# GREEN PACKAGING AS A DRIVER OF SUSTAINABILITY

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**A RESEARCH REPORT SUBMITTED TO THE SCHOOL OF BUSINESS IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE AWARD OF THE DEGREE OF BACHELOR OF PROCUREMENT AND LOGISTICS MANAGEMENT OF UGANDA CHRISTIAN UNIVERSITY, MUKONO**

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UGANDA CHRISTIAN UNIVERSITY
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## DECLARATION

As per the university values of integrity and diligence, I have not received any unauthorized assistance while working on this project. I, KADIMA MAREBUZA ARISTOTE hereby declare that the work is authentically mine and to the best of my knowledge, it contains no traces of plagiarism or any other unethical practices. The only work used that has already been published by other persons has been purely for reference purpose.

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Date: ....6/9/2023.....

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## APPROVAL

This paper has been submitted for examination with my approval.

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Mr. MULOOSI PASCAL

## DEDICATION

And at the beginning of this report, I take a few seconds, to dedicate this work to my parents Wellars Serushago and Agnes Sifa for what they did for me. May God bless you a hundredfold.

## ACKNOWLEDGEMENTS

To the one who gives me the breath of my life every morning, to the one who has endowed me with intelligence and the ability to study, I can only say thank you, dear GOD. I write this with certainty that without Him I would not go that far with my studies. His divine hand has not ceased to be placed on my head throughout my education career. He has been present even in my silent battles.

Special thanks are dedicated to my precious family particularly my parents Wellars Serushago and Agnes Sifa. My gratitude is unheard of for all the support you have shown throughout this academic career; thank you for instilling in me the spirit of Ubuntu with your support (both financially, spiritually, and morally). I am only a product of their ongoing efforts to make me an intellectual ready to help this family and society. Thank you for your trust and for sacrificing so much so that I can study in good conditions.

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## ABSTRACT

This study aimed to investigate the use of 'green packaging as a driver of sustainability.' The study had three major objectives, to investigate why there was a need for businesses and consumers to adopt green packaging, to investigate the type of packaging materials that were currently used and their environmental impact, to investigate the barriers and potential solutions to adopting green packaging by businesses and consumers. The study was purely descriptive and analytical, based on both qualitative and quantitative data from both primary and secondary sources. The data was collected using questionnaires and interviews during the data collection. A sample size of 55 respondents who are consumers and business owner are also used in the study.

It was discovered that green packaging helped in reducing waste generation in businesses and consumers' operations, reduced costs, helped minimize greenhouse gas emissions, and gave a competitive advantage to businesses.

It was found that single-use plastic and disposable plastic packaging significantly contributed to environmental waste. The use of paper and cardboard packaging was seen as related to deforestation and habitat destruction, though it had lower gas emissions and degradation impacts. Glass packaging's recyclability was recognized, while metal packaging was appreciated for its durability and recyclability. However, awareness about biodegradable and compostable packaging was low, and lastly, the most used packaging material was plastic, followed by paper and cardboard packaging material.

It was also discovered that the cost and limited availability of green packaging materials were identified as barriers to the adoption of green packaging, along with consumer unawareness about the environmental impacts of traditional packaging. Inadequate regulations were also noted as a challenge in the implementation of green packaging practices.

The study, therefore, concluded that green packaging is a driver of sustainability. The study further made recommendations for improvements and implementation of green packaging and drive to sustainability which where the raising of awareness about sustainability, reinforcement of regulation, give incentive to companies and organizations that implement green packaging in their activities but also penalties to those who do not comply with the regulation, government to support research and innovation in the packaging industry.

## KEYWORDS AND ABBREVIATIONS

**Packaging**: In simple terms, packaging refers to designing and developing the wrapping material or container around a product that helps to Identify and differentiate the product in the market, Transport and distribute the product, Store the product, Promote the product, and Use the product properly. (Aashish Pahwa, feedough.com, February 2023)

**Green packaging**: Green packaging, also known as sustainable packaging or eco-friendly packaging, refers to the use of materials and design techniques that minimize the environmental impact of packaging throughout its lifecycle.

**Packaging materials**: Packaging materials are the various substances and components used to create packaging for products. These materials serve different functions, such as protecting the product, ensuring its freshness, providing information to consumers, and enhancing the product's visual appeal.

**Sustainability**: Sustainability refers to the practice of meeting current needs without compromising the ability of future generations to meet their own needs. It involves making choices and taking actions that balance economic, social, and environmental considerations to ensure long-term well-being. (Blaq Jnr, Green technology, Jul, 2023)

**Consumers**: Consumers are individuals or entities that purchase or use goods and services to satisfy their needs and wants

**Business**: A business refers to an organization or entity engaged in economic activities with the primary goal of generating profit. Businesses produce and provide goods, services, or both, which are intended to meet the needs and wants of consumers in exchange for money or other forms of value.

**-UCU**: Uganda Christian University

**-RFID**: Radio Frequency Identification

**-NGO**: Non-Governmental Organization

**-LCA**: life cycle assessment

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# CHAPTER ONE: INTRODUCTION

## 1.0 Introduction to the study

This chapter introduces the study that will be conducted to evaluate green packaging as a driver of sustainability. The chapter will focus on the background of the study, problem statement, objectives of the study, research questions, scope of the study, and significance of the study will all be included in this chapter.

## 1.1 Background of the study

During the old days, people have been using packaging materials like leaves, gourds, and animal hides to transport and store goods for thousands of years. However, these materials were often limited in durability and protective capabilities. In the 18th and 19th centuries, advances in manufacturing and transportation led to the development of more sophisticated packaging materials, such as cardboard, paper, and metal cans. These materials were cheaper, more widely available, and better able to preserve and protect goods. After World War II, consumer demand started increasing and companies began investing in more eye-catching designs and branding for their packaging. (Mark Clarke, packaging a cultural history, 1997)

Plastic packaging also became more popular during this time, due to its durability, flexibility, and versatility. In the 21st century, concerns about environmental sustainability and waste reduction have driven many companies to prioritize eco-friendly packaging solutions. This has led to developments like biodegradable plastics, recycled materials, and alternatives to single-use plastics in the same way in the 21$^{st}$ century the rise of e-commerce and online shopping has driven innovations in packaging to accommodate the needs of these channels. As more products are shipped directly to consumers, companies have had to develop packaging that is lightweight, compact, and easy to open and dispose of. Additionally, digital technologies like smart labels and RFID tags are being used to track products throughout the supply chain and provide consumers with more information about the products they're buying. (Tanweer Alam, packaging technology and research 2020)

The issue of sustainability and environmental conservation is a pressing concern in today's world. Climate change, pollution, and unsustainable development practices are endangering the

planet and negatively affecting the lives of people around the world. One of the main contributors to environmental degradation is packaging, which is omnipresent in modern consumer society. To mitigate the negative impact of packaging on the environment, green packaging has emerged as a potential driver of sustainability. (Kanniainen, J., & Leino, M.2016)

Green packaging has emerged as a driver of sustainability as there is an increasing concern about the impact of traditional packaging materials on the environment. Additionally, more and more consumers are demanding green packaging it's an important factor in their buying decisions. So, as a business, opting for green packaging will not only support a sustainable future but will help increase sales and improve brand perception (Swiftpackuk,2023)

As consumers become more environmentally conscious, they are actively seeking products that are packaged in sustainable materials. This has resulted in an increase in demand for green packaging, which refers to packaging materials that are renewable, biodegradable, recyclable, and eco-friendly.

In response, many companies have started to adopt sustainable packaging practices. For instance, some companies use recycled materials to create their packaging or are switching to biodegradable materials like paper, bamboo, and starch-based plastics. Others have streamlined their packaging to reduce waste and greenhouse emissions.

Searching for a solution for this huge environmental problem has led to 'green packaging'. This packaging method uses such materials and manufacturing techniques that reduce energy usage and the hazardous effects of chemicals on the environment. In other words, the green packaging market involves the usage of recyclable and bio-degradable packing material rather than plastic and Styrofoam. (Neha Gupta, eco idea 2022)

Traditional packaging materials, such as plastic, are non-biodegradable and can take hundreds of years to decompose. This leads to negative ecological impacts such as pollution and harm to ecosystems.

The main purpose of packaging in the past was to hold and protect the product. But recently, several factors have raised it to the position of a crucial marketing and environmental protection instrument. Because of the increased competitiveness and congestion on retail store shelves,

packages now perform many sales tasks attracting attention, to the describing the product, easy transportation, to making the sale Companies must consider expanding environmental concerns when deciding how to package products. One of these concerns is that the package should create as little waste as possible therefore the increase of popularity of sustainable packaging or "sustainability" (Kotler, Armstrong, Wong & Saunders 2008)

Every year, the UK produces over 2.4 million tonnes of packaging waste, around 40% is plastic. Businesses must increasingly adopt recyclable, biodegradable, and compostable materials to help fight the negative effects on our world caused by the amount of packaging that ends up in landfills.

A project that seeks to reduce the negative environmental effects of plastic as a packaging material has to choose new materials that will either replace plastic or give the plastic some additional features to make it more environmentally friendly. As stated by the British multinational Symphony Plastics Ltd (2009), "plastic is strong, durable, versatile, lightweight, safe and inexpensive" which supports the use of plastics as a packaging material. On the other side, the problem identified by governments and Non-governmental organizations (NGOs) around the world is that plastic does last rather too long if it gets into the environment and especially in the oceans. This has increased environmental awareness among people and businesses, which has resulted in the expansion of international legislation restricting the use of careless packaging materials and an increase in environmental-related lawsuits involving the disposal of plastic has led to a demand for plastic that can degrade or the substitute of packaging materials other than plastics. (Bio-Tec LLC, 2009) The implementation of this type of material is sometimes used as a marketing tool and firms claim that it is an attempt to enhance sustainability in their business, therefore, our interest in this "green packaging".

"In an era where sustainability is gaining prominence in both consumer and business-to-business product offerings, managers who do not react to social and environmentally conscious initiatives will quickly see their brands losing favor with consumers and losing market share." Ottman (2009b)

The shift towards green packaging not only benefits the environment, but it also provides companies with a competitive advantage in the market by meeting consumer demand for

sustainable products. Green packaging has also been associated with cost savings, as waste reduction and material efficiency can lead to a decrease in production costs.

Overall, the use of green packaging has the potential to significantly reduce the carbon footprint of the packaging industry, making it a driving force in achieving sustainability.

### 1.2 Statement of the Problem

The growing demand for goods and services has led to an increase in the production of packaging materials, which often end up in landfills, oceans, and other natural spaces, causing harm to wildlife and biodiversity. As a result, there is a critical need for packaging design that is sustainable and environmentally, and that minimizes waste and ecological damage. Green packaging refers to packaging design that is environmentally friendly, biodegradable, recyclable, and made from renewable materials, such as biomass or organic waste.

However, there is a lack of understanding and awareness of green packaging's benefits as a driver of sustainability. The packaging industry's traditional approach to minimizing the cost of packaging and profitability to meet customer demands has prevented sustainable packaging from becoming more widespread. Additionally, the high initial cost of implementing green packaging solutions and the lack of a regulatory framework requires industries to invest in green packaging, hindering its adoption.

Furthermore, the disparity between the cost-effectiveness of traditional packaging and green packaging throws challenges in the adoption of green packaging. Although the cost of green packaging has been declining over the years, it is still significantly higher than that of traditional packaging. Thus, generating extensive investment costs and posing a financial constraint for the businesses.

The growing awareness of the environmental impact of packaging and consumers' demand for sustainable products has made green packaging more critical than ever. Therefore, identifying and addressing the challenges facing the adoption of green packaging as a driver of sustainability is vital to promote its growth and development.

### 1.3 Main objective of the study

The main purpose of the study was;

To examine the concept of green packaging as a driver of sustainability, and thus this study will provide new material for packaging and recommendations for improving the packaging system and leading it to a more sustainable packaging.

### 1.4 Specific objectives of the study

This study was guided by the following strategically designed objectives;

- To investigate why there is a need for businesses to adopt green packaging.
- To investigate the type of packaging materials that are currently used and their environmental impact.
- To investigate the barriers and potential solutions to adopting green packaging by businesses and consumers.

### 1.5 Research questions

1. What are the barriers and potential solutions to adopting green packaging by businesses and consumers?

2. What types of packaging materials are currently being used and what is their environmental impact?

3. Why there is a need for businesses to adopt green packaging?

### 1.6 scope of the study

#### 1.6.1 Content scope

Sustainability refers to the ability of a system or activity to continue operating without causing harm to the environment or depleting natural resources, It involves finding a balance between economic development, social well-being, and environmental protection. The integration of green packaging enables companies and customers to go more and more green.

The research looked at the effectiveness of green packaging and its impact on sustainability. I chose this topic because packaging is one of the activities that have a serious impact on sustainability, and most of the traditional packaging has several loopholes, which can explain

why it is difficult to be sustainable at such a high rate. This is because many factors, such as waste that filled up landfill sites, waste that reached the ocean, air pollution, loss of materials, time, and resources used in production, customer health, could all have had an impact on sustainability, hence necessitating the implementation of green packaging.

### 1.6.2 Time scope

This research targeted the current year and some years back (2018). This made it easier for me, the researcher and the respondents to engage completely in carrying out the critical and prospective research. The respondents were then prepared and eager to recall recent events and answer by offering information, enhancing correct and accurate statistical data for a fruitful inquiry in the research.

## 1.7 Geographical scope

The study was also limited to the geographical scope of operation in East Africa for the reason that it was easy for the researcher to get information in these areas and also because of the concentration of businesses and activities in these areas.

## 1.8 Significance of the study

The study helped the researcher to gain skills in conducting research. The acquired skills will not only be limited to academic research but will also be of vital importance to the researcher while in the workplace after school. The study findings helped to identify how green packaging helps to achieve sustainability and some of the technology that can enable to achieve it in businesses and consumers. The study findings helped to add to the body of existing literature about green packaging and sustainability and this will be of help to coming students and researchers. The study would benefit the economy, environment, social life, and the continuance journey toward sustainability.

The study helped organizations and consumers to see the importance of the implementation and the use of green packaging as a driver of sustainability instead of the traditional packaging or the old packaging system. It enabled them to better understand the effects of green packaging on sustainability.

This study recognized the potential of green packaging as a driver of sustainability. By encouraging and promoting the adoption of green packaging practices, individuals and businesses can contribute to reducing the negative impact of human activities on the environment. This would lead to a more sustainable future for generations to come.

Overall, the study on green packaging as a driver of sustainability is highly significant as it highlighted the need for sustainable solutions to pressing environmental issues. It also recognizes the potential of green packaging as a way to achieve this goal.

### 1.9 Anticipate the problem

Firstly, the fact was that some packaging companies may not have been willing to provide information because they were suspicious of where the information that I was collecting was to be taken.

Many of the respondents, such as managers, employees, and even the directors of enterprises, had busy work schedules in most of these companies. Asking questions and assessing the respondents in their settings was not easy for me as the researcher.

the language of communication was another limitation that the researcher faced since the official language of this research was English and some respondents didn't know English.

The time to conduct research was limited since the researcher was a student, which made it hard for him to collect data and undertake some practice of existing packaging materials.

# CHAPTER TWO: LITERATURE REVIEW

## 2.0 Introduction

This chapter reviewed the existing literature about green packaging and sustainability. It helps the researcher to get a full understanding of the variables before actually going into the field to carry out the study and this gives a basis to the study. In this literature review, we explore the role of green packaging as a driver of sustainability, examining its benefits, challenges, and future prospects.

## 2.1 Packaging

The packaging industry played a more dynamic role in sustainability development, with a market value that rapidly increased over the last few years and reached $1 trillion in 2020 from $839 billion in 2015 (Smithers Pira Group, 2016)

In 2009 Dixon-Hardy and Curran notified that Packaging is not simply a carton or a box, but it is a system that enables the safe, cost-effective, and efficient storage, handling, transportation, and marketing of goods along the supply chain.

Philip Kotler in May 2005 defined Packaging as the act of enclosing or protecting the product using a container to aid its distribution, identification, storage, promotion, and usage, Packaging encompasses all the processes involved in creating and crafting the enclosure for a product. To put it simply, it involves the design and production of the materials or container that envelops a product, serving to distinguish and uniquely identify the product in the market, as well as facilitating its transportation, distribution, Store management , Promotion the product, and Use the product properly. (Aashish Pahwa,;ala.com, February 2023). Packaging was one such industry as it significantly impacted the costs and environmental efficiency of the entire supply chain from packaging material procurement and packaging design and development phases to logistics and end-of-life handling phases (Ballou, 2004).

## 2.2 Green packaging

Green packaging, also known as sustainable packaging or eco-friendly packaging, referred to the use of materials and design techniques that minimized the environmental impact of packaging throughout its lifecycle. It aimed to reduce resource consumption, energy usage, and waste

generation associated with packaging materials and processes (Datta, P., & Chattopadhyay, S. K., Eco-friendly, 2020).

The use of packaging had increased significantly over the years due to the growth in consumption of goods, in recent years, environmental sustainability had become a major concern for individuals, organizations, and governments worldwide. However, traditional packaging materials such as plastic, and metal had been identified as a significant contributor to environmental degradation. This has led to a shift towards the use of green packaging as a way to promote sustainability.

In recent years, there has been growing interest in worldwide environmental protection. In this sense, green packaging is an aspect of great importance to reduce the impact of waste and pollution, and to promote sustainability. Green packaging also known as 'eco-green packaging', 'eco-friendly packaging', 'sustainable packaging', or 'recyclable packaging'.(CWY Wong, K Lai, KC Shang, International journal of green operation, 2012)

In 2019, the total value of packaging worldwide was estimated to be approximately USD 917 billion and in the same way, a study published in "The Future of Global Packaging to 2024" shows that demand for packaging will grow 2.8% per year and peak at USD 1.05 trillion in 2024 (Smithers, the future of global packaging to 2024, September 2020)

According to Lu, S.; Yang L., packaging excess on the planet challenged the sustainable development of our society. From the perspective of the green packaging, the waste problem had to be addressed from the early design stage, which included packaging projects. Additionally, the green packaging model is founded on economic, natural, and social capital concepts, always supported by a transition to renewable energy sources. Hence, it's clear that packaging developers, manufacturers, and other packaging professionals have a duty to meet the growing demands of the present situation. (S Lu, L Yang, W Liu, L Jia - Journal of Cleaner Production, 2020 )

On the other hand, numerous publications analyzed green packaging issues from the viewpoint of companies. They covered a wide range of dimensions, including how technological, organizational, and human capabilities contribute to the implementation of eco-design innovation

in packaging, and its benefits in terms of brand innovation and environmental protection. Companies are working on new lines of products for ethical, renewable, and green packaging, which could require investing in new filling lines in order to accommodate more environmentally friendly, reusable, recyclable, and sustainable packaging, or the establishment of a joint collaboration with packaging suppliers (Walmart, packaging digest,2023). Given that this research and these evaluations are scattered across various literature domains, undertaking a comprehensive analysis of this knowledge poses a vital and complex undertaking for packaging professionals.

The design of packaging should prioritize minimizing its environmental impact. To achieve this, the project should utilize tools akin to life cycle assessments and inventories, aiming to reduce both its carbon footprint and overall environmental effects. (F Casarejos, CR Bastos, C Rufin, Journal of Cleaner Production, 2018) The green packaging concept is relevant in the search for solutions to the problem of packaging waste generation. The transition from a dominant traditional packaging to green packaging may create and support the journey of sustainability.

### 2.3 Green packaging and sustainability

Sustainability can be defined as a development that meets the needs of the present without compromising the ability of future generations to meet their needs" (World Commission on Environment and Development, 1987, p. 8).

Sustainability was once the concern of only a few, but it is now a significant issue to the general public due to higher levels of awareness through developments in media and technology and negative changes in the environment.(Jesse van den Elzen, 2016).

The sustainability perspective on packaging was to reduce the environmental impact or eco-burden of the packaging, using life cycle assessment to evaluate different design alternatives (Renee Wever and Joost Vogtlande, 2012). Green packaging would certainly prove to be an innovative and creative method for a sustainable business and sustainable environment (Sangeetha Padmanabhan and Magesh, 2016).

green packaging promotes sustainable lifestyles by raising awareness about the importance of environmental protection and encouraging consumers to make eco-friendly choices. Such

awareness promoted a culture of environmental responsibility and reinforces the idea that every individual can contribute to sustainability efforts. Also, green packaging could create new business opportunities in the form of eco-brands and encourage the development of green supply chains. Green packaging and sustainable development along a supply chain and operations require cooperation among the stakeholders (Verghese and Lewis,2007)).

Companies continued to depend on environmentally degrading options for packaging their products such as single-use plastics and multi-layered packaging while unsustainable consumption and disposal of packaging by end-consumers create ecological strains and block sustainability development (Hall, 2017; WWF, 2019)

Green packaging as a vital driver of sustainability, offered numerous benefits from an environmental, social, and economic perspective. Consumer perception and acceptance, as well as government policies and regulations, play a crucial role in promoting the use of green packaging. The future of green packaging looks promising, and it is expected to become an essential component of sustainable lifestyles in the future.

### 2.4 Why is there a need for businesses to adopt green packaging

In recent years, there had been a growing recognition of the need for businesses to adopt green packaging practices due to the increasing concerns over environmental sustainability. In the following, we were going to explore the reasons and benefits associated with the adoption of green packaging by businesses. By examining various studies, books, and scholarly articles, the coming paragraphs highlighted the environmental, social, and economic drivers for businesses to embrace green packaging strategies.

#### 2.4.1 Environmental drivers

These packaging innovations offered several advantages, among them lighter materials that reduced fuel and water consumption, decreased costs, and increased consumer awareness. Traditional packaging materials, such as plastic and metal, had been identified as major contributors to environmental degradation. The adoption of green packaging allowed businesses to reduce waste generation, conserve natural resources, and minimize greenhouse gas emissions (Guirong Zhang and Zongjian Zhao, 2012).

Sustainability regulation has become much more of a global phenomenon, even if the level of regulation has varied. Governments worldwide have implemented regulations and policies to promote sustainable packaging practices. Businesses were motivated to adopt green packaging to comply with these regulations, avoid penalties, and demonstrate their commitment to environmental responsibility (Gao Qing; Zhang Guirong, 2012).

With the rise of awareness of sustainability and climate change, there has been a rise in demand for sustainable products and eco-friendly packaging. Consumer demand for environmentally friendly products is on the rise. By adopting green packaging, businesses could enhance their brand reputation and appeal to environmentally-conscious consumers who prioritize sustainability in their purchasing decisions. (B. Almanza, 2018)

### 2.4.2 Social drivers

With the risen awareness about sustainability and climate change mentioned in the previous paragraph. Consumers were increasingly inclined to support businesses that demonstrate environmentally responsible practices. Adopting green packaging allowed businesses to align with consumer values, thereby building trust, loyalty, and positive brand perception. (Susan E. M. Selke, 2011).

Green packaging aligned with the broader goals of Corporate Social Responsibility initiatives by minimizing negative environmental impacts and contributing to sustainable development. Businesses adopting green packaging strategies could showcase their commitment to social and environmental well-being. Corporate social responsibility refers to a business approach that involve integrating social and environmental concerns into a company's operations and interactions with stakeholders. It is a concept that recognizes that businesses have responsibilities beyond generating profits and should also contribute to the well-being of society and the environment. (Lu, S.; Yang L, 2020)

### 2.4.3 Economic drivers

The adoption of green packaging by businesses is driven by several economic factors that majorly focused on cost reduction and savings. Green packaging could lead to cost savings through material optimization, waste reduction, and operational efficiencies, resource

conservation. Adopting sustainable packaging practices could help businesses streamline their supply chain, reduce packaging waste, and lower transportation costs. (Mintel, 2020).

The Consumer demand for sustainable and eco-friendly products is growing rapidly. By appealing to environmentally-conscious consumers, companies could attract a larger customer base, build brand loyalty, and potentially command premium pricing for their sustainable products. Businesses that have adopted green packaging strategies could differentiate themselves in the market by appealing to environmentally-conscious consumers and gain a competitive advantage. Green packaging could serve as a unique selling point and give businesses a competitive edge in their respective industries. (Walmart, 2023)

In the above paragraphs, we have seen that businesses had a compelling need to adopt green packaging practices for several reasons. Environmental drivers emphasized the importance of mitigating environmental impact, meeting regulatory requirements, and enhancing brand reputation. Social drivers emphasize on consumer preferences and fulfilling corporate social responsibility. Lastly, economic drivers emphasized cost reduction and gaining market differentiation. By embracing green packaging, businesses could align with sustainability goals, enhance their reputation, and reap economic benefits while contributing to a healthier and more sustainable future and helping to move forward in the sustainability journey.

## 2.5 The type of packaging materials that are currently used and their environmental impact

Packaging materials accounted for 15–20% of total municipal solid waste in several countries (Tencati et al., 2016). Plastic packaging alone accounted for 50% of total plastic waste globally (UNEP, 2018), with Asian countries such as China, Vietnam, the Philippines, Indonesia, and Thailand depositing more plastic waste into the ocean than the rest of the world (Conservancy, 2015). Ingestion of plastic has killed around one million seabirds and 100,000 marine mammals every year (United Nations, 2017) while its incineration releases toxic gases into the atmosphere that could cause a host of kidney and respiratory problems in humans (GAIA, 2018).

Here below are some of the packaging materials that were identified used and their environmental impact.

### 2.5.1 Plastic Packaging

Plastic packaging materials, such as polyethylene (PE), polypropylene (PP), and polystyrene (PS), have been extensively used in various industries. For example, plastic packaging used for food and beverages could end up as litter in oceans, harming marine life and ecosystems. However, their environmental impact was a growing concern. Plastic packaging has contributed to pollution and waste accumulation due to its slow degradation. It was often associated with issues such as littering, marine pollution, and microplastic contamination. For instance, single-use plastic bags and disposable plastic bottles have been found to contribute significantly to plastic waste in the environment (Jambeck et al., 2015). The production of plastic packaging materials also requires the extraction of fossil fuels, contributing to greenhouse gas emissions (Geyer et al., 2017).

### 2.5.2 Paper and Cardboard Packaging

Paper and cardboard packaging materials were widely used in industries ranging from food to consumer goods. Paper and cardboard packaging, including corrugated boxes and paper bags, had a lower environmental impact compared to plastics. They were considered more environmentally friendly compared to plastics due to their renewable nature and recyclability. However, the production of paper and cardboard packaging has been involved in the consumption of energy, water, and chemicals. It also contributes to deforestation and habitat destruction if not sourced responsibly. For example, paper packaging used for fast food and takeaway meals, and the expansion of paper pulp production for packaging materials could lead to forest conversion and loss of biodiversity (Fa et al., 2020). Implementing sustainable forestry practices and increasing recycling rates could mitigate the environmental impact of paper packaging.

### 2.5.3 Metal Packaging

Metal packaging, such as aluminum and steel containers, had both positive and negative environmental aspects. It was known for its durability and recyclability. Metals were highly recyclable and could be reused indefinitely without losing quality. These materials had a high recycling rate, which reduced the demand for virgin resources and minimized energy consumption. Recycling metal packaging saved energy and reduced the need for raw material

extraction. However, the production of metal packaging materials required significant amounts of energy and emission of greenhouse gases. Mining operations for extracting metals could also have adverse environmental impacts, including habitat destruction and water pollution. The use of recycled content in metal packaging and promoting recycling infrastructure could enhance its environmental performance (Ekvall et al., 2007). Examples included aluminum cans for beverages and steel cans for food, metallic containers.

### 2.5.4 Glass Packaging

Glass packaging, including bottles and jars, was considered environmentally favorable due to its recyclability and inert nature. It was made from abundant raw materials like sand. Glass could be recycled indefinitely without losing quality, which reduced the demand for raw materials and energy consumption. However, the transportation of glass packaging could contribute to higher carbon emissions compared to lighter materials because they are heavy. Proper recycling infrastructure and consumer participation in glass recycling programs were essential to maximize its environmental benefits. Fredrik Wikstrom And Helen Williams, 2019.Examples of glass packaging included wine bottles, sauce jars, and perfume bottles.

### 2.5.5 Biodegradable and Compostable Packaging

Biodegradable and compostable packaging materials, such as bio-based plastics and plant fibers like bagasse and bamboo, aimed to provide more environmentally friendly alternatives and have gained attention as potential alternatives to conventional packaging materials. These materials were designed to break down naturally under specific conditions, such as composting facilities. However, the environmental impact of biodegradable and compostable packaging depend on various factors such as their composition, manufacturing processes, and end-of-life management. If not properly disposed of, these materials might not degrade as intended or contribute to contamination in recycling streams (Larsen et al., 2020). Examples included biodegradable plastic bags and compostable food containers made from plant-based materials.

The choice of packaging materials significantly affects the environmental impact of packaging. Plastic packaging raises concerns due to its slow degradation and pollution, while paper, cardboard, metal, and glass packaging materials offer more sustainable alternatives. Biodegradable and compostable packaging materials show potential but require proper disposal

infrastructure to achieve their intended environmental and sustainable benefits. It's important to consider the entire life cycle of packaging materials, including sourcing, production, use, and disposal, to assess their environmental impact accurately. The selection of packaging materials should prioritize those with lower environmental footprints and the implementation of sustainable practices, such as recycling, responsible sourcing, and waste management, is crucial for minimizing the environmental impact of packaging materials.

## 2.6 What are the barriers and potential solutions to adopting green packaging by businesses and consumers?

Adopting green packaging by businesses and consumers is crucial for reducing environmental impacts and promoting sustainability. However, several barriers existed that hindered the widespread adoption of green packaging practices. This literature review highlighted some of these barriers and potential solutions.

1. Cost considerations: Green packaging materials and technologies often have higher upfront costs compared to traditional packaging options. This cost differential could discourage businesses from adopting sustainable packaging practices. For the potential solutions, Governments and industry associations could provide financial incentives or subsidies to offset the initial costs of green packaging. Collaborative efforts among businesses could also lead to economies of scale, reducing the overall cost of sustainable packaging materials.

2. Limited availability and scalability: The availability of green packaging materials and technologies might have been limited, especially for niche products or specific industries. Additionally, the scalability of sustainable packaging solutions to meet high-volume demands could have been challenging. For the potential solutions, Investment in research and development could have driven innovation and expanded the range of green packaging options available. Collaboration between packaging manufacturers, raw material suppliers, and businesses could have also helped create a robust supply chain for sustainable packaging materials. (Kamrul Ahsan and Shams Rahman ,2017)

3. Consumer perception and preferences: Consumer perception and preferences: It was discovered that Consumer perceptions and preferences play a significant role in driving market demand for green packaging. Some consumers may have been unaware of the environmental

impacts of traditional packaging or prioritized other factors such as convenience and price over sustainability. For the potential solutions, raising consumer awareness through education and marketing campaigns could have helped inform them about the benefits of green packaging. Transparent labeling and certifications could have also aided consumers in making more sustainable choices and encouraged businesses to adopt eco-friendly packaging.

4. Technical limitations and performance concerns: Green packaging materials may have had technical limitations in terms of durability, shelf life, or product protection compared to traditional alternatives. Businesses may have been hesitant to adopt green packaging if it compromised the quality or safety of their products. Potential solutions: Continued research and development could have addressed technical limitations by improving the performance of green packaging materials. Collaboration between packaging manufacturers, scientists, and businesses could have helped develop innovative solutions that met both sustainability and functional requirements.

5. Regulatory challenges: Inconsistent or inadequate regulations related to green packaging could have posed challenges for businesses. Varying standards and regulations across different regions or countries could have hindered the adoption of uniform sustainable packaging practices. For the Potential solutions, Governments could have established clear and consistent regulations regarding the use of sustainable packaging materials and promoted harmonization across different jurisdictions. Collaboration between regulatory bodies, industry stakeholders, and environmental organizations could have facilitated the development of effective policies and guidelines. (Werner J Glantschnig, 1994)

While the adoption of green packaging by businesses and consumers was essential for sustainable development, several barriers needed to be addressed. By implementing potential solutions such as financial incentives, research and development, consumer education, and regulatory improvements, the transition to green packaging could have been facilitated, leading to a more environmentally friendly packaging industry.

### 2.7 Life cycle assessment of green packaging

A life cycle assessment of green packaging typically involves analyzing the environmental impacts of the packaging throughout its entire life cycle, including production, distribution, use,

and disposal. The assessment may consider factors such as energy use, water use, greenhouse gas emissions, waste generation, and resource depletion. One of the main goals of a life cycle assessment is to identify areas where environmental improvements can be made. For example, if the assessment finds that the production of green packaging results in high levels of greenhouse gas emissions, then efforts can be made to reduce these emissions, such as through the use of renewable energy sources or energy-efficient equipment.

The assessment may also compare the environmental impact of green packaging to other types of packaging, such as conventional packaging made from non-renewable materials. This comparison can help to determine whether green packaging is truly more environmentally friendly than its alternatives.

Some of the LCA studies in the packaging industry reveal that LCAs have been conducted on a variety of packaging materials, such as glass, plastic, paper, and metal. Studies have shown that using recycled materials in packaging production can significantly reduce environmental impacts. For example, an LCA study comparing glass bottles made with recycled materials to those made with virgin materials found that the recycled glass bottles had lower environmental impacts in terms of energy use and greenhouse gas emissions.(Geyer, R., Jambeck, J.R., & Law, K.L. ,2017) ,(Muthu, S.S., Li, Y., Hu, J., & Mok, P.Y.,2019).

LCA studies have also highlighted the importance of reducing packaging size and weight to minimize environmental impacts. A study comparing the environmental impacts of different sizes of soft drink cans found that reducing the size of the can from 355 ml to 250 ml resulted in a significant reduction in materials use and energy consumption. ( Tukker, A.,2015)

Another important factor in assessing the environmental impact of packaging is end-of-life disposal. LCAs of different packaging materials have shown that compostable and biodegradable materials may not necessarily be more environmentally friendly than traditional materials if they end up in landfills, where they can release harmful chemicals during decomposition. (Hahladakis, J.N., Velis, C.A., Weber, R., Iacovidou, E., & Purnell, P...2018)

Overall, LCA is an important tool for evaluating the sustainability of packaging and identifying opportunities for improvement.

# CHAPTER THREE: METHODOLOGY

## 3.0 Introduction

This section mainly focuses on the methods that were used to achieve the specific objectives. According to Kothari (2004), the methodology describes the procedures and details of how this research was carried out. It will contain the methods to be used, how materials will be sampled and prepared, how data will be collected, processed, and analyzed.

## 3.1 Research design

In this research design, the researcher adopted a mixed-methods approach, combining both quantitative and qualitative research methods. The quantitative component will involve a survey to gather data on consumer perceptions and behavior related to green packaging and sustainability. The qualitative component will involve interviews with industry experts to gain insights into the implementation and effectiveness of green packaging practices as a major driver of sustainability.

## 3.2 Source of data

For the data collection, the researcher used both primary sources and secondary sources. Primary data refers to the original data collected specifically for this research. It involves direct engagement with participants and the use of research instruments designed for this study, For the primary source a structured survey questionnaire was developed to gather data from consumers regarding their perceptions and preferences related to green packaging as a driver of sustainability. The survey was distributed to a randomly selected sample of 55 participants.

For the secondary source of data: secondary data refers to information that was not originally collected for this research but is relevant to the study's objectives. For this study, academic literature is the secondary source that was consulted. A comprehensive review of academic literature on green packaging and sustainability was conducted. Scholarly articles, research papers, and books were sourced from databases such as Google Scholar, and academic libraries.

These sources provided theoretical frameworks, existing models, and empirical studies related to green packaging as a driver of sustainability and its impact on the environment and business practices.

### 3.3 Study population

The study population for researching and promoting green packaging as a driver of sustainability would consist of a wide range of random people with an educational background. The study population encompassed people with various educational levels and disciplines, without any specific demographic, geographical, or any other restriction. The aim is to understand and promote green packaging as a driver of sustainability in our society.

### 3.4 Sampling techniques

In our consumer survey, we've adopted random sampling, a method where individuals are chosen from the population with an equal and independent chance of selection. This approach ensures a representative sample that encompasses various demographic backgrounds. The sample size we choose is directly tied to our desired level of statistical significance.

A diverse sample, covering demographics like age, gender, income, education, and location, ensures that our survey findings apply to a broad consumer population. The sample size is critical; a larger sample offers greater statistical power and precision but is resource-intensive, while a smaller sample may be more cost-effective but less reliable. We determine the sample size based on factors like population size, desired confidence level, and acceptable margin of error, aiming to strike a balance between precision and practicality in our survey design.

### 3.5 Data collection

a. Consumer Survey: A questionnaire that assesses consumer perceptions, preferences, and behaviors related to green packaging will be developed. The survey will include questions about awareness of green packaging, purchasing decisions influenced by sustainable packaging, and attitudes towards recycling and waste reduction. Online surveys will be distributed using platforms like Google Forms or Survey Monkey which will help the researcher to collect a wide range of data.

b. Expert Interviews: Semi-structured interviews will be conducted with industry experts to gather qualitative insights. Prepare an interview guide with open-ended questions focusing on

topics such as the implementation of green packaging practices, challenges faced, and observed impacts on sustainability. Conduct the interviews either in person or via video conferencing or even via a phone call.

### 3.6 Data quality control and reliability

To ensure the reliability of the data, a pilot study was conducted to test the reliability of the questionnaire and identify questions that may be misinterpreted. 13 participants completed the 20-question pilot study (7 male, 13 female). Additionally, some questions were modified and others were removed before the questionnaires were administered. This ensured consistency and relevancy during the survey by avoiding changes in the questionnaire during the data collection exercise. The triangulation approach was applied in which questionnaires, interviews, and literature were used in the study. The researcher and supervisor discussed the questionnaire following which adjustments were made accordingly before the final draft. The data entry format was designed and cleaned in Excel to minimize entry errors before data analysis.

### 3.7 Ethical considerations

The researcher obtained the consent of the respondents in order to seek responses from the target study population. The respondents were given a brief description of the purpose and procedure of the study and the confidentiality of the information were assured to the respondents. Respondents were further assured of their personal protection and that they have the right to refuse or accept to be interviewed and also were free to withdraw at any point without providing any reason. At the end of the questionnaire, participants were provided the researcher's email address for any further information. The data findings were presented in the form of research findings and submitted to the school of business for the award of a bachelor's degree in procurement and logistics management at Uganda Christian University.

# CHAPTER FOUR: DATA ANALYSIS, PRESENTATION AND INTERPRETATION

## 4.0 Introduction

In an era where sustainability concerns have become paramount, the adoption of green packaging practices is gaining significant attention as a key driver of sustainability. (Neha Gupta, eco idea 2022).

In this chapter, we're going to explore the data we collected in a smart way. We'll look at the numbers and stories we found during our study about how green packaging is a driver of sustainability and the different objectives that were set for our research. We're like detectives, trying to understand what the data tells us. This chapter helps us turn the raw information we gathered into clear ideas. We'll use special methods to understand the numbers better and show them in pictures for example the survey data will be analyzed using statistical analysis software Excel, generated automatically by the Google form, and use appropriate descriptive statistics to summarize the survey responses. Conduct inferential statistics like correlation analysis to explore relationships between variables and assess the significance of findings. Then, we'll talk about what these numbers mean. We'll also pay attention to what respondents told us in their own words. By looking at both the numbers and what respondents said, we hope to learn the use of green packaging as a driver of sustainability and provide recommendations for improving the packaging system and lead it to a more sustainable packaging.

For this research, an online questionnaire used from the Google form was launched on 11$^{th}$ July 2023. The participants' responses were collected and stored, which were exported when the questionnaire closed on 25th July 2023. 55 participants were recruited via random sampling method to an online questionnaire (Google form); links to the questionnaire were sent to friends and family, and posted on WhatsApp status and various WhatsApp groups and different social media. and people were able to complete the questionnaire. Upon open the link(https://docs.google.com/forms/d/e/1faipqlsfflqrypyrjhbqjjkteriu0jbgjd7neuznkw2ledvsfqehfba/viewform?usp=pp_url)

Participants were directed to the questionnaire on the Google form with 4 sections where 3 of those sections were our research questions and the first section focused on the socio-demographic aspects of participants. Participants were required to complete the questionnaire in

their own time, answering 22 questions. Firstly, they had to state their gender, age, and their level of study. They were then required to answer 7 questions with an aim of understanding why there is a need for businesses to adopt green packaging while emphasizing on reduction of waste, cost, gas emissions, operational efficiencies, and competitive advantages. Next, they had to state the type of packaging materials used and their environmental impacts by answering 6 questions, all of them on a scale from strongly agree to strongly disagree emphasizing on plastics, paper, glass, metal, and biodegradable packaging. They were then asked which one of the above packaging materials has a significant negative environmental impact. Barriers and potential solutions for adopting green packaging by businesses and consumers the participant responded to 5 questions where the focus was on high cost, limited availability of materials, inadequate regulations, and unawareness as potential challenges. Participants were presented with an informed consent form before completing any questions, informing them that their anonymity would be maintained and that they were free to withdraw at any point without providing reason. At the end of the questionnaire, participants were provided the researcher's email address for any further information.

### 4.1 Socio-demographic data

To appreciate the reliability of the research findings, the researcher identified the respondents' demographic data concerning Gender, Age, and Education level.

#### 4.1.1 Gender of the Respondents

Gender distribution of the respondents

| Gender | Frequency | Percentage |
|---|---|---|
| Male | 36 | 65.5% |
| Female | 19 | 34.5% |
| Total | 55 | 100% |

The collected data all of them are from primary sources. The data breakdown in the table reveals that the primary respondents were females, constituting 65.5%, while males accounted for 34.5% of the responses. This highlights that a higher percentage of females were actively engaged in responding to the researcher's questionnaires compared to males. It suggests that a greater number of female participants took part in the study than males did.

### 4.1.2 Age of the respondents

The table below summarizes the age bracket of the respondents to this research.

| Age Bracket | Frequency | Percentage |
|---|---|---|
| Under 18 | 2 | 3.6% |
| 18-24 | 42 | 76.5% |
| 25-34 | 8 | 14.5% |
| 35-44 | 1 | 1.8% |
| 45 and above | 2 | 3.6% |
| Total | 55 | 100% |

Looking at the table provided, it's evident that 76.5% percent of the participants fell within the age range of 18 to 24 years, while 8% percent were between 25 and 34 years old. Respondents aged 35 years and above constituted 5.4% percent. The primary reason for the higher representation within the 18 to 25 age group is due to the environment in which we collected the data which is the campus environment but also the method used to collect the data which was the online method.

### 4.1.3 Level of education

| Level of study | Frequency | Percentage |
|---|---|---|
| Secondary school | 2 | 3.6% |
| Undergraduate | 42 | 76.5%% |
| Postgraduate | 10 | 18.1% |
| None of the above | 1 | 1.8% |
| Total | 55 | 100% |

Participants were asked by the researcher to specify their educational level. The findings unveiled that the largest portion were undergraduate students 42, and 10 respondents were postgraduate,2 were from secondary level and respondents were none of the suggested answers.

### 4.2 Why is there a need for consumers and businesses to adopt green packaging

This was our section two of the questionnaire and contained a various number of questions which helped to understand why there is a need for consumers and businesses to adopt green packaging.

A resounding 41.8% of respondents strongly agree and 43.6% of respondents agree approximately 86% of respondents agreed that green packaging helps in the reduction of waste generation in the business.

On the cost-saving 21.8% of respondents strongly agree and 36.4% of them agree that green packaging help business and consumers in the cost saving but it's good to mention that 21.8% were not sure of this but also 14.5% of them disagree.

31% of respondents strongly agree and 40% of them agreed that green packaging helps to minimize greenhouse gas emissions, whereas 18% were not sure.

14.5% of respondents strongly agree and 40% of them agree that people want to attach themselves to businesses that use or incorporate green packaging in their operations while 40%

of them were not sure and 9% disagree. This led us to the next point of view where 36,4% of respondents strongly agreed and 41.8% of them agreed that businesses that incorporate green packaging in their operations gain competitive advantages over others.

### 4.3 The type of packaging materials currently being used and their environmental impact

This was the section three of the questionnaire and the second objective of this research This section contained several questions that helped us to understand the type of packaging materials currently being used and their environmental impact.

The questionnaire findings reveal that 45.5% of our respondents strongly agreed and 41.8% of them agreed that the single-use of plastic bags and disposable plastic bottles contribute significantly to waste in the environment and 7.3% of them were not sure.

Additionally, 23% of our respondents strongly agree and 60% of them agree that the use of paper and cardboard packaging is related to the issues of deforestation and habitat destruction but have a lower impact on the environment in term of gas emissions and degradation.

Moreover, 18.2% of our respondents strongly agreed and 27.3% agreed that the glass packaging can be recycled indefinitely without losing quality whereas 36.4% of them were not sure and 14.5 of them disagreed.

For the metal packaging,20% of our respondents strongly agreed and 54.5% of them agreed that metal packaging is well known and reputed for its durability and recyclability, whereas 12.7% of them were not sure.

Remarkably, 18.2% of our respondents strongly agreed and 61.8% of them agree that most of the people are not aware of the concept of biodegradable and compostable packaging materials whereas 14.5% were not sure.

When our respondents were asked about the environmental impact of the packaging materials 83.6% of them said that plastic packaging has a significant negative impact on the environment and 7.3% said it's the paper and cardboard packaging.

Lastly in this section when respondents were asked about the packaging material they use the most 50.9% of the respondents used plastic packaging and 32.7% used paper and cardboard the most,12.7% used glass packaging.

### 4.4 Barriers and potential solutions for adopting green packaging by consumers and businesses.

This section was section four of our questionnaires but also our third objective of this research this section contained several questions that helped us to understand barriers and potential solutions to adopting green packaging by businesses and consumers.

Several challenges have emerged that impede individuals from effectively adopting green packaging as a driver of sustainability. Out of the respondents 30.9% of them strongly agreed and 43, 6% of them agree that the high cost of green packaging discourages businesses and consumers from adopting it, whereby 12.7%.

Additionally, 10.9% of the respondents strongly agreed and 43.9 agreed that the limited availability of green packaging materials hinders the widespread adoption of sustainable practices whereby 32.7% were not sure and 10.9 disagreed.

Unawareness of consumers about the environmental impacts of traditional was mentioned also that it hinders the adoption of green packaging where 23.6% of our respondents strongly agreed and 63.6% of them agreed and 9.1% of them were not sure.

Moreover, 38.2% of our respondents strongly agree and 38.2% agree that inadequate regulations pose a challenge in the implementation of green packaging whereby 12.7% of them were not sure and 9.1% of them disagreed.

From the above information collected from our participants, we can easily assume that:

On the first research question and the second section of the questionnaire, a significant majority of respondents agreed that green packaging helps in reducing waste generation in businesses. However, there was some uncertainty about whether it leads to cost savings. Still, a substantial proportion believed that green supply chain practices help minimize greenhouse gas emissions, and incorporating green packaging in business operations can provide a competitive advantage.

moving on to the second research question and third section of the questionnaire, respondents acknowledged that single-use plastic bags and disposable plastic bottles significantly contribute to environmental waste. The use of paper and cardboard packaging was seen as related to deforestation and habitat destruction, though it has lower gas emissions and degradation impacts. Glass packaging's recyclability was recognized, while metal packaging was appreciated for its durability and recyclability. However, awareness about biodegradable and compostable packaging people are not aware of the concepts. Lastly, the most used packaging material is the plastic one followed by the paper and cardboard packaging materials.

On the third research question and the fourth section of the questionnaire, cost and limited availability of green packaging materials were identified as barriers to the adoption of green packaging, along with consumer unawareness about the environmental impacts of traditional packaging. Inadequate regulations were also noted as a challenge in the implementation of green packaging practices.

# CHAPTER FIVE: SUMMARY, CONCLUSION AND RECOMMENDATION

## 5.0 Summary

This study was conducted to investigate the use of "green packaging as a driver of sustainability" with the overarching aim of fostering a culture of sustainability. The objectives encompassed the investigation of why there is a need for businesses and consumers to adopt green packaging, the investigation of the type of packaging materials that are currently used and their environmental impact, and also the investigation of the barriers and potential solutions to adopting green packaging by businesses and consumers.

The first objective involved identifying why is there a need for businesses and consumers to adopt green packaging, The study probed into the financial, social, and environmental advantages that businesses and consumers benefit from adopting green packaging as a driver of sustainability. By doing so, this research captures the holistic views of the advantages that come with green packaging.

The second objective sought, to investigate the type of packaging materials that are currently used and their environmental impact. The research uncovered that the single-use and disposable plastic packaging significantly contribute to environmental waste. The study also spotlighted that the use of paper and cardboard packaging was related to deforestation and habitat destruction, though it has lower gas emissions and degradation impacts. This research discovered that Glass packaging is more recyclable, while metal packaging is the most durable one. However, people are not aware of the biodegradable and compostable packaging concepts, and lastly the most used packaging material is the plastic one followed by paper and cardboard packaging material. This comprehensive exploration offered a deep understanding of the type of packaging materials that are currently used and their environmental impact.

The study's third objective centered on investigating the barriers and potential solutions to adopting green packaging by businesses and consumers. These barriers covered a wide range of barriers like cost and limited availability of green packaging materials, consumer unawareness about the environmental impacts of traditional packaging, and Inadequate regulations were noted as challenges in adopting green packaging practices.

This study presents a holistic understanding of green packaging as a driver of sustainability, by focusing on both the consumers, businesses, and regulatory bodies, this study provided a set of sustainability practices to both consumers and businesses and recommendations to regulatory bodies on how green packaging can be implemented.

### 5.1 Conclusion

In conclusion, this study was conducted to investigate the use of "green packaging as a driver of sustainability" with the overarching aim of fostering a culture of sustainability. The threefold objectives of the investigation of why there is a need for businesses and consumers to adopt green packaging, investigate the type of packaging materials that are currently used and their environmental impact, and also investigate the barriers and potential solutions to adopting green packaging by businesses and consumers illuminated the understanding of green packaging as a driver of sustainability on a multidimensional plan.

The first objective unfolded why is there a need for businesses and consumers to adopt green packaging, unveiling the reasons that can push consumers and businesses to adopt green packaging. From the findings, it was discovered that the highest percentage believed that green packaging offers to both businesses and consumers a financial, social, and environmental advantages like reducing waste generation, reducing cost, minimizing greenhouse gas emissions, and gives a competitive advantage to businesses, that businesses and consumers benefit from adopting green packaging as a driver of sustainability. This is in line with Guirong Zhang and Zongjian Zhao, 2012 who asserted that green packaging offers several advantages, among them lighter materials that reduce fuel and water consumption, decreased costs, and increased consumer awareness, The adoption of green packaging allowed businesses to reduce waste generation, conserve natural resources, and minimize greenhouse gas emissions.

The second objective delved into investigating the type of packaging materials that are currently used and their environmental impact. From the findings it was uncovered that the single-use and disposable plastic packaging significantly contribute to environmental waste In line with this, Jambeck et al., 2015 asserted that Plastic packaging contributes to pollution and waste accumulation due to its slow degradation and the single-use plastic bags and disposable plastic bottles had been found to contribute significantly to plastic waste in the environment. The findings spotlighted that the use of paper and cardboard packaging was seen as related to

deforestation and habitat destruction, though it has lower gas emissions and degradation impacts in the same way (Julia E et al., 2020). Asserted that paper and cardboard packaging are considered more environmentally friendly compared to plastics due to their renewable nature and recyclability but the production of paper and cardboard contributed to deforestation and habitat destruction if not sourced responsibly.

The findings recognized Glass packaging as the most recyclable, meaning that glass packaging can be recycled more than other packaging materials without losing its value This is in line with Fredrik Wikstrom and Helen Williams, 2019 asserted that Glass packaging can be recycled indefinitely without losing quality, which reduced the demand for raw materials and energy consumption.

From the findings metal packaging was appreciated for its durability The production of metal packaging materials required significant amounts of energy and emitted greenhouse gases in line with this Tomas Ekvall and Getachew Assefa, 2007 they assert that metal packaging is highly recyclable and could be reused indefinitely without losing quality However, Mining operations for extracting metals could also have adverse environmental impacts, including habitat destruction and water pollution. However, unawareness about biodegradable and compostable packaging has been discovered this means that people are not aware of this concept. Through rigorous analysis, the most used packaging material is the plastic ones followed by the paper and cardboard packaging material. This comprehensive exploration offered a deep understanding of the type of packaging materials that are currently used and their environmental impact.

Building upon these insights, the study's third objective strategically aimed at investigating the barriers and potential solutions to adopting green packaging by businesses and consumers. From the findings, it was discovered that the highest percentage believed that like cost and limited availability of green packaging materials, Inadequate regulations from regulatory bodies, and consumer unawareness about the environmental impacts of traditional packaging emerged as prominent challenges that hinder the implementation of green packaging practices. In line with this Kamrul Ahsan and Shams Rahman, 2017 asserted that green packaging materials and technologies often have higher upfront costs compared to traditional packaging, and its availability is limited in some areas and it's hard to meet high-volume demands. Werner J. Glantschnig 1994 also asserted that a lot of consumers are not aware of the environmental

impacts of traditional packaging or prioritized other factors such as convenience and price over sustainability but also Inconsistent or inadequate regulations related to green packaging could have posed challenges for businesses. Varying standards and regulations across different regions or countries could have hindered the adoption of uniform sustainable packaging practices.

In summary, this study presented a holistic understanding of green packaging as a driver of sustainability, reducing waste generation, reducing cost, minimizing greenhouse gas emissions, and gives a competitive advantage to businesses are diverse reasons to why consumers and businesses should adopt green packaging as a driver of sustainability. various packaging materials that are currently used with their environmental impact are quite many but plastic packaging is the most used and also has a big environmental impact, Paper and cardboard packaging are related to deforestation and habitat destruction but with low gas emissions and degradation impacts, the biodegradable and compostable packaging material are the most unknown one, the Glass packagings are the most recyclable ones and metal packaging the most durable one. Biodegradable and compostable packaging people are not aware of this concept. Barriers like cost and limited availability of green packaging materials, consumer unawareness, and inadequate regulations are challenges that hinder the implementation of green packaging. Ultimately, these barriers must be addressed in order to foster the adoption of green packaging and sustainability in the society. This research's implications are extensive influencing not only consumers and businesses but also the regulatory bodies in the implementation of green packaging as a driver of sustainability.

## 5.2 RECOMMENDATION

Based on the comprehensive findings and insights of this study, several recommendations can be made to promote green packaging as a driver of sustainability but also the cultivation of sustainable practices culture in the society.

**Raise Awareness and Education about green packaging:**

Launch public awareness campaigns to educate consumers about the environmental impact of different packaging materials and the benefits of green packaging. This can be done through Collaborating with educational institutions to include sustainability and green packaging topics in their curriculum.

Businesses should educate their employees about the advantages of green packaging and the importance of sustainability practices in their operations but also find a way to engage with their consumers. Using social media and other communication channels to engage consumers in discussions about green packaging and its benefits and Involve consumers in sustainability initiatives, such as recycling programs or community clean-up events. Media should have outlets to feature stories and articles that highlight the positive impact of green packaging and successful adoption stories and share informative content about green packaging practices and their benefits but also Develop campaigns that encourage consumers to make conscious choices, such as using reusable bags, containers, and bottles.

**Regulation and Policy:**

Advocate for stricter regulations on single-use plastics and non-recyclable materials. regulatory bodies should develop guidelines and standards for green packaging materials and practices and this can be done through Local Government Engagement, working with local governments in the implementation of the policies that promote the use of green packaging and ensure the reinforcement and applicability of the green packaging regulations but also the establishment of recycling facilities and infrastructure to support the proper disposal of green packaging materials.

**Collaboration and Partnerships:**

Facilitate partnerships between businesses, packaging manufacturers, and environmental organizations to find innovative solutions.

Encourage collaboration between industries to share best practices and resources for implementing green packaging, through Hosting industry conferences, workshops, and webinars to facilitate discussions on the benefits and challenges of green packaging adoption and establish initiatives to drive collective action toward sustainable packaging practices. This collaboration between industries and businesses enhances the creation of Industry Standards that can consist of Engaging with industry associations and organizations that focus on sustainable packaging to contribute to the development of best practices and standards.

Encourage businesses to adopt voluntary sustainable packaging guidelines set by these industry groups. Encourage also collaboration and partnership with retailers to create special displays or sections for products with sustainable packaging, making it easier for consumers to identify and

choose these options, Also retailers can educate customers on recycling facilities and infrastructure to support the proper disposal of green packaging materials.

**Incentivize Green Packaging Adoption:**

Offer financial incentives, tax breaks, or grants to businesses that adopt sustainable packaging practices.

Encourage businesses to use eco-friendly certifications and labels on their packaging to inform consumers of their commitment to sustainability or to oblige businesses to design products with minimal packaging or packaging that can be easily recycled and promote the use of refillable or reusable packaging options for products.

this point leads directly to the next one which is the implementation of penalties for businesses that do not comply with green packaging practices or businesses using unsustainable practices in their operations but also for customers who wrongly dispose of the packaging materials.

**Corporate Responsibility and Reporting:**

I would suggest businesses to incorporate green packaging goals and achievements into their corporate social responsibility reports.

Recognize and celebrate businesses that excel in adopting sustainable packaging practices through awards and recognition programs.

**Circular Economy and Close Loop Supply Chain Strategies:**

Businesses and consumers can invest more in the adoption of a circular economy and close-loop supply chain principles, such as designing packaging for reusability, recyclability, and minimizing waste in the way that the waste will be taken as raw material or the waste can be repurposed. Collaborate with businesses to develop take-back programs for packaging materials, encouraging customers to return used packaging for recycling or reuse.

**Supply Chain Integration:**

Supply chain integration can help to foster the implementation of green packaging and sustainability. Because there can’t be green packaging without green disposal and green production of the packaging materials. Work with suppliers to source sustainable packaging

materials and promote responsible sourcing practices. Encourage businesses to consider the entire lifecycle of packaging materials, from production to disposal.

**Research and Innovation:**

Government should invest in research and development to create innovative and sustainable packaging materials that have a lower environmental impact.

Support startups and companies that focus on developing biodegradable, compostable, and recyclable packaging alternatives. By investing in this research government can help to foster the implementation of green packaging and sustainability practices.

**Continuous Monitoring and Improvement:**

Set up mechanisms to continuously monitor the progress of green packaging adoption and track environmental impact reductions.

Regularly update stakeholders on the positive outcomes achieved through green packaging initiatives.

Lastly, I can recommend that further research should be conducted to investigate more on green packaging as a driver of sustainability.

Incorporating these recommendations can contribute to the implantation of green packaging as a driver of sustainability and enable our society to have sustainability practices for both the consumers and businesses.

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**APPENDICES**

**Appendix 1 : introductory letter for data collection**

UGANDA CHRISTIAN UNIVERSITY
A Centre of Excellence in the Heart of Africa

**SCHOOL OF BUSINESS**

1st Aug 2023

**TO WHOM IT MAY CONCERN**

Name: **KADIMA MAREBUZA ARISTOTE** Reg. No. **IJ20B00/009**

A bachelor's student who is seeking permission from your office to collect data for his/her dissertation titled

**"GREEN PACKAGING AS A DRIVER OF SUSTAINABILITY"**

We shall be grateful if you could render assistance to him/her in collecting the necessary data for his/her dissertation.

The Uganda Christian University School of Business thanks you in advance

……..

Mukisa Simon Peter
Research Coordinator

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