IMPACT OF SUSTAINABLE PACKAGING ON CONSUMER BUYING BEHAVIOUR: A STUDY BASED ON UTAR STUDENT

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BY

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A final year project submitted in partial fulfilment of the requirement for the degree of

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(1) This undergraduate FYP is the end result of my own work and that due acknowledgement has been given in the references to ALL sources of information be they printed, electronic or personal.

(2) No portion of this FYP has been submitted in support of any application for any other degree or qualification of this or any other university, or other institutes of learning,

(3) Sole contribution has been made by me in completing the FYP.

(4) The word count of this research is 10712.

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DEDICATION

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LIST OF ABBREVIATIONS

ANOVA	Analysis of Variance
ASS	Awareness of Sustainable Packaging
CBB	Consumer Buying Behaviour
CP	Cost Perception
PEI	Perceived Environmental Impact
SPSF	Sustainable Packaging with Smart Function
SPSS	Statistical Package for the Social Sciences
TPB	Theory of Planned Behaviour
VIF	Variance Inflated Factors

PREFACE

By the requirement of Universiti Tunku Abdul Rahman (UTAR) to the award of certificates for Bachelor of International Business (Honours), it is compulsory for every student to undertake the Final Year Project 'UKMZ3016 Research Project'. The ides for this research study emerged from my strong interest in understanding sustainable practices and impact on consumer buying behaviour. As environmental concerns continue to grow globally, the topic of sustainable packaging resonated with me as an essential area of exploration, particularly its role in shaping consumer choices. Many prior studies have examined the factors that can encourage consumers to adopt sustainable packaging. Therefore, the author inspired to investigate the impact of sustainable packaging on consumer buying behaviour, aiming to contribute to promoting the widespread of sustainable packaging.

ABSTRACT

The research investigates the factors influencing university students' buying behaviour toward sustainable packaging in Malaysia, emphasizing four key independent variables: awareness of sustainable packaging, perceived environmental impact, sustainable packaging with smart function and cost perception. Grounded in the Theory of Planned Behaviour, the study examines how these factors interact to shape consumer behaviour. A quantitative research approach was employed, collecting data through surveys from 202 university students. Multiple regression analysis and Pearson correlation were utilized as statistical tools to identify relationships and derive meaningful insights.

The findings highlight significant positive relationships between awareness of sustainable packaging, sustainable packaging with smart function and cost perception with consumer buying behaviour. Awareness fosters informed decisions, while smart packaging functions such as freshness monitoring, condition tracking, and product information are identified as the influential factor, enhancing the practicality and appeal of sustainable packaging. Cost perception reveals that students are willing to pay a premium for packaging perceived to provide additional value. Conversely, perceived environmental impact did not significantly influence buying behaviour, potentially due to consumers switching to more eco-friendly reusable bags.

This study underscores the importance of targeted strategies for businesses and policymakers. Businesses should prioritize innovation in smart packaging and effective pricing strategies to enhance consumer value and align with sustainability goals. Policymakers can support these efforts through public education campaigns and incentives to encourage the adoption of sustainable practices. Despite the study's limited generalizability, its findings offer valuable insights into shaping consumer behaviour and promoting sustainable packaging, particularly among Malaysia's

younger generation.

Keywords: Sustainable packaging, Smart packaging, Awareness, Perception, Consumer buying behaviour.

CHAPTER 1: RESEARCH OVERVIEW

1.0 Introduction

This chapter introduces the background information that is related to the topic. The research problems provide insights into the challenges faced in enhancing consumer buying behaviour on sustainable packaging. It also presents the research objectives and questions, specifying the investigation focus.

1.1 Research Background

1.1.1 Introduction of Sustainable Packaging

In recent years, the demand for greater environmental responsibility has increased significantly, driven by growing environmental concerns and awareness of environment conservation, leading to the rise of sustainable packaging (Wandosell et al., 2021; Soon, 2024). Sustainable packaging refers to using materials that are environmental friendly and have minimal environmental footprints, such as biodegradable, compostable or recyclable materials (Wandosell et al., 2021). It is important in promoting circularity, solving issues like packaging leakage, reducing ocean pollution and greenhouse gas emissions by lowering the carbon footprint of packaging materials throughout their lifecycle (Leggett, 2022).

Nowadays, both companies and consumers are increasingly using eco-friendly alternatives, promoted by government policies, public or industry initiatives other than increasing awareness towards sustainability (Yousuf, 2024; Malaysian Recycling Alliance | MAREA Malaysia, 2024). In Malaysia, sustainable packaging includes biodegradable and compostable, recycling and renewable packaging.

1.1.2 Types of Sustainable Packaging in Malaysia

1.1.2.1 Biodegradable Packaging

Biodegradable packaging is packaging that utilizes materials that can decompose naturally in the environment (Qpack, 2023). Common biodegradable packaging in Malaysia includes biodegradable plastic like Polylactic Acid (PLA) from corn starch or sugarcane and Polyhydroxyalkanoates (PHA) from microorganisms (Cheng et al., 2024). For example, Aeon mall has adopted biodegradable plastic bags to reduce plastic waste (Aeon, 2022). Additionally, natural biopolymers like starch-based blends (combined with PLA or PHA) used in cushioning materials (Cheng et al, 2024).

1.1.2.2 Compostable Packaging

Compostable packaging is made from materials that decompose into natural elements in a compost environment, becoming fertilizer to improve soil and plant health (Varžinskas & Markevičiūtė, 2020). In Malaysia, cellulose-based materials like paper and cardboard are commonly used for items such as corrugated boxes, containers, and paper bags, adopted by restaurants or café like Mc Donald's, Starbucks and Tealive (Cheng et al., 2024). Moreover, plant-based materials like seaweed and mushrooms are being increasingly utilized for packaging by many companies, partly due to government incentives encouraging business to adopt more eco-friendly practices (Yousuf, 2024).

1.1.2.3 Recyclable Packaging

Recyclable packaging focuses on reusing materials, reducing the need for virgin resources. Common recyclable materials include glass, paper, and metal (Tyler, n.d.). The circular economy trend has driven the development

of packaging that prioritizes recyclability. In Malaysia, the Malaysian Recycling Alliance (MAREA) encourages member companies to increase the use of recycled and renewable materials (Malaysian Recycling Alliance |MAREA Malaysia, 2024). Member companies like F&N are working towards making all their packaging entirely recyclable by 2025, incorporating 25% recycled material and using more renewable packaging materials like sugarcane-based plastic into their packaging (Frazer& Neave, 2023). Other member companies such as Coca-Cola, Spritzer, and Unilever are also following these practices in Malaysia.

1.1.3 Trend of Sustainable Smart Packaging

Sustainable smart packaging has also become a significant trend with advancement in smart packaging technology opening new possibilities, driving its development and growing popularity for sustainable packaging (Dirpan et al., 2023). Evidence of this trend can be seen in packaging companies that have expressed similar views, as it can bring potential benefits that consumers value (QPACK, 2023; Teong Chuan, 2024; Tetra Pak, 2021).

Smart packaging incorporates innovative technology to enhance functionality beyond traditional packaging, such as improving product safety, traceability, information display, freshness monitoring and consumer interaction. It also holds significant potential for advancing sustainability goals (Nicoletti & Serrone, 2017).

Key innovations in smart packaging include active, intelligent and connected packaging. **Active packaging** extends shelf life to prevent food waste (Cavallo, 2024) by incorporating materials like natural active compounds (e.g. natural antimicrobial agents and antioxidants) (Salgado et al., 2021). **Intelligent packaging** uses sensors, indicators or smart labels to monitor freshness conditions like temperature and humidity in real-time (Cavallo, 2024), helping users alert and prevent spoilage. **Connected packaging**, a

subset of intelligent packaging, utilizes RFID, barcodes, NFC, and QR codes to enhance traceability and safety. RFID and barcodes improve supply chain management, reducing waste (Thilina Abekoon et al., 2024); NFC and QR code provide consumers with additional information, such as recycling instructions, reducing potentially inaccurate online searches (Blue Bite, 2019).

Recent developments have begun to focus on integrating smart packaging technologies with biodegradable materials (Verma et al., 2024), contributing more sustainable packaging solutions.

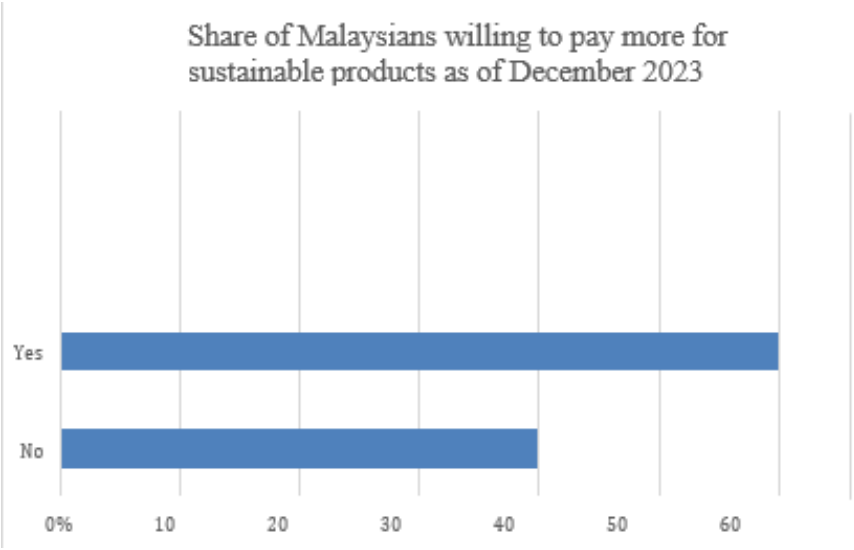
1.1.4 Challenges and Opportunities

Despite the shift towards sustainable packaging, Malaysia faces a unique challenge with rising packaging waste. Packaging waste has become an increasing concern, with plastic waste expected to rise significantly, as the 238 million metric tons of plastic waste in 2020 is expected to increase to 408 million metric tons by 2040 (Abdul Rahman, 2023). Furthermore, Polystyrene packaging, also widely used in Malaysia (Yusry, 2024). The increased use of these plastic and polystyrene packaging will lead to significant waste, typically ending up into marine environments or in landfills. This non-decomposable material can cause some environmental issues, such as harming marine life, disrupting ecosystems, and contributing to pollution (Phelan et al., 2022). Moreover, limited consumer knowledge of right action on sustainable packaging often led to confusion. For example, improper disposal of recyclable materials leads to them being discarded as trash, wasting resources (Kabilan 2024; UN environment programme, 2021).

Government policies like the ‘Roadmap Towards Zero Single-Use Plastics 2018-2030’ aim to reduce plastic waste, but challenges remain in consumer education (UN environment programme, 2021). However, these challenges create opportunities for companies to innovate their packaging practices to

meet the growing demand for eco-friendly products. A 2023 Statista survey shows a rising trend in consumer preference for sustainable options, revealing that 60% of Malaysian consumers are willing to pay more for sustainable products, indicating that most consumers in Malaysia are willing to adopt sustainable practices such as using sustainable packaging (Siddharta, 2024).

Figure 1.1: Percentage of Malaysian Willing to Pay More for Sustainable Product as of December 2023



Adapted from: Siddharta (2024).

1.2 Research problem

While the shift towards sustainable packaging reflects a growing commitment to protect the environment in Malaysia, several key issues still need further investigation.

Despite growing environmental awareness, insufficient education on responsible consumption, including sustainable packaging, leaves many consumers to remain unaware of its environmental benefits, making it harder to widely adopt truly

sustainable packaging. This knowledge gap also challenges companies' efforts to achieve their sustainability efforts (UN Environment Programme, 2021). Therefore, this study aims to explore factors that promote the use of sustainable packaging, with a particular focus on university students' understanding and how awareness of sustainable packaging influences their buying behaviour in Malaysia.

Perceived environmental impact plays an important role in consumers' choice of sustainable packaging. While perceptions of a product's environmental impact shape willingness to pay for packaging with sustainable features (Satir, 2023), actual purchasing behaviour may not necessarily align with awareness (Loughlin, 2023). So, a gap exists between consumers' perception of environmental impact and their actual buying behaviour. This gap may be attributed to factors such as economic factors, convenience and more (Herrmann et al., 2022). Hence, this study aims to gain a better understanding of university students' perception of the environmental impact of sustainable packaging and how these perceptions influence their buying behaviour.

Functionality is one of the characteristics that can attract and affect consumers to buy the packaging. Consumer value packaging that has function that can bring convenience (Fofana, 2024). Consumer's buying behaviour can be influenced by packaging that has functions increasing the overall practical value such as extending product shelf life, monitoring condition of product and providing added information (Baccarella et al., 2021). However, the impact of these smart features on consumer behaviour is unclear, especially for university student. Hence, this study aims to explore whether sustainable packaging with smart functions can affect university students buying behaviour and understanding their preference on the type of smart features.

Cost perception can influence consumer behaviour, especially purchasing sustainable products. Despite growing sustainability awareness, the higher cost of sustainable packaging compared to traditional options remains a barrier (Duarte et al, 2024). This may lead consumers to prioritize cost over environmental benefits,

creating a gap between their environmental concerns and buying decisions. While price sensitivity is common in Malaysia (International Trade Administration, 2024), but Generation Z may still be willing to pay more for sustainable packaging due to green perceived quality benefits (Gomes et al., 2023). Hence, this study explores how perceived cost influences university students' buying behaviour for sustainable packaging.

1.3 Research Objectives

1.3.1 General Objectives

This research aims to study the determinants influencing the buying behaviour of university students in Malaysia towards sustainable packaging, focusing on awareness of sustainable packaging, perceived environmental impact, sustainable packaging with smart function, and cost perception.

1.3.2 Specific Objectives

1. To explore the relationship between awareness of sustainable packaging and consumer buying behaviour regarding sustainable packaging.

2. To explore the relationship between perceived environmental impact and consumer buying behaviour regarding sustainable packaging.

3. To explore the relationship sustainable packaging with smart function and consumer buying behaviour regarding sustainable packaging.

4. To explore the relationship between cost perception and consumer buying behaviour regarding sustainable packaging.

1.4 Research Questions

1. Does awareness of sustainable packaging influence the consumer buying behaviour among university students for sustainable packaging?

2. Does perceived environmental impact affect the consumer buying behaviour among university students for sustainable packaging?

3. Does sustainable packaging with smart function affect the consumer buying behaviour among university students for sustainable packaging?

4. Does cost perception affect the consumer buying behaviour among university students for sustainable packaging?

1.5 Research Significance

This survey aims to provide valuable insights into university students' thoughts about sustainable packaging, particularly in how it influences their buying behaviour. By examining key factors such as awareness of sustainable packaging, perceived environmental impact, sustainable packaging with smart function, and cost perception, the research aims to identify the drivers behind consumer choices in the context of sustainable packaging.

For businesses, the study provides important insights into consumer buying behaviour towards sustainable packaging. By understanding factors influencing consumer buying decisions, businesses can take targeted actions to refine their marketing strategies and develop products that align more closely with consumer preferences. Therefore, businesses can create effective strategies for sustainable and smart packaging, such as optimize pricing models, and incorporate preferred smart features. Ultimately, this will enhance product positioning in the market and drive sales growth.

Moreover, the research offers valuable information for government and policymakers

by providing a deeper understanding of the factors influencing sustainable consumer behaviour. This knowledge can guide the implementation of regulations that promote the adoption of sustainable packaging practices that consumers prefer, encouraging consumers willing to choose sustainable packaging to support initiatives that reduce environmental impact. Such policies can increase with sustainable packaging options.

Furthermore, this study can help consumers, particularly university students, gain a deeper understanding of their own buying behaviour related to sustainable packaging. It provides insights into their level of awareness, perception influences their buying behaviour and preference for smart functions in sustainable packaging.

1.6 Conclusion

This chapter provides an overview, covering research background, problems, questions and objectives, and the significance.

CHAPTER 2: LITERATURE REVIEW

2.0 Introduction

This chapter discusses the factors influencing consumer buying behaviour for sustainable packaging, focusing on one dependent variable—consumer buying behaviour, and four independent variables—awareness of sustainable packaging, perceived environmental impact, sustainable packaging with smart function, and cost perception. The conceptual framework and the hypothesis were developed based on related past journals.

2.1 Underlying Theory

This study's purpose is to examine the impact of sustainable packaging on consumer behaviour. Therefore, Theory of Planned Behaviour (TPB) is applied to provide foundational explanation of how consumers influence their consumer behaviour toward sustainable packaging.

2.1.1 Theory of Planned Behaviour (TPB)

The Theory of Planned Behaviour (TPB), developed by Icek Ajzen in 1980, is a widely recognized framework used to predict a person's intention to behave in a specific time and location (LaMorte, 2022). The theory explains behaviour that individuals have attitudes, perceived behavioral control, and subjective norms as key determinants of an individual's intention to perform a behaviour. TPB has been extensively applied in explaining consumer buying behaviour, especially in the context of green and sustainable products (Kamalanon et al., 2022). Moreover, Rozenkowska (2023) claimed that this theory is considered as an expectancy-value model, which helps to clarify the relationship between analytical processes that describe how consumers develop and modify attitudes based on their beliefs or knowledge about an

object or action, and their evaluation of these specific beliefs. In other words, consumer attitudes towards behaviours are influenced by their beliefs (behavioral, normative and control) about the outcomes of those behaviours. These beliefs are stored in consumer memory and influence the positive or negative direction of their attitudes toward a particular behaviour. According to Yuan et al. (2023), they stated that TPB can assist researchers in assessing consumer attitudes toward sustainable products, societal restrictions and consumer perceived control over sustainable buying behaviour. Besides, according to Islam and Ali Khan (2024), it is effective to utilize TPB as the theoretical framework to understand consumer behaviour regarding sustainable purchasing because the three beliefs stated in theory align well with the complex process of making decisions about sustainable consumption. This theory can be used in understanding the affective and cognitive evaluations that consumers make when considering variables such as perceived environmental impact, product attributes, and perceived price, which in turn influence their buying behaviour intention. Furthermore, Rustam et al. (2020) also claimed that TPB can be used to explain how individuals use environmental information and awareness to make decisions that shape their intentions and actions towards environmentally sustainable behaviours, including purchasing green products. Therefore, TPB provides a comprehensive framework for understanding and predicting consumer buying behaviour in the context of sustainable packaging choice.

2.2 Review of Variables

Dependent variables are variables that are influenced by independent variables. In this study, the dependent variable is consumer buying behaviour, while the independent variables are awareness of sustainable packaging, perceived environmental impact, sustainable packaging with smart function, and cost perception.

2.2.1 Dependent Variable: Consumer Buying Behaviour

Consumer buying behaviour involves the process consumers go through to recognize their needs, gather information, assess different options, and ultimately make buying decisions (Kumar, 2016). It is shaped by a combination of the consumers' preferences, opinions, goals, and decisions, which influence their responses in the market when purchasing a product (Roy, 2022). Additionally, consumer buying behaviour describes the preferences or choices consumers make for a specific product and encompasses the actions of the end consumer, including the selection, purchase, use of goods and services to satisfy their wants according to (Dhakal, 2023). This process also involves deciding whether to repurchase the same item or switch to a different one based on previous experiences.

Consumer buying behaviour can be influenced by psychological, personal and economic factors. Psychologically, consumers are motivated to buy products when their needs are met (Qazzafi, 2020). For example, consumers may be driven by a desire to protect the environment or to feel a sense of fulfillment and responsibility by buying sustainable packaging (Santos et al., 2021). Besides, buying behaviour influenced by past learning through drive, triggers, cues, reactions, and reinforcement (Qazzafi, 2020). When consumers purchase goods in sustainable packaging, their decisions reflect prior learning and knowledge of about it (Ilangasekara and Siriwardana, 2022). Furthermore, consumer buying behaviour also shaped based on how consumer perceive a product (Qazzafi, 2020). If consumers can recognize and value the benefits of sustainable packaging, they might tend to exhibit purchase behaviour towards it (Herbes et al., 2020). Personally, consumer buying behaviour can be vary based on age, lifestyle and personality (Qazzafi, 2020). This indicates that consumers with environmentally conscious personalities or eco-friendly lifestyles at some specific age, may be more inclined to buy sustainable packaging. Economically, consumer buying behaviour is directly related to income level (Qazzafi, 2020). This indicates

that consumers with limited purchasing power may be less likely or unable to buy sustainable packaging.

Furthermore, product attributes and prices play a significant role in influencing the consumer decision making process (Alhamad et al., 2023). When consumers purchase goods in sustainable packaging, their decisions are influenced by their preference, and readiness to spend extra (Ilangasekara and Siriwardana, 2022).

2.2.2 Independent Variable: Awareness of Sustainable Packaging

According to Cambridge Dictionary (2019), awareness is the knowledge of the existence of something or the comprehension of a current situation or subject, informed by experience or available information. Awareness of sustainability refers to understanding how human activities impact the environment and the importance of use and purchase environmentally friendly products (Rustam et al., 2020). Awareness of sustainability is considered an initial and crucial step in equipping individuals to address environmental problems (Handoyo et al., 2021). So, awareness of sustainable packaging may influence consumers to use sustainable packaging to help to protect the environment. Additionally, providing more information allows environmentally responsible and sensitive consumers to make informed decisions and better buying decisions (Rustam et al., 2020).

Ghaffar and Islam (2023) found that individuals with greater environmental knowledge are more likely to have a positive attitude toward environmental issues and practice sustainable behaviours. Similarly, Shimul and Cheah (2023) claimed that environmental knowledge fosters environmental awareness, igniting a sense of moral responsibility and motivating consumers to take pro-environmental actions and green consumer behaviour. Moreover,

Sharma et al. (2022) stated that product-related factors, such as the availability of information about green products, positively influence green purchase behaviour. These studies suggest that gaining knowledge about sustainable products can enhance environmental awareness, which in turn promotes more sustainable consumption behaviour and shift towards environmentally friendly buying behaviour. Besides, Amoako et al. (2020) and Ling et al. (2023) both found that environmental knowledge influence the green consumption behaviour of young people in Ghana and China, with most China Generation Z college students possessing such knowledge, which positively impacts their sustainable purchasing behaviour. So, this indicates that young people with greater environmental knowledge are likely to develop awareness, which influences their buying behaviour towards sustainable products. Furthermore, consumers who are aware of environmental issues and consider the sustainability of packaging important often demonstrate a positive attitude towards protecting the environment by purchasing sustainable packaging (Ketelsen et al., 2020). Consumers' environmental awareness has been identified as a key factor driving green consumption (Ding et al., 2023).

2.2.3 Independent variable: Perceived Environmental Impact

According to Qazzafi (2020), perception is the process through which individual gather and interpret information based on their sense, including touch, smell, hearing, taste and feel. This subjective process shapes decision-making, as each person interpret the same information differently. A person's action is motivated by perception, so it significantly impacts consumer buying behaviour. This aligns with the idea that perceived environmental impact might influence consumer buying behaviour, as perception shapes actions, particularly in sustainability decisions. According to Emmanuel (2019), "perceived impact" refers to individuals believe that their actions

contribute to achieving outcomes or goal. This perception can influence their motivation and performance, particularly in relation to sustainable consumption. Besides, consumers' perception of how their personal efforts and daily consumption address environmental issues significantly influences their buying behaviour (Kim and Lee, 2023). From these studies, it can be understood that if consumers perceive a high impact from their actions, they might be more likely to recognize the importance and benefits of using sustainable packaging for the environment, influencing their buying behaviour. According to Islam and Ali Khan (2024), perceived environmental impact refers to individuals evaluating the potential outcomes of environmental products, service and actions. Perceived environmental impact measures the effects of these actions on the environment, including factors like resource depletion, pollution, carbon emissions, and ecological sustainability. This perception significantly affects eco-conscious behaviour and decision making, especially in sustainable purchasing of environmentally friendly product choice.

Convenience also plays a role in shaping consumers' perception of the environmental impact of their actions. Adopting sustainable packaging loses out if consumers required to compromise on other important product characteristic, such as convenience (Fogt Jacobsen et al., 2022). This indicates that if sustainable packaging is inconvenient, its perceived importance is likely to diminish. Packaging features such as material, closure type, and durability influence consumer perceptions of convenience (Anquez et al., 2022; Reppmann et al., 2024). For instance, consumers over the durability paper-based packaging (Oloyede and Lignou, 2021) or lack of important features like durability can make eco-friendly options seem less important (Boz et al., 2020). These studies suggest that when consumers think sustainable packaging is not convenient to them, they might prioritize their personal experience over the perceived importance of using sustainable packaging.

2.2.4 Independent Variable: Sustainable Packaging with Smart Function

Packaging attributes consist of both visual elements and quality features that contribute to its functionality (Cherry and Christina, 2024). It is crucial in influencing and changing consumer behaviour as it can create consumer value (Kalro and Joshipura, 2023). This suggests that sustainable packaging, when enhanced with smart function features that create consumer value, it may influence consumer buying behaviour. According to Dutta and Sharma (2023), the uniqueness of packaging plays a crucial role in enhancing brand visibility and acceptance in a new market. From this study, it seems that incorporating unique innovative smart functions with packaging may enhance its appeal, as consumers place value on distinctive packaging. Besides, Rambabu and Porika (2020) stated that product packaging serves as an effective communication tool for the consumers. It should convey its intended purpose and relevant information clearly. Younger consumers demonstrated a greater preference for smart packaging, valuing decision-making assistance, product information access, and alerts about potential issues highly, likely due to their limited life experience (Young et al., 2020). So, these studies indicate that incorporating smart functions like intelligent and connected packaging can enhance communication by providing product details, such as freshness level and recycling instructions, helping consumers, especially younger people easier to make informed decisions. Besides, consumers with high environmental and social concerns along with those who feel accountable for solving issues like food waste, are more inclined to choose food products packaged in innovative solutions like intelligent or active packaging to support environmental protection (Cammarelle et al., 2021; Suwandi et al., 2023). Furthermore, the study from Brennan et al. (2023) discovered that younger people aged between 18 to 25 were more driven to minimize food waste compared to people aged between 26 to 45. Based on this, it can be inferred that smart packaging, such as active

packaging, may be an option or solution to satisfy their needs to minimize food waste.

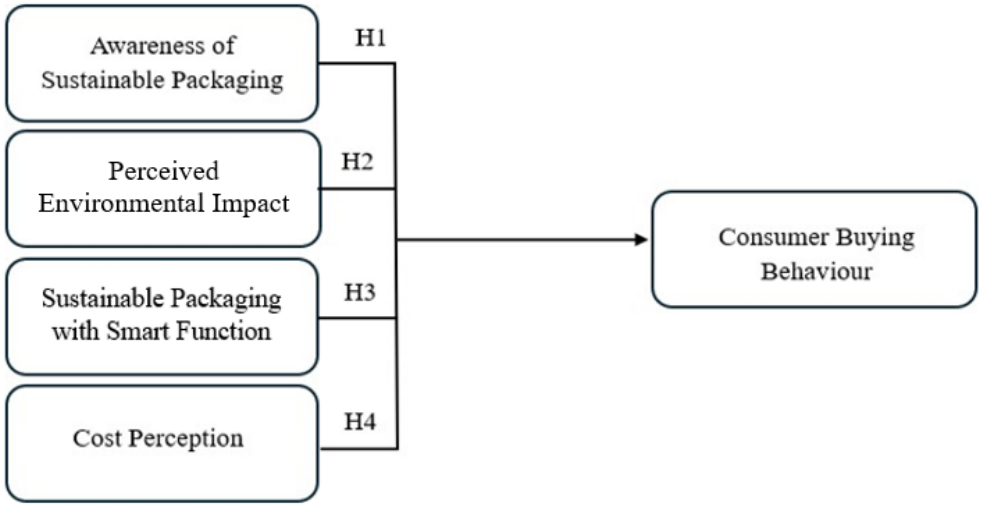
2.2.5 Independent Variable: Cost Perception

A product's price consists of its actual value and the buyers' subjective perceptions, which can vary based on their background. Customers' subjective assessments of a product's objective price, which influences uniqueness and image, are known as perceived pricing (Islam and Ali Khan, 2024). Lan et al. (2023) emphasize that the price of sustainable packaging is crucial in shaping consumer purchase intentions. Implementing suitable pricing strategies can boost consumers' buying behaviour on products with these packaging by aligning pricing with consumer preferences and sustainability objectives (Duarte et al., 2024). This indicates that if consumers perceive the additional price for sustainable or smart packaging as justified or providing value, they are more likely to be buy such packaging. Furthermore, Giannoutsos et al. (2023) and Duarte et al. (2024) study claimed that consumers who are more environmentally conscious and attuned to sustainability concerns are more inclined to spend additional money on products with sustainable packaging, as they perceive such packaging as offering superior quality. These indicate that if consumers are concerned about the environment, they most probably would pay extra for sustainable packaging or even with smart functions. However, some consumers also think that price is a barrier for them to pay extra for packaging. Studies have shown that while consumers recognize the environmental importance of green packaging, affordability remains a significant barrier. Factors such as limited budgets, high costs, and price sensitivity influence their reluctance to pay extra for green-packaged products, despite their environmental benefits. For instance, Romanian and Chinese consumers cited price as key factor, rather than environmental concerns and packaging quality. Consumers preferred smart packaging technologies only when prices were similar, as higher costs were not justified,

even for features like extended shelf life for an already expensive product (Wandosell et al., 2021; Young et al., 2020). From these studies, it can imply that consumers may be less likely to exhibit buying behaviour towards sustainable packaging or sustainable packaging with smart functions if they are unable or unwilling to pay more money, even though they understand the importance of sustainable packaging and environmental issues. Additionally, Ziesemer et al. (2021) discussed the reason for consumers not willing to pay more on packaging. The study highlighted young consumers would rather save money for shared experiences with friends than spend extra on sustainable packaging. This is because most of them still rely on household income and have limited financial resources and they focus on living within their means and securing their future stability, which might make them hesitant to spend extra on items like sustainable packaging or sustainable packaging with smart function.

2.3 Proposed Conceptual Framework

Figure 2.1: Conceptual Framework



Adapted from: Developed for this study

2.4 Hypothesis Development

This section examines empirical studies, understands the relationships between variables, and formulates a hypothesis outlining the relationship between the dependent and independent variables.

2.4.1 Awareness of Sustainable Packaging and Consumer Buying Behaviour

According to Ketelsen et al. (2020) they claimed that consumers who are aware of environmental issues and consider the sustainability of packaging important often demonstrate a positive attitude towards protecting the environment by purchasing sustainable packaging. Ding et al. (2023) explained that consumers' environmental awareness has been identified as a key factor driving green consumption. Mahmoud et al. (2022) and Wardhana (2022) stated that environmental awareness has a significant impact on consumers buying behaviour. Moreover, individuals with environmental awareness are more likely to adjust their buying behaviour towards eco-friendly products (Mahmoud et al., 2022). Therefore, it can be assumed that a positive relationship does exist between awareness of sustainable packaging and consumer buying behaviour.

H1: Awareness of sustainable packaging has a positive relationship with consumer buying behaviour.

2.4.2 Perceived Environmental Impact and Consumer Buying Behaviour

Ali Khan and Islam (2020) stated that environmental perceived impact has a significant impact on buying intention which will affect consumer buying behaviour. Saari et al. (2021) also claimed that environmental perceived

impact can affect consumer buying behaviour on sustainability. These types of perception are seen as predictors of sustainable buying behaviour at individual level, as they evoke emotional responses, such as concern for the environment and its deterioration, leading to a greater personal commitment to environmental causes. Therefore, it can be assumed that a positive relationship between perceived environmental impact and consumer buying behaviour.

H2: Perceived environmental impact has a positive relationship with consumer buying behaviour.

2.4.3 Sustainable Packaging with Smart Function and Consumer Buying Behaviour

Amin and Tarun (2020) stated that functional value impacts consumer buying behaviour for sustainable products, as consumers benefits from product functionality. Boz et al. (2020) claimed that if there are inhibitors or inconsistencies such as absence of functional properties in a packaging, it could reduce significance of sustainable options and alter consumer buying behaviour in the opposite direction. Similarly, Zhao et al. (2021) highlighted a significant relationship between innovative packaging and consumer buying behaviour because it offers convenience or instruction to consumers. This indicates that innovative sustainable packaging with smart functions can influence consumers' buying behaviour. Therefore, it can be assumed that there is a positive relationship between sustainable packaging with smart function and consumer buying behaviour.

H3: Sustainable packaging with smart function has a positive relationship with consumer buying behaviour.

2.4.4 Cost Perception and Consumer Buying Behaviour

Consumers' buying decisions are influenced by their price perception and their views on the actual cost of a product (Zhao et al., 2021). So, price has a strong correlation with consumer purchasing behaviour. There is a barrier to buy products with sustainable and smart packaging technologies which includes worries about the extra cost of products that use such packaging (Young et al., 2020; Nguyen et al., 2020). According to Majeed et al. (2022), it stated that pricing has a positive correlation with sustainable purchase intention for sustainable products, including packaging, and this will influence consumer buying behaviour. Therefore, it can be assumed that there is a positive relationship between perceived cost and consumer buying behaviour.

H4: Perceived cost has a positive relationship with consumer buying behaviour.

2.5 Conclusion

The chapter's literature review concluded the definition of independent and dependent variables. Hypothesis of this research formed.

CHAPTER 3: METHODOLOGY

3.0 Introduction

This chapter will cover various techniques for data collection and analysis. It explores different approaches to gathering and analyzing data. The chapter also outlines the study design, sampling framework, research instruments, construct evaluation, as well as the processing and interpretationof the data.

3.1 Research Design

3.1.1 Quantitative Research

Quantitative research focuses on numerical data, collected through surveys and analyzed to uncover patterns and means, make forecasts, examine causal relationships, and conclude results (Judithe Sheard, 2018). Statistical techniques are used in quantitative data analysis to process and interpret numerical data. This study uses quantitative research by distributing surveys to university students.

3.1.2 Descriptive Research

Descriptive research outlines characteristics associated with objects, individuals, groups, organizations, environments. It encompasses collecting data that represent events, followed by organizing, tabulating, illustrating, and describing the gathered information (Libraries Studies & Information Technology, n.d.). This study uses a survey questionnaire to gather responses in statistical form, enabling basic statistical analysis to interpret data on university students' characteristics (Qualtrics, 2023).

3.2 Sampling Design

After formulating research design, a sampling design is developed to generalize findings. The following sections outline the justifications of target population, sampling frame, procedure, and the sample size used in this research.

3.2.1 Target Population

The target population is a group of university students. By approaching this population, we can understand their opinion about sustainable packaging. It includes their awareness, perception and preference regarding sustainable packaging to gain insights into their consumer buying behaviour.

3.2.2 Sampling Frame

Sampling frame refers to the list from which units are selected from for the sample (Sciencedirect, 2015). There is no sampling frame used in this study, as this study uses non-probability sampling techniques.

3.2.3 Sampling Technique

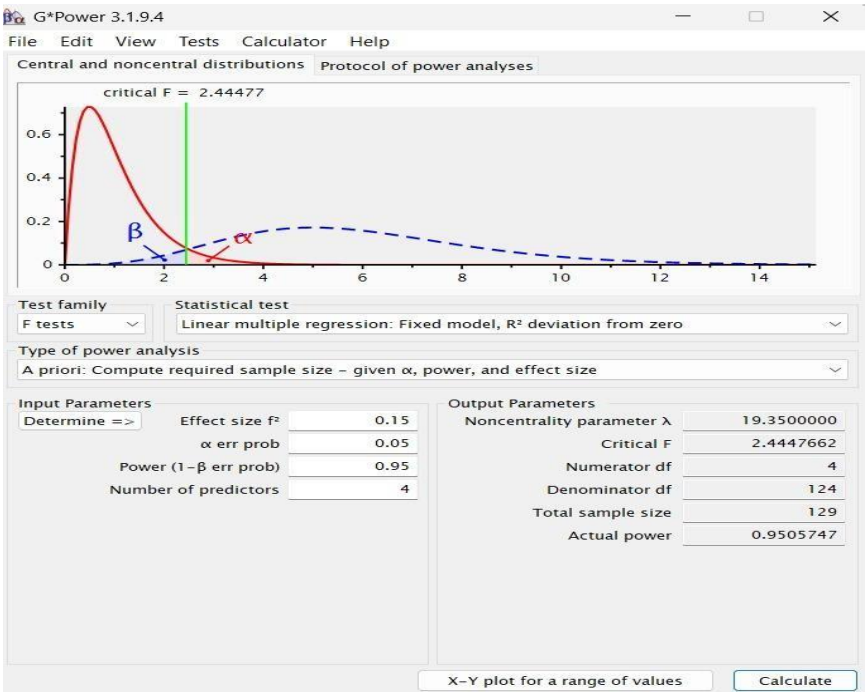
Non-probability sampling is used in this study because it is difficult to access the entire population, making it impossible to give everyone an equal chance of selection. Convenience sampling is applied due to the absence of a formal sampling frame. This method is chosen to efficiently gather many responses within a short time.

3.2.4 Sampling Size

Using G*Power, required minimum sample size for this study is 129, based on effect size of 0.15 and power level of 0.95 (refer to Figure 3.1). The F-

test, “Linear multiple regression: fixed model, R^2 deviation from zero” is used to determine the relationship between four independent variables and one dependent variable. The research includes four independent variables directly related to one dependent variables, matching the four predictors.

Figure 3.1: Calculation of Sampling Size



Source: Developed for the research by G*power

3.3 Data Collection Method

Data collection entails collecting relevant information to address the hypothesis and research question described. This study collects primary data to access targeted sources of targeted sources and gather information.

3.3.1 Primary Data

Primary data will be collected in this study. It is input for an analysis process when doing a research study (SoPact University, 2024). All primary data were acquired through questionnaire survey.

3.4 Proposed Data Analysis Tool

3.4.1 Research Instrument

A self-administered questionnaire is employed as the research tool in this study to collect data. The questionnaire is distributed through an online form via Microsoft Teams, WhatsApp, QR codes, link and having students fill out survey in person face to face.

3.4.1.1 Questionnaire Design

The questionnaire was distributed to reach more respondents, using English as it is the global official language. Simple language was used to prevent confusion and ensure the accuracy of the results.

The questionnaire uses structured multiple-choice questions for convenience and efficiency for respondents to answer. The research objective and detailed information are included in the study form's first-page description to inform respondents about the survey topics and ensure voluntary participation.

The questionnaire is divided into three sections. Section A covers respondents' general information, including their attitudes and preference towards packaging. This section consists of 6 checklist-style questions.

Section B contains 4 to 6 questions related to construct measurement that were included for all variables. A Likert scale with five-point is applied to estimate the degree of agreement and disagreement with various statements, and to gauge opinions, attitudes, or behaviours (Bhandari and Nikolopoulou, 2023).

Section C includes the demographic profiles questions, covering respondents' gender, age,academic faculty, place of origin.

3.4.1.2 Pilot Test

Pilot test is a preliminary study conducted before the actual experiment to test and refine procedures, estimating key parameters for primary research (Division of Research and Innovation, 2015). Cronbach's Alpha assesses a test or scale internal consistency and estimate its reliability (Tavakol and Dennick, 2011).

Table 3.1: Association Strength of Cronbach's Alpha

Cronbach's Alpha	Strength of association
$\alpha \geq 0.9$	Excellent
$0.9 > \alpha \geq 0.8$	Good
$0.8 > \alpha \geq 0.7$	Acceptable
$0.7 > \alpha \geq 0.6$	Questionable
$0.6 > \alpha \geq 0.5$	Poor
$0.5 > \alpha$	Unacceptable

Source: Glen (2023).

According to Table 3.1, a Cronbach's Alpha evaluated as poor when it falls between 0.69 and lower than 0.5, value over 0.7 is considered acceptable.

Table 3.2: Result of Pilot Test

	Constructs	Cronbach's Alpha	Total items
1.	Consumer buying behaviour	0.706	4
2.	Awareness of sustainable packaging	0.663	4
3.	Perceived environmental impact	0.896	4

4.	Sustainable packaging with smart function	0.840	5
5.	Perceived cost	0.742	6

Source: Developed for the research by SPSS

The reliability and validity of the questionnaire is determined by the Statistical Package for the Social Sciences (SPSS) version 29.0. With the objective to conduct the pilot test for this research, 30 questionnaires were collected. According to Glen (2023), all the variables in the study are acceptable and considered as good, but only one variable which is awareness of sustainable packaging is questionable. The reason might be due to the sample number of 30 being less, and smaller numbers can affect the alpha value.

3.5 Construct Measurement

3.5.1 Origin of Constructs

Table 3.3: Origin of Constructs

Constructs	Sources
Consumer Buying Behaviour	Zhao et al., 2021
Awareness of Sustainable Packaging	Mahmoud et al., 2022
Perceived Environmental Impact	Islam and Ali Khan, 2024
Sustainable Packaging with Smart Function	Zhao et al., 2021
Cost Perception	Zhao et al., 2021

Source: Zhao et al., 2021; Mahmoud et al., 2022; Islam and Ali Khan, 2024

3.5.2 Scale of Measurement

Ordinal scale ranks data based on relative levels of a characteristic, with order being important for analysis. In this study, ordinal scale is used to assess behaviour and preference via a Likert scale (ScienceDirect, n.d.). Nominal scale categorizes values into distinct groups based on characteristics. Essentially, nominal scale names these categories, and values fall into countable, separate groups (Frost, 2022).

Questionnaire of section A uses both ordinal and nominal scales. Ordinal scale is applied, and it includes questions with options which rank the value of their behaviour and preference such as very interested to not interested at all. Nominal scale is employed to categories options without implying any order, such as types of packaging respondents most appealing (e.g. traditional, sustainable, smart packaging).

In section B, ordinal scale is applied through Likert scale. Likert scale is an ordinal scale because it has ordered categories, but the intervals between these categories are not necessarily equal, making it unsuitable for interval-level analysis (ScienceDirect, n.d.). The Likert scale measures the extent of agreement or disagreement with a specific statement, using a 5-point scale ranging from ‘strongly disagree=1” to “strongly agree=5”.

In section C, both nominal and ordinal scales are applied. Gender, faculty and place of origin are determined through nominal scale while age is determined by through ordinal scale.

3.6 Data Processing

This section discusses the preliminary process before data analysis, including the editing of data collected and coding of data.

3.6.1 Data Editing

Data editing involves using validation checks to identify missing, invalid, or inconsistent entries, and flag potential errors. Regardless of the type of data being handled, specific edits are carried out at various stages of data collection and processing. Here, data editing is explained with an emphasis on surveys (Statcan.gc.ca, 2012).

3.6.2 Data Coding

Data Coding is a quantitative data approach that assigns descriptive label to specific data, enabling the researchers connect related content throughout the dataset (Social Sciences, 2023). For example, the gender is coded as "1=female" and "2=male", while survey responses for dependent and independent variables were coded on a Likert Scale from "1=Strongly Disagree" to "5=Strongly Agree".

3.7 Data Analysis

Data analysis aids in assessing data consistency by summarizing and converting relevant raw data into statistics. SPSS 29.0 transforms collected raw data into useful statistics.

3.7.1 Descriptive Analysis

Descriptive analysis was conducted to outline respondents' demographic information, including gender, age, academic faculty and place of origin. These details were summarized and presented in table format, showing the frequency and percentage of respondents. The descriptive data were sourced from Google Forms and analyzed using Microsoft Excel.

3.7.2 Inferential Analysis

Inferential analysis uses data gathered from the sample population to make conclusions. Hypothesis testing is an inferential methodology that allows the researcher to infer population features. Forming an assumption before drawing a conclusion about a population is a phase in the hypothesis testing process.

3.7.2.1 Pearson Correlation Coefficient

Pearson Correlation Coefficient is a statistical tool used to assess the strength and direction of the relationship between two continuous variables, ranging from +1 (perfect positive correlation) to -1 (perfect negative correlation), where an increase or decreased in one variable is reflected by a similar change in the other, with 0 signifying no correlation (Statistics Solutions, 2021).

3.7.2.2 Multiple Regression Analysis

Multiple linear regression models extend simple linear regression by involving more than one independent or predictor variable. It examines and assesses the relationship between a measurable dependent variable and one or more quantitative or qualitative predictor variables. Multiple Regression analysis method is appropriate when there is more than one predictor directly correlated with the dependent variable, all measured using a Likert scale. Since the independent variables are assessed using a metric scale, the multiple regression equation can be specified as follow:

$$Y = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \varepsilon$$

Where:

	Define
Y= Dependent variable	
Y= Consumer buying behaviour	To measure buying behaviour influenced by factors related to sustainable packaging.
***X* = Independent variable**	
X1 = Awareness of sustainable packaging	To measure consumer understanding about sustainable packaging.
X2 = Perceived environmental impact	To measure consumer perceptions of sustainable packaging's environmental importance.
X3 = Sustainable packaging with smart function	To measure consumer preference for smart functions in packaging.
X4 = Cost perception	To measure willingness to pay for sustainable packaging.
α = y-intercept or constant value	
β = Unstandardized coefficient	

3.8 Conclusion

The research design, including descriptive and quantitative research, the sampling design which covers the target population, sampling frame and sampling technique, are covered in this chapter. The data used in this study are collected through primary data and SPSS is applied totest the reliability.

CHAPTER 4: DATA ANALYSIS

4.0 Introduction

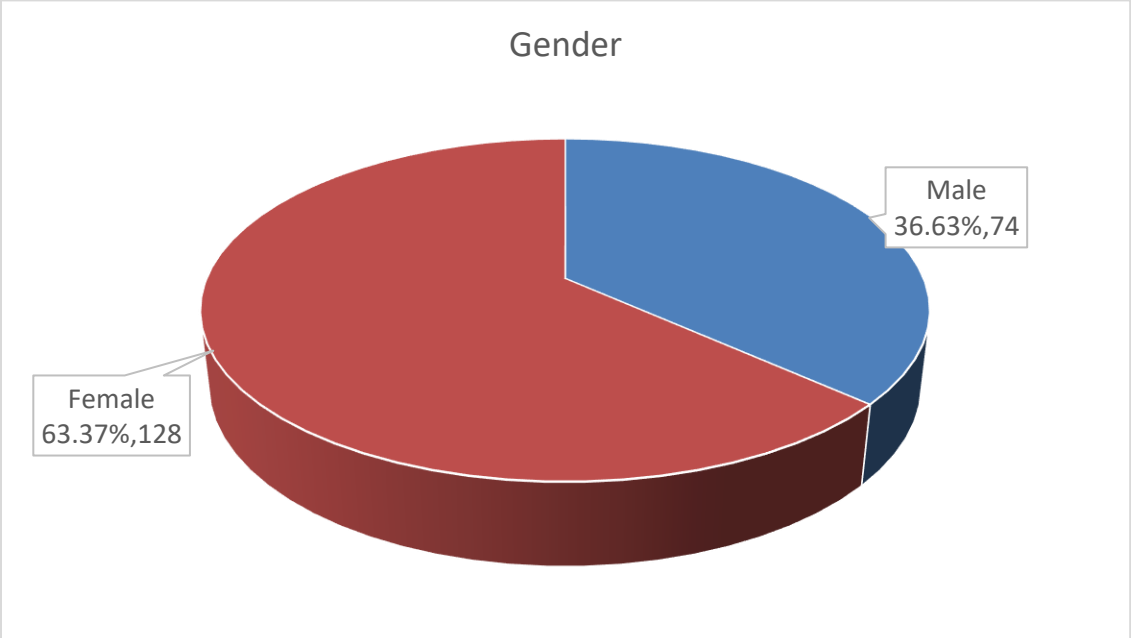
This chapter will describe the respondents' data collection. 202 responses were collected through Google form. Pearson correlation and Multiple Regression is used to estimate for reliable results by using SPSS version 29.

4.1 Descriptive Analysis

4.1.1 Demographic Profile and General Information

Respondents' demographic and general information includes 4 demographic questions (gender, age, faculty and place of origin) and 6 general questions (preferred packaging types, primary product choice motivation, attention to packaging frequency, interest in technology advanced packaging, packaging consideration frequency and packaging influence on purchasing decision).

Figure 4.1: Gender



Source: Developed for the research

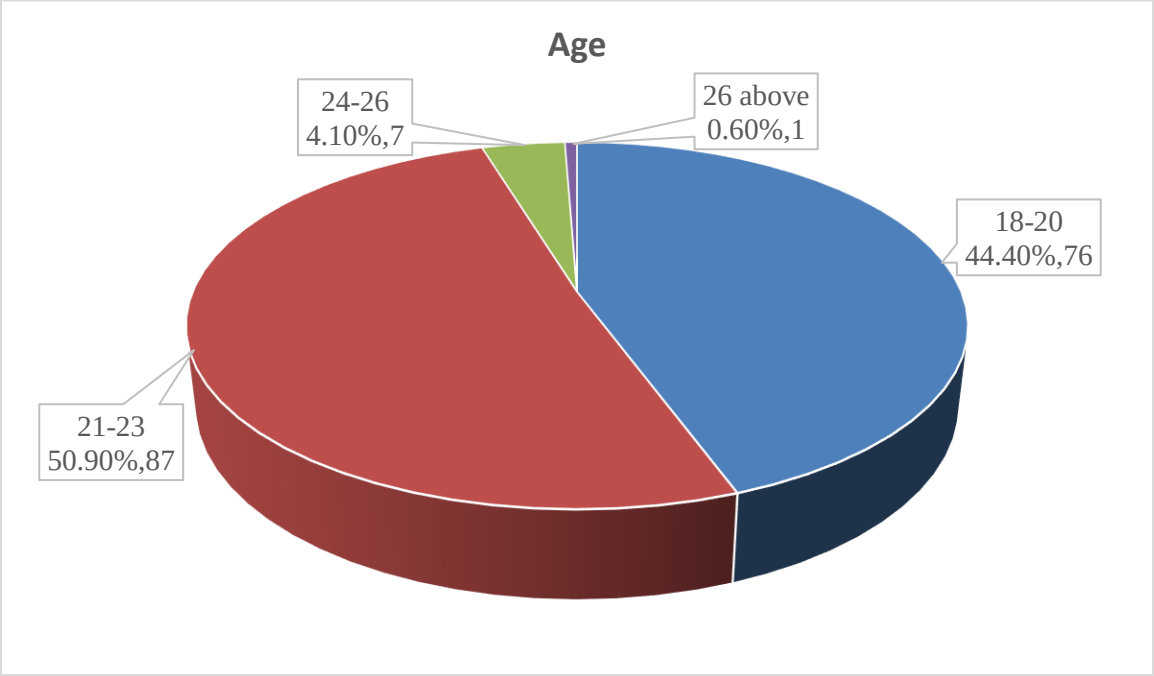
Table 4.1: Gender

	Frequency	Percent/%	Cumulative Percent/%
Female	128	63.37	63.37
Male	74	36.63	100
Total	202	100.00	

Source: Developed for the research

Figure and Table above present that 63.37% female and 36.63% male of university students were involved in this research. Therefore, the sample has more female participants.

Figure 4.2: Age



Source: Developed for the research

Table 4.2: Age

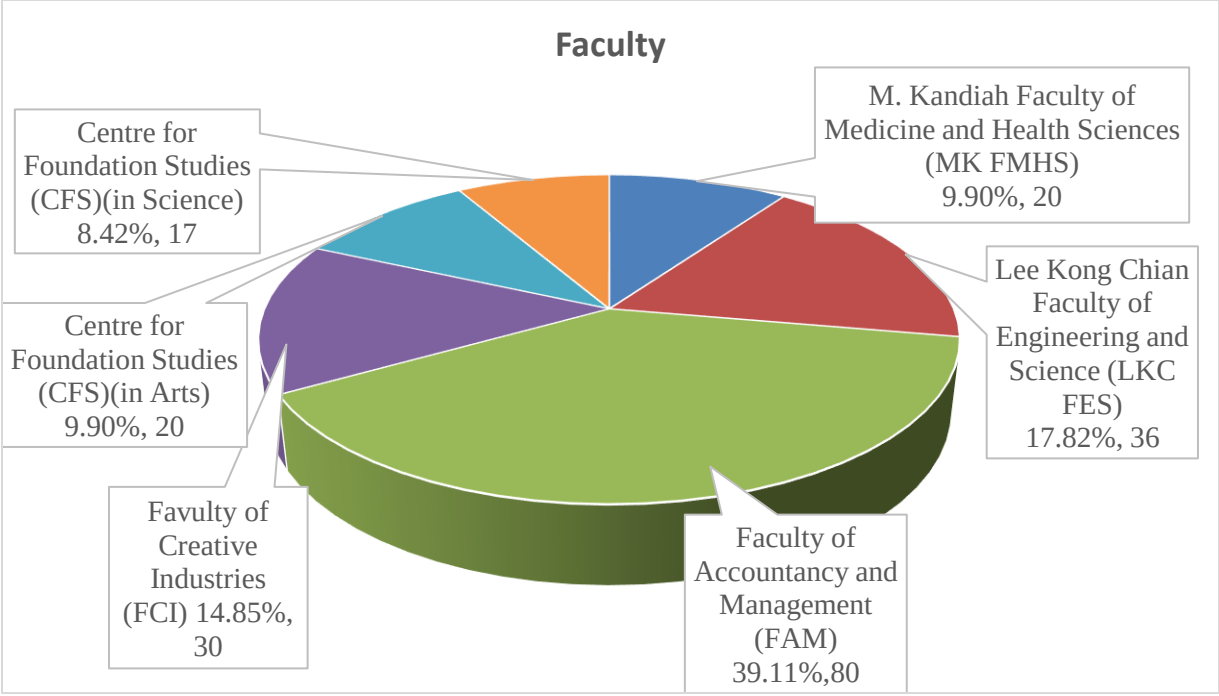
	Frequency/ f	Percent/%	Cumulative Percent/%
18-20	94	46.53	46.53
21-23	100	49.50	96.03
24-26	7	3.47	99.5
26 above	0.50	0.50	100
Total	202	100.00	

Source: Developed for the research

Figure and Table above present that 46.53% of university students are aged 18-20, 49.50% are 21-23, 3.47% are 24-26, and 0.50% are 26 and above. The cumulative percentages of 96.03% for aged 18-23, indicates most respondents

are young.

Figure 4.3: Faculty



Source: Developed for the research

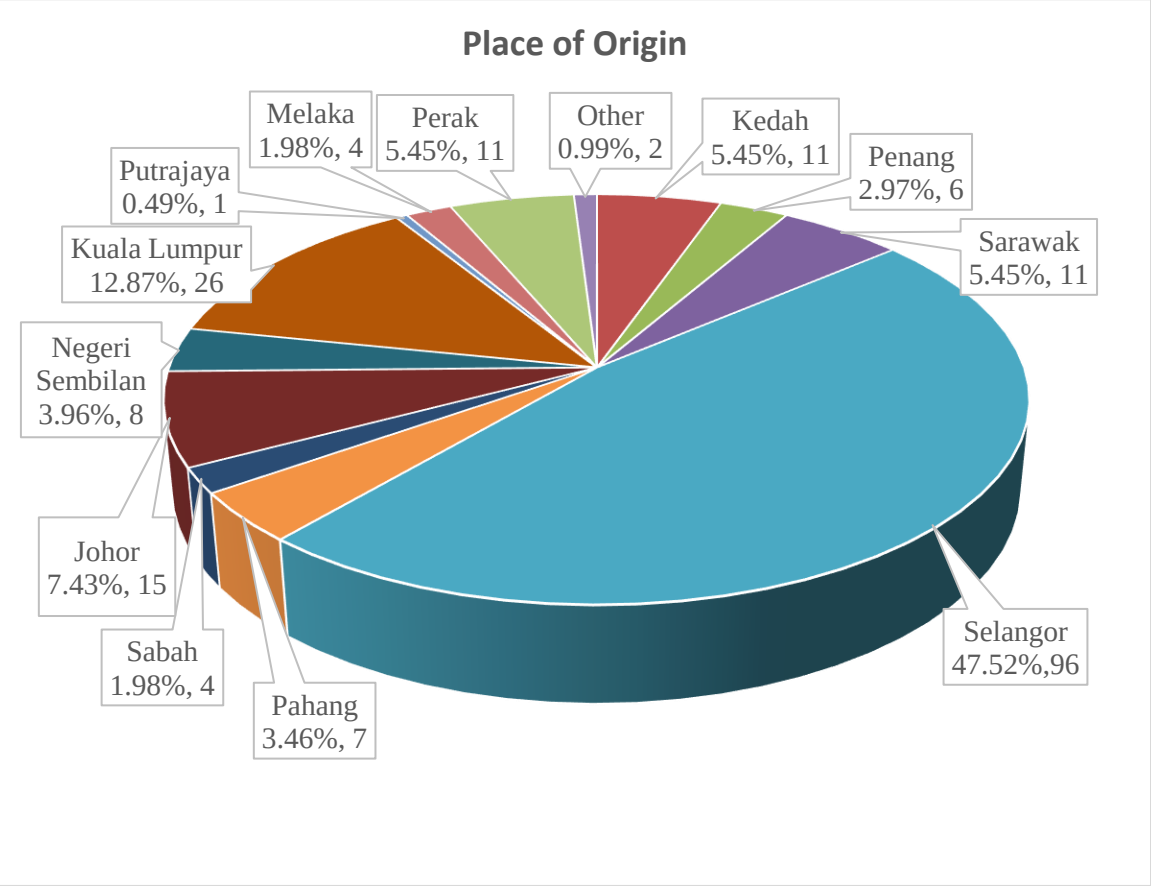
Table 4.3: Faculty

	Frequency	Percent/%	Cumulative Percent/%
MK FMHS	20	9.90	9.90
LKC FES	36	17.82	27.72
FAM	79	39.11	66.83
FCI	30	14.85	81.68
CFS(in Arts)	20	9.90	91.58
CFS(in Science)	17	8.42	100
Total	202	100.00	

Source: Developed for the research

Figure and Table above present that 9.90% of university students are MK FMHS, 17.82% are LKC FES, 39.11% are FAM, and 14.85% are FCI, 9.90% are CFS (in Arts), and 8.42% are CFS (in Science). Therefore, most respondents are from FAM, as it is the largest faculty at UTAR Sungai Long campus.

Figure 4.4: Place of origin



Source: Developed for the research

Table 4.4: Place of origin

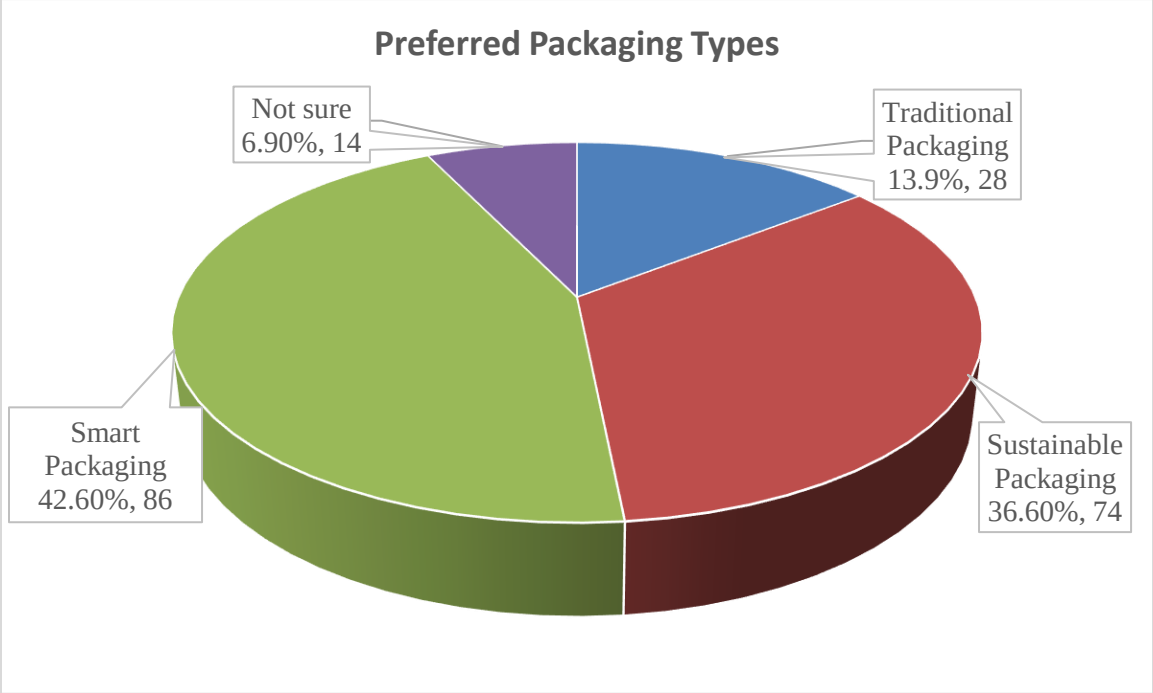
	Frequency	Percent/%	Cumulative Percent/%
Perlis	0	0	0
Kedah	11	5.45	5.45
Penang	6	2.97	8.42
Perak	11	5.45	13.87
Selangor	96	47.52	61.39
Negeri Sembilan	8	3.96	65.35
Melaka	4	1.98	67.33
Johor	15	7.43	74.76
Kelantan	0	0	74.76
Terengganu	0	0	74.76
Pahang	6	3.46	78.22
Kuala Lumpur	26	12.87	91.09
Putrajaya	1	0.49	91.58
Sabah	4	1.98	93.56
Sarawak	11	5.45	99.01
Other	2	0.99	100
Total	202	100.00	

Source: Developed for the research

Figure and Table above indicate the distribution of university students: 0% from Perlis, Kelantan and Terengganu; 5.4% from Kedah; 2.97% from Penang; 5.45% from Perak; 47.52% from Selangor; 3.96% from Negeri Sembilan; 1.98% from Melaka; 7.43% from Johor; 3.46% from Pahang; 12.87% from Kuala Lumpur; 0.49% from Putrajaya; 1.98% from Sabah; 5.45% from Sarawak; and 0.99 % from other. Therefore, most respondents

are from Selangor and Kuala Lumpur, as they live near the University Sungai Long campus.

Figure 4.5: Preferred Packaging Types



Source: Developed for the research

Table 4.5: Preferred Packaging Types

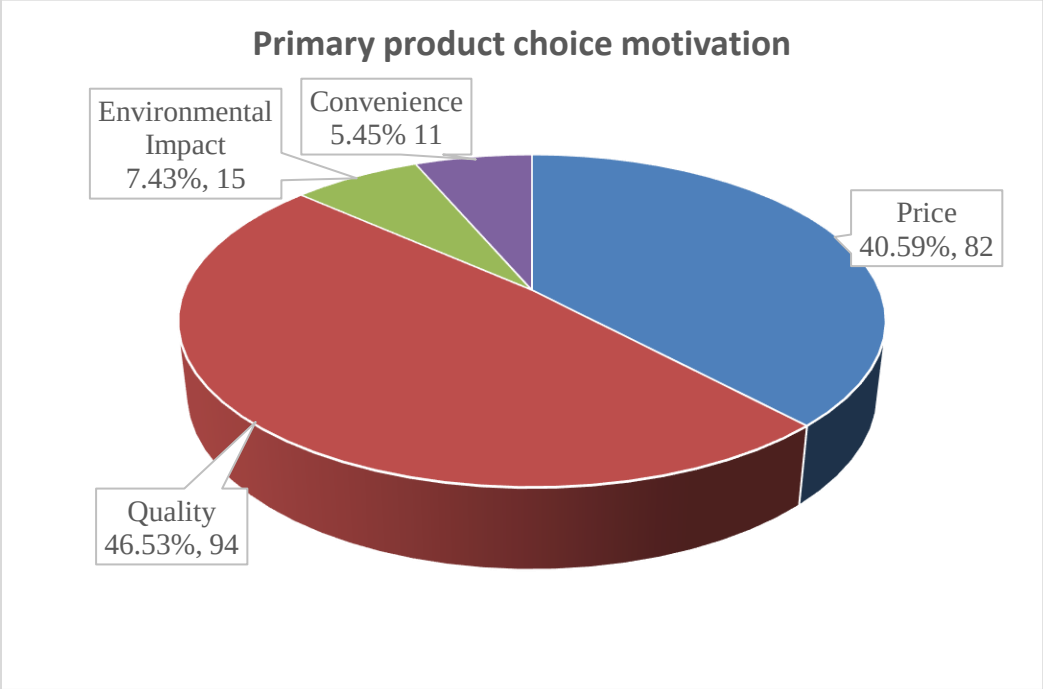
	Frequency	Percent/%	Cumulative Percent/%
Traditional Packaging	28	13.90	13.90
Sustainable Packaging	74	36.60	50.50
Smart Packaging	86	42.60	93.10
Not sure	14	6.90	100

Total	202	100.00	

Source: Developed for the research

Figure and Table above present that 13.90% of university students prefer traditional packaging, 36.60% prefer sustainable packaging, 42.60% prefer smart packaging, and 6.90% not sure. In total, 79.20% prefer either sustainable or smart packaging, while 13.90% prefer traditional packaging or not sure. Therefore, most participants favor smart or sustainable packaging.

Figure 4.6 Primary product choice motivation



Source: Developed for the research

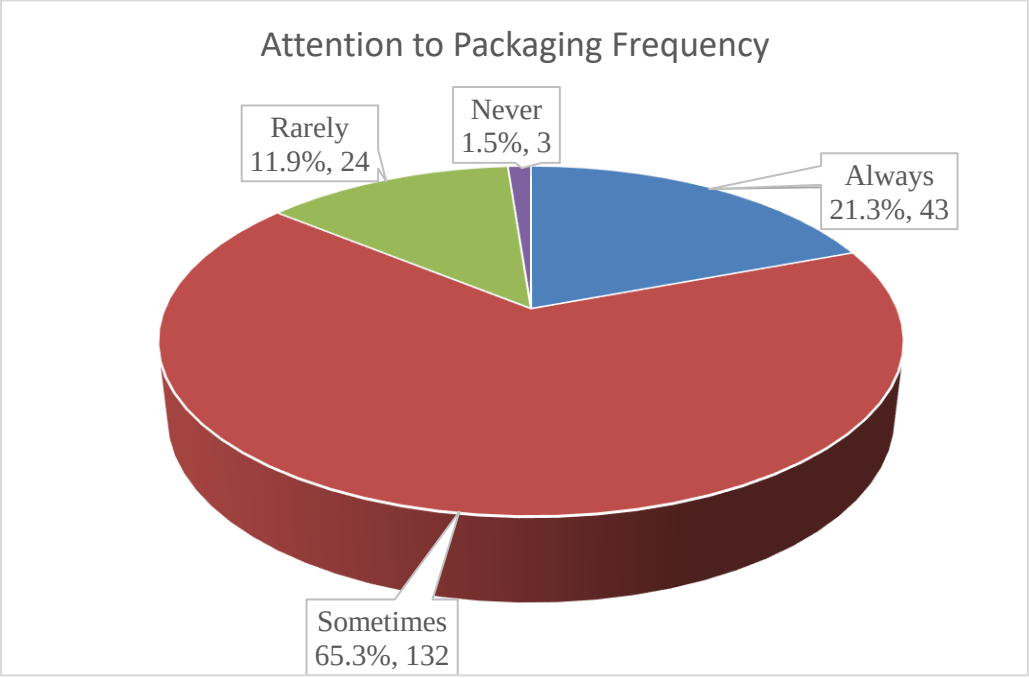
Table 4.6 Primary product choice motivation

	Frequency	Percent/%	Cumulative Percent/%
Price	82	40.59	40.59
Quality	94	46.53	87.12
Environmental Impact	15	7.43	94.55
Convenience	11	5.45	100
Total	202	100.00	

Source: Developed for the research

Figure and Table above indicate that 40.59% of university students are most motivated by the price, 46.53% by quality, 7.43% by environmental impact, and 5.45% by convenience. A total of 87.12% are primarily motivated by price or quality, while fewer consider environmental impact or convenience. Therefore, price and quality are the main motivators with environmental and convenience factors being less influential.

Figure 4.7: Attention to Packaging Frequency



Source: Developed for the research

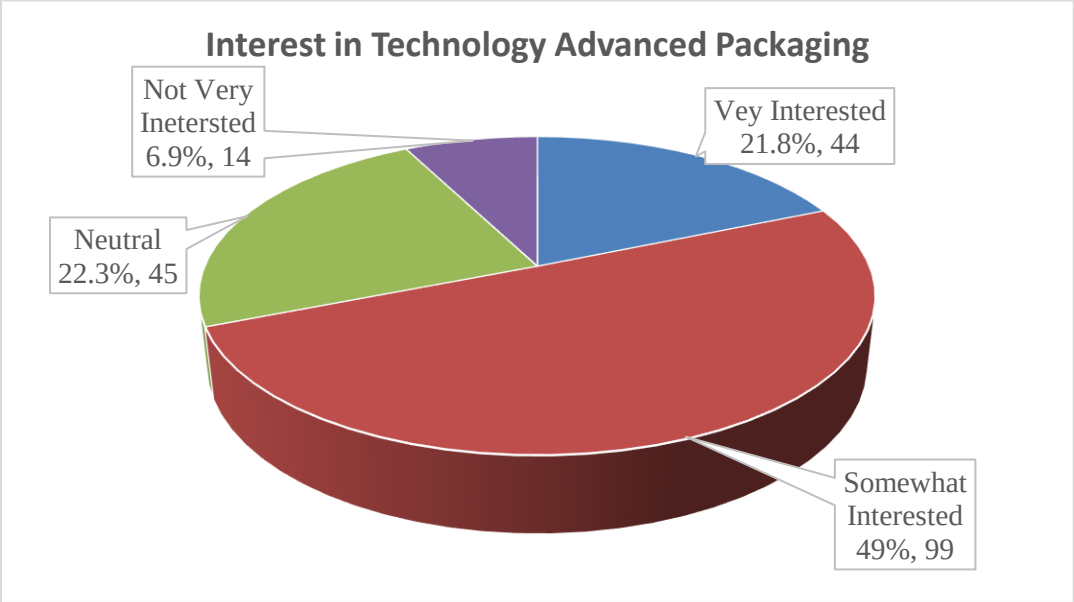
Table 4.7: Attention to Packaging Frequency

		Frequency/f	Cumulative Frequency/ CF	Percent/%	Cumulative Percent/%
	Always	43	43	21.3	21.3
	Sometimes	132	175	65.3	86.6
	Rarely	24	199	11.9	98.5
	Never	3	202	1.5	100
	Total	202		100.0	
Mean	1.936				
Median	$\sum f/2=202/2=101^{th}$, Sometimes				
Mode	Sometimes				

Source: Developed for the research

Figure and Table above present that 21.30% of university students always pay attention to packaging of product they buy, 65.3% sometimes do, 11.9% rarely do, 1.5% never do. The cumulative percentage shows that 87.12% pay attention to packaging either always or sometimes, while fewer rarely or never do. The mean is 1.936, with the median and mode in the "Sometimes" category, highlighting it as the most common behaviour. Therefore, most respondents pay attention to packaging, with many doing occasionally.

Figure 4.8: Interest in Technology Advanced Packaging



Source: Developed for the research

Table 4.8: Interest in Technology Advanced Packaging

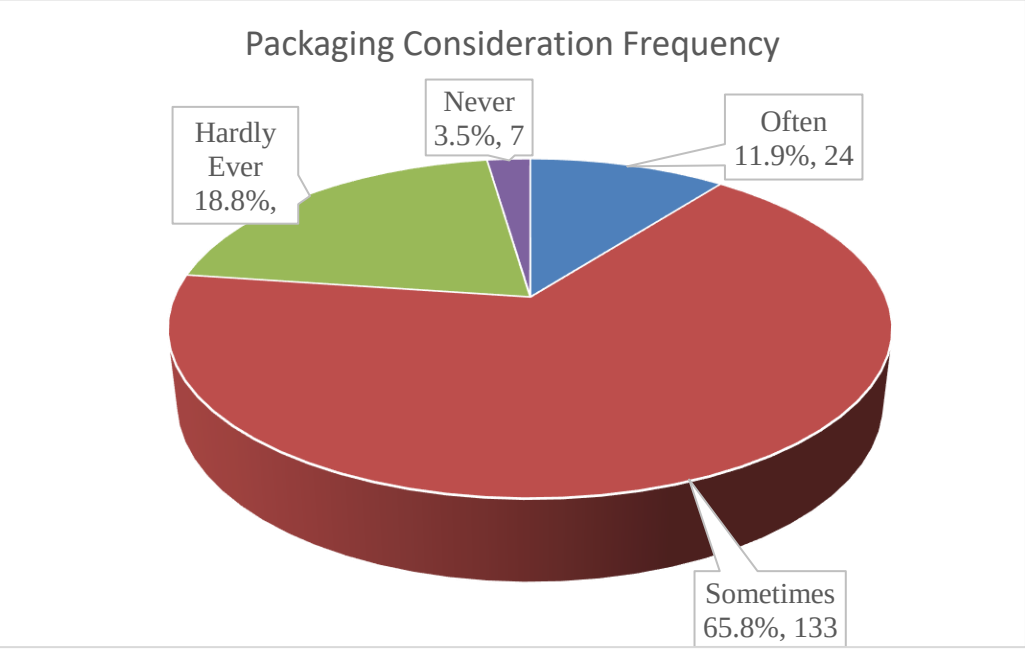
		Frequency/f	Cumulative Frequency/CF	Percent/%	Cumulative Percent/%
	Very Interested	44	44	21.8	21.8
	Somewhat Interested	99	143	49.0	70.8
	Neutral	45	188	22.3	93.1
	Not very interested	14	202	6.9	100
	Not Interested at all	0	202	0	100
	Total	202		100.0	

Mean	2.144
Median	202/2=101th, Somewhat Interested
Mode	Somewhat Interested

Source: Developed for the research

Figure and Table above indicate that 21.8% of university students are very interested in technologically advanced packaging, 49.0% are somewhat interested, 22.3% are neutral, 6.9% are not very interested, and 0% are not interested at all. The cumulative percentage reveals that 71.3% are somewhat interested or neutral, while 28.7% are either very interested or not interested. The mean is 2.144, with the median and mode in the "Somewhat Interested" category, indicating moderate interest. Therefore, most respondents show at least some interest in technologically advanced packaging.

Figure 4.9: Packaging Consideration Frequency



Source: Developed for the research

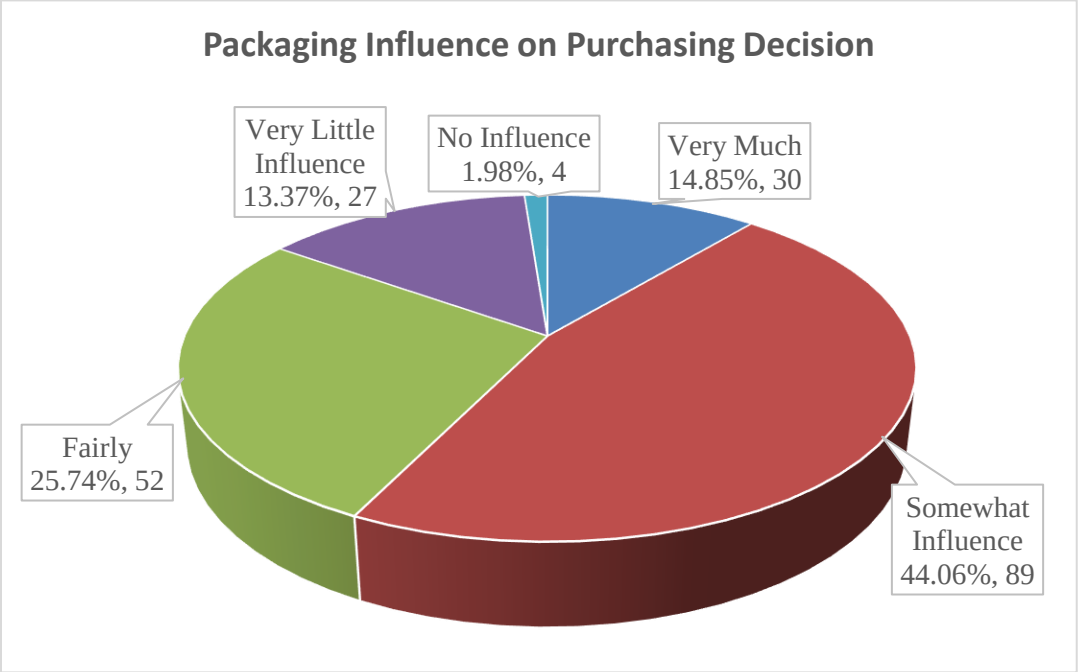
Table 4.9: Packaging Consideration Frequency

		Frequency/f	Cumulative Frequency/CF	Percent/%	Cumulative Percent/%
	Often	24	24	11.9	11.9
	Sometimes	133	157	65.8	77.7
	Hardly Ever	38	195	18.8	96.5
	Never	7	202	3.5	100
	Total	202		100	
Mean	2.139				
Median	202/2=101th, Sometimes				
Mode	Sometimes				

Source: Developed for the research

Figure and Table above indicate that 11.9% of university students often consider packaging when making purchase decisions, 65.8% sometimes do, 18.8% hardly ever do, 3.5% are never do. The cumulative percentages reveals that 84.6% consider packaging either sometimes or hardly ever, while 15.4% often or never consider it. The mean is 2.139, with the median and mode in the "Sometimes" category, highlighting most respondents occasionally consider packaging. Therefore, most respondents think about packaging at least sometimes, with small portion prioritizing it.

Figure 4.10: Packaging Influence on Purchasing Decision



Source: Developed for the research

Table 4.10: Packaging Influence on Purchasing Decision

		Frequency/f	Cumulative Frequency/ CF	Percent/%	Cumulative Percent/%
	Very Much	30	30	14.85	14.85
	Somewhat Influence	89	119	44.06	58.91
	Fairly	52	171	25.74	84.65
	Very Little Influence	27	198	13.37	98.02
	No Influence	4	202	1.98	100
	Total	202		100	
Mean	2.436				

Median	202/2=101th, Somewhat Influence
Mode	Somewhat Influence

Source: Developed for the research

Figure and Table above present that 14.85% of university students are very much influenced by packaging when making purchasing decisions, 44.06% are somewhat influenced, 25.74% are fairly influenced, 13.37% are influenced very little, 1.98% are not influence at all. The cumulative percentages reveals that 69.80% are at least somewhat or fairly influenced, while only 30.2% report either very much or very little or no influence. The mean is 2.436, the median and mode fall in the "Somewhat Influence" category, indicating moderate impact on the purchasing decisions. Therefore, packaging moderately influences most respondents' the purchasing decisions.

4.1.2 Descriptive Statistics

Table 4.11: Descriptive Statistics

Constructs	N	Mean	Variance	Total items	Ranking
Consumer Buying Behaviour	202	3.727	0.537	4	2
Awareness of Sustainable Packaging	202	3.906	0.504	4	4
Perceived Environmental Impact	202	4.090	0.491	4	5
Sustainable	202	3.939	0.522	5	3

Packaging with Smart Function					
Cost Perception	202	3.613	0.593	6	1

Source: Developed for the research by SPSS

The Perceived environmental impact contains the greatest mean of 4.090, shown in Table 4.11 above, followed by Sustainable packaging with smart function (3.939), Awareness of sustainable packaging (3.906), Consumer buying behaviour (3.727) and Cost perception with the lowest mean of 3.613. This suggests that perceived environmental impact is a key factor in Consumer buying behaviour, while cost perception has a poor correlation to consumer buying behaviour.

4.2 Scale Measurement

4.2.1 Test of Reliability

Table 4.12: Test of Reliability

	Constructs	Cronbach's Alpha	Total Items	Rankings
1.	Consumer Buying Behaviour	0.789	4	4
2.	Awareness of Sustainable Packaging	0.770	4	5
3.	Perceived Environmental Impact	0.853	4	1
4.	Sustainable Packaging	0.836	5	2

	with Smart Function			
5.	Cost Perception	0.835	6	3

Source: Developed for the research by SPSS

In Table 4.11, the four independent variables and one dependent variable, each with 4-6 items, have reliability scores above 0.7. Perceived environmental impact has the highest Cronbach's Alpha score of 0.853, followed by Sustainable packaging with smart function (0.836), Cost perception (0.835) and consumer buying behaviour (0.789). Awareness of sustainable packaging has the lowest Cronbach's Alpha of 0.770.

4.3 Inferential Analysis

4.3.1 Pearson Correlation Analysis

Table 4.13: Pearson Correlation Analysis

		CBB	ASP	PEI	SPSF	CP
CBB	Pearson Correlation	1	.588**	.433**	.622**	.621**
	Sig.(2-tailed)		0.000	0.000	0.000	0.000
	N	202	202	202	202	202
ASP	Pearson Correlation	.588**	1	.686**	.669**	.623**
	Sig.(2-tailed)	0.000		0.000	0.000	0.000
	N	202	202	202	202	202
PEI	Pearson Correlation	.433**	.686**	1	.630**	.467**
	Sig.(2-tailed)	0.000	0.000		0.000	0.000

	N	202	202	202	202	202
SPSF	Pearson Correlation	.622**	.669**	.230**	1	.626**
	Sig.(2-tailed)	0.000	0.000	0.000		0.000
	N	202	202	202	202	202
CP	Pearson Correlation	.621**	.467**	.467**	.626**	1
	Sig.(2-tailed)	0.000	0.000	0.000	0.000	
	N	202	202	202	202	202
***Correlation is significant at the 0.01 level (2 tailed).						

Source: Developed for the research by SPSS

***CBB**: Consumer buying behaviour, **ASP**: Awareness of sustainable packaging, **PEI**: Perceived environmental impact, **SPSF**: Sustainable packaging with smart function, **CP**: Cost perception

Table 4.13 illustrates all variables—Awareness of sustainable packaging, Perceived environmental impact, Sustainable packaging with smart function, and Cost perception—have significant relationships with consumer buying behaviour at the value of 0.01 (2-tailed). Sustainable packaging with smart function obtains the largest r value of 0.622, followed by Cost perception (0.621), Awareness of sustainable packaging (0.588) and Perceived environmental impact has the smallest at 0.433. Therefore, sustainable packaging with smart function has the strongest relationship with consumer buying behaviour, while perceived environmental impact shows the weakest relationship.

4.3.2 Multiple Regression Analysis

Table 4.14: Model Summary

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of Estimate
1	.704a	.496	.486	0.52551
a Predictors: (Constant), Cost perception, Perceived environmental impact, Sustainable packaging with smart function and Awareness of sustainable packaging				

Source: Developed for the research by SPSS

The table shows an adjusted R square value of 0.496, meaning the four independent variables—Cost perception, Perceived environmental impact, Sustainable packaging with smart function and Awareness of sustainable packaging account for 49.6% of the variance. The remaining 50.4% is unexplained by these variables and may be explained and influenced by other factors.

Table 4.15: Coefficient

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	.760	.242		3.143	.00193		
	Awareness of	.238	.084	.230	2.828	.0051	0.387	2.587

	sustainable packaging					7		
	Perceived environmental impact	-.074	.077	-.071	-0.966	.335	0.475	2.107
	Sustainable packaging with smart function	.321	.078	.317	4.129	.0000 538	0.434	2.305
	Cost perception	.298	.066	.313	4.509	.0000 112	0.532	1.880

Source: Developed for the research by SPSS

Table above shows the result that highlighting the relationships between four independent variables—Awareness of sustainable packaging, Perceived environmental impact, Sustainable packaging with smart function, Cost perception and one dependent variable—Consumer buying behaviour.

Awareness of sustainable packaging has an unstandardized coefficient value of 0.238, indicating that a 1 unit increase in this variable, with other factors remaining constant, will increase the level of consumer buying behaviour by 0.238 units. This variable has significant relationship with consumer buying behaviour because the significant p-value below 0.05.

The unstandardized coefficient of Perceived environmental impact is -0.074. This suggests that if perceived environmental impact increases by 1 unit and other factors remain the same, decrease by 0.074. This is due to consumer skepticism about greenwashing of sustainable products, cost of sustainable packaging and preference for more durable and eco-friendly reusable bags over sustainable packaging (Boz et al., 2020; Gomes & Tan, 2024; Chatzargyros, 2023; Oloyede & Lignou, 2021; Quan, 2024). However, changes in perceived environmental impact are unlikely to explain changes in

consumer buying behaviour, as this variable shown an insignificant relationship with consumer buying behaviour, indicated by a p-value exceeds 0.05.

The unstandardized coefficient of Sustainable packaging with smart function is 0.32, indicating that a 1 unit increase in this variable, with other factors remaining constant, will increase the level of consumer buying behaviour by 0.321. This variable has a significant relationship with consumer buying behaviour, as its significant p-value below 0.05.

The unstandardized coefficient of Cost perception is 0.298, indicating that a 1 unit increase in this variable, with other factors remaining constant, will increase the level of consumer buying behaviour by 0.298. This variable has a significant relationship with consumer buying behaviour because the significant p-value below 0.05.

Table 4.15 shows the VIF values for four independent variables are below 10, indicating no serious multicollinearity and the correlation between the independent variables is not excessively high, ensuring reliable coefficient estimates in the regression model.

4.3.2.1 Estimate multiple regression

$$\widehat{Y} = 0.760 + 0.238X_1 - 0.074X_2 + 0.321X_3 + 0.298X_4$$

The estimated multiple regression is presented in Table 4.15 above.

Table 4.16: ANOVA

ANOVA[a]						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	53.548	4	13.387	48.476	<.001b
	Residual	54.403	197	0.276		
	Total	107.951	201			
a. Dependent Variable: Consumer buying behaviour						
b. Predictors: (Constant), Awareness of sustainable packaging, Perceived environmental impact, Sustainable packaging with smart function, Cost perception						

Source: Developed for the research by SPSS

ANOVA results show F value of 48.476 and a significance value below 0.001. All independent variables—Awareness of sustainable packaging, Perceived environmental impact, Sustainable packaging with smart function and Cost perception are significantly influence the dependent variable—Consumer buying behaviour, as the significant value falls below the standard value of 0.05.

4.3.3 Hypothesis Testing

Hypothesis one

H_0: Awareness of sustainable packaging has no significant relationship with university students' consumer buying behaviour regarding sustainable packaging.

H_1: Awareness of sustainable packaging has significant relationship with university students' consumer buying behaviour regarding sustainable

packaging.

H_0 is rejected, if the p-value < 0.05.

Awareness of sustainable packaging has a p-value of 0.00517 (Table 4.15). Since its significant level is lower than 0.05, the Awareness of sustainable packaging (X_1) is considered statistically significant. Therefore, H_1 is accepted while H_0 is rejected, indicating a strong correlation between awareness of sustainable packaging and the consumer buying behaviour of sustainable packaging among university students.

Hypothesis two

H_0: Perceived environmental impact has no significant relationship with university students' consumer buying behaviour regarding sustainable packaging.

H_2: Perceived environmental impact has significant relationship with university students' consumer buying behaviour regarding sustainable packaging.

H_0 is rejected, if the p-value < 0.05.

Perceived environmental impact has a p-value of 0.335 (Table 4.15). Since its significant level is greater than 0.05, the Perceived environmental impact (X_2) is considered statistically insignificant. Therefore, H_2 is rejected while H_0 is accepted, indicating that there is no correlation between perceived environmental impact and the consumer buying behaviour of sustainable packaging among university students.

Hypothesis three

H_0: Sustainable packaging with smart function has no significant relationship

with university students' consumer buying behaviour regarding sustainable packaging.

H_3: Sustainable packaging with smart function has significant relationship with university students' consumer buying behaviour regarding sustainable packaging.

H_0 is rejected, if the p-value < 0.05.

Sustainable packaging with smart function has a p-value of 0.0000538 (Table 4.15). Since its significant level is lower than 0.05, the Sustainable packaging with smart function (X_3) is considered statistically significant. Therefore, H_3 is accepted while H_0 is rejected, indicating a strong correlation between sustainable packaging with smart function and the consumer buying behaviour of sustainable packaging among university students.

Hypothesis four

H_0: Cost perception has no significant relationship with university students' consumer buying behaviour regarding sustainable packaging.

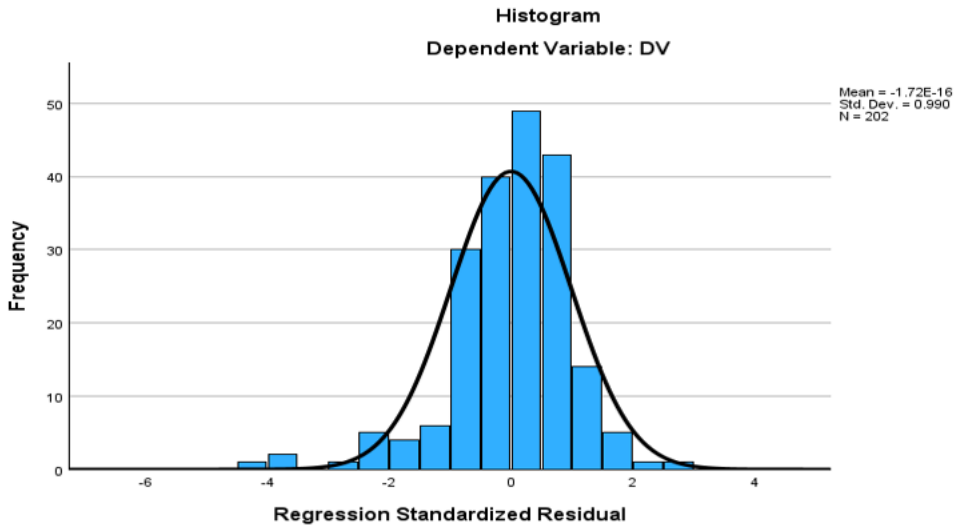
H_4: Cost perception has significant relationship with university students' consumer buying behaviour regarding sustainable packaging.

H_0 is rejected, if the p-value < 0.05.

Cost perception has a p-value of 0.0000112 (Table 4.15). Since its significant level is below 0.05, Cost perception (X_4) shows statistically significant. Hence, H_4 is accepted while H_0 is rejected, indicating a strong correlation between cost perception and the consumer buying behaviour of sustainable packaging among university students.

4.4 Histogram

Figure 4.11: Histogram



Adapted from: Developed for the research by SPSS.

The closer the histogram resembles a normal distribution, the more satisfied the normality assumption. Therefore, the histogram above shows a nearly normally distributed graph, indicating that the estimation tends to be more accurate.

4.5 Conclusion

This chapter outlines all data analysis conducted through SPSS, confirming the reliability of the survey questionnaire through pilot test with Cronbach's Alpha above 0.7. The descriptive analysis covers general information analysis. The inferential analysis includes the measurement model assessment results.

CHAPTER 5: DISCUSSION, CONCLUSION, AND IMPLICATIONS

5.0 Introduction

5.1 Discussion of Major Findings

Table 5.1: Research Objective, Hypothesis and Results Summary

Research Objective	Hypothesis	Results	Achieved
To explore the relationship between awareness of sustainable packaging and consumer buying behaviour regarding sustainable packaging.	Awareness of sustainable packaging has significant relationship with university students' consumer buying behaviour regarding sustainable packaging.	t=2.828 (P<0.05) P=0.00517	Yes
To explore the relationship between perceived environmental impact and consumer buying behaviour regarding sustainable packaging.	Perceived environmental impact has significant relationship with university students' consumer buying behaviour regarding sustainable packaging.	t=-0.966 (P>0.05) P=0.335	No

To explore the relationship sustainable packaging with smart function and consumer buying behaviour regarding sustainable packaging.	Sustainable packaging with smart function has significant relationship with university students' consumer buying behaviour regarding sustainable packaging.	t=4.129 (P<0.05) P=0.0000538	Yes
To explore the relationship between cost perception and consumer buying behaviour regarding sustainable packaging.	Cost perception has significant relationship with university students' consumer buying behaviour regarding sustainable packaging.	t=4.509 (P<0.05) P=0.0000112	Yes

Source: Developed for the research

5.1.1 Awareness of Sustainable Packaging and Consumer Buying Behaviour

Based on Table 5.1, awareness of sustainable packaging is significant as 5%, indicating a significant connection between awareness of sustainable packaging and consumer buying behaviour for sustainable packaging. Therefore, H1 is approved. Consumers aware of the concept of sustainable packaging, its environmental benefits and the difference between traditional packaging and sustainable packaging are more likely to exhibit buying behaviour toward sustainable packaging. Orzan et al. (2018) support this,

stating that environmentally aware consumers understand their impact on the environment affects influencing their sustainable buying behaviour.

5.1.2 Perceived Environmental Impact and Consumer Buying Behaviour

Based on Table 5.1, perceived environmental impact is not significant as 5%, indicating no significant connection between perceived environmental impact and consumer buying behaviour for sustainable packaging. Therefore, H2 is rejected. The findings suggest that perceived environmental impact does not have a direct or reliable influence on consumer buying behaviour for sustainable packaging. This may be attributed to factors such as misleading claims and ambiguous terminology associated with greenwashing, which reduces consumer trust, create doubt about sustainability efforts, and reduce consumers' willingness to purchase product with sustainable packaging (Boz et al., 2020). Besides, charging for sustainable packaging may encourage the use of reusable bags, benefiting both the environment and consumers' budget (Gomes & Tan, 2024; Chatzargyros, 2023). The poor quality, which is limited durability of sustainable packaging (e.g. paper packaging), may also discourage consumers choose it (Oloyede & Lignou, 2021). Reusable bags are more eco-friendly and durable, and reusable for multiple, aligning with consumer preferences to reduce environmental impacts, leading them to prefer own bags over purchasing sustainable packaging (Quan, 2024).

5.1.3 Sustainable Packaging with Smart Function and Consumer Buying Behaviour

Based on Table 5.1, sustainable packaging with smart function is significant as 5%, indicating a significant connection between sustainable packaging with smart functions and consumer buying behaviour for sustainable packaging. Therefore, H3 is approved. The findings show that university students consider packaging functionality in their buying behaviour. When exposed to packaging with smart features (such as features for maintain freshness, monitor product's condition or providing product information), students are more likely to incorporate these features into their buying behaviours. This suggest that smart packaging functions can influence consumer buying behaviour, making sustainability an important consideration in the buying behaviour of university students.

5.1.4 Cost Perception and Consumer Buying Behaviour

Based on Table 5.1, cost perception is significant as 5%, indicating a significant connection between cost perception and consumer buying behaviour towards sustainable packaging. Therefore, H4 is approved. This suggests that university students' willingness to pay more for sustainable packaging or sustainable packaging with smart functions play a key role in influencing their purchasing decisions. University students tend to buy sustainable packaging or sustainable packaging with smart function when its benefits outweigh cost.

5.2 Managerial Implications

Awareness of sustainable packaging has a significant result on consumer buying behaviour. Business should significantly influence consumer buying behaviour. Business should prioritize educating consumers about the environmental benefits and functionalities of sustainable packaging to align their marketing strategies with growing consumer demand for sustainable products. Additionally, public education campaigns can promote awareness of sustainable packaging to let consumers become more informed, leading them to choose sustainable packaging options for reducing environmental impacts of packaging waste. Once consumers have awareness, it would be driving them to prefer product with sustainable packaging.

Sustainable packaging with smart function has a significant result on consumer buying behaviour. Businesses can incorporate this innovation into their product packaging can enhance the appeal of sustainable packaging. Moreover, policies should encourage the development and use of smart functions in packaging such as improved freshness maintenance, could incentivize businesses to innovate while meeting consumer demands for functionality and sustainability. Furthermore, as these smart functions can become increasingly important for consumers, consumers can understand these factors and align their purchasing behaviour with their preferences for sustainability.

Cost perception has a significant result on consumer buying behaviour. Businesses can optimize their pricing strategies to ensure that sustainable packaging remains affordable while balancing it perceive value. Incorporating these insights will help companies to position their product effectively in the market, increasing their competitiveness and increase sales in a sustainability-focused market. Besides, Government can introduce subsidies or regulations that reduce the cost of sustainable packaging for businesses, making it more accessible to consumers.

5.3 Limitation of The Study

In this study, there are several limitations that have been found. The first limitation is its focuses on university students from a single institution, which may restrict the generalizability of the findings to a broader population. The preferences, behaviours, and perceptions observed in this specific group may not accurately represent those of students those of students' other universities. Therefore, this study findings may be specific to the unique characteristics of the selected university's student population.

Moreover, this study focuses only on four independent variables (Awareness of sustainable packaging, Perceived environmental impact, Sustainable packaging with smart function, Cost perception). Consumer buying behaviour might be influenced by other variables not included in this research such as educational level, income level, green trust, and peer pressure. Therefore, some significant factors affecting consumer buying behaviour were not addressed.

Additionally, this study focuses solely on university students, it does not account for the behaviours and perceptions of other consumer groups, such as working professionals, different occupation or older adults, who may have different attitudes towards sustainable packaging.

5.4 Recommendations

The future researchers should expand the study population. Future research can include more diverse sample population, such as students from multiple universities or institutions across different regions. This would enhance the generalizability of the findings and provide a more comprehensive understanding of consumer buying behaviour towards sustainable packaging across various student populations.

Moreover, future researcher should incorporate additional variables. Future research can explore and include other relevant independent variables that could influence consumer buying behaviour, such as educational level, income level, green trust, and peer pressure. This would provide a more holistic understanding of factors driving buying sustainable packaging choices and a more accurate and reliable results.

Furthermore, future researchers should broaden the demographic scope. To gain deeper insights, future research should include other consumer groups, such as working professionals, occupation, older adults, or single individuals to capture diverse attitudes and behaviours towards sustainable packaging. This approach would provide a more comprehensive perspective and help identify tailored strategies for different demographic groups.

5.5 Conclusion

The study’s findings provide valuable insights into how key factors for practitioners such as awareness of sustainable packaging, sustainable packaging with smart function and cost perception influence consumer buying behaviour. However, some limitations remain for future research to address.

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Appendices

Appendix 3.1: Questionnaire

Impact of Sustainable Packaging on Consumer Buying Behaviour in Malaysia

Dear respondents,
I am a student from Universiti Tunku Abdul Rahman (UTAR), Faculty of Accountancy and Management, pursuing degree in Bachelor of International Business (Honours), currently conducting a study on "Impact of Sustainable Packaging on Consumer Buying Behaviour in Malaysia" as my final year project. The objective of this research is to investigate the factors that affect university students' consumer buying behaviour for sustainable packaging.

I sincerely hope that you can take a few minute to complete this questionnaire. Your responses are essential for me to complete my final year project. Your participation is on a voluntary basis.

Please take note that this survey is strictly for academic purposes, and I would like to assure you that all the information collected will remain PRIVATE AND CONFIDENTIAL. I greatly appreciate you for taking the time and effort in completing this questionnaire. Thank you for your cooperation.

* Indicates required question

1. Email *

Section A: General Information

Instruction: Please read each question carefully and provide the information by placing a TICK(/) in the box given.
Smart packaging is emerging technologies within packaging to extend product shelf life and monitor, communicate or respond the product's environment in real-time.

2. Which type of packaging do you find most appealing? *

Mark only one oval.

- ◯ Traditional packaging
- ◯ Sustainable packaging
- ◯ Smart packaging
- ◯ Not sure

3. Which of the following best describes your primary motivation when choosing a product? *

Mark only one oval.

- Price
- Quality
- Environmental impact
- Convenience

4. How often do you pay attention to the type of packaging used for the products you buy? *

Mark only one oval.

- Always
- Sometimes
- Rarely
- Never

5. Are you interested in packaging with new technologies (e.g. smart packaging)? *

Mark only one oval.

- Very interested
- Somewhat interested
- Neutral
- Not very interested
- Not interested at all

6. How often do you consider packaging when making purchasing decisions? *

Mark only one oval.

- ◯ Often
- ◯ Sometimes
- ◯ Hardly ever
- ◯ Never

7. How much does packaging influence your decision making when purchasing food and products? *

Mark only one oval.

- ◯ Very much
- ◯ Somewhat
- ◯ Fairly
- ◯ Very little influence
- ◯ No influence

Section B: Consumer Buying Behaviour

Instruction: Please read each question carefully and provide the information by placing a TICK(/) in the box given.

8. I am more likely to purchase products that use sustainable packaging. *

Mark only one oval.

	1	2	3	4	5	
Stro	◯	◯	◯	◯	◯	Strongly agree

9. My purchasing decisions are influenced by the environmental impact of the packaging. *

Mark only one oval.

	1	2	3	4	5	
Stro	◯	◯	◯	◯	◯	Strongly agree

10. Sustainable packaging plays a critical role in my overall satisfaction with a product. *

Mark only one oval.

	1	2	3	4	5	
Stro	◯	◯	◯	◯	◯	Strongly agree

11. My purchase decisions are significantly influenced by the sustainability of the packaging. *

Mark only one oval.

	1	2	3	4	5	
Stro	◯	◯	◯	◯	◯	Strongly agree

Awareness of Sustainable Packaging

Instruction: Please read each question carefully and provide the information by placing a TICK(/) in the box given.

12. I am aware of the concept of sustainable packaging and its environmental benefits. *

Mark only one oval.

	1	2	3	4	5	
Stro	◯	◯	◯	◯	◯	Strongly agree

13. I understand the difference between traditional packaging and sustainable packaging (e.g., recyclable, compostable). *

Mark only one oval.

	1	2	3	4	5	
Stro	◯	◯	◯	◯	◯	Strongly agree

14. I am familiar with how sustainable packaging can reduce environmental impact. *

Mark only one oval.

	1	2	3	4	5	
Stro	◯	◯	◯	◯	◯	Strongly agree

15. I know that some sustainable packaging options include features like smart technology to enhance their environmental benefits. *

Mark only one oval.

	1	2	3	4	5	
Stro	◯	◯	◯	◯	◯	Strongly agree

Perceived Environmental Impact

Instruction: Please read each question carefully and provide the information by placing a TICK(/) in the box given.

16. I perceive sustainable packaging as a more environmental friendly option compared to traditional packaging. *

Mark only one oval.

	1	2	3	4	5	
Stro	◯	◯	◯	◯	◯	Strongly agree

17. I feel that using sustainable packaging helps in conserving natural resources. *

Mark only one oval.

	1	2	3	4	5	
Stro	◯	◯	◯	◯	◯	Strongly agree

18. I believe that sustainable packaging has a positive impact on reducing waste. *

Mark only one oval.

	1	2	3	4	5	
Stro	◯	◯	◯	◯	◯	Strongly agree

19. I think it is important that sustainable packaging reduces the carbon footprint of the product. *

Mark only one oval.

	1	2	3	4	5	
Stro	◯	◯	◯	◯	◯	Strongly agree

Sustainable Packaging with Smart Function

Instruction: Please read each question carefully and provide the information by placing a TICK(/) in the box given.

20. I consider packaging functionality frequently in my purchase decisions. *

Mark only one oval.

	1	2	3	4	5	
Stro	◯	◯	◯	◯	◯	Strongly agree

21. I prefer packaging that includes features designed to extend the shelf life and maintain the quality of the product. *

Mark only one oval.

	1	2	3	4	5	
Stro	◯	◯	◯	◯	◯	Strongly agree

22. The ability of smart packaging to monitor product's condition (e.g. freshness) is important to me when making purchasing decisions. *

Mark only one oval.

	1	2	3	4	5	
Stro	◯	◯	◯	◯	◯	Strongly agree

23. I prefer packaging that includes connected features to provide additional product information or interactive experience. (e.g. QR code, NFC code) *

Mark only one oval.

	1	2	3	4	5	
Stro	◯	◯	◯	◯	◯	Strongly agree

24. I prefer sustainable packaging includes multiple features (e.g. extend shelf life, monitor product's condition, connected features) *

Mark only one oval.

	1	2	3	4	5	
Stro	◯	◯	◯	◯	◯	Strongly agree

Cost Perception

Instruction: Please read each question carefully and provide the information by placing a TICK(/) in the box given.

25. I am willing to pay more money for products that use sustainable packaging. *

Mark only one oval.

	1	2	3	4	5	
Stro	◯	◯	◯	◯	◯	Strongly agree

26. The cost of sustainable packaging influences my decision to purchase products. *

Mark only one oval.

	1	2	3	4	5	
Stro	◯	◯	◯	◯	◯	Strongly agree

27. I am willing to pay more for products that use smart packaging with sustainable materials. *

Mark only one oval.

	1	2	3	4	5	
Stro	◯	◯	◯	◯	◯	Strongly agree

28. The added cost of smart packaging is justified by the benefits it provides. *

Mark only one oval.

	1	2	3	4	5	
Stro	◯	◯	◯	◯	◯	Strongly agree

29. The cost of smart packaging influences my decision to purchase products. *

Mark only one oval.

	1	2	3	4	5	
Stro	◯	◯	◯	◯	◯	Strongly agree

30. I weigh the cost of smart packaging against the perceived benefits it offers. *

Mark only one oval.

	1	2	3	4	5	
Stro	◯	◯	◯	◯	◯	Strongly agree

Section C: Demographic Profile

Instruction: Please read each question carefully and provide the information by placing a TICK(/) in the box given.

31. Gender *

Mark only one oval.

◯ Male
◯ Female

32. Age *

Mark only one oval.

- 18-20
- 21-23
- 24-26
- 26 above

33. Faculty *

Mark only one oval.

- M. Kandiah Faculty of Medicine and Health Sciences (MK FMHS)
- Lee Kong Chian Faculty of Engineering and Science (LKC FES)
- Faculty of Accountancy and Management (FAM)
- Faculty of Creative Industries (FCI)
- Centre for Foundation Studies (CFS)(in Arts)
- Centre for Foundation Studies (CFS) (in Science)

34. Where are you from? *

Mark only one oval.

- Perlis
- Kedah
- Penang
- Perak
- Selangor
- Negeri Sembilan
- Melaka
- Johor
- Kelantan
- Terengganu
- Pahang
- Kuala Lumpur
- Putrajaya
- Sabah
- Sarawak
- Other: _____

Appendix 3.2: Ethical Clearance Approval Official Letter

Re: U/SERC/78-352/2024

9 September 2024

Dr Fitriya Binti Abdul Rahim
Head, Department of International Business
Faculty of Accountancy and Management
Universiti Tunku Abdul Rahman
Jalan Sungai Long
Bandar Sungai Long
43000 Kajang, Selangor

Dear Dr Fitriya,

Ethical Approval For Research Project/Protocol

We refer to your application for ethical approval for your students' research project from Bachelor of International Business (Honours) programme enrolled in course UKMZ3016. We are pleased to inform you that the application has been approved under Expedited Review.

The details of the research projects are as follows:

No.	Research Title	Student's Name	Supervisor's Name	Approval Validity
1.	Strategic Approaches to Enhance Consumer Engagement and Traction Through Livestreaming Content: A Comparative Analysis of Effective Tactics and Best Practices	Adeline Kong Qing Qing	Pn Ezatul Emilia Binti Muhammad Arif	9 September 2024 – 8 September 2025
2.	Factors Influencing Customers Acceptance of Malaysian Traditional Bank's Digital Channels	Chan Huey Teng	Dr Tee Peck Ling	
3.	Relationship Marketing Affecting the Customer Experience in Using AI-Chatbot	Chan Pei Yee	Dr Yeong Wai Mun	
4.	Factors that Influence Employee Performance in the Workplace	Chen Kar Him	Dr Komathi a/p Munusamy	
5.	Social Media Advertising Format that Affect Consumer Behaviour in Malaysia	Cheong Yi Qian	Dr Fok Kuk Fai	
6.	Consumer Intentions to Switch Accommodations from Traditional Hotels to Airbnb	Chia Rong Wei	Dr Law Kian Aun	
7.	Engulfed by Recommendation Systems: Walking Away Empty-handed Becomes a Challenge	Chin Kai Ning	Pn Ezatul Emilia Binti Muhammad Arif	
8.	The Interrelations Between Artificial Intelligence (AI) Usage and Academic Performance	Chin Wie Jane	Dr Low Mei Peng	
9.	Factor Affecting University Students' Behavioural Intention to Use ChatGPT for Academic Purpose	Chock Yee Fai	Pn Farida Bhanu Binti Mohamed Yousoof	
10.	The Impact of ESG Initiatives on Green Product and Consumer Purchase Intentions	Choi Yoon Qi	Dr Foo Meow Yee	
11.	Factors Influencing Gender Entrepreneurial Intention Among Malaysian Undergraduate Students	Chong Chean You	Dr Kalaivani a/p Jayaraman	
12.	The Influence of Technological Infrastructure on the Success of Digital Reading Platforms Globally Among Students	Chong Li Xian	Dr Komathi a/p Munusamy	

No.	Research Title	Student's Name	Supervisor's Name	Approval Validity
13.	The Impact of Social Sustainability Awareness on Consumer Buying Behavior	Fang Yu Mei	Dr Komathi a/p Munusamy	9 September 2024 – 8 September 2025
14.	The Effect of Social Media Influencer Marketing on the Purchase Intention of Young Consumers in the Skincare Product Industry	Foh Zhi Hui	Ms Goh Poh Jin	
15.	University Student's Intention to Adopt Mobile Payments in Malaysia	Foo Yong Yi	Pn Farida Bhanu Binti Mohamed Yousoof	
16.	Modernisation and Transformation in SMEs: A Case Study Exploring Owner Perspectives on Process Transformation and Technological Adaptation	Grace Lim Wei Qi	Mr Lee Yoon Heng	
17.	Understanding the Influence of Greenwashing on Green Brand Equity and Green Purchase Intention Among Electric Vehicle Consumers in Klang Valley	Heng Xian Wei	Dr Tan Pei Meng	
18.	Adoption of Digital Marketing on SME Service Sector in Klang Valley	Jordan Wue Bin Hassan Wue	Ms Puvaneswari a/p Veloo	
19.	Exploring Determinants of Malaysian Purchase Intention for Electric Vehicles	Joyce Yap Jie Ni	Dr Malathi Nair a/p G Narayana Nair	
20.	Sustainable Shopper: Linking ESG with the Shopping Carts	Julia Look Hui Sian	Dr Abdullah Sallehhuddin Bin Abdullah Salim	
21.	Investigating Influential Factors on Female Consumers' Purchase Behavior or Organic Perfumes in Malaysia	Kang Karen	Dr Ooi Bee Chen	
22.	Factors Influencing Consumer Purchase Intention Towards Green Household Products	Kok ZiLi	Dr Ooi Bee Chen	
23.	Winning in Cross-border E-commerce: Factors That Influence Strategic Platform-based Product Selection Among Sellers	Lai Kah Shen	Pn Ezatul Emilia Binti Muhammad Arif	
24.	Employee Retention's Impact Factors Within the Retail Industry	Lee Yee Hong	Dr Foo Meow Yee	
25.	Factors Influencing the Employee Turnover Rate Among Fresh Graduate Employees	Leong Weng Kent	Dr Kalaivani a/p Jayaraman	
26.	The Factors Influencing the Purchase Intention of Electric Vehicles Among Malaysian Young Adults	Lew Hui Ching	Dr Foo Meow Yee	
27.	Exploring Factors Influencing Customer Loyalty in Malaysia's Traditional Coffee Shop (Kopitiam)	Lew Zhi Qing	Dr Malathi Nair a/p G Narayana Nair	
28.	Green Purchase Intention Towards Reusable Shopping Bag in Malaysia	Lim Khang Xian	Ms Tai Lit Cheng	
29.	What Type of E-commerce Advertising Method Impact Customer Purchase	Lim Qi Yi	Pn Ezatul Emilia Binti Muhammad Arif	
30.	Unlocking Cross-Border Growth: Exploring Digital Free Trade Zones' Impact on International Trade	Lim Ying Ze	Pn Ezatul Emilia Binti Muhammad Arif	
31.	Consumer Behavior Trends and Preferences in the Malaysia Car Spare Parts Market: A Case Study of Perodua Bezza	Loh Eng Kang	Dr Fok Kuk Fai	
32.	Impact of Sustainable Packaging on Consumer Buying Behaviour in Malaysia	Loh Yan Min	Dr Fok Kuk Fai	
33.	Explicating the Influence of Artificial Intelligence (AI) Literacy on Employee Performance	Loke Li Ying	Dr Low Mei Peng	
34.	Leveraging Artificial Intelligence (AI) Competencies for Organisational Performance	Loke Xin Yu	Dr Low Mei Peng	
35.	The Influence of Culture on Consumer's Intention to Purchase Personalized Products	Loo Ci Ting	Dr Choo Siew Ming	
36.	Exploring The Financial Benefits and Risks of Allocating Additional Income Towards Investment Opportunities	Loo Su Yu	Dr Choo Siew Ming	
37.	Factors Influencing Consumer's Purchase Behaviour Towards Organic Food Among Malaysian University Students in Klang Valley	Low Chan Guan	Dr Ooi Bee Chen	
38.	Adoption AI in Logistics Industry: Improved Efficiency and Fault Tolerance	Low Sam Yee	Mr Khairul Anuar Bin Rusli	

No.	Research Title	Student's Name	Supervisor's Name	Approval Validity
64.	The Connection Between Gig-Economy Employees and Personal Well-Being	Yu Kay Ciek	Dr Law Kian Aun	9 September 2024 – 8 September 2025
65.	Role of Brand Communities in Building Brand Loyalty	Yuvarani a/p Suresh	Dr Komathi a/p Munusamy	

The conduct of this research is subject to the following:

(1) The participants' informed consent be obtained prior to the commencement of the research;

(2) Confidentiality of participants' personal data must be maintained; and

(3) Compliance with procedures set out in related policies of UTAR such as the UTAR Research Ethics and Code of Conduct, Code of Practice for Research Involving Humans and other related policies/guidelines.

(4) Written consent be obtained from the institution(s)/company(ies) in which the physical or/and online survey will be carried out, prior to the commencement of the research.

Should the students collect personal data of participants in their studies, please have the participants sign the attached Personal Data Protection Statement for records.

Thank you.

Yours sincerely,

Professor Ts Dr Faidz bin Abd Rahman
Chairman
UTAR Scientific and Ethical Review Committee

c.c Dean, Faculty of Accountancy and Management
Director, Institute of Postgraduate Studies and Research