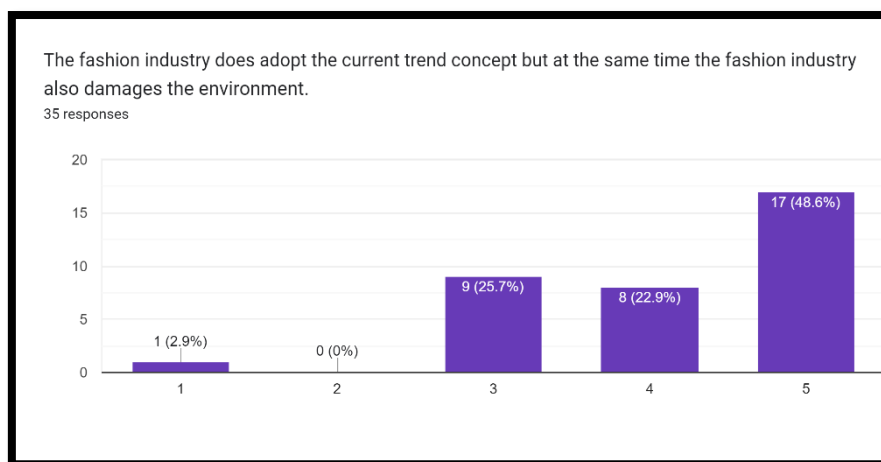
Figure 4.2.17 shows the number of respondents who strongly disagree (1), disagree (2), neutral (3), agree (4) and strongly agree (5) with Correct terms and concepts are used in objective of our product. Most respondents strongly agreed that Correct terms and concepts are used in interactive video. A total of 16 respondents agreed and 7(22.6)% chose neutral. In conclusion, more than 50% of all respondents support that the fashion industry does adopt the current trend concept but at the same time the fashion industry also damages the environment.

People who choose upcycle to develop new products will create motivation in society about waste and more focus towards saving the environment.

35 responses
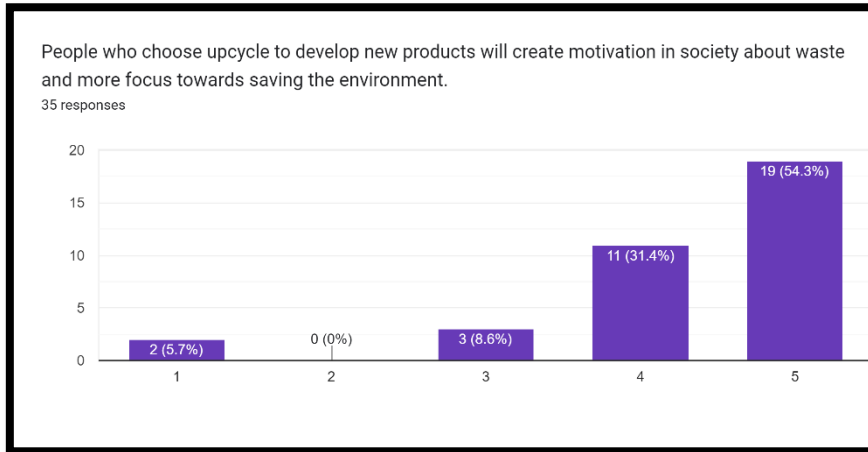
Only 6.5% (2 person) of respondents, as shown in Figure 4.2.18, disagree People who choose upcycle to develop new products will create motivation in society about waste and more focus towards saving the environment. 6.5% (2 respondents) of those polled picked neutral in response to the assertion. However, 17 respondents, or 54.8%, said they strongly agreed with the statement "The interactive video offers users the chance to think." In addition, 32.3% of respondents said they agreed with the statement (10 people).

I prefer buying clothing and accessories that are made from recycled material.

35 responses
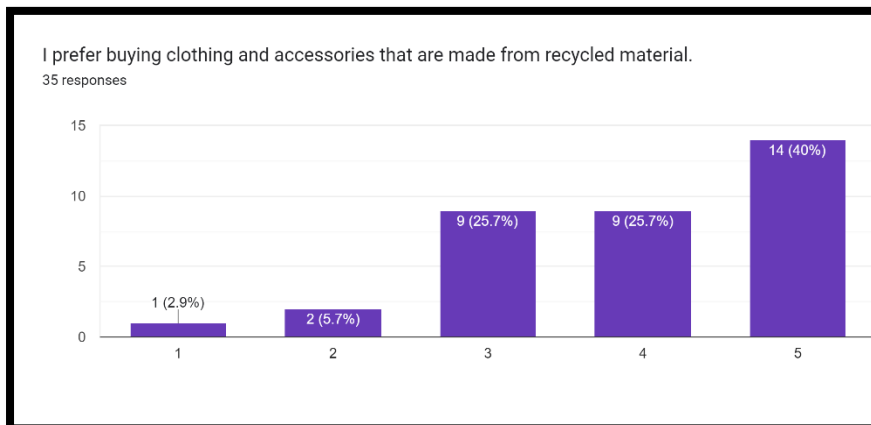
Based on the analysis in figure 4.2.19, the highest choice is very much in agreement that prefer buying clothing and accessories that are made from recycled material, which is 41.9% (13 people). While 25.8% (8 people) of respondents agreed with the statement and 22.6% (7 people) of the respondents chose prefer buying clothing and accessories that are made from recycled material. Finally, only 1 person (3.2%) of the students strongly disagreed and 6.5% (2 people) disagreed with the statement.

I prefer to use more recycled products than ordinary new products because it does help with the environment and also my financial situation.

35 responses
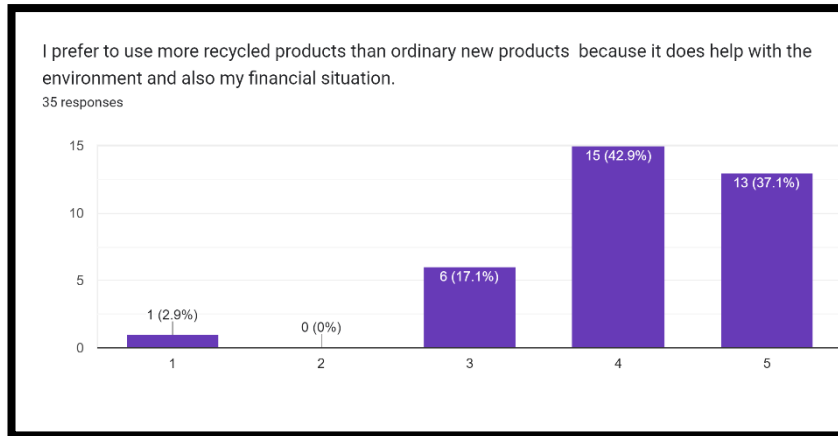
In figure 4.2.20, a total of 38.7% (12 people) strongly agree and 41.9% (13 people) agree about prefer to use more recycled products than ordinary new products because it does help with the environment and financial situation. While 16.1% (5 people) gave a neutral answer and there were also a few students who disagreed, which is only 3.2% or 1 people.

I prefer to shop less or not from certain stores because I'm aware of the impact on the environment.

35 responses
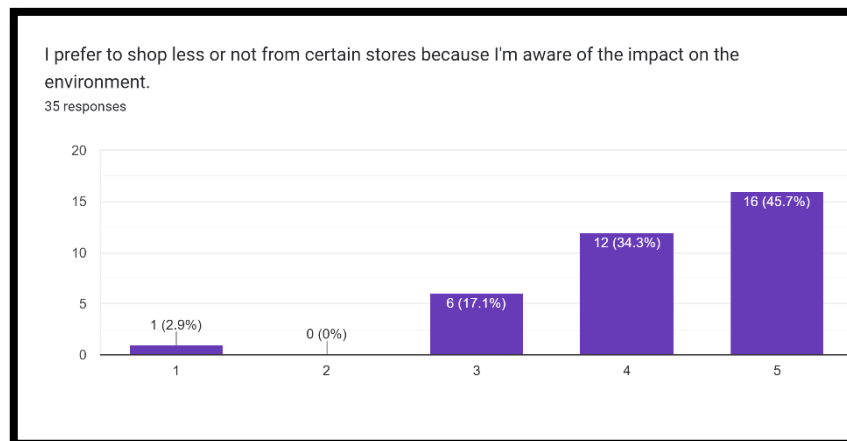
In figure 4.2.21, a total of 48.4% (15 people) strongly agree and 35.5% (11 people) agree about prefer to shop less or not from certain stores because I'm aware of the impact on the environment. While 12.9% (4 people) gave a neutral answer and there were also a few students who disagreed, which is only 3.2 % or 1 people.

I like the concept of a jeans tote bag made from recycled denim materials although it is made from recycled materials, it still maintains the current trend concept and durable quality for daily use.

35 responses
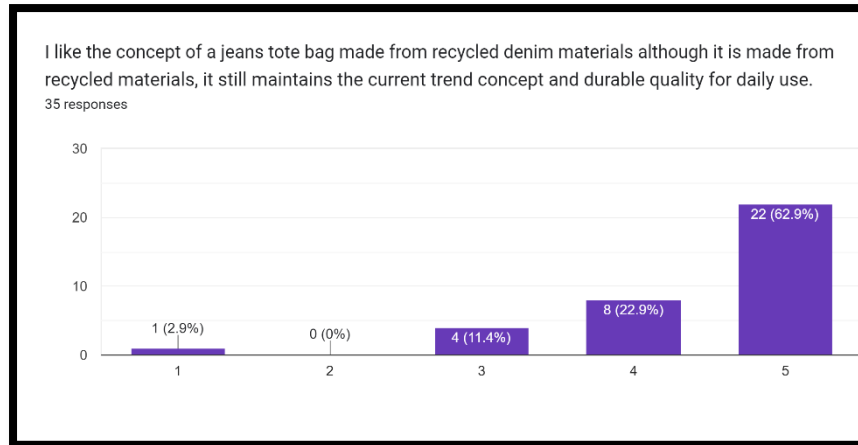
In figure 4.2.22, a total of 64.5% (20 people) strongly agree and 22.6% (7 people) agree concept of a jeans tote bag made from recycled denim materials although it is made from recycled materials, it still maintains the current trend concept and durable quality for daily use. While 9.7% (3 people) gave a neutral answer and there were also a few students who disagreed, which is only 3.2% or 1 people.

The material used in the process to develop jeans tote bags are made from recycled denim material making them environmentally friendly and does help...th denim waste that will harm the environment.

35 responses
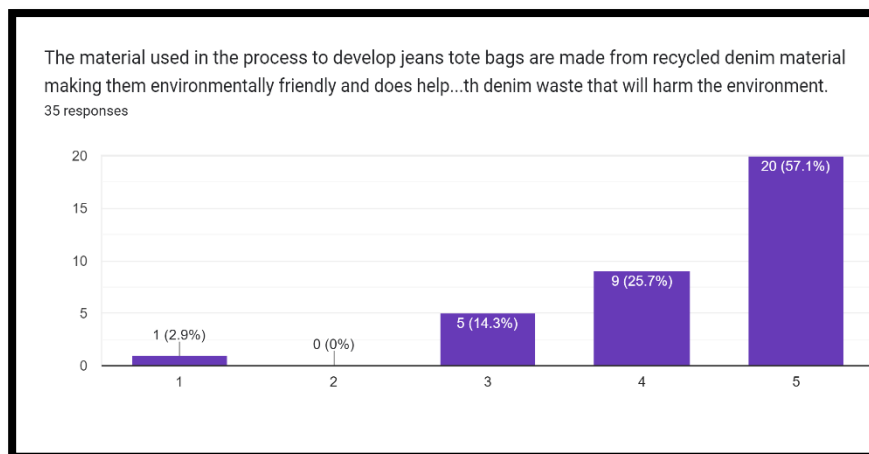
In figure 4.2.24, a total of 61.3% (19 people) strongly agree and 22.6% (7 people) agree about The material used in the process to develop jeans tote bags are made from recycled denim material making them environmentally friendly and does help with denim waste that will harm the environment. While 12.9% (4 people) gave a neutral answer and there were also a few students who disagreed, which is only 3.2% or 1 people.

4.4 The Mean Score

In statistics, the mean score (also known as the arithmetic mean) is a measure of central tendency that represents the average value of a set of data. It is calculated by adding up all the values in the data set and dividing the sum by the total number of values.

Level of mean score range

Range of mean score	Level
1.00 – 2.33	Low
2.34 – 3.67	Moderate
3.68 – 5.00	High

Item	Variables	Level	Mean	Std. Deviation
1	The fashion industry does adopt the current trend concept but at the same time the fashion industry also damages the environment.	High	4.2000	1.03057
2	People who choose upcycle to develop new products will create motivation in society about waste and more focus towards saving the environment.	High	4.2667	1.08066
3	I prefer buying clothing and accessories that are made from recycled material	High	3.9333	1.11211
4	I prefer to use more recycled products than ordinary new products because it does help with the environment and my financial situation.	High	4.1333	0.93710
5	I prefer to shop less or not from certain stores because I am aware of the impact on the environment.	High	4.2333	0.93526
6	I like the concept of a jeans tote bag made from recycled denim materials although it is made from recycled materials, it still maintains the current trend concept and durable quality for daily use.	High	4.4667	0.93710
7	The material used in the process to develop jeans tote bags are made from recycled denim material making them environmentally friendly and does help with denim waste that will harm the environment.	High	4.4000	0.96847
Total Average			4.23332	1.00018

Table 4: Mean score table

From table 4, which is Section II: Dependent Variable, the highest mean for item 1 (4.2000) with standard deviation of 1.03057. While the lowest mean for item 7 (3.9333) with standard deviation of 1.11211. The mean average was 4.23332 with a standard deviation of 1.00018.

CHAPTER 5 CONCLUSION AND RECOMMENDATION

5.1 Introduction

In the previous chapter, the researchers have obtained results from the data collected. This chapter will discuss the findings from the previous chapter, and it contains four parts which are the interpretation of findings, limitations , future recommendation and conclusion of the study.

5.2 Findings

In this chapter, the findings of the research on customer acceptance towards recycled jeans products are presented. The study aimed to produce good tote bags made from recycled denim material by using the stage gate model on research design, the effectiveness of our product. The study found that customer satisfaction towards tote bag usage is at high level-of acceptance .The survey was carried out on customer like the concept of a jeans tote bag made from recycled denim materials although it is made from recycled materials,it still maintains the current trend concept and durable quality for daily use.It showed that there is a demand for a recycled product.

5.3 Limitations

It is important to acknowledge the limitations of this research. Firstly, the study focused on a specific context and sample, limiting the generalizability of the findings to other settings.Besides, The research would refine the design based on feedback from product testers, optimize the manufacturing process, and refine the sourcing of the recycled denim materials. Secondly, due to the fact that the material used to produce jeans is typically diverse in terms of colour and colour code, it is challenging for us to develop new products. Furthermore, for packaging the product not have proper packaging due to time consuming on product development which will cause the jeans tote bag to be damaged before reaching the buyer's hands.

5.4 Future Recommendations

Based on the findings and limitations of this research, several recommendations for future studies based on our product are proposed:

Further research may conduct more study on recycled denim material resources to increase availability of a variety of color and denim materials . This will help to develop more neat recycled jeans tote bags in terms of color.

The current studies have limitations on design by developing more types of design with the same recycled denim materials used to produce jeans tote bags for instance pockets for mobile phones or wallets. This will help to attract more customers to buy the recycled tote bag

By creating packaging for our recycled jeans tote bag will help with customer satisfaction on buying our product. Our future studies should consider using a more diverse range of data collection methods , including objective measures of customer acceptance.

5.5 Conclusion

In conclusion, the findings of this research demonstrate the positive impact of jeans tote bags using recycled denim materials. The creation of tote bags from recycled jeans can make people aware of caring for the environment and also create awareness in terms of a large amount of environmental damage and pollution caused by textile waste.

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APPENDIX A

Activity	Month/Week													
	1													
	2	3	4	5	6	7	8	9	10	11	12	13	14
Determination of Title	■												
Literature Review	■	■	■	■	■	■	■	■	■	■	■	■	■
Consultation with supervisor	■	■	■	■	■	■	■	■	■	■	■	■	■
Proposal Preparation	■	■	■	■	■*								
Product Design and Development				■	■	■	■						
Product Testing and Validation								■	■	■	■		
Final Report									■	■	■		
Final Report and preparation for Final Presentation												■	■**
Final Project Submission													

Gannt Chart

*Proposal presentation will be held in the 6th week

**Final Project Presentation will be held in week 13

CUSTOMER ACCEPTANCE TOWARDS RECYCLE JEANS PRODUCT.

The textile industry is the second most polluting industry in the world. And Malaysia is no exception when it comes to contributing to this issue. Our goal is to create multifunctional tote bags out of recycled old in fact to reduce denim waste in order to save environmental and maintain healthy lifestyle.

Sign in to Google to save your progress. Learn more

* Indicates required question

Gender *
◯ Male
◯ Female

Age *
Choose ▾

CUSTOMER ACCEPTANCE TOWARDS RECYCLE JEANS PRODUCT.

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* Indicates required question

This is our product. In order to reduce waste and save the environment, our product is made from a recycled denim jeans. Let's support our product to help save the environment

Choose ▾

Marital Status *
◯ Single
◯ Married

Education Level *
◯ Highschool / SPM
◯ Undergraduate (Certificate / Diploma / Degree)
◯ Postgraduate (Master / PhD)

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The fashion industry does adopt the current trend concept but at the same time the fashion industry also damages the environment. *

	1	2	3	4	5	
Totally Disagree	◯	◯	◯	◯	◯	Totally Agree

People who choose upcycle to develop new products will create motivation in society about waste and more focus towards saving the environment. *

	1	2	3	4	5	
Totally Disagree	◯	◯	◯	◯	◯	Totally Agree

I prefer buying clothing and accessories that are made from recycled material. *

	1	2	3	4	5	
Totally Disagree	◯	◯	◯	◯	◯	Totally Agree

I prefer to use more recycled products than ordinary new products because it does help with the environment and also my financial situation. *

	1	2	3	4	5	
Totally Disagree	◯	◯	◯	◯	◯	Totally Agree

I prefer to shop less or not from certain stores because I'm aware of the impact on the environment. *

	1	2	3	4	5	
Totally Disagree	◯	◯	◯	◯	◯	Totally Agree

I like the concept of a jeans tote bag made from recycled denim materials although it is made from recycled materials, it still maintains the current trend concept and durable quality for daily use. *

	1	2	3	4	5	
Totally Disagree	◯	◯	◯	◯	◯	Totally Agree