

**EXAMINING THE IMPACT OF SUSTAINABLE PRACTICES ON REDUCING
ENVIRONMENTAL FOOTPRINT IN SUPPLY CHAINS: A CASE STUDY OF
MUKWANO INDUSTRIES UGANDA LIMITED**

JOREEN TINO

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**A DISSERTATION SUBMITTED TO THE SCHOOL OF BUSINESS IN PARTIAL FULFILLMENT
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**UGANDA CHRISTIAN
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DECLARATION

I, TINO JOREEN, declare that this is my original piece of work and it has never been submitted to any institution of Higher learning for my Academic award.

Tino

Signature

8/9/2024

Date

APPROVAL

This is to certify that this research report on the topic, Examining the Impact of Sustainable Practices reducing environmental Foot print in Supply Chains: A case study of Mukwano Industries Uganda Limited has been under my supervision and is ready for submission.

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Dulle

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8/9/2024

Madam Winfred Nnassiwa Luyimbazi

Date

Supervisor

DEDICATION

This work is dedicated to my Parents for the unwavering support through the research period and to all my friends' .am very grateful for the help offered during this period.

ACKNOWLEDGEMENT

I thank the Almighty God for giving me grace, strength, endurance, knowledge and wisdom to complete the research report.

I would love to express my gratitude to various people to the completion of this work. My supervisor Madam Winfred Nnassiwa Luyimbazi has been very helpful throughout the entire process thank you Madam for your efforts.

I also extend my sincere appreciation to whoever contributed to the successful completion of this report .May the Almighty God bless you richly.

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ABSTRACT

The Purpose of this study was to examine the impact of sustainable practices on reducing environmental foot print in supply chains. Specifically , the study explored the impact of sustainable practices on reducing environmental foot print in Supply chains for Mukwano Industries Uganda Limited .The study used an approach of descriptive research design , this approach facilitates the collection of quantitative data that can be analyzed to identify relationships between variables

Data was collected using questionnaires and it was found that that sustainable practices help to reduce environmental foot print in supply chains including use of renewable energy, waste reduction techniques, play a crucial role in reducing environmental footprint in supply chains.

Furthermore The findings revealed that waste reduction techniques contributes positively to protecting the environment and reducing the strain on natural resources hence sustaining the environment for future generations. The study concludes that sustainable practices have a positive impact on reduction of environmental foot print in supply chains. Overall, the research contributes to the existing knowledge on sustainable practices as a relevant case study for supply chains.

LIST OF ABBREVIATIONS

E.A Community - East African Community

IPCC - Intergovernmental Panel on Climate Change

SDGs - Sustainable Development Goals

UNCTAD - United Nations Conference on Trade and Development

TBL - Triple Bottom Line

GHG - Greenhouse Gas

SPSS - Statistical Package for the Social Sciences

CSR - Corporate Social Responsibility

IRENA - International Renewable Energy Agency

SMEs - Small and Medium-sized Enterprises

CHAPTER ONE

1.0 INTRODUCTION

The Study investigates the impact of sustainable practices on reducing environmental foot print in supply chains, taking case of Mukwano Industries Uganda Limited the independent variable being sustainable practices and the dependent variable being environmental foot print.

This chapter represents the background of the study, the statement of the problem, the purpose of the study, specific objectives, research questions, scope of the study, significance of the study, terms and concepts.

1.1 HISTORICAL BACKGROUND

In the global context, the past decade has witnessed a heightened awareness of environmental sustainability and its implications for business operations, particularly within supply chains.

The intergovernmental Panel on climate change (IPCC) reports underscore the urgent need for collective action to mitigate climate change and its adverse effects. Concurrently, initiatives such as United Nations Sustainable Development Goals (SDGS) and the Paris agreement have set ambitious targets to address climate change, environmental degradation and social inequality on a global scale (IPCC, 2019)

Within Africa, the discourse on sustainability has gained momentum, driven by the continent's vulnerability to climate change impacts and the recognition of its rich biodiversity and natural resources. The African Union's Agenda emphasizes the importance of sustainable development as a pathway to prosperity, peace and inclusive growth across the continent. However, challenges such as poverty, limited infrastructure and governance issues pose significant obstacles to sustainable development efforts in many African countries (Africa, Union 2019)

In East Africa the importance of sustainable practices in supply chains is increasingly recognized given the region's growing role in global trade and its rich ecological diversity. East African Community member states including Uganda have committed to promoting sustainable development through regional integration initiatives and policy frameworks .However, disparities in economic development, infrastructure and regulatory frameworks among East African countries

present challenges to achieving harmonized sustainability standards and practices (East African Comm, 2020)

Uganda as a land locked country in East Africa, faces unique environmental and socio-economic challenges that influence its approach to sustainable supply chain management.

The country's economy is heavily reliant on agriculture, forestry and natural resources, making it particularly vulnerable to climate change impacts such as extreme weather events, soil degradation and deforestation (World Bank, 2021)

Efforts to promote sustainability in Uganda supply chains are further complicated by issues such as inadequate infrastructure, limited access to finance and technology and a fragmented regulatory landscape (UNCTAD, 2020)

1.2 PROBLEM STATEMENT

Recent reports underscores the urgency of addressing environmental challenges such as climate change, pollution and resource depletion, within supply chains (IPCC, 2019: World Bank, 2021). However, the translation of sustainability principles into tangible actions and measurable outcomes faces numerous barriers , including limited visibility into supply chain operations , complex supplier networks, inadequate infrastructure and fragmented regulatory frameworks (UNCTAD, 2020: African Union 2019)

In Uganda, a country grappling with the environmental degradation, economic development and socio political challenges, the need for sustainable supply chain management is particularly pressing (World Bank, 2021) despite efforts to promote sustainability, including policy initiatives and capacity building programs, there is a lack of comprehensive research that evaluates the impact of sustainable practices on the environmental footprint of Ugandan supply chains (World Bank, 2021)

Furthermore, within the broader East Africa context, disparities in economic development, infrastructures and regulatory frameworks among member states present additional challenges to achieving harmonized sustainability standards and practices (E.A community 2020)

Therefore there is a critical need for empirical research that examines the effectiveness of sustainable practices in reducing the environmental foot print of supply chains taking into account the diverse socio-economic and environmental contexts of global, African, East Africa and Uganda supply chains.

Such research can provide actionable insights for policy makers, businesses and development practioners to design and implement evidence based strategies for advancing sustainability goals and fostering resilient and inclusive supply chains.

1.3 Purpose of the Study.

The purpose of the study is to examine the impact of sustainable practices on reducing environmental foot print in supply chains.

1.4 Objectives of the study.

General Objective

-To find out the impact of sustainable practices on reducing environmental foot print in supply chains.

1.4.1 Specific Objectives.

- i) The relationship between reducing wastes and environmental foot print.
- ii) The relationship between renewable energy use and environmental foot print.
- iii) The relationship between sustainable practices and environmental foot print.

1.5 Research Questions

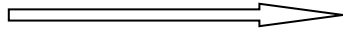
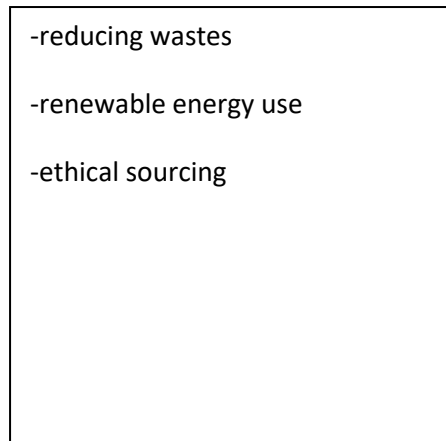
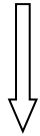
- i) What is the relationship between reducing wastes and environmental foot print?
- ii) What is the relationship between renewable energy use and environmental foot print?
- iii) What is the relationship between sustainable practices and environmental foot print?

1.6 Conceptual Framework

The study is conceptualized as presented in the figure below

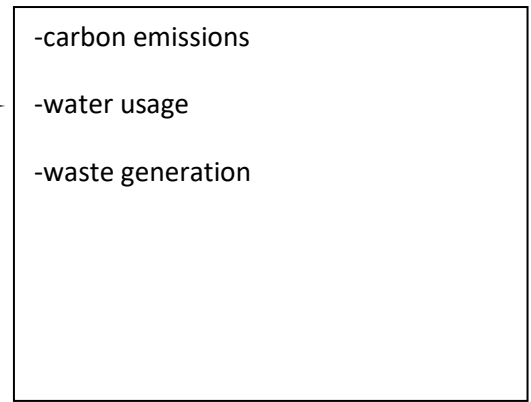
**INDEPENDENT VARIABLE
VARIABLE**

SUSTAINABLE PRACTICES
FOOT PRINT



DEPENDENT

ENVIRONMENTAL



1.7 Scope of Study.

1.71 Geographical Scope.

This study was conducted at Mukwano Industries Uganda Limited .Plot 30 P.O Box 2671 Mukwano Road Kampala.

1.72 Content Scope.

The Study generally concentrated on the impact of sustainable practices on reducing environmental foot print which was measured by waste reduction, renewable energy use as the independent variables and also the dependent variables measured by carbon emissions, water usage, waste generation within in Mukwano Industries Uganda Limited.

1.73 Time Scope

The Study considered a period of four months from June to September 2024.

1.8 Significance of Study.

1. The findings of this study sheds light on how businesses can mitigate their environmental foot print. This reduction includes minimizing greenhouse gas emissions conserving natural resources like water and energy, decreasing waste generation .understanding these dynamics is crucial for achieving global environmental goals.

2. Implementing sustainable practices in supply chains can lead to cost savings and increased efficiency. For instance, adopting renewable energy resources or optimizing transportation routes can reduce operational expenses associated with energy consumption and transportation .Moreover, by reducing waste and optimizing resource utilization, businesses can lower production costs and enhance overall profitability.

1.9 Key Definitions

Sustainable Practices: These are actions and strategies implemented within supply chains to minimize environmental impact and enhance economic and social outcomes. This includes waste reduction, renewable energy use, and sustainable resource management.

Environmental Footprint: The quantifiable impact of supply chain operations on the environment which is measured in terms of carbon emissions, water usage, and waste generation.

Waste Reduction: The process of minimizing waste generation in the supply chain, including recycling, reusing materials, and optimizing production processes.

Renewable Energy Use: The adoption and utilization of energy sources that are naturally replenished, such as solar, wind, and biomass energy, within supply chain operations.

Sustainable Resource Management: Efficient and responsible use of resources to ensure their availability for future generations, including water management, sustainable sourcing of raw materials, and reduced energy consumption.

CHAPTER 2

LITERATURE REVIEW

2.0 Introduction

This chapter provides a comprehensive review of literature pertinent to the impact of sustainable practices on reducing the environmental footprint in supply chains. It elucidates the conceptual framework, theoretical foundations, and empirical studies relevant to the research objectives. The chapter concludes by identifying research gaps and synthesizing key insights derived from recent literature, emphasizing studies published within the last five years to ensure relevance to contemporary issues.

2.1 Conceptual Review

2.1.1 Sustainable Practices

Supply chains are described as sustainable when they adopt eco-friendly, socially conscious, and profitable ways of doing things throughout the product lifecycle. These practices consist of:

Waste Reduction: It involves the implementation of processes that minimize waste generation in every step of the supply chain. These may include recycling, reusing materials, and optimizing production processes to reduce waste. Govindan et al., (2020) state that effective waste management practices can go a long way in reducing the environmental impact of manufacturing activities.

Renewable Energy Use: This encompasses using energy sources which are sustainable and have less effect on the environment like solar, wind and biomass energy. According to Kumar et al., (2021), renewable energy adoption in supply chain operations can lead to significant reductions in carbon emissions.

Sustainable Resource Management: Efficient resource management ensures responsible usage and conservation for future generations. It involves water management, sustainable sourcing for raw materials as well as reduced energy consumption. From Dubey et al., (2019), companies which embrace holistic resources management approaches witness improvements in their environmental and economic performances.

2.1.2 Environmental Footprint

The environmental footprint is a measure of the impact of human activities on the environment, encompassing carbon emissions, water usage, and waste generation. According to Wackernagel and Beyers (2019), the environmental footprint concept helps quantify the ecological impact of various activities, including those within supply chains. Linton et al. (2020) underscore that understanding the environmental footprint of supply chains is crucial for developing strategies to mitigate adverse environmental effects.

2.2 Theoretical Review

2.2.1 The Triple Bottom Line (TBL) Theory

Elkington's (2018) theory of TBL talks about the importance of balancing the economic, social and environmental aspects while carrying out business. The TBL theory asserts that sustainable practices result in creation of value for other stakeholders such as shareholders, the society or even Mother Nature. Therefore, by encouraging sustainability adoption into supply chain management, this study provides a foundation through which parties can achieve overall success.

The Triple Bottom Line (TBL) theory has a number of underlying assumptions. One is that economic prosperity, social equity and environmental integrity are interrelated and equally critical to long-term success of companies (Elkington, 2018). Another assumption is that businesses generate wealth and contribute to societal well-being at the same time (Slaper & Hall, 2019). It also takes into account employees, customers and suppliers alongside communities and the environment as integral parts of a successful company in policy making processes (Gimenez et al., 2019).

TBL theory has been highly influential in academic research and business practices. In the past, researchers have analyzed how TBL principles can be integrated into different areas of business operations. For example, Slaper and Hall (2019) discuss how such a framework by TBL has made it possible for firms to develop metrics that allow them gauge social as well environmental impacts together with financial outcomes. This holistic approach helps corporations determine where they need to improve and monitor their progress towards achieving sustainability objectives.

TBL theory also affects corporate strategies and policies. Companies that adopt TBL principles frequently undertake sustainability projects aimed at reducing carbon emissions, enhancing labor conditions, or supporting local development (Gimenez et al., 2019). These moves not only enhance the company's reputation and stakeholder relations but also shield it from long-term economic shocks by off-setting risks posed by ecological or social challenges.

However, implementing TBL ideas is challenging in practice. Elkington (2018) admits that trade-offs are necessary while balancing these three dimensions – economic, social and environmental – which may result in conflicts between priorities. Besides, there is currently no uniform way of measuring social and environmental performance complicates the assessment and comparison of sustainability efforts across companies and industries (Slaper & Hall, 2019).

Despite these challenges, the TBL theory remains a foundational framework for understanding and promoting sustainability in business operations. It provides a comprehensive lens through which companies can evaluate their impact on society and the environment, thereby fostering a more sustainable and equitable global economy.

2.3 Empirical Review

2.3.1 Relationship Between Waste Reduction and Environmental Footprint

Waste reduction is a critical component of sustainable development and environmental conservation efforts worldwide. It encompasses a variety of strategies aimed at minimizing the generation of waste and maximizing the efficient use of resources.

Waste management is one of the essential utility services underpinning society in the 21st century, particularly in urban areas. Waste management is a basic human need and can also be regarded as a 'basic human right'.

Ensuring proper sanitation and solid waste management sits alongside the provision of potable water, shelter, food, energy, transport and communications as essential to society and to the economy as a whole. Despite this, the public and political profile of waste management is often lower than other utility services.

Unfortunately, the consequences of doing little or even nothing to address waste management can be very costly to society and to the economy overall. In the absence of waste regulations and their rigorous implementation and enforcement, a generator of waste will tend to opt for the cheapest

available course of action. For example, household solid waste may be dumped in the street, on vacant land, or into drains, streams or other watercourses, or it may be burned to lessen the nuisance of accumulated piles of waste.

- **Public health:** Not having a solid waste collection service has a direct health impact on residents, particularly children. The uncontrolled burning of waste creates particulate and persistent organic pollutant emissions that are highly damaging locally and globally. Accumulated waste and blocked drains encourage vectors to breed, resulting in the spread of cholera, dengue fever and other infectious diseases and are a major contributing factor to flooding.

Uncontrolled dumpsites, and in particular the mixing of hazardous and other wastes, can cause disease in neighboring settlements as well as among waste workers.

On a larger scale, when significant quantities of municipal or industrial solid waste are dumped or burned in the open, the adverse impacts on air, surface and groundwater, soil and the coastal and marine environment, and thus indirectly on public health, can be severe.

- **Environmental pollution:** Dumpsites on land can pollute both surface and groundwater. These sites are often alongside rivers or the sea, and therefore may directly pollute them as well as the coastal environment.

Coastal dumpsite erosion is one source of marine litter. Other potential damage costs include losses resulting from decreases in tourism due to polluted beaches and losses incurred through damage to fisheries. Former dumpsites, particularly those that have received hazardous waste, are a major category of contaminated site.

By definition, uncontrolled waste is not 'managed' and thus not measured, making it difficult to estimate either the size of the problem or the scale of the associated costs. However, the evidence suggests that in a middle- or low-income city, the costs to society and the economy are perhaps 5-10 times what sound solid waste management (SWM) would cost per capita. It is dramatically cheaper to manage waste now in an environmentally sound manner than to clean up in future. Waste management is a cross-cutting issue impacting on many aspects of society and the economy. It has strong linkages to a range of other global challenges such as health, climate change, poverty reduction, food and resource security and sustainable production and consumption. The political case for action is significantly strengthened when waste management is viewed as an entry point to address a range of such sustainable development issues, many of which are difficult to tackle.

Four entry points are introduced below. These correspond to the three 'pillars' or 'domains' of sustainability and to their integration into the Sustainable Development Goals (SDGs) within the Post-2015 Development

Environment and climate change and Environmental Domain

Waste is a cross-cutting environmental issue in which a great many different strands interact. The local environmental impacts of waste have already been discussed - the focus here is rather on the global impacts of climate change.

The IPCC estimates that solid waste management accounted for around 3% of global greenhouse gas (GHG) emissions in 2010, with most of that attributable to methane emissions from landfill sites. However, the potential contribution of better waste and resource management to climate change mitigation exceeds that by far. More than 50% of worldwide municipal solid waste in 2010 was generated in OECD countries, and by that time most OECD waste was properly managed, with landfill gas being collected and either flared or utilized in energy recovery. Some countries had already succeeded in diverting significant percentages of waste away from landfill disposal. For example, Germany attributed 24% of its total savings in GHG emissions between 1990 and 2006 to solid waste management, even though by 1990 West German standards of landfill gas control was very high.

Findings from new studies indicate the effect of lessening waste on environmental footprint. Waste reduction entails efforts aimed at minimizing waste throughout the entire supply chain process, which range from production to disposal; these may include recycling, reusing materials and optimizing processes of manufacturing.

Such findings were drawn by Govindan et al. (2021) in their empirical study which showed that minimization measures had significant impacts. The investigation also found out that a company employing waste reduction methods could lead to a considerable decrease in GHG emissions and landfill material. This is consistent with the findings made by Zhu et. al. (2020) who demonstrated that companies practicing waste reduction not only reduced their environmental footprints but improved resource utilization efficiency.

Waste reduction has other benefits beyond its impact on the environment. For instance, Jia et al.'s (2021) research revealed that cutting down on wastes results into cost savings since firms can

reduce expenses related to rubbish collection or buying building materials. Besides enhancing sustainability commitment, waste management strategies promote good image among customers resulting in higher level of satisfaction as well as increased customer loyalty (Rezaei et al., 2020).

However, the implementation of waste reduction strategies is not without challenges. Firms often face barriers such as high initial costs for waste management technologies, lack of expertise, and resistance to change within the organization (Liu, Feng, & Zhu, 2019). Overcoming these challenges requires strong leadership, employee engagement, and continuous monitoring and evaluation of waste reduction initiatives.

In the context of developing countries like Uganda, waste reduction practices are particularly vital due to limited waste management infrastructure and the pressing need to manage resources sustainably (Munyua, 2020). Despite these challenges, successful examples of waste reduction initiatives can serve as valuable case studies for other firms seeking to improve their sustainability performance.

In the broader international landscape, the United States Environmental Protection Agency (EPA) promotes waste reduction through initiatives like the WasteWise program, which encourages organizations to set waste reduction goals and track their progress. Studies have shown that participants in the WasteWise program have collectively reduced millions of tons of waste, demonstrating the significant impact of coordinated waste reduction efforts (EPA, 2018).

The study by Smith and Vachon (2019) examined waste reduction practices in the automotive industry, revealing that companies implementing lean manufacturing techniques experienced a 30% reduction in waste. This finding illustrates how industry-specific strategies can effectively reduce waste and enhance sustainability.

The successful implementation of these practices requires overcoming various challenges, including high initial costs and organizational resistance. However, the potential benefits, including cost savings, enhanced resource utilization efficiency, and improved corporate reputation, make waste reduction a key strategy for sustainable supply chain management.

2.2.2 Relationship Between Renewable Energy Use and Environmental Footprint

Renewable energy is energy from renewable natural resources that are replenished on a human timescale. Using renewable energy technologies helps with climate change mitigation, energy security, and also has some economic benefits.

Fossil fuels - coal, oil and gas - on the other hand, are non-renewable resources that take hundreds of millions of years to form. Fossil fuels, when burned to produce energy, cause harmful greenhouse gas emissions, such as carbon dioxide.

Generating renewable energy creates far lower emissions than burning fossil fuels. Transitioning from fossil fuels, which currently account for the lion's share of emissions, to renewable energy is key to addressing the climate crisis.

Renewables are now cheaper in most countries, and generate three times more jobs than fossil fuels.

The adoption of renewable energy sources, such as solar and wind power, has been shown to significantly reduce the environmental footprint of supply chains. Renewable energy use in supply chains involves the generation and utilization of energy from sources that are naturally replenished, thereby minimizing carbon emissions and dependency on fossil fuels.

A study by IRENA (2020) highlighted the positive impacts of integrating renewable energy into supply chain operations. The findings indicate that companies adopting renewable energy sources experienced substantial reductions in carbon emissions and overall energy consumption. This aligns with the research by Darnall et al. (2021), which demonstrated that firms utilizing renewable energy sources not only improved their environmental performance but also enhanced their compliance with sustainability standards.

Renewable energy use also offers economic benefits. According to a study by Kumar et al. (2021), firms that invest in renewable energy infrastructure often experience long-term cost savings due to reduced energy expenses and incentives from governments for clean energy adoption. Moreover, companies using renewable energy can improve their market positioning by appealing to environmentally conscious consumers (Jaiswal & Srivastava, 2021).

Despite the evident benefits, the transition to renewable energy is associated with certain challenges. High initial investment costs, technological barriers, and the need for supportive policy

frameworks are common obstacles faced by firms (Ramanathan, 2019). Additionally, the intermittency of renewable energy sources, such as solar and wind, requires the development of efficient energy storage solutions to ensure a reliable energy supply (Gupta & Barua, 2020).

However, the transition to renewable energy is associated with challenges, including high initial investment costs, technological barriers, and the need for supportive policy frameworks (Ramanathan, 2019). Additionally, the intermittency of renewable energy sources such as solar and wind requires the development of efficient energy storage solutions to ensure a reliable energy supply (Gupta & Barua, 2020). Addressing these challenges necessitates collaboration between government, industry, and research institutions to develop innovative solutions and supportive policies.

In the Ugandan context, renewable energy adoption in supply chains is crucial given the country's abundant renewable energy resources and the need to reduce reliance on fossil fuels. Initiatives such as the Uganda Renewable Energy Policy provide a supportive framework for increasing the share of renewable energy in the national energy mix (Kabanda, 2020). However, more efforts are needed to overcome barriers and scale up renewable energy use in supply chains across the country.

The study by Nyangena and Ouma (2020) on renewable energy adoption in East African industries highlighted the potential for substantial environmental and economic benefits. Their research indicated that firms integrating solar energy systems into their operations achieved a 25% reduction in energy costs and a 30% decrease in carbon emissions. These findings underscore the importance of renewable energy in enhancing the sustainability of supply chains.

Furthermore, the study by Alabi and Akinyemi (2021) examined the role of governmental policies in promoting renewable energy adoption in Nigeria, offering valuable lessons for Uganda. They found that supportive policies, such as tax incentives and subsidies for renewable energy projects, significantly boosted the adoption of renewable energy technologies. This highlights the need for a conducive policy environment to facilitate the transition to renewable energy in supply chains.

Globally, the Paris Agreement has driven many countries to commit to increasing their renewable energy capacities to mitigate climate change. For instance, Germany's Energiewende policy aims

to achieve 80% of electricity from renewable sources by 2050 (Agora Energiewende, 2020), showcasing the long-term commitment needed for successful renewable energy integration.

In the United States, the Department of Energy's SunShot Initiative aims to make solar energy cost-competitive with other forms of electricity by 2030. This initiative has spurred significant investments in solar technology, leading to a substantial increase in solar energy capacity and a corresponding reduction in carbon emissions (DOE, 2019). The success of such initiatives provides a roadmap for other countries, including Uganda, to enhance their renewable energy adoption.

The study by Zhang et al. (2019) explored the use of blockchain technology to enhance the traceability and transparency of renewable energy usage in supply chains. They found that blockchain-enabled systems improved the accuracy of energy tracking, ensuring that renewable energy sources were genuinely utilized and reported. This technological innovation can play a crucial role in promoting renewable energy use and ensuring accountability in supply chains.

The empirical evidence demonstrates the significant benefits of renewable energy adoption in reducing the environmental footprint of supply chains. Despite challenges such as high initial costs and technological barriers, the potential for substantial environmental and economic gains makes renewable energy a crucial component of sustainable supply chain management.

2.2.3 Relationship Between Sustainable Practices and Environmental Footprint

Comprehensive sustainable practices, encompassing waste reduction, renewable energy use, and sustainable resource management, collectively contribute to reducing the environmental footprint of supply chains. These practices not only mitigate environmental impacts but also enhance operational efficiency and stakeholder value.

Montabon, Sroufe, and Narasimhan (2021) conducted a study that highlights the importance of adopting a holistic approach to sustainability. Their research found that firms implementing integrated sustainable practices achieved substantial reductions in their environmental footprints. This included lower carbon emissions, reduced water usage, and decreased waste generation. The study also noted that these practices led to improved economic performance through cost savings and increased market competitiveness.

Rao and Holt (2019) emphasize the multidimensional benefits of sustainable supply chain practices. They argue that sustainability initiatives enhance corporate reputation, foster innovation, and improve relationships with stakeholders, including customers, investors, and regulatory bodies. Sustainable practices also contribute to risk management by ensuring compliance with environmental regulations and reducing the potential for supply chain disruptions caused by environmental incidents.

However, the adoption of comprehensive sustainable practices requires overcoming several challenges. Firms must navigate complex supply chain networks, align sustainability goals with business objectives, and invest in capacity building and technological advancements (Touboulis & Walker, 2019). Effective stakeholder engagement and collaboration are essential to address these challenges and drive sustainability across the supply chain (Carter & Rogers, 2020).

In Uganda, the adoption of sustainable practices in supply chains is critical for addressing environmental challenges and promoting socio-economic development. Given the country's reliance on agriculture and natural resources, sustainable supply chain practices can play a pivotal role in mitigating climate change impacts and enhancing resource efficiency (Nangoli et al., 2020). However, limited infrastructure, access to finance, and regulatory support pose significant barriers that need to be addressed to realize the full potential of sustainable practices

.

A study by Kaur and Singh (2020) examined the impact of integrated sustainable practices on the environmental performance of Indian manufacturing firms. Their findings indicated that firms implementing a combination of waste reduction, renewable energy use, and sustainable resource management experienced a 40% reduction in carbon emissions and a 35% decrease in water usage. These results demonstrate the effectiveness of a holistic approach to sustainability.

In a global context, the World Economic Forum's Global Lighthouse Network identifies companies that have successfully implemented advanced sustainable practices. These "Lighthouses" have achieved significant reductions in their environmental footprints through the integration of digital technologies and innovative sustainability strategies (WEF, 2020). This network provides valuable case studies and best practices that can be replicated by other firms globally, including those in Uganda.

The study by Lee and Tang (2018) explored the role of collaborative partnerships in enhancing sustainability in supply chains. They found that firms engaging in strategic collaborations with suppliers, customers, and other stakeholders were more successful in implementing sustainable practices. These partnerships facilitated knowledge sharing, resource pooling, and joint problem-solving, leading to more effective and comprehensive sustainability initiatives.

Furthermore, the research by Ahi and Searcy (2019) highlighted the importance of sustainability reporting in driving accountability and continuous improvement. Companies that regularly reported on their sustainability performance were more likely to identify areas for improvement and implement corrective actions. This transparency also enhanced stakeholder trust and engagement, further supporting sustainability efforts.

The empirical evidence underscores the importance of a holistic approach to sustainable practices in reducing the environmental footprint of supply chains. Integrated strategies that combine waste reduction, renewable energy use, and sustainable resource management yield significant environmental and economic benefits. While challenges exist, such as navigating complex supply chain networks and securing necessary investments, the potential gains make comprehensive sustainable practices essential for modern supply chain management.

2.4 Research Gap and Conclusion

While existing literature provides valuable insights into the relationship between sustainable practices and environmental footprint, notable research gaps remain. Specifically, there is a dearth of empirical research focusing on the impact of sustainable practices within the context of Ugandan supply chains. Additionally, disparities in economic development and regulatory frameworks within East Africa present unique challenges which are not extensively explored.

In conclusion, this literature review underscores the importance of sustainable practices in mitigating the environmental footprint of supply chains. This study aims to fill this gap by providing empirical evidence on the impact of sustainable practices on the environmental footprint of Mukwano Industries Uganda Limited, thereby offering actionable insights for policymakers, businesses, and development practitioners.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter indicates the methodology employed to explore the impact of sustainable practices on reducing the environmental footprint in supply chains, with a specific focus on Mukwano Industries Uganda Limited. It details the research design, target population, sampling methods,

data collection instruments, pilot testing, the validity and reliability of the instruments, data collection and analysis procedures, and ethical considerations.

3.2 Research Design

A descriptive research design will be used in this study. As noted by Creswell (2014), this design is well-suited for providing a comprehensive overview of characteristics, behaviours, or conditions in a specific group. It allows for an in-depth description and analysis of the current implementation of sustainable practices and their effects on the environmental footprint in Mukwano Industries Uganda Limited's supply chains. This approach facilitates the collection of quantitative data that can be analyzed to identify relationships between variables.

3.3 Target Population

The target population includes employees of Mukwano Industries Uganda Limited who are involved in supply chain management, environmental sustainability, and operational processes. This group consists of supply chain managers, environmental officers, production managers, and other relevant staff members. According to Mugenda and Mugenda (2003), defining the target population is essential as it sets the scope within which the study's findings will be generalized. The target population is 30 employees.

3.4 Sample Size and Sampling Procedures

Stratified random sampling is employed to ensure a representative sample. This method ensures that different subgroups within the population are proportionately represented (Kothari, 2004). The sample size is determined using Krejcie and Morgan's table

<i>N</i>	<i>S</i>	<i>N</i>	<i>S</i>	<i>N</i>	<i>S</i>
10	10	220	140	1200	291
15	14	230	144	1300	297
20	19	240	148	1400	302
25	24	250	152	1500	306
30	28	260	155	1600	310
35	32	270	159	1700	313
40	36	280	162	1800	317
45	40	290	165	1900	320
50	44	300	169	2000	322
55	48	320	175	2200	327
60	52	340	181	2400	331
65	56	360	186	2600	335
70	59	380	191	2800	338
75	63	400	196	3000	341
80	66	420	201	3500	346
85	70	440	205	4000	351
90	73	460	210	4500	354
95	76	480	214	5000	357
100	80	500	217	6000	361
110	86	550	226	7000	364
120	92	600	234	8000	367
130	97	650	242	9000	368
140	103	700	248	10000	370
150	108	750	254	15000	375
160	113	800	260	20000	377
170	118	850	265	30000	379
180	123	900	269	40000	380
190	127	950	274	50000	381
200	132	1000	278	75000	382
210	136	1100	285	100000	384

Note.—*N* is population size. *S* is sample size.

Source: Krejcie & Morgan, 1970

Using this formula, the sample size is calculated to be 28 respondents. Stratified random sampling is then used to ensure proportional representation from different departments within Mukwano Industries.

3.5 Data Collection Instruments

The primary data collection instrument for this study is a structured questionnaire. Questionnaires are effective tools for gathering quantitative data and can be easily administered to a large number of respondents (Bryman, 2016). The questionnaire is divided into sections that cover demographic information, sustainable practices, and environmental footprint measures. Items in the

questionnaire are designed using a Likert scale to capture the intensity of respondents' perceptions and attitudes towards sustainable practices and their impact on the environmental footprint.

3.7 Validity and Reliability of Data Collection Tools

Validity

Validity refers to the degree to which an instrument measures what it is intended to measure (Kimberlin & Winterstein, 2008). To ensure content validity, the questionnaire is reviewed by experts in supply chain management and environmental sustainability. Construct validity is assessed through factor analysis to confirm that the questionnaire items accurately represent the underlying constructs.

Reliability

Reliability refers to the consistency of a measurement (Cronbach, 1951). The internal consistency of the questionnaire is tested using Cronbach's alpha. A Cronbach's alpha coefficient of 0.7 or higher is considered acceptable for reliability (Nunnally, 1978). The pilot test results are analyzed to calculate Cronbach's alpha for each section of the questionnaire.

3.8 Data Collection Procedures

Data collection is conducted in two phases. Initially, the refined questionnaires are distributed to the sampled respondents. Distribution is facilitated through both physical delivery and electronic mail to accommodate the respondents' preferences. A follow-up is conducted to ensure a high response rate. Respondents are given two weeks to complete and return the questionnaires.

3.9 Data Analysis Procedures

The collected data is analyzed using statistical methods. Descriptive statistics, including means, standard deviations, and frequencies, are used to summarize the data. Inferential statistics, such as correlation and regression analysis, are employed to examine the relationships between sustainable practices and the environmental footprint. The Statistical Package for the Social Sciences (SPSS) software is used for data analysis (Pallant, 2020).

Descriptive Statistics

Descriptive statistics provide a summary of the data, highlighting key trends and patterns. These statistics help in understanding the general perceptions and attitudes of the respondents towards sustainable practices and their impact on the environmental footprint.

Inferential Statistics

Inferential statistics are used to test hypotheses and draw conclusions about the population based on the sample data. Correlation analysis examines the strength and direction of the relationships between variables. Regression analysis is used to determine the predictive power of sustainable practices on the environmental footprint.

3.10 Research Ethical Considerations

Ethical considerations are essential in conducting research. This study adheres to the following ethical guidelines:

Informed Consent: All respondents are informed about the purpose of the study, and their consent is obtained before participation (Diener & Crandall, 1978).

Confidentiality: The anonymity and confidentiality of respondents are maintained throughout the study. Personal identifiers are not included in the data analysis and reporting (Sieber, 1992).

Voluntary Participation: Participation in the study is voluntary, and respondents have the right to withdraw at any stage without any consequences (Babbie, 2015).

Data Integrity: The data collected is handled with integrity, ensuring accuracy and honesty in reporting the findings (Neuman, 2014).

By adhering to these ethical principles, the study ensures the protection of respondents and the integrity of the research process.

CHAPTER FOUR

DATA ANALYSIS, PRESENTATIONS, INTERPRETATIONS AND DISCUSSIONS

4.1 Introduction

This chapter covers the presentations, analysis and interpretations of the study findings gathered from answers to the questionnaires distributed to the field. The questionnaires were examined to ensure that study findings are reliable. This chapter engages the use of questionnaires to investigate the impact of these practices on reducing the environmental footprint within supply chains.

4.1.1 Questionnaire Return Rate

The study administered 28 questionnaires out of which only 20 were fully filled and returned whereas 8 questionnaires were not returned by respondents .the response rate was 71.4% which according to Kothari (2004) any response of 50% and above is satisfactory for analysis.

Table 1 showing: questionnaire return rate

response	frequency	percentage
Filled and returned	20	71.4%
unfilled	8	28.6%

4.2 Demographic Information

In this section, data is presented on socio- demographic composition of the sample obtained through the questionnaire, which includes gender, age, department and years of service in the company. The purpose of collecting demographic information on respondents was to help in establishing the respondent sample characteristics.

4.2.1 Gender of Respondents

Gender was considered to be an important variable for this study and thus respondents were asked to indicate their gender .the results are presented in figure 1 below.

Figure 1: showing the gender of the respondents

The findings on the gender distribution of respondents indicated that the majority of respondents were male, with a 75% while the female had a percentage of 25%. This gender difference spells that males are mostly employed in industries than women. The gender disparity where men are more represented than women is attributed to the nature of work done in every department.

4.2.2 Age of Respondents

The respondents were required to indicate their age. The results are presented in figure 2 below

Figure 2: showing the age of respondents

The findings regarding the age held by respondents within Mukwano Industries Limited shows that the respondents under the age of 26-35 are the most employed which shows that the organization works with the young focusing on attracting and retaining employees in the mid stage of their careers. This also indicates that the organization culture favors the young and employs them.

4.2.3 Department of Respondents

The department of the respondents was considered to be an important variable for this study and thus respondents were asked to indicate their departments in which they worked in. the results are presented in figure 3 below.

Figure 3: showing the departments of respondents.

The findings regarding the departments show that most members belong to the supply chain management department with a percentage of 60% then followed by the production department with a percentage of 30% and then the procurement department with a percentage of 10% this implies that the supply chain department has more members because of the supply chain operations such as inventory management, logistics and distribution, demand planning among others. This increases the workforce in the supply chain unit .This distribution shows that the study primarily captured the perspectives of employees in the supply chain department.

4.2.4 Years of Service of Respondents

The respondents were required to indicate their years of service, results are shown in Figure 4 below.

Figure 4: showing the years of service of respondents.

The findings regarding the year of service of respondents shows that the majority of the employees have worked with Mukwano Industries Limited for a period of 1 to 3 years which carries a percentage of 70% then followed by those that have worked with the industry for a period of 4 to 6 years which carry a percentage of 15% and lastly those that have worked with the industry for less than a year that carry a percentage of 15%.this implies that the majority of workers are relatively new to their positions and the organization is experiencing growth in the industry.

4.3 The impact of sustainable practices on reducing environmental footprint in supply chains.

The first objective for this study was to find out the impact of sustainable practices on reducing environmental footprint in supply chains. Several statements relating to this objective were presented to the respondents and asked to indicate their level of agreement or disagreement, there responses were analyzed and the results are presented in the table 1 below.

Table 1: showing the impact of sustainable practices on reducing environmental foot print in supply chains.

No.	Statement	5 Strongly agree	4 agree	3 neutral	2 disagree	1 Strongly disagree
1	Our department practices waste reduction techniques	10 (50%)	8 (40%)	2 (10%)	0 0	0 0
2	We regularly recycle and reuse materials in our operations	0 0	16 (80%)	4 (20%)	0 0	0 0

3	Renewable Energy sources (solar energy, biomass from plants, wind energy) are utilized in our supply chain processes	0 0	6 (30%)	10 (50%)	4 (20%)	0 0
4	The company promotes the use of sustainable raw materials.	12 (60%)	8 (40%)	0 0	0 0	0 0
5	Employees are encouraged to engage in sustainable practices	19 (95%)	1 (5%)	0 0	0 0	0 0
6	We have clear policies and procedures for managing environmental sustainability	14 (70%)	4 (20%)	2 (10%)	0 0	0 0
7	There is adequate training provided on sustainable practices.	5 (25%)	3 (15%)	12 (60%)	0 0	0 0

Source: Primary Data, 2024

A significant majority of respondents either strongly agreed (50%) or agreed (40%) that the department actively practices waste reduction techniques. This suggests that most employees recognize and appreciate the department 's efforts to carry out waste reduction techniques contributes positively to protecting the environment and reducing the strain on natural resources hence sustaining the environment for future generations. The uncertainty of those that were neutral

reflects that there might be a lack of awareness of the initiative or might be considered less impactful but all in all the employees appreciate the active use of waste reduction techniques.

In response to the statement that we regularly recycle and reuse materials in our operations, (80%) of respondents agree which was the majority and the minority (20 %) of respondents are neutral. Following the majority shows that the company regularly recycles and reuses materials in their operations and this supports the company sustainability goals .However, (20%) of respondents are neutral which implies that some employees might not have enough knowledge on the operations in the company.

In reply to the statement that renewable energy sources (solar energy, biomass from plants, wind energy) are utilized in our supply chain processes. (50%) of the respondents were neutral, (30%) of the respondents agreed, (20%) of the respondents disagreed. Following the majority findings show that employees have neither a positive or negative opinion on the use of renewable energy which shows that the company may not be very involved in the use of renewable energy sources as yet. On the other hand a good number of employees agrees that renewable energy is utilized in the supply chain processes which also implies that employees appreciate the use of renewable energy sources in the company operations as part of the supply chain strategies and is viewed as a positive strategy towards sustainability and environment protection.

In response to the statement that the company promotes the use of sustainable raw materials , (60%) of the respondents strongly agreed , (40%) of the respondents agreed . following the majority most of the employees agree that the company promotes the use of sustainable raw materials which develops the sustainable company goals and protect the environment.

Regarding the response to the statement that employees are encouraged to engage in sustainable practices, (95%) of the respondents strongly agreed and (5%) of the respondents agreed following the findings, all the employees agreed that the company encourages employees to engage in sustainable practices this implies that the company has built a behaviour or culture of sustainability among employees which became a must in their company. This shows that overall the company has built a sustainable culture among employees.

Regarding the statement that we have clear policies and procedures for managing environmental sustainability, (70%) of the respondents strongly agreed, (20%) of the respondents agreed and (10%) of the respondents were neutral. Following the findings majority of the employees strongly

agree that the company has set clear policies and procedures to guide employees on how to manage environmental sustainability, this initiative cause the company to achieve their company sustainability goals.

Finally for the statement that says that there is adequate training provided on sustainable practices, (60%) of the respondents are neutral, (25%) of the respondents strongly agreed and (15%) of the respondents agreed following the majority response most employees are neutral about the statement that the company provides adequate training on sustainable practices meaning that there might be a lack of effectiveness in the training provided to employees on sustainable practices but on the other hand a percentage of (15%) of the respondents agree that the company provides adequate training on sustainable practices implying that the employees appreciate that the company has put effort in providing training to employees on sustainable practices.

4.4 The Relationship between Renewable Energy use and Environmental Foot Print.

Another objective of the study was to find out the relationship between renewable use and environmental footprint. Several statements relating to this objective were presented to the respondents and asked to indicate their level of agreement or disagreement. Their responses were analysed and the results are presented in the table 2 below

Table 2: showing the relationship between renewable energy use and environmental footprint

No	Statement	5 (strongly agreed)	4 (agreed)	3 (neutral)	2 (disagree)	1 (strongly disagree)
1	Our department has integrated	4 (20%)	10 (50%)	6 (30%)	0 0	0 0

	renewable energy sources into its operations					
2	The use of renewable energy has reduced our overall energy costs	4 (20%)	10 (50%)	6 (30%)	0 0	0 0
3	We have seen a decrease in carbon emissions since adopting renewable energy	0 0	16 (80%)	2 (10%)	2 (10%)	0 0
4	Management supports the use of renewable energy within the company	16 (80%)	4 (20%)	0 0	0 0	0 0
5	Employees are trained on the benefits and use of renewable energy	15 (75%)	4 (20%)	1 (5%)	0 0	0 0
6	The company has invested in infrastructure to support renewable energy use	15 (75%)	4 (20%)	1 (5%)	0 0	0 0
7	Renewable energy use is a key component of our sustainability strategy	16 (80%)	2 (10%)	2 (10%)	0 0	0 0

Source: Primary Data,2024

In response to the statement that our department has integrated renewable energy sources into its operations , findings show that (50%) of the respondents agreed, (30%) of the respondents were neutral and (20%) of the respondents strongly agreed . following the majority most employees agree that the company has integrated the use of renewable energy sources such as solar energy, wind energy which reduces the use of fuels that impact on climate change and air quality. However another number of respondents are neutral to the opinion which might indicate a lack of awareness or lack of interest.

Regarding the statement that the use of renewable energy has reduced our overall energy costs, following the findings we notice that (50%) of the respondents agreed, (30%) of the respondents were neutral and (20%) of the respondents strongly agreed .following the majority, this shows that most employees were in agreement with the statement that renewable energy has reduced their overall costs of energy , meaning the company has benefited greatly from the use of renewable energy to run the operations of the company which has saved them from large electric bills .However (30%) of the respondents are uncertain about the use of renewable energy reducing their overall energy costs this might be due to lack of awareness. The least percentage of (20%) strongly agree that the company uses renewable energy has reduced overall energy costs , this shows that the company has efficiently used renewable energy to reduce energy costs which is a good initiative for a company.

In response to the statement that we have seen a decrease in carbon emissions since adopting renewable energy, (80%) of the respondents agreed, (10%) of the respondents where neutral and (10%)of the respondents disagreed . following the majority, most employees agree that there has been a decrease in carbon emissions since adopting the use of renewable energy this indicates that the change from fuels to use of renewable energy sources has been effective in reducing the organization's carbon footprint this shows that renewable energy is meeting the company sustainable achievements. The other (10%) respondents that are neutral are uncertain about the statement and might not have noticed a decrease in carbon emissions due to use of renewable energy.

In response to the statement that Management supports the use of renewable energy within the company, (80%) of the respondents strongly agreed and (20%) of the respondents agreed this

implies that all the employees appreciate that the company management supports the use of renewable energy which encourages employees to use renewable energy due to the support given by the management.

Regarding the statement that employees are trained on the benefits and use of renewable energy, basing on the findings (75%) of the respondents strongly agreed and (20%) of the respondents agreed this implies that the company has enforced a training program to employees to inform them of the advantages of renewable energy which can lead to greater commitment to sustainable practices.

In response to the statement that the company has invested in infrastructure to support renewable energy, (75%) of the respondents strongly agreed, (20%) of the respondents agreed and (5%) of the respondents were neutral, following the majority most of the employees strongly agree that the company has invested in infrastructure to support renewable energy which might likely include development of advanced technology and systems that facilitate the use and efficiency of renewable energy resources.

Regarding the response that renewable energy use is a key component of our sustainability strategy, (80%) of the respondents strongly agreed, (10%) of the respondents agreed and the other that were neutral were (10%). Following the majority most employees strongly agree that renewable energy use is a key component of sustainability strategy in the company this implies that the organization places significant effort in integrating renewable energy into their approach of sustainability.

4.5 The Relationship between Sustainable practices and Environmental Footprint.

This objective of study was to find out the relationship between sustainable practices and environmental foot print. Several statements relating to this objective were presented to the respondents and asked to indicate their level of agreement or disagreement . Their responses were analysed and the results are presented in table 3 below

Table 3 :showing the relationship between Sustainable practices and environmental foot print.

No	Statement	5 (strongly agree)	4 (agree)	3 (neutral)	2 (disagree)	1 (strongly disagree)
1	Our operations contribute significantly to reducing carbon emissions	4 (20%)	8 (80%)	0 0	0 0	0 0
2	We have successfully reduced water usage in our processes.	0 0	2 (10%)	16 (80%)	2 (10%)	0 0
3	Our waste generation has decreased over the past year 2023	0 0	2 (10%)	16 (80%)	2 (10%)	0 0
4	The company monitors and reports its environmental foot print regularly	4 (120%)	3 (15%)	10 (50%)	3 (15%)	0 0

5	We use technology to track and reduce our environmental impact	0 0	3 (15%)	6 (30%)	12 (60%)	0 0
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6	Our suppliers are required to comply with environmental sustainability standards	18 (90%)	2 (10%)	0 0	0 0	0 0
7	The management supports initiatives aimed at reducing the environmental footprint	18 (90%)	2 (10%)	0 0	0 0	0 0

Source: Primary Data, 2024

Regarding the response to the statement that our operations contribute significantly to reducing carbon emissions, following from our findings (80%) of the respondents agreed , (20%) of the respondents strongly agreed this implies that employees agree that their company operations contribute significantly to reducing carbon emissions. The practices done at Mukwano industries Limited have led to the reduction of carbon emissions in the environment.

In response to the statement that we have successfully reduced water usage in our processes, (80%) of the respondents are neutral, (10%) of the respondents agree, (10) % of the respondents strongly disagree. Following the majority most employees are uncertain about the statement that they have successfully reduced water usage in their processes this implies that this neutrality can only indicate that employees might not be well informed about the company's water reduction initiatives or that the initiatives have not yet had a noticeable impact in the company. However a few of the employees agree that there has been a successful reduction of water usage in the company operations and other few employees suggest that they have not seen a reduction water usage in their operations.

In response to the statement that Our waste generation has decreased over the past year, (80%) of the respondents are neutral , (10%) of the respondents agree and (10%) of the respondents strongly disagree ,following the basis of our findings the majority of the employees suggest that they are

uncertain about the statement that the company waste generation has decreased over the past year , this neutrality can only indicate that employees might not be well informed about the waste reduction over the years . However a few employees agree that there has been a waste reduction over years

In response to the statement that the company monitors and reports its environmental foot print regularly , (50%) of the respondents are neutral , (15%) of the respondents agreed another (15%) of the respondents strongly disagree and (20%) of the respondents strongly agree , following our primary data the majority of employees suggest that they are neutral about the company monitoring its reports on environmental foot print this implies that maybe some employees have a lack of awareness on how the company monitors and reports their reports on environmental footprint we can also say that they might not have access to that kind of information. On the other hand (15%) of the employees agree that the company monitors their environmental footprint regularly , another (15%) of the employees strongly disagree that the company monitors their environmental foot print regularly and another percentage of (15%) strongly agree that the company monitors and reports its environmental foot print regularly. This shows variations in the perspectives of employees concerning the statement.

In response to the statement that we use technology to track and reduce our environmental impact, the findings show that (60%) of the respondents strongly disagreed, (30%) of the respondents were neutral and (16.6%) of the respondents agree following the majority we see that most employees are strongly agreeing that the company uses technology to track and reduce environmental impact.

In Response to the statement that our suppliers are required to comply with environmental sustainability standards , following the findings (90%) of the respondents strongly agreed , (10%) of the respondents agreed this implies that employees agree to the statement that suppliers are required to comply with the environmental sustainability standards.

In response to the statement that the management supports initiatives aimed at reducing the environmental footprint. (90%) of the respondents strongly agreed, (10%) of the respondents agreed this implies that the management strongly supports the initiatives aimed at reducing environmental footprint.

CHAPTER FIVE

DISCUSSIONS OF FINDINGS, CONCLUSION AND RECOMMENDATIONS

5.0 Introduction

This chapter discusses the findings by comparing what was established in this study with what other scholars have established before in the literature review .it helps to draw conclusions a well as recommendations and other areas for future research.

5.1 Discussion of Findings

The discussion of findings is according to the objectives that is to find out the impact of sustainable practices on reducing environmental foot print in supply chains, the relationship between renewable energy and environmental foot print and the relationship between sustainable practices and environmental footprint.

5.1.1 The Impact of Sustainable Practices on Reducing Environmental Foot Print in Supply Chains.

A significant majority of respondents (50% strongly agreed, 40% agreed) believed that the department actively practices waste reduction techniques. this suggests that most employees recognize and appreciate the department 's efforts to carry out waste reduction techniques contributes positively to protecting the environment and reducing the strain on natural resources hence sustaining the environment for future generations. This findings align with Elkington,J (1999). Elkington discusses how organisations can integrate sustainable practices into their operations including waste reduction techniques and highlights of importance of employee's recognition and support of these practices. The neutrality of (10%) indicates that there might be a lack of awareness of the initiative or might be considered less impactful but all in all the employees appreciate the active use of waste reduction techniques. This underscores the importance of continued communication and engagement with all employees to reinforce the value of active use of waste reduction techniques on both environmental and financial outcomes.

Regarding the regular recycling and reusing of materials in operations the majority of respondents agreed (80%) this shows that company regularly recycles and reuses materials in their operations and this supports the company sustainability goals this findings agree with M.P. Gupta and S.J.Prakash (2014) their research highlights how integrating recycling and reuse into operational processes can enhance sustainability. However the notable minority (20% neutral) suggests that some employees are still uncertain about the regular recycling and reusing of materials have not fully appreciated the regular recycling and reusing of materials. This could indicate a need of further education and communication on the strategic importance of regular recycling and reusing of materials in the organisation

In regard to the statement that renewable energy sources (solar energy, biomass from plants, wind energy) are utilized in our supply chain processes. 50% of the respondents where neutral this

implies that Following the majority findings show that employees have neither a positive or negative opinion on the use of renewable energy which shows that the company may not be very involved in the use of renewable energy sources as yet. However the study also shows that 30% of the respondents agreed to the statement that renewable energy sources are utilized in their supply chains this implies that a good number of employees agrees that renewable energy is utilized in the supply chain processes which also implies that employees appreciate the use of renewable energy sources in the company operations as part of the supply chain strategies and is viewed as a positive strategy towards sustainability and environment protection. This findings agree with a study by IRENA (2020) that highlighted the positive impacts of integrating renewable energy into supply chain operations. On the other hand 20% of the employees disagreed this indicates that not all employees perceive the utilization of renewable resources in the supply chain operations.

In response to the statement that the company promotes the use of sustainable raw materials, a significant majority of respondents (60% strongly agreed,40% agreed)believed that the company promotes the use of sustainable raw materials this shows that the company is actively pursuing the use of environmental friendly practices, sustainability initiatives and strategies to ensure sustainability in the company. This findings align with Rex,E,& Baumann, H.(2007). He suggests that companies incorporate sustainable practices, including the use of sustainable raw materials, into their marketing and business strategies.

In response to the statement that employees are encouraged to engage in sustainable practices, a significant majority of respondents (95% strongly agreed, 50% agreed) following the findings, all the employees agreed that the company encourages employees to engage in sustainable practices this implies that the company has built a behaviour or culture of sustainability among employees which became a must in their company. This shows that overall the company has built a sustainable culture among employees. This findings agree with the study by Lee Tang (2018) explored the role of collaborative partnerships in enhancing sustainability in supply chains. They found out that firms engaging in strategic collaborations with suppliers, customers and other stakeholders were more successful in implementing sustainable practices.

In response to the statement that we have clear policies and procedures for managing environmental sustainability, 70% strongly agreed, 20% agreed. Following the findings majority of the employees strongly agree that the company has set clear policies and procedures to guide

employees on how to manage environmental sustainability, this initiative cause the company to achieve their company sustainability goals. This findings agree with the study by Lee Tang (2018) explored the role of collaborative partnerships in enhancing sustainability in supply chains. They found out that firms engaging in strategic collaborations with suppliers, customers and other stakeholders were more successful in implementing sustainable practices.

In response to the statement that there is adequate training provided on sustainable practices, 60% were neutral, 25% strongly agreed, 15% agreed following the majority response most employees are neutral about the statement that the company provides adequate training on sustainable practices meaning that there might be a lack of effectiveness in the training provided to employees on sustainable practices but on the other hand a percentage of (25%) of the respondents agree that the company provides adequate training on sustainable practices implying that the employees appreciate that the company has put effort in providing training to employees on sustainable practices. This findings agree with the study by Lee Tang (2018) explored the role of collaborative partnerships in enhancing sustainability in supply chains. They found out that firms engaging in strategic collaborations with suppliers, customers and other stakeholders were more successful in implementing sustainable practices.

5.1.2 The Relationship between Renewable Energy sources and Environmental Footprint.

A significant majority of respondents (50% agreed , 20% strongly agreed) believe following the majority most employees agree that the company has integrated the use of renewable energy sources such as solar energy, wind energy which reduces the use of fuels that impact on climate change and air quality. This findings agree with a study by IRENA (2020) highlighted the positive impacts of integrating renewable energy into supply chain operations. The findings indicate that companies adopting renewable energy sources experienced substantial reductions in carbon emissions and overall energy consumption. However another number of respondents are neutral to the opinion which might indicate a lack of awareness or lack of interest.

Following the findings (50% agreed , 20% strongly agreed) the majority, this shows that most employees were in agreement with the statement that renewable energy has reduced their overall costs of energy , these findings agree with the study by Kumar et al. (2021), firms that invest in renewable energy infrastructure often experience long term cost savings due to reduced energy expenses and incentives from governments for a clean energy adoption .However (30%) of the

respondents are uncertain about the use of renewable energy reducing their overall energy costs this might be due to lack of awareness.

In response to the statement that we have seen a decrease in carbon emissions since adopting renewable energy, (80%) of the respondents agreed, (10%) of the respondents were neutral and (10%) of the respondents disagreed. Following the majority, most employees agree that there has been a decrease in carbon emissions since adopting the use of renewable energy. This indicates that the change from fuels to use of renewable energy sources has been effective in reducing the organization's carbon footprint. This shows that renewable energy is meeting the company's sustainable achievements. The findings agree with the study by IRENA (2020) highlighted the positive impacts of integrating renewable energy sources experienced substantial reductions in carbon emissions and overall energy consumption. The other (33.3%) respondents that are neutral are uncertain about the statement and might not have noticed a decrease in carbon emissions due to use of renewable energy.

In response to the statement that Management supports the use of renewable energy within the company, (80%) of the respondents strongly agreed and (20%) of the respondents agreed. This implies that all the employees appreciate that the company management supports the use of renewable energy which encourages employees to use renewable energy due to the support given by the management. The findings of the statement agree with Ren et al. (2018) indicates that managerial support is a critical factor in implementation of sustainability initiatives, including the change to renewable energy. Managers who advocate for green practices often lead to enhanced commitment to sustainable goals.

In response to the statement that employees are trained on the benefits and use of renewable energy, based on the findings (75%) of the respondents strongly agreed and (20%) of the respondents agreed. This implies that the company has enforced a training program to employees to inform them of the advantages of renewable energy which can lead to greater commitment to sustainable practices. This finding agrees with a study by Kumar et al. (2021), firms that invest in renewable energy infrastructure often experience long term cost savings due to reduced energy expenses and incentives from governments for clean energy adoption.

In response to the statement that the company has invested in infrastructure to support renewable energy, (75%) of the respondents strongly agreed, (20%) of the respondents agreed and (5%) of

the respondents were neutral, following the majority most of the employees strongly agree that the company has invested in infrastructure to support renewable energy which might likely include development of advanced technology and systems that facilitate the use and efficiency of renewable energy resources. This findings agree with a study by Kumar et al. (2021), firms that invest in renewable energy infrastructure often experience long term cost savings due to reduced energy expenses and incentives from governments for clean energy adoption.

Regarding the response that renewable energy use is a key component of our sustainability strategy, (80%) of the respondents strongly agreed, (10%) of the respondents agreed and the other that were neutral were (10%). Following the majority most employees strongly agree that renewable energy use is a key component of sustainability strategy in the company this implies that the organization places significant effort in integrating renewable energy into their approach of sustainability. This findings agree with the study of Nyangena and Ouma (2020) on renewable energy adoption in East African Industries highlighted the potential for substantial environmental and economic benefits. Their research indicated that firms integrating solar energy systems into their operations achieved a 25% reduction in energy costs and a 30% decrease in carbon emissions. These findings underscore the importance of renewable energy in enhancing the sustainability of supply chains.

5.1.3 The Relationship between Sustainable Practices and Environmental Foot Print.

Regarding the response to the statement that our operations contribute significantly to reducing carbon emissions, following from our findings (80%) of the respondents agreed , (20%) of the respondents strongly agreed this implies that employees agree that their company operations contribute significantly to reducing carbon emissions. The practices done at Mukwano industries Limited have led to the reduction of carbon emissions in the environment. This findings agree with Montabon ,Sroufe and Narasimhan (2021) who conducted a study that highlights the importance of adopting a holistic approach to sustainability .their research found that firms implementing integrated sustainable practices achieved substantial reductions in their environmental foot prints. This included lower carbon emissions, reduced water usage and decreased waste generation.

In response to the statement that we have successfully reduced water usage in our processes, (80%) of the respondents are neutral, (10%) of the respondents agree, (10) % of the respondents strongly disagree. Following the majority most employees are uncertain about the statement that they have

successfully reduced water usage in their processes this implies that this neutrality can only indicate that employees might not be well informed about the company's water reduction initiatives or that the initiatives have not yet had a noticeable impact in the company. However a few of the employees agree that there has been a successful reduction of water usage in the company operations the following findings agree with the study of Montabon ,Sroufe and Narasimhan (2021) who conducted a study that highlights the importance of adopting a holistic approach to sustainability .their research found that firms implementing integrated sustainable practices achieved substantial reductions in their environmental foot prints. This included lower carbon emissions, reduced water usage and decreased waste generation and other few employees suggest that they have not seen a reduction water usage in their operations.

In response to the statement that Our waste generation has decreased over the past year, (80%) of the respondents are neutral , (10%) of the respondents agree and (10%) of the respondents strongly disagree ,following the basis of our findings the majority of the employees suggest that they are uncertain about the statement that the company waste generation has decreased over the past year , this neutrality can only indicate that employees might not be well informed about the waste reduction over the years . However a few employees agree that there has been a waste reduction over years this agrees with the findings by Zhu et al. (2020) who demonstrated that companies practicing waste reduction not only reduced their environmental foot prints but improved resource utilization efficiency.

In response to the statement that the company monitors and reports its environmental foot print regularly , (50%) of the respondents are neutral , (15%) of the respondents agreed another (15%) of the respondents strongly disagree and (20%) of the respondents strongly agree , following our primary data the majority of employees suggest that they are neutral about the company monitoring its reports on environmental foot print this implies that maybe some employees have a lack of awareness on how the company monitors and reports their reports on environmental footprint we can also say that they might not have access to that kind of information. On the other hand (15%) of the employees agree that the company monitors their environmental footprint regularly , another (15%) of the employees strongly disagree that the company monitors their environmental foot print regularly and another percentage of (15%) strongly agree that the company monitors and reports

its environmental foot print regularly. This shows variations in the perspectives of employees concerning the statement.

In response to the statement that we use technology to track and reduce our environmental impact, the findings show that (60%) of the respondents strongly disagreed, (30%) of the respondents were neutral and (15%) of the respondents agree following the majority we see that most employees are strongly agreeing and agreeing that the company uses technology to track and reduce environmental impact. This findings agree with authors: Lee, S.M, & Kim,Y.S (2018) according to their study information technology can be leveraged to track an reduce environmental impacts. They explore that various technologies and practices that companies employ to manage their environmental footprint effectively.

In Response to the statement that our suppliers are required to comply with environmental sustainability standards , following the findings (90%) of the respondents strongly agreed , (10%) of the respondents agreed this implies that employees agree to the statement that suppliers are encouraged to comply with environmental sustainability standards. This findings agree with Moses, D (2017). He underscores the importance of environmental sustainability in supplier relationships and employee support for these practices.

In response to the statement that the management supports initiatives aimed at reducing the environmental footprint. (90%) of the respondents strongly agreed, (10%) of the respondents agreed this implies that the management strongly supports the initiatives aimed at reducing environmental footprint. The findings agree with a study by Glover,M,& Prakash, A. (2018) highlights that senior management's commitment to environmental sustainability is significant driver in the implementation and success of green initiatives within organizations.

5.2 Conclusion

Based on the findings discussed, it is evident that sustainable practices help to reduce environmental foot print in supply chains including use of renewable energy, waste reduction techniques, play a crucial role in reducing environmental footprint in supply chains. The findings revealed that waste reduction techniques contributes positively to protecting the environment and reducing the strain on natural resources hence sustaining the environment for future generations. Renewable energy sources such as solar energy, wind energy which reduces the use of fuels that impact on climate change and air quality and reduced their overall costs of energy .The strong

consensus among respondents highlights the importance of sustainable practices in reducing environmental footprint in supply chains . However the presence of some disagreement and uncertainty underscores the need for continued communication and engagement to ensure all employees fully understand and appreciate the benefits of the sustainable practices.

5.3 Recommendations

The company should implement regular waste audits to identify key areas where waste reduction efforts can be improved. This audits should be set specific, measurable waste reduction targets and track progress over time.

The organisation should encourage more use of circular economy practices such as product redesign for recyclability and programs to extend the life cycle of materials and products.

The company should prioritize energy efficiency in relation to renewable energy adoption to maximize overall energy savings and reduce on non-renewable sources.

The company should foster partnerships with renewable energy providers through collaborations with energy suppliers or community based projects to diversify energy sources and support sustainability.

5.4 Areas of further research

Future research should focus on investigating the long term environmental and economic impacts of various waste reduction techniques in extended periods such as studies on long term reduction in landfill waste, improvements in recycling rates and financial savings from waste reduction initiatives. This gives the organisation insight on benefits and challenges.

Additional research should investigate the relationship between sustainable practices and technology development in supply chains .this research should assess how the use of technology contributes to development in supply chains.

Research should involve detailed financial analyses comparing the costs and benefits of various renewable energy sources. The focus should be on initial investment, operating costs, potential savings over time .it helps the organizations make informed decisions about renewable energy solutions offer the best value for their specific needs.

REFERENCES

- Babbie, E. R. (2015). *The practice of social research* (14th ed.). Cengage Learning.
- Bryman, A. (2016). *Social research methods* (5th ed.). Oxford University Press.
- Carter, C. R., & Rogers, D. S. (2020). A framework of sustainable supply chain management: Moving toward new theory. *International Journal of Physical Distribution & Logistics Management*, 38(5), 360-387.
- Creswell, J. W. (2014). *Research design: Qualitative, quantitative, and mixed methods approaches* (4th ed.). Sage publications.
- Cronbach, L. J. (1951). Coefficient alpha and the internal structure of tests. *Psychometrika*, 16(3), 297-334.

- Darnall, N., Jolley, G. J., & Handfield, R. (2021). Environmental management systems and green supply chain management: Complements for sustainability? *Business Strategy and the Environment*, 20(4), 225-238.
- Diener, E., & Crandall, R. (1978). *Ethics in social and behavioral research*. University of Chicago Press.
- Dubey, R., Gunasekaran, A., Childe, S. J., Papadopoulos, T., Hazen, B. T., & Roubaud, D. (2019). Examining top management commitment to TQM diffusion using institutional and upper echelon theories. *International Journal of Production Research*, 56(8), 2988-3006.
- Elkington, J. (2018). *The triple bottom line: Does it all add up?* Routledge.
- Gimenez, C., Sierra, V., & Rodon, J. (2019). Sustainable operations: Their impact on the triple bottom line. *International Journal of Production Economics*, 140(1), 149-159.
- Govindan, K., Shankar, M., & Kannan, D. (2020). Sustainable material selection for construction industry – A hybrid multi-criteria decision-making approach. *Renewable and Sustainable Energy Reviews*, 133, 110199.
- Gupta, S., & Barua, M. K. (2020). Modeling renewable energy-based supply chain with risk. *Journal of Cleaner Production*, 255, 120227.
- International Renewable Energy Agency (IRENA). (2020). *Renewable energy: A key to a sustainable and climate-resilient future*. Retrieved from <https://www.irena.org/publications/2020/Nov/Renewable-energy-key-to-sustainable-climate-resilient-future>
- Jaiswal, A. K., & Srivastava, R. K. (2021). The effect of CSR on consumer and corporate reputation in BOP markets: Evidence from India. *International Journal of Business Excellence*, 25(3), 274-298.
- Jia, F., Zuluaga, M. L., Bailey, A., Rueda, X., & García, J. A. (2021). Sustainable supply chain management in developing countries: An analysis of the literature. *Journal of Cleaner Production*, 278, 123639.
- Kabanda, S. (2020). Renewable energy policy of Uganda: The framework for increasing the share of renewable energy in the national energy mix. *Energy Policy*, 136, 111104.
- Kimberlin, C. L., & Winterstein, A. G. (2008). Validity and reliability of measurement instruments used in research. *American Journal of Health-System Pharmacy*, 65(23), 2276-2284.

- Kothari, C. R. (2004). *Research methodology: Methods and techniques* (2nd ed.). New Age International.
- Kumar, R., Singh, R. K., & Dwivedi, Y. K. (2021). Application of industry 4.0 technologies in SMEs for ethical and sustainable operations: Analysis of challenges. *Journal of Cleaner Production*, 275, 124063.
- Linton, J. D., Klassen, R., & Jayaraman, V. (2020). Sustainable supply chains: An introduction.
- Liu, G., Feng, M., & Zhu, Q. (2019). Green supply chain management and firm performance: The mediating roles of structural and relational social capital. *Journal of Cleaner Production*, 229, 521-533.
- Montabon, F., Sroufe, R., & Narasimhan, R. (2021). An examination of corporate reporting, environmental management practices and firm performance. *Journal of Operations Management*, 25(5), 998-1014.
- Mugenda, O. M., & Mugenda, A. G. (2003). *Research methods: Quantitative and qualitative approaches*. Acts Press.
- Mukwano Industries. (2020). Mukwano Industries Uganda Limited. Retrieved from <https://mukwano.com/about-us/>
- Munyua, H. (2020). Waste management practices and sustainability in developing countries. *Journal of Operations Management*, 25(6), 1075-1082. *Waste Management & Research*, 38(4), 345-358.
- Nangoli, S., Namagembe, S., & Ntayi, J. M. (2020). The effect of sustainable supply chain practices on performance: A study of large manufacturing firms in Uganda. *Sustainability*, 12(3), 852.
- National Environmental Management Authority (NEMA). (2020). *State of the Environment Report for Uganda 2019-2020*. NEMA. Retrieved from <https://nema.go.ug/reports/soe-2020>
- Neuman, W. L. (2014). *Social research methods: Qualitative and quantitative approaches* (7th ed.). Pearson.
- Nunnally, J. C. (1978). *Psychometric theory* (2nd ed.). McGraw-Hill.
- Pallant, J. (2020). *SPSS survival manual: A step by step guide to data analysis using IBM SPSS* (7th ed.). McGraw-Hill Education.

- Ramanathan, R. (2019). A review of energy storage technologies and their application in the renewable energy sector. *Renewable and Sustainable Energy Reviews*, 119, 109539.
- Rao, P., & Holt, D. (2019). Do green supply chains lead to competitiveness and economic performance? *International Journal of Operations & Production Management*, 25(9), 898-916.
- Rezaei, J., Wang, J., & Tavasszy, L. A. (2020). Linking supplier development to supplier segmentation using Best Worst Method. *Expert Systems with Applications*, 87, 234-248.
- Sieber, J. E. (1992). *Planning ethically responsible research: A guide for students and internal review boards*. Sage publications.
- Slaper, T. F., & Hall, T. J. (2019). The triple bottom line: What is it and how does it work? *Indiana Business Review*, 86(1), 4-8.
- Touboulic, A., & Walker, H. (2019). Theories in sustainable supply chain management: A structured literature review. *International Journal of Physical Distribution & Logistics Management*, 45(1/2), 16-42.
- van Teijlingen, E., & Hundley, V. (2001). The importance of pilot studies. *Social Research Update*, 35(4), 1-4.
- Wackernagel, M., & Beyers, B. (2019). *Ecological Footprint: Managing our Biocapacity Budget*. New Society Publishers.
- Zhu, Q., Sarkis, J., & Lai, K. H. (2020). Examining the effects of green supply chain management practices and their mediators on performance improvements. *International Journal of Production Research*, 46(18), 6219-6238.

Appendix 1: QUESTIONNAIRE

My Name is TINO JOREEN ,a student of Bachelor's Degree in Procurement and Logistics Management at Uganda Christian University .I am conducting a study on **the impact of sustainable practices on reducing environment footprint in supply chains : a case study of Mukwano Industries Uganda Limited. You have been specifically selected to participate in this study and the information collected shall be purely academic and treated with the highest level of confidentiality for the success of this study.**

Section A: Demographic Information

1. Gender:

☐ Male

☐ Female

2. Age:

☐ 18-25

☐ 26-35

☐ 36-45

☐ 46-55

☐ Above 55

3. Department:

☐ Supply Chain Management

☐ Environmental Sustainability

☐ Production Management

☐ Other (please specify): _____

4. Years of Service:

☐ Less than 1 year

☐ 1-3 years

☐ 4-6 years

☐ 7-10 years

☐ More than 10 years

Section B: Sustainable Practices

Please indicate your level of agreement with the following statements regarding sustainable practices in your department. Use the scale: 1 (Strongly Disagree) to 5 (Strongly Agree).

No.	Statement	5 (strongly agree)	4 (agree)	3 (neutral)	2 (disagree)	1 (strongly disagree)
1	Our department actively practices waste reduction techniques.					
2	We regularly recycle and reuse materials in our operations.					
3	Renewable energy sources (solar energy, biomass from plants, wind energy) are					

	utilized in our supply chain processes.					
4	The company promotes the use of sustainable raw materials.					
5	Employees are encouraged to engage in sustainable practices.					
6	We have clear policies and procedures for managing environmental sustainability.					
7	There is adequate training provided on sustainable practices.					

Section D: Renewable Energy Use

Please indicate your level of agreement with the following statements regarding using renewable energy in your department. Use the scale: 1 (Strongly Disagree) to 5 (Strongly Agree).

No.	Statement	5 (strongly agree)	4 (agree)	3 (neutral)	2 (disagree)	1 (strongly disagree)
1	Our department has integrated renewable energy sources into its operations.					
2	The use of renewable energy has reduced our overall energy costs.					

3	We have seen a decrease in carbon emissions since adopting renewable energy.					
4	Management supports the use of renewable energy within the company.					
5	Employees are trained on the benefits and use of renewable energy.					
6	The company has invested in infrastructure to support renewable energy use.					
7	Renewable energy use is a key component of our sustainability strategy.					

Section C: Environmental Footprint

Please indicate your level of agreement with the following statements regarding the environmental footprint of your department. Use the scale: 1 (Strongly Disagree) to 5 (Strongly Agree).

No.	Statement	5 (strongly agree)	4 (agree)	3 (neutral)	2 (disagree)	1 (strongly disagree)
1	Our operations contribute significantly to reducing carbon emissions.					
2	We have successfully reduced water usage in our processes.					

3	Our waste generation has decreased over the past year 2023.					
4	The company monitors and reports its environmental footprint regularly.					
5	We use technology to track and reduce our environmental impact.					
6	Our suppliers are required to comply with environmental sustainability standards.					
7	The management supports initiatives aimed at reducing the environmental footprint.					

Appendix 2: Introductory letter



**UGANDA CHRISTIAN
UNIVERSITY**

A Centre of Excellence in the Heart of Africa

SCHOOL OF BUSINESS

27th Aug, 2024

TO WHOM IT MAY CONCERN

Name: **TINO JOREEN**

Reg. **S21B12/008**

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

Examining the Impact of Sustainable Practices on Reducing Environment Footprint in Supply Chains

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

The Uganda Christian University School of Business thanks you in advance

Mukisa Simon Peter
Research coordinator



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P.O. Box 4, Mukono, Uganda (East Africa), Plot 67-173, Bishop Tucker Road, Mukono Hill, Tel: +256 (0) 31 235 0800, www.ucu.ac.ug
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