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BSc. Business Administration and Management

Thesis

Green Supply Chain Management (GSCM): Strategies for Sustainability and Environmental Responsibility

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INTRODUCTION

Supply Chain Management (SCM) serves as the backbone of modern commerce, represent the link between suppliers, institutions, and customers in order to meet the needs of the final consumer with the right quality, the right price, the right time, and the right place, starting from obtaining raw materials and production requirements to distributing and delivering the final products to consumers in the appropriate conditions. However, due to the scarcity of resources and the rise of voices calling for the necessity of rationalizing their exploitation, preserving the rights of future generations, and protecting the environment, the concept of supply chain management has developed to keep pace with these changes to emerge what is known as green supply chain management, which focuses on integrating the environmental dimension into all traditional supply chain management practices.

The growing urgency of environmental issues like climate change and resource reduction has significantly impacted the elaboration of Green Supply Chain Management. Societal recognition of these challenges has dragooned businesses to borrow environmentally friendly practices across their entire supply chain. This shift represents a model change from ordinary, linear supply chains focused particularly on cost efficiency, to circular and sustainable supply chains prioritizing environmentally responsible behavior and the well-being of the stakeholders.

Green supply chain management is a general term for multiple initiatives that aim to reduce a company's environmental impact and helps creating a more harmonious relationship between its operations and the environment. We count several initiatives promoting waste reduction, energy efficiency, sourcing renewable resources, and sustainable packaging. This last focuses on eco-friendly designs and materials, going beyond simply minimizing waste – it serves as a direct channel of contact with consumers, shaping their perception of the level of a business's environmental commitment.

Sustainable packaging stands as a pilar of Green Supply Chain Management (GSCM), serving

as a concrete manifestation of environmental responsibility and a two ways communication channel with consumers. In recent years, consumer preferences have strongly shifted towards goods that are packaged in materials perceived as ecofriendly such as biodegradable sacs, recycled wrappings, and other alternatives. This showcases the fast-growing awareness of consumers in regards of the impacts of packaging waste on the environment, as well as aspiring to align personal values. Consequently, companies that initiated adopting sustainable packaging into their supply chains stand to not only reduce their emissions footprint but also enforce consumer trust and loyalty to the brand, thereby strengthening their competitive position in the market.

As sustainability is becoming part of the definition of corporate social responsibility, understanding the impact of green supply chain management, -particularly on the field of green packaging- on customer behaviour has attracted significant academic and industrial interest. Customers, being the major stakeholder, increasingly consider the company's environmental performance when deciding on purchases. They are interested in the price to quality ratio of products as well as the ecological footprint of the supply chains producing them. Therefore, it is of high importance for organizations to understand the relationship between GSCM practices, including sustainable packaging initiatives, and customer behaviour to effectively meet market needs and improve their market share.

The hypothesis covered by this research defends that integrating sustainable packaging practices into existing and new supply chains strengthens environmental responsibility, reduces ecological footprint, and significantly increases consumer trust, consequently improving the reputation and competitiveness of the corporation. By investigating the core between sustainable packaging, supply chain management, and consumer behaviour, this research seeks to clarify the mechanisms through which environmentally responsible practices are able to lead to positive outcomes for businesses and the environment as well.

Within this framework, the main thesis question leading this research is presented as: **How can sustainable packaging practices throughout the supply chain create a competitive advantage for businesses while influencing consumer behavior and purchasing decisions?**

Here are the main objectives of the study:

Exmine how using sustainable packaging in supply chains can reduce environmental harm and give businesses an advantage over competitors.

To explore consumers awarness about eco-friendly packaging and if it affects their choices, their trust in brands, and their loyalty to them.

Also to examing how induviduals are familiar with sustainable packaging and if that makes them willing to spend more on sustainable products.

CHAPTER 1: LITERATURE REVIEW

Supply Chain Management.

Supply chain management is an important part of today's business practices and has changed a lot over time, this idea started with the first forms of buying and selling, where traders had to organize how goods were moved from where they were made to the marketplace. With the rise of industrialization in the 18th and 19th centuries, it became more complicated to manage different parts and the process of getting products to buyers, which led to more organized methods. In the middle of the 20th century, and thanks to global trade and new technologies, supply chain management turned into a crucial and distinct field, aimed at improving efficiency and cutting costs.

Martin Christopher described supply chain management as the oversight of the movement of goods and services, he explains that it covers all the steps involved in taking a product from the initial idea to the final user, and this includes the processes of sourcing materials, purchasing, manufacturing, managing inventory, transporting, and delivering the product. (Christopher, 2016)

Kenneth Lysons and Robert Slack define supply chain management as the organized management of materials, information, and finances moving in both directions from suppliers to customers, they emphasize that this includes the flow of products and services throughout the entire process. (Slack, 2016)

When we talk about what a supply chain is, it can sound pretty complicated, It's simply a network that includes all the steps involved in getting a product from where it's made to the customer's hands. This could mean a bunch of things: the people working on it, the activities needed to move it, the information exchanged to make things go smoothly, and the actual physical moving of goods, nowadays, this even includes handling products when they get returned.

Green Supply Chain Management: An Overview

Environmental awareness is in a quick rise throughout the whole world, businesses are actively and in a progressive way for manner to minimize their impact on the global ecology. Here where Green Supply Chain Management steps in. Going beyond and further than traditional supply chain management by integrating environmentally responsible practices throughout the entire Life cycle of the product.

The seed of Green Supply Chain Management is watered by the higher common recognition of the environmental impacts related to traditional supply chain practices and the need for businesses to adopt more sustainable approaches to their operations. (David B. Grant, 2017)

Green supply chain management can be defined as well as a strategic approach to designing, sourcing, producing, and distributing goods and services in an environment friendly way. It starts with integrating environmental considerations into the integrity of aspects of the supply chain, from raw material extraction to a final product. Green supply chain management aims to significantly lower the environmental effect of operations by reducing non-renewable resource consumption, bringing down waste generation, and adopting renewable energy sources. This approach considers not only the direct environmental effects of operations but also the general ecological footprint of the entire supply chain. (Gupta, 2011)

Concepts of Sustainable Packaging

Materials used in packaging make a significant part of our lives, serving an important role in preserving products during handling, transportation, and storage throughout the various industries, including the supermarket business, restauration businesses, and pharmaceutical industry. This crucial component of the supply chain contributes to the protection of goods yet facilitating transportation and displaying essential consumer information. (Jedlicka, 2010)

Sustainable Packaging

Sustainable packaging aims at the minimization of the environmental impact of packaging throughout its whole lifecycle, from design and production to the life-end. It is divided to the following principles:

Selection of materials:

As previously noted, sustainable packaging focuses on using materials that have a smaller environmental impact. This includes favoring recycled content over materials that are non-renewable or difficult to sustain. Also, looking into biodegradable options such as mushroom mycelium, bamboo, or cellulose-based materials offers a natural choice appropriate for many products. In conclusion, materials that degrade easily help form a closed-loop system particularly beneficial for organic and degradable products. (Auras, 2008)

Life Cycle Assessment:

A life cycle assessment is a tool to check how different packaging options affect the environment. It considers everything from how raw materials are gathered and made into products to how they're transported and eventually reach consumers. This assessment helps us see the total environmental impact of our packaging choices. Knowing this, we can make smarter decisions, focus on reducing our negative impacts, and find chances to do better. When companies use life cycle assessments, they can pick packaging methods that are not only better for the planet but also efficient in using resources throughout the supply chain. According to the International Organization for Standardization (ISO), Life Cycle Assessment is defined as the compilation and evaluation of the inputs, outputs, and the potential environmental impacts of a product system throughout its life cycle. (ISO 14040:2006)

The United States Environmental Protection Agency defines Life cycle assessment as a method for assessing the environmental aspects and potential impacts of a product, process, or service by compiling an inventory of energy and material inputs, evaluating environmental impacts, and interpreting results to identify opportunities for reducing environmental burdens. (Webster, 2015)

Figure 1: Model of the life cycle

Picturing of the life cycle of a plastic water bottle

Raw Material Extraction: the life cycle of a plastic bottle of water starts with the extraction of raw materials, which are normally petroleum-derived polymers for example polyethylene terephthalate . life cycle assessment would assess the environmental implications of petroleum extraction, which include energy use, greenhouse gas emissions, and habitat disturbance.

Manufacturing: when the raw components are obtained, they are processed to create the plastic bottles. This stage includes energy-intensive procedures including polymerization, moulding, and shaping. life cycle assessment would examine energy use, emissions, and waste creation throughout manufacturing, taking into account water usage and chemical inputs.

Packaging and Distribution: Once manufactured, the plastic bottles are packed for distribution. This includes factors like packaging materials like cardboard boxes and shrink-wrap, transportation such as fuel usage, vehicle emissions, and storage. Life Cycle Assessment would assess the environmental consequences of packing materials, transportation distances, and logistics.

Product Use: During the product use phase, consumers buy and drink bottled water. Life Cycle Assessment would assess the environmental consequences of consumer behaviour, such as disposal patterns (e.g., recycling, landfill), energy consumption associated with refrigeration, and potential leakage or contamination from discarded bottles.

End-of- life : as soon as plastic water bottles reach the end of their lifestyles cycle, they're either disposed of or recycled. Life cycle assessment could compare the environmental impact of numerous end-of- life alternatives, consisting of landfilling, incineration, and recycling. This includes considerations for waste control, energy healing, and material reclamation costs.

Waste Reduction:

Waste reduction makes the core shape of sustainable packaging, focusing on minimizing waste generation through different and various strategies. We can mention:

Lightweighting: is the practice of using less material to construct packaging while still providing sufficient safety for the goods inside. It's an important strategy for sustainable packaging because it immediately minimises the environmental impact of packaging manufacture.
Example: Coca-Cola's PlantBottle, made partially from plant-based materials, is a lightweight alternative to traditional Polyethylene Terephthalate plastic bottles, it reduces the use of fossil fuels and lowers carbon emissions during production. (Report, s.d.)

Right-sizing: is the practice of optimising packaging dimensions to properly fit the goods they contain. This saves wasted space and reduces the amount of material used, which contributes greatly to sustainable packaging goals.
For example Amazon's Frustration-Free Packaging program redesigns packaging to eliminate excess space and reduce overall package size, leading to fewer transportation trips and lower environmental impact. (Amazon, s.d.)

Elimination of unnecessary components: refers to the practice of designing and producing packaging that minimizes unnecessary components, such as excess packaging layers or non-

recyclable materials, that contribute to waste production., this strategy directly reduces waste generation and promotes a more sustainable packaging approach.

For example Lego company has pledged to eliminate plastic packaging from all of its goods by the end of 2025 after realising that it is not a sustainable material. Their switch from individual plastic bags to paper bags made of recycled material is a big step towards achieving this aim. With its solution, superfluous plastic waste is eliminated, functionality is maintained, and ethical recycling practices are encouraged by means of explicit consumer instruction.

Exploring further, we find designing packaging for recyclability and supporting recycling infrastructure make a crucial part of waste reduction efforts. Sustainable packaging contributes to the circular economy, reducing the reliance on virgin materials and minimizing the environmental impact of packaging waste, by enabling materials to be recovered and reused effectively.

Circular Economy Principles :

It guide sustainable packaging practices towards creating a closed circular system where resources are used efficiently. This showcases how important it is to design packaging that can be easily recycled or repurposed at the end of its initial utility. When prioritizing materials that are recyclable or compostable, businesses contribute to reducing the environmental impact of the waste produced from their packaging. We encounter further with the integration of recycled content in packaging materials promotes resource conservation and reduces reliance on virgin materials. The advocating of circular economy principles also involves supporting a loop system where packaging materials are continually recycled and reintegrated into production processes, pushing further the line of the need for new raw materials and fostering a more sustainable and resource-efficient approach to packaging. (Webster, 2015)

Benefits of Sustainable Packaging in Supply Chain Management

The implementation of sustainable packaging practices within supply chain management opens doors on several opportunities, count for example:

Reduction of the environmental impact:

Green packaging helps preserving natural resources, cut down on waste production, and lower the emission of greenhouse gas. When using eco-friendly materials and optimizing packaging designs, companies can significantly reduce their carbon footprint, contributing positively to the environment.

Cost-Efficiency:

sustainable and green packaging practices can result in cost savings through various ways. Lighter and smaller packaging reduces transportation expenses, while packaging dimensions can be optimized to fit more products per shipment, thereby reducing storage and shipping costs. We cannot go without mentioning that utilizing recycled materials proves to be more economical than using new materials.

Strengthening Brand Image and Consumer Engagement:

With the increasing demand for environment friendly goods, adopting sustainable and green packaging not only aligns with consumer values but also promotes a better brand reputation. Businesses that prioritize sustainability can target and attract consumers who share the green view of the future, stand out in the market, and make good use of long-term loyalty.

Ensuring Regulatory Compliance:

worldwide governments are engaged massively in the implementation of regulations that are of a strict nature when it comes to packaging waste and the sustention of the environment. As we are embracing and advocating green packaging practices, companies can proactively adhere to existing and future regulations, avoiding potential penalties and keeping their reputation safe.

Integrating Sustainable Packaging in Supply Chain Management

Some of these tactics that businesses can think about adopting while trying to incorporate sustainable packaging practices into supply chain management might include:

Cooperation with Suppliers:

Have discussions with suppliers regarding environmentally friendly packaging options. Instruct them to use environmentally friendly products and procedures and include explicit sustainability standards in supplier agreements and assessments.

Design with sustainability in mind.

Reducing environmental impact in packaging design requires incorporating sustainability. Businesses can make sure that sustainability factors are considered right from the start by incorporating design early in the product development process. Limiting environmental damage while promoting local economies is achieved by giving priority to materials that are renewable recyclable and available locally. Furthermore, packaging that is simple to disassemble for recycling or repurposing encourages resource efficiency and circularity which strengthens sustainability initiatives.

Supply Chain Enhancement:

Optimizing supply chain logistics is crucial for lowering wasteful packaging and raising productivity. Through operational simplification companies can minimize superfluous packaging materials and lower transportation-related carbon emissions. To reduce costs and improve the environment working with logistics providers allows for the investigation of creative solutions like reusable packaging effective pallet configurations and optimized transportation routes.

Engagement and Education of Consumers:

Encouraging responsible consumption and disposal habits among consumers requires the generalization of awareness among them about sustainable packaging practices. With the use of educational packaging materials recycling symbols and clear labeling businesses can

increase public awareness of the value of sustainable packaging. Customers can be directly engaged and encouraged to take an active role in sustainability initiatives by using interactive initiatives like mobile apps or QR codes. This will eventually result in a more environmentally conscious consumer base.

Innovation and continuous improvement:.

Encouraging sustainable packaging initiatives requires ongoing evaluation and creativity. Businesses can identify areas for improvement and implement targeted interventions by routinely monitoring the sustainability performance of packaging materials and processes. Keeping up with new developments in technology and creative solutions helps companies stay ahead of the curve and implement cutting-edge procedures that have the least negative effects on the environment. Additionally funding R&D projects that concentrate on packaging and alternative materials supports continuous efforts to meet sustainability targets and promote constructive change in the sector. (Ottman, 2011)

Sustainable packaging fields of application:

Sustainable packaging is applied in a broad array of industries and scopes because environmental sustainability gains more importance for both the company and the customer who seeks an alternative to regular packing materials. These are some of the major scopes where sustainable packaging commonly finds its application:

Food and Beverage Industry:

This sector is one of the largest industries that uses packaging the most, and sustainable packaging solutions emphasise the use of renewable resources, higher recycling rates, and less material use, packaging that is biodegradable and composed of plant-based ingredients, such as sugarcane or cornflour, is gaining popularity., ompared to conventional plastics, these materials break down more quickly and have less negative environmental effects, in addition reusable containers and edible packaging are two further cutting-edge waste reduction strategies that are gaining popularity.

Pharmaceuticals:

In this sector, sustainable packaging is essential for worker safety and health as well as the environment. Cutting back on packaging can help reduce waste, but it must be balanced with the need to keep sensitive medicines safe from deterioration or infection, therefore biodegradable packing peanuts, recyclable blister packs, and paper-based solutions that provide adequate protection while leaving less of an environmental impact are being investigated by numerous companies.

Electronics

The electronics sector faces obstacles because its goods are complex and require highly protective packaging, the sustainable practices include packaging made from recyclable materials and designs that are easy to deconstruct for recycling, some companies are also implementing minimalist packaging tactics, such as removing extraneous boxes and filler materials and employing environmentally friendly inks and adhesives.

Cosmetics & Personal Care

This industry is very sensitive to customer perceptions and need for sustainability, many cosmetic companies are converting to recycled materials or producing packaging that is easily recyclable or reused, in addition glass and aluminium are preferable to single-use plastics because they can be recycled indefinitely without losing quality, also refill kiosks for shampoos and lotions are becoming more prevalent in supermarkets, encouraging customers to reuse their containers. (LEE, 2020)

Clothing and Style

Sustainability initiatives in the fashion sector concentrate on lessening the impact of retail and shipping packaging, recycled materials and biodegradable bags are often utilised, and some innovative businesses have begun utilising packaging that consumers may return to the

merchant to be reused, also utilising QR codes rather of physical labels to offer product information is another trend that is cutting down on paper usage.

Retail and E-commerce

The rapid increase in online shopping—soaring skyward during the pandemic—has even brought the focus on the sustainable packaging of the retail and e-commerce sectors to another level. Smart packaging approaches are also being turned to by many companies, from right-sizing packages to fit products more precisely, reducing both material waste and the carbon footprint associated with shipping goods. Examples include innovations such as the use of biodegradable air pillows and organically derived materials instead of traditional packing peanuts and bubble wrap. Further commitments to reusable packaging include inviting consumers to return or reuse shipping materials, making them as easy to handle; an emphasis on using recycled and recyclable materials helps foster a circular economy in packaging. (LIOBIKIENĖ, 2016)

Agriculture and Horticulture

In this sector the sustainable packaging is become s for reducing environmental impacts, thus, biodegradable pots have been developed, which can be planted in the soil as they are without adding to the plastic waste. Also transitioning to bulk packaging methods for products such as grains and seeds also reducing the use of packaging per product unit. Furthermore, with an effort to sensitize the issue, the adoption of packaging fresh produce using recyclable and compostable materials and innovative edible packaging solutions helps avoid wastage of perishables by extending the shelf life. This also includes reducing dependency on traditional packaging. These practices underline an increasing commitment to sustainability that resonates well with both moral and environmentalists

Packaging Innovations and Emerging Technologies

The packaging industry is changing quickly with new and emerging technologies driving the way towards efficiency, sustainability, and consumer focused designs, these advancements cover a variaty of areas, from the choice of materials for packaging to the incorporation of cutting-edge digital technologies and creative manufacturing methods, let's take a closer look at each of these areas:

Creative Packaging Designs:

Designers are getting super creative and functional with their packaging ideas. For example, making packaging lighter (which they call lightweighting) helps use less material but still keeps everything strong and working well. This doesn't just cut down on waste; it also makes the packages lighter, which helps reduce costs for moving them around and lowers carbon emissions too. (YUEN, 2019.)

Plus, they're focusing a lot on making packaging more user-friendly. Features like easy-to-open seals, packages that can be resealed, and designs that control how much you use, meet the needs of people who want things to be easy and eco-friendly.

Technologies in Packaging:

Digital technologies is transforming packaging with what they call smart packaging. This includes things like sensors, RFID tags, or QR codes that tell you if a product is fresh, real, or where it's been. Smart packaging helps make everything more open and safer, which makes customers trust and stick to a brand. (ELTAYEB, 2010)

Also, there are fun packaging ideas using augmented reality (AR) or custom designs that make shopping more of an experience. Brands use these techs to share unique stories, give personalized info, and stand out from the crowd.

Active and Smart Packaging:

Active and smart packaging is a big step up in the packaging world, adding features that do more than just hold a product. Here's what's happening in active and smart packaging:

- **Active Packaging:**

This kind of packaging actually interacts with what's inside it to make it last longer, stay safe, and keep its quality,it includes cool stuff like oxygen scavengers that take away oxygen to stop food from going bad, or moisture absorbers that keep things dry and safe from mold, also there are tech bits like time-temperature indicators (TTIs) that show how long a product has been stored at certain temperatures, helping you know if it's still good to use. (YADAV, 2017)

- **Smart Packaging:**

Smart packaging uses sensors and data stuff to tell you real-time info about the product's condition. It can track temperature, moisture, and even if the package got banged up in transit. For instance, tags that keep an eye on temperature help make sure things like medicines stay within safe limits.

Smart packaging can also have smart labels or QR codes that let you check out a product's backstory, what's in it, and how sustainable it is, this helps make everything more transparent and builds customer trust.

In general, active and smart packaging not only keeps products fresh and safe, they also give useful info across the supply chain, helping make better decisions and stick to rules. As tech gets better, these kinds of packaging will likely become even more key in making packaging smarter and more sustainable.

3D Printing in Packaging:

3D printing, or additive manufacturing, is making a splash in how packaging is designed and made. It lets brands quickly change designs based on what people want and market trends. Since it's on-demand and can be done locally, 3D printing cuts down on waste and the pollution from traditional making methods. (MIN, 2001)

In conclusion, all these new ideas and tech in packaging are tackling how to be sustainable, functional, and engage customers better. By using sustainable materials, creative designs, digital tech, and 3D printing, companies can make packaging that meets modern needs and helps take care of our planet while making their brand stand out.

CHAPTER TWO: RESEARCH METHODOLOGY

Reminder of the Questions Addressed

This research aims to answer the following questions:

To test the research question, I conducted a survey among 90 individuals from various demographic and ethnic backgrounds. The study made use of a questionnaire to collect primary data, this last is later analyzed using Microsoft excel and SPSS. The results were later displayed in tables with descriptive statistics including frequencies, averages and percentages.

Research Design

This study will employ a quantitative research design, specifically through a self-administered survey on voluntary basis. This method allows for the collection of data at a single point in time from a representative sample of the population made up of 90 individuals. The utilized approach is ideal for gathering insights into awareness among consumer, their preferences, and behaviors related to green packaging.

Data Collection

The self-administered questionnaire is developed to collect quantitative data from the responding participants to easily get data and information in order to understand and explain the facts. The questionnaire is later on shared among Facebook groups of sustainability activists and some of my international friends through various social media platforms. I adopted a sampling method which leads to examining a fraction of the population.

Sample Size

Our target sample size for this study falls at approximately 90 participants. This sample size is sufficient to provide statistically significant results for the analyses, particularly as we are using a descriptive statistical approach.

Data Analysis

Collected quantitative data through the questionnaires will be analyzed using descriptive statistics. This last will be used to summarize the demographic information of the respondents as well as their responses to the survey questions. I must also mention that inferential statistics may be employed to test hypotheses about the relationship between variables, such as the link between sustainable packaging awareness and purchase decisions.

Research Hypotheses.

H1: integrating sustainable packaging practices into a company's supply chain management enhances environmental responsibility.

H1: Consumers are more likely to pay slightly more price for goods when they are aware of sustainable packaging.

CHAPTER THREE: DATA ANALYSIS AND FINDINGS

Green Packaging and Sustainable Supply Chains Survey

This survey aims to understand consumer awareness of sustainable packaging and its influence on purchasing decisions, brand trust, and loyalty within the context of Green Supply Chain Management (GSCM).

Section 1: Demographics

Gender:

Table1: represents the gender of respondents as follows.

Table 1: Gender of respondents

	Your sex is:	***Percentage %***
Female	36	40%
Male	54	60%
Total	90	100%

Source: author's own research, (2024), n= 90

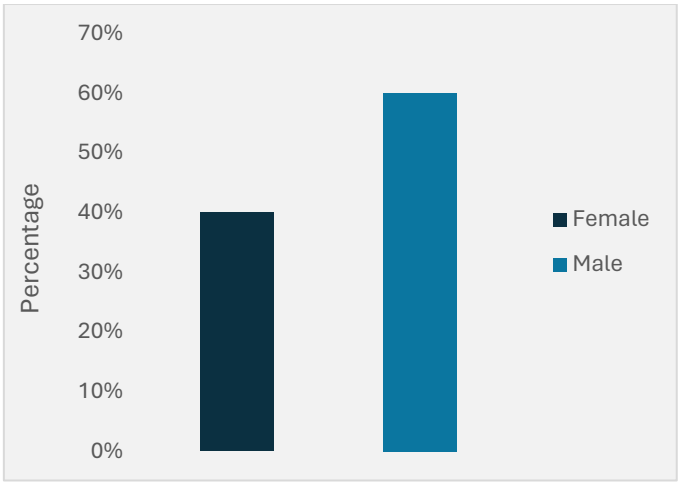

Figure 2: Gender

Source: author's own research, (2024), n= 90

According to the Table 1 and Figure 2, the number of men questioned is 54, the equivalent of a rate of 60%, as for the number of women is 36, which is a percentage of 40%. We can see that more men responded to this questionnaire than women.

Age:

Table 2 represents and figure 3 the different age groups of the population studied as follows.

Table 2: Age groups of respondents

	Your age group is:	Percentage %
Between 18 and 30 years	76	84,45%
Between 30 and 40 years	14	15,55%
Between 40 and 50 years	0	0
Above 50 years	0	0
Total	90	100%

Source: author's own research, (2023), n=90

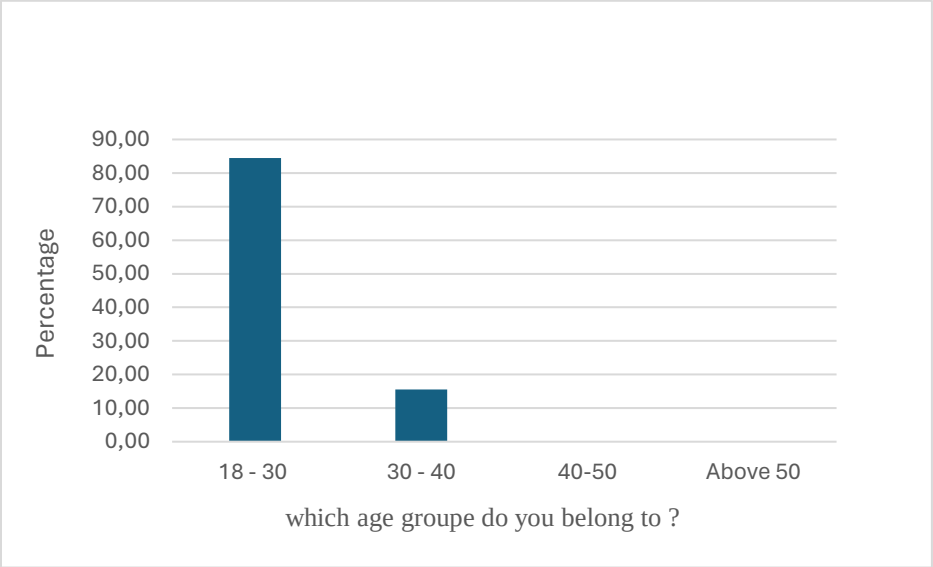

Figure 3: age of group

Source: author's own research, (2024), n= 90

It is remarkable that the people who answered the questionnaire and who are between 18 and 30 years old represented a large part, that is to say a number of 76 the equivalent of a respective rate of 84,45%, followed by people who are between 30 and 40 years old whose number is 14, a rate of 15,55%, the number of people aged between 40 and above 50 was 0.

People between the ages of 18 and 30 were quite receptive to the questionnaire because this age group is more interested in social networks and is fully connected to the virtual world knowing that the questionnaire was not shared. only through social networks (WhatsApp, Facebook...)

Student Status

Table 3 and Figure 4 represent the distribution of individuals who are currently students

Table 3: Are you currently a student?

Are you currently a student ?	*N*	*Percentage %*
Yes	62	68,88%
No	**28**	**31,11%**
Total	**90**	**100%**

Source: ***Author's own research, (2024), n=90***

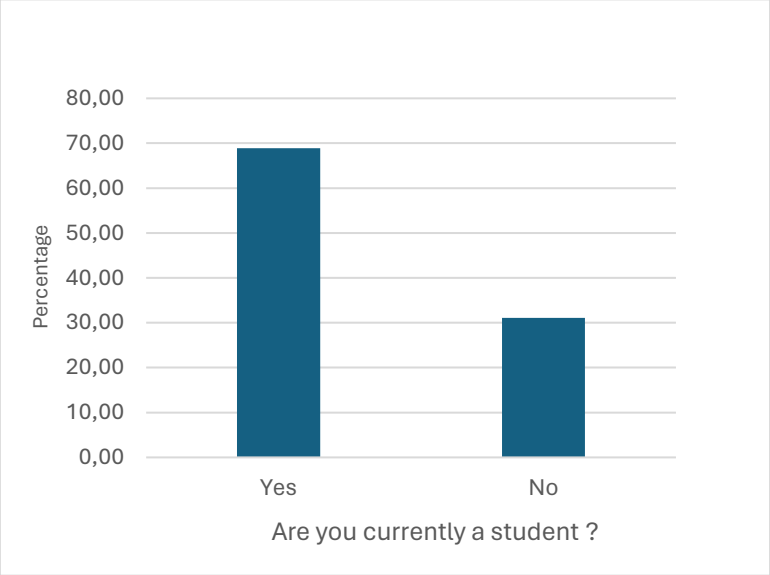

Figure 4: percentage of student status

Figure 4: percentage of student status

Source: ***Author's own research, (2024), n=90***

Table 3 and Figure 4 represent the distribution of individuals who are currently students in a sample of 90 individuals. There were 62 individuals (68,88%) who responded "yes" they are currently a student and 28 individuals (31,11%) who answered "no". However, the majority of the participants were a student.

Employment

Table 4 and figure 5 represent the employment status distribution in a sample of 90 individuals.

Table 4: are you currently employed?

Are you currently employed ?	*N*	*Percentage %*
Yes, Full-time	27	30,0%
Yes, Part-time	56	62,22
No	7	7,77%
Total	90	100.0%

Source: ***Author's own research, (2024), n=90***

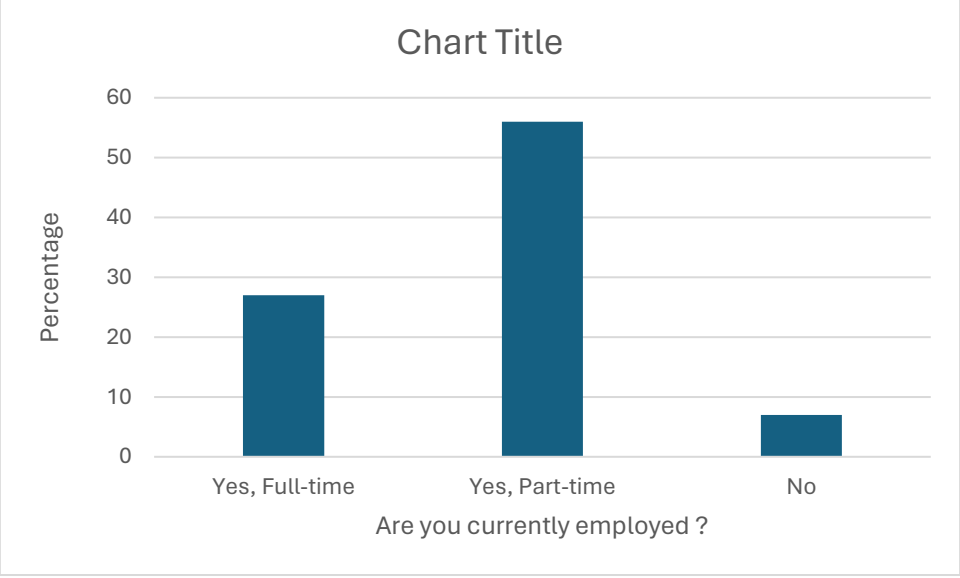

Figure 5: Are you currently emlpoyed?

Source: ***Author's own research, (2024), n=90***

There were 27 individuals (30,0%) who were employed full-time, 56 individuals (62,22%) who were employed part-time, and 7 individuals (7,77%) who were not employed. This show that most of the participants are employed either full-time or part-time.

Place of residence

Table 5 and figure 6 represent the distribution of the country of residence in a sample of 90 individuals

Table 5: WHERE DO YOU LIVE CURRENTLY?

Where do you live currently?	***N***	*Percentage %*
Algeria	5	5,56%
Belgium	2	2,22%
Brazil	1	1,11%
Egypt	2	2,22%
France	4	4,44%
Germany	3	3,33%
Hungary	41	45,56%
Indonesia	1	1,11%
Italy	1	1,11%
Lebanon	1	1,11%
Morocco	18	20,00%
Netherland	2	2,22%
Peru	1	1,11%
Syria	1	1,11%
Tunisia	5	5,56%
Türkiye	2	2,22%
Total	**90**	100,00%

Source: author's own research, (2024), n=90

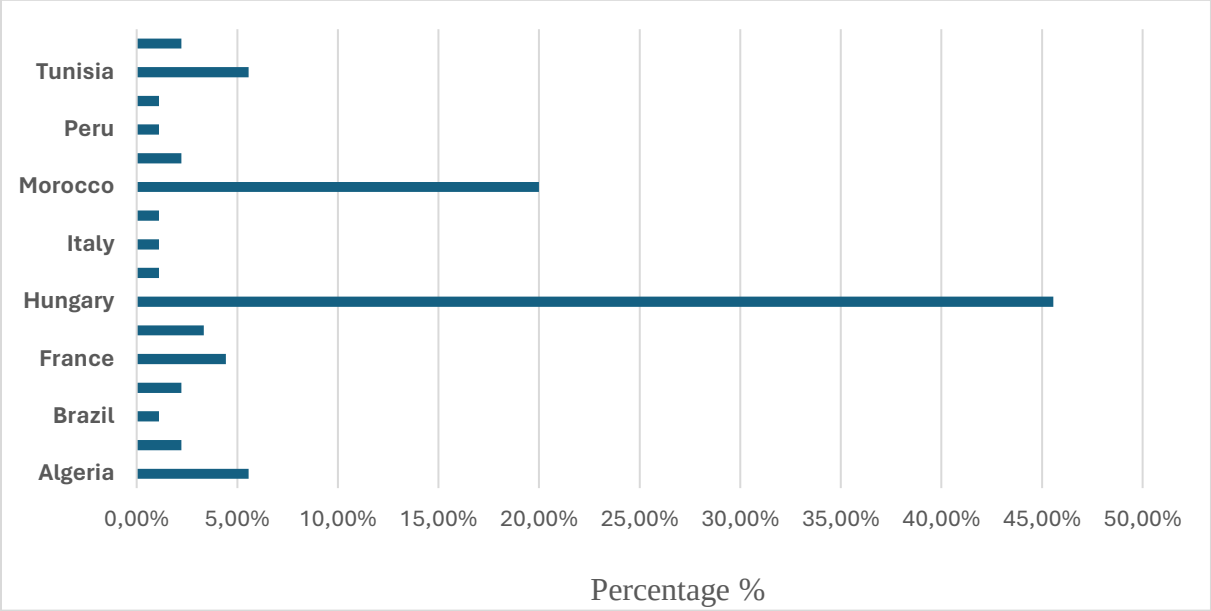

Figure 6: Where do you leave currently?

Source: ***Author's own research, (2024), n=90***

Hungary has the highest frequency (41) and percentage (45,56%) of respondents, followed by Morocco (18 and 20,00%), Algeria and Tunisia (5 and 5,56%), and France (4 and 4,44%). The other countries have less than 4% each.

Section 2: Sustainable Packaging Awareness

Exploring Consumer Familiarity with Sustainable Packaging

The table 6 and figure 7 shows the frequency and percentage of respondents who indicated their levels of familiarity regarding the concept of the sustainable packaging.

Table 6: familiarity with the concept of green supply chain in product purchasing

Question	Very familiar		Somewhat familiar		Not familiar at all	
	N	%	N	%	N	%
How familiar are you with the concept of sustainable packaging?	20	22,22%	35	38,89%	35	38,89%

Source: author's own research, (2024), n=90

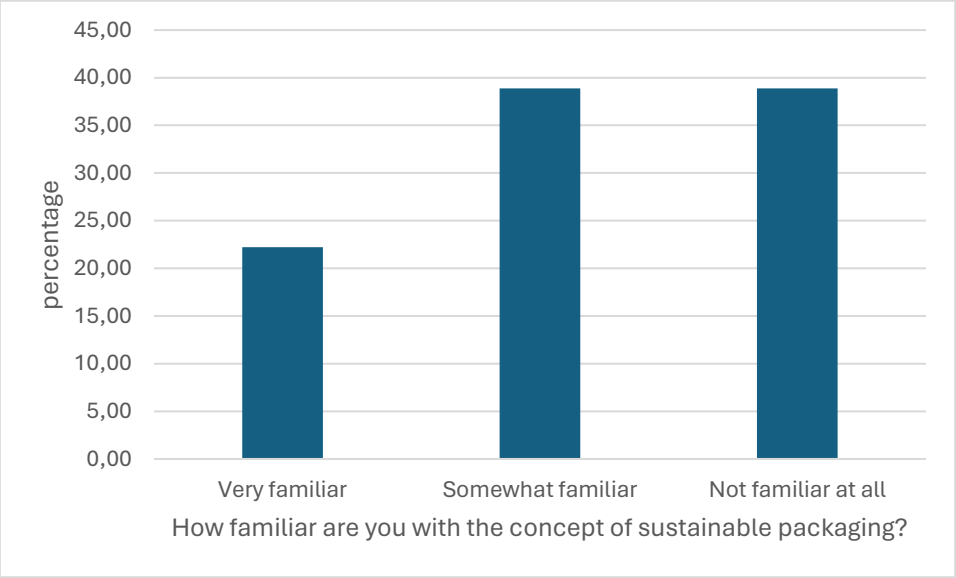

Figure 7: How familiar are you with the concept of sustainable packaging?

Source: ***Author's own research, (2024), n=90***

Out of the total respondents, 22,22% (20) indicate thar are very familiar with the concept of sustainable packaging, and 38,89% (35) are somewhat familiar, while 38,89% (35) are not familiar at all. Overall, the respondents suggest a moderate level of awareness regarding sustainable packaging among the respondents.

Consumer Perspectives on Sustainable Packaging: Assessing Its Importance in Purchasing Decisions

Table 7 and figure 8 depicts the frequency and percentage of respondents indicating the importance of sustainable packaging in their purchasing decisions.

Table 7: Importance of Sustainable Packaging in Purchasing Decisions

Question	Extremely important		Somewhat important		Not important	
	N	%	N	%	N	%
How important is sustainable packaging to you when making purchasing decisions?	35	38,89%	48	53,33%	7	7,78%

Source: author's own research, (2024), n=90

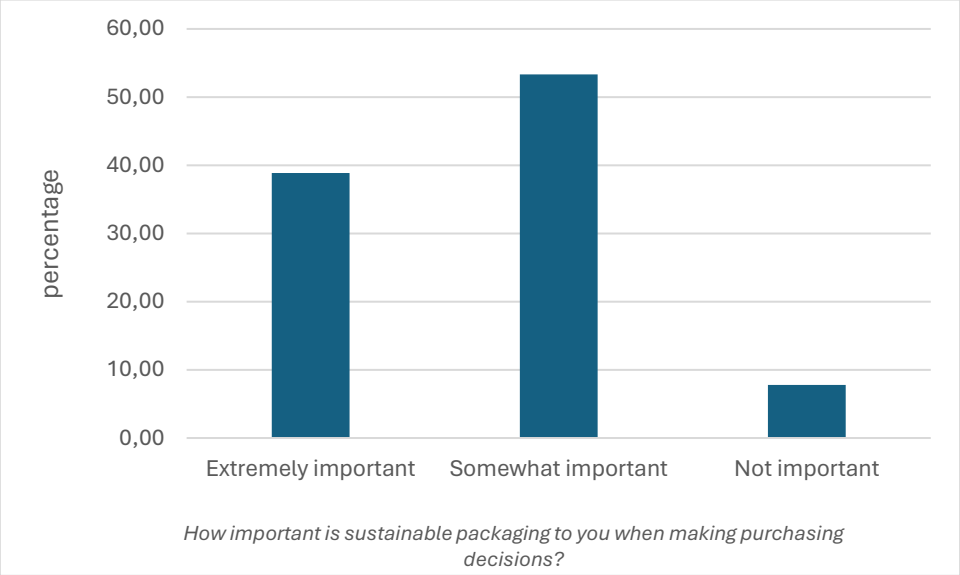

Figure 8: How important is sustainable packaging to you when making purchasing decisions?

Source: Author's own research, (2024), n=90

Out of the total respondents, 38.89% (35) consider sustainable packaging extremely important, 53.33% (48) find it somewhat important, and 7.78% (7) do not consider it important. The majority of respondents, totaling 92.22% (83), indicated that sustainable packaging is important to them, with 38.89% (35) considering it extremely important and 53.33% (48) finding it somewhat important. Only a small minority of 7.78% (7) stated that sustainable packaging is not important to them. The results suggest that respondents are aware of the environmental implications and demonstrate a concern for sustainability by prioritizing environmentally friendly packaging in their purchasing decisions.

The findings of this study carry significant inference for businesses and brands aiming to meet consumer expectations while maintaining competitiveness in the market. companies that integrate sustainable packaging practices throughout their supply chain operations and offer eco-friendly products are better positioned to attract and retain customers who value environmental responsibility. Moreover, businesses that demonstrate a commitment to sustainability may enhance their brand recognition and reputation among consumers.

Exploring Consumer Awareness and Perceptions Regarding Sustainable Packaging Options.

Table 8 summarizes the frequencies and percentages of respondents' familiarity with different sustainable packaging options. Respondents were able to select all options that applied, resulting in a total number of responses exceeding the total number of participants (n=176).

Table 8: Familiarity with Sustainable Packaging Options

Which of the following types of sustainable packaging are you familiar with?		
Type	**N**	**%**
Recycled content packaging (e.g., recycled paper, plastic)	**79**	**33,34%**
Biodegradable packaging (e.g., compostable materials)	**57**	**24,05%**
Reusable packaging	**56**	**23,62%**
Minimalist packaging (reduced material use)	**45**	**18,99%**
Total	**237**	**100**

Source: author's own research, (2024), n=90

Table 8 summarizes the frequencies and percentages of respondents' familiarity with different sustainable packaging options. Respondents were able to select all options that applied, resulting in a total number of responses exceeding the total number of participants (n=176).

Among the total responses. Recycled content packaging was identified as the most popular sustainable packaging type, with 33.33% (n=79) of respondents indicating consciousness.

Following closely are biodegradable at 24.05% (n=57) and reusable packaging at 23.62% (n=56).. Interestingly, minimalist packaging (reduced material use) garnered a strong response (18.99%) despite lower overall awareness, suggesting a high resonance with those familiar with the concept. This indicates a potential for growth in its recognition.

These findings provide crucial details on consumer knowledge of sustainable packaging choices. A sizable proportion of respondents were aware with various sustainable packaging options. Recycled material and biodegradable packaging appeared as popular alternatives, demonstrating that consumers are familiar with these usual procedures. Furthermore, the high selection rate for minimalist packaging shows that adoption will expand as awareness develops. This data presents an opportunity for companies to emphasize the use of recycled content and biodegradable materials in their packaging, catering to existing consumer awareness. Additionally, educating consumers about minimalist packaging can raise awareness and potentially drive its adoption. also there is a need for clear communication strategies for effectively showcasing a company's commitment to sustainable packaging solutions. and by understanding consumer awareness and preferences, companies can strategically implement sustainable packaging practices to gain a competitive edge and cater to a growing environmentally conscious market.

Section 3: Sustainable Packaging and Purchasing Behaviour

Willingness to Pay a Premium for Sustainable Packaging:

The data reported in Table 9 gives insight on customer views regarding paying a premium for items using sustainable packaging over conventional alternatives.

Table 9: Willingness to pay a slight premium for a product with sustainable packaging compared to similar packaging

Question	Yes		Maybe		No	
	N	%	N	%	N	%
To what extent are you willing to pay a slight premium (up to 5% more) for a product with sustainable packaging compared to similar packaging?	37	41,11%	32	35,55%	21	23,33%

Source: author's own research, (2024), n=90

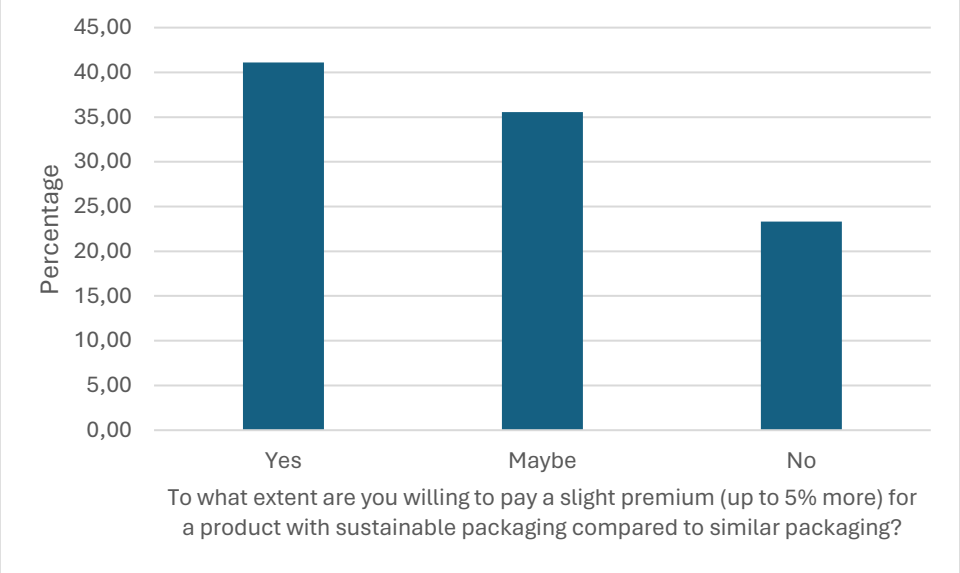

Figure 9: To what extent are you willing to pay a slight premium (up to 5% more) for a product with sustainable packaging compared to similar packaging?

Source: ***Author's own research, (2024), n=90***

A sizable majority (41,11%) of respondents replied "yes" to paying up to 5% more for eco-friendly packaging. This identifies a significant portion of consumers that value sustainability in their purchases and are prepared to match their selections with environmental issues, even if it means paying a somewhat higher price.

Additionally, a significant proportion (35,55%) indicated ambiguity ("maybe") about the premium. This category gives an opportunity for firms to conduct educational programmes or provide incentives that may change customer behaviour towards more environmentally friendly solutions. And a minority (23,33%) expressed their unwillingness ("no") to pay more for ecological packaging. While their numbers are fewer than those with favourable views, they represent a market group that may require focused marketing or alternative techniques emphasising the value proposition of sustainable packaging in addition to environmental advantages.

Overall, the statistics support a growing trend of ecologically conscious consumption. The majority of respondents (more than 80%) showed a willingness to pay a premium, indicating a potential market for businesses that prioritise sustainable practices in their packaging decisions. This opinion highlights the rising relevance of sustainability in consumer decision-making, as well as the need for businesses to prioritise environmentally friendly operations. Companies that satisfy the changing needs of environmentally conscious consumers can not only improve their brand reputation but also contribute to beneficial environmental consequences.

Impact of Company's Environmental Practices (Including Packaging) on Purchasing Decisions

Table 10 summarises survey responses about the impact of a company's commitment to environmental sustainability, including packaging methods, on purchasing decisions over the previous year.

Table 10: Consumer responses to environmental sustainability in product purchases.

Question	Yes		No	
	N	%	N	%
In the past year, have you chosen a product specifically because of a company's commitment to environmental sustainability, including their packaging practices?	41	45,55%	49	54,44%

Source: author's own research, (2024), n=90

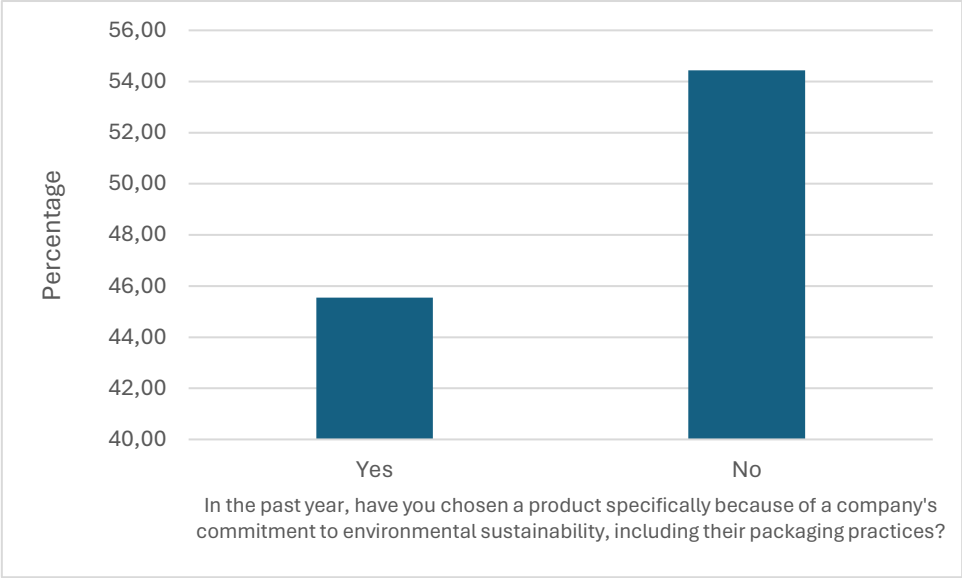

Figure 10: In the past year, have you chosen a product specifically because of a company's commitment to environmental sustainability, including their packaging practices?.

Source: ***Author's own research, (2024), n=90***

Among the respondents, a significant 45.55% said they had chosen a product in the previous year based on a company's commitment to environmental sustainability, including its packaging initiatives. This figure indicates that a significant number of customers actively examine a company's environmental activities when making purchase decisions, highlighting the rising importance of sustainability as a determining factor in consumer choices.

In contrast, 54.44% of respondents replied negatively, indicating that they had not chosen a product based on a company's environmental commitments or reputation. While this majority viewpoint implies that environmental issues may not be the main or primary motivator for all customers, it does not diminish the importance of sustainability measures in shaping consumer behaviour.

These findings emphasise the numerous landscape of customer preferences, where factors such as price, product quality, convenience, and brand loyalty all have a significant effect on purchase decisions. While environmental sustainability is important to many customers, it is only one of several factors that influence their purchasing decisions.

results show an increasing awareness and emphasis on environmental factors in consumer decision-making processes. The vast majority of respondents are aware with green supply chain management strategies and prioritise purchasing items with a minimal environmental footprint. While environmental issues influence their purchasing decisions, respondents also consider health and safety, price, product quality, and brand reputation.

Exploring the relationship between familiarity with green Packaging and willingness to pay more for sustainable products: A Chi- Square test analysis.

Table 11 represent the distribution of responses regarding familiarity with green packaging and willingness to pay a slight premium for sustainable products.

Table 12: The distribution of responses regarding familiarity with green packaging and willingness to pay a slight premium for sustainable products.

Familiarity with green packaging and willingness to pay a slight premium for sustainable products.

Count

		To what extent are you willing to pay a slight premium (up to 5% more) for a product with sustainable packaging compared to similar packaging?			
		Yes	No	Maybe	Total
How familiar are you with the concept of sustainable packaging?	Very familiar	10	5	5	20
	Somewhat familiar	15	11	9	35
	Not familiar at all	12	5	18	35
Total		37	21	32	90

Source: author's own research, (2024), n=90

Table 13: Chi-square Test

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	7,102[a]	4	,131
Likelihood Ratio	7,074	4	,132
Linear-by-Linear Association	3,454	1	,063
N of Valid Cases	90		

a. 1 cells (11,1%) have expected count less than 5. The minimum expected count is 4,67.

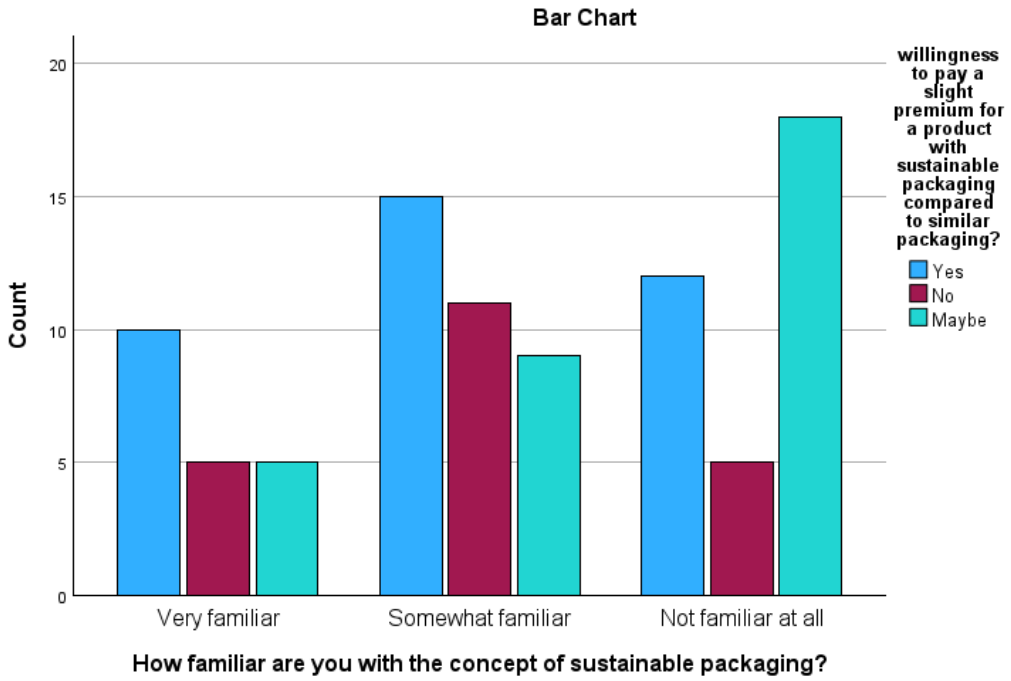

Figure 11: Bar Chart

Those who were very familiar with the concept of green packaging were more willing to pay a somewhat higher price for sustainable products, with out of 20 50% (10) responding positively. whereas just 25% (5) of those highly familiar were unwilling to pay a premium.

Also, those who were familiar with green packaging were willing to pay a little premium for sustainable products. Among of 35 respondents, 42.9% (15) were willing to pay more, while 31.4% (11%) were not. and out of the 35 respondents who said they had no idea what green packaging was, just 34.3% (12) would they pay extra, and 51.4% (18) maybe can pay more while 14, 28, 28 (5) said they would not pay more.

The Chi-square tests indicate a statistically significant link between familiarity with green packaging and willingness to pay extra for environmentally friendly products. This shows that when people get more familiar with green packaging, they are more likely to be willing to pay a somewhat higher price for sustainable items.

The findings suggest that growing familiarity with green packaging could positively have an effect on purchaser behavior towards sustainability. educating customers approximately the advantages of green packaging may also lead to an greater appreciation for sustainable practices and merchandise.
organizations and policymakers can leverage those insights to increase strategies geared toward

elevating consciousness and promoting sustainable alternatives amongst customers. this can involve instructional campaigns, product labeling projects, or incentives for eco-friendly purchases.

DISCUSSION

The survey findings shed light on several key aspects related to sustainable packaging practices and consumer behavior. Firstly, the results indicate a moderate level of awareness among respondents regarding sustainable packaging, with a significant majority considering it important in their purchasing decisions. This aligns with the hypothesis that integrating sustainable packaging practices into supply chain management enhances environmental responsibility, as evidenced by the emphasis placed by consumers on eco-friendly packaging options.

Moreover, the willingness of a sizable majority of respondents to pay a slight premium for products with sustainable packaging corroborates the hypothesis that consumers are more likely to pay a slightly higher price for goods when they are aware of sustainable packaging. This suggests that there is a growing market for businesses that prioritize sustainability in their packaging decisions.

Furthermore, the significant portion of respondents who reported choosing products based on a company's commitment to environmental sustainability, including packaging practices, underscores the importance of sustainability as a determining factor in consumer choices. While environmental considerations may not be the sole motivator for all customers, they nevertheless play a significant role in shaping consumer behavior.

The Chi-square test analysis reinforces the relationship between familiarity with green packaging and willingness to pay extra for environmentally friendly products. This suggests that efforts to educate consumers about the benefits of sustainable packaging can lead to an increased willingness to pay a premium for eco-friendly products, further supporting the hypothesis.

CONCLUSION

The study looks closely at how people think and act about sustainable packaging, showing that more people prefer eco-friendly options now. This is a chance for companies to stand out by using sustainable packaging in their whole supply chain.

A major finding is that talking to customers about the benefits of eco-friendly packaging can help increase its demand. Companies can use different ways to tell customers how these options help the environment and show that they are committed to being green.

Based on the study, there are a couple of suggestions for companies and those who make policies. First, companies should focus on using sustainable packaging in all parts of their work and spend money on finding new materials and technologies. Second, policymakers should make rules and give rewards to encourage companies to focus on green practices, like making them responsible for their packaging and requiring green labels.

Working together is important for making faster progress in sustainable packaging. Groups like industry associations and schools can share knowledge and help come up with new ideas.

In conclusion, if companies focus on sustainability, talk to their customers about it, and support helpful policies, everyone can help make the future more environmentally friendly.

SUMMARY

This thesis explores Green Supply Chain Management , focused on how sustainable packaging influences consumer behavior and market trends, started by looking at how supply chain management has changed due to environmental issues and then moves on to discuss sustainable packaging's importance.

The main idea of this study that including sustainable packaging in supply chains not only helps the environment but also gives companies an edge by making consumers trust them more, and the questionnaire confirms this idea by showing that consumers who know and aware about sustainable packaging and green supply chain are willing to pay extra for eco-friendly products.

The findings show the growing importance of sustainability to consumers when they choose what to buy, with many preferring products that are packaged responsibly, also, companies can

use sustainable packaging to stand out and meet the expectations of consumers who are becoming more aware of environmental issues.

In conclusion, the thesis suggests that businesses need to communicate with consumers to encourage demand for sustainable packaging, also recommends investing in research and development to find new ways to be sustainable, in addition to that it proposes that policymakers can help by making rules that encourage businesses to be more sustainable.

Overall this study provides useful information about how sustainable packaging, supply chain management, and consumer behavior are connected, which can help businesses stay competitive and responsible.

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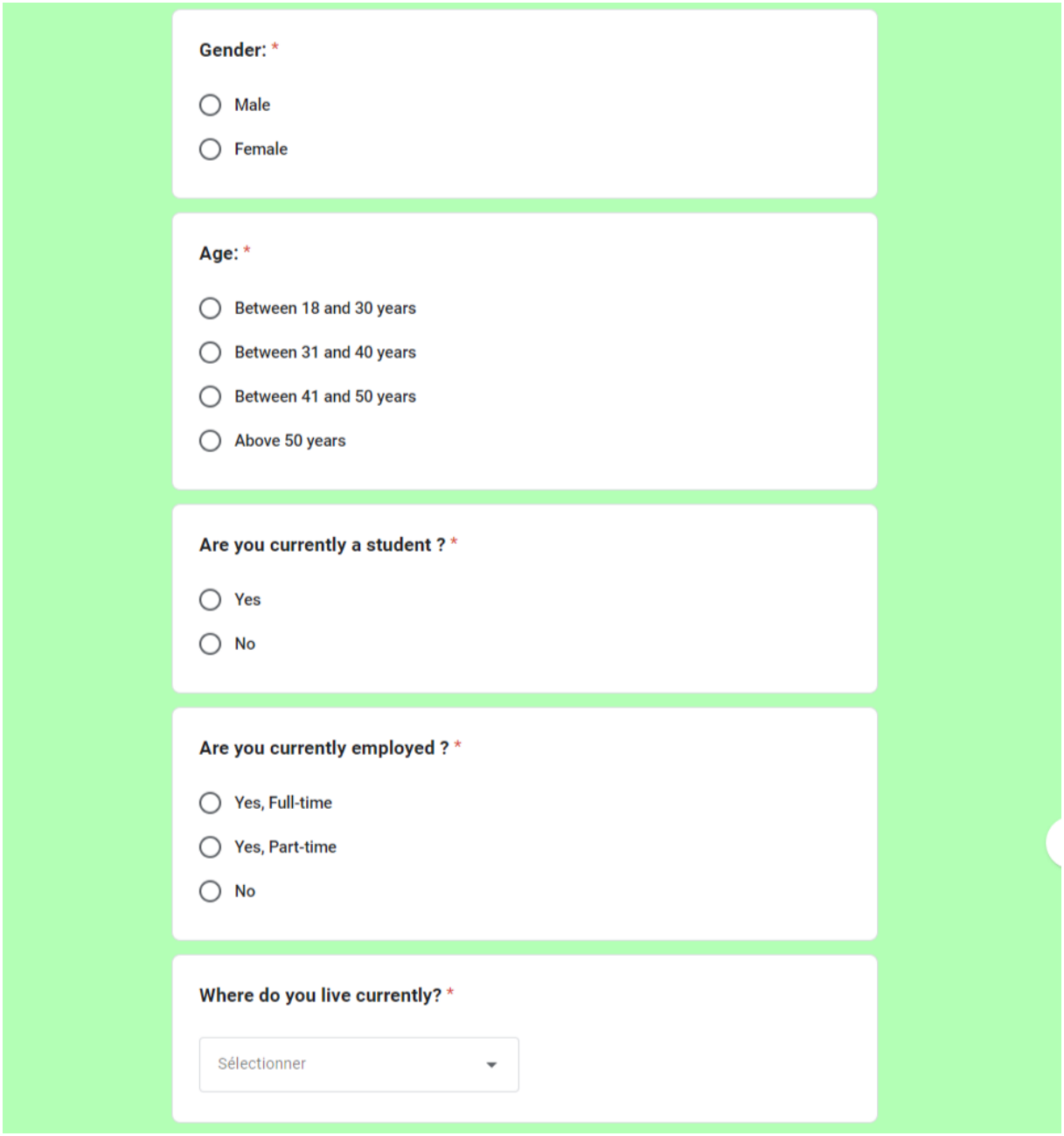
Appendices


Gender: *
Male
Female
Age: *
Between 18 and 30 years
Between 31 and 40 years
Between 41 and 50 years
Above 50 years
Are you currently a student ? *
Yes
No
Are you currently employed ? *
Yes, Full-time
Yes, Part-time
No
Where do you live currently? *
Sélectionner

How familiar are you with the concept of sustainable packaging? *

- ◯ Very familiar
- ◯ Somewhat familiar
- ◯ Not familiar at all

How important is sustainable packaging to you when making purchasing decisions? *

- ◯ Extremely important
- ◯ Somewhat important
- ◯ Not important

Which of the following types of sustainable packaging are you familiar with? *

- ☐ Recycled content packaging (e.g., recycled paper, plastic)
- ☐ Biodegradable packaging (e.g., compostable materials)
- ☐ Reusable packaging
- ☐ Minimalist packaging (reduced material use)

To what extent are you willing to pay a slight premium (up to 5% more) for a product with sustainable packaging compared to similar packaging? *

- ◯ Yes
- ◯ Maybe
- ◯ No

In the past year, have you chosen a product specifically because of a company's commitment to environmental sustainability, including their packaging practices? *

- ◯ Yes
- ◯ No

DECLARATION

on authenticity and public assess of final thesis

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Title of the document:	Green Supply Chain Management (GSCM): Strategies for Sustainability and Environmental Responsibility
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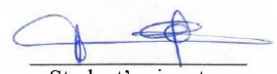

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STATEMENT ON CONSULTATION PRACTICES

As a supervisor of Soufiane Barrahhou (BIZ9O3), I here declare that the final thesis has been reviewed by me, the student was informed about the requirements of literary sources management and its legal and ethical rules.

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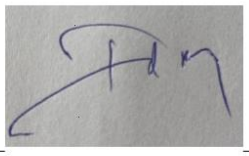

Internal supervisor