



ADDIS ABABA UNIVERSITY
COLLEGE OF BUSINESS AND ECONOMICS

**FACTORS AFFECTING GREEN PACKAGING PRACTICES: THE
CASE OF SELECTED PHARMACEUTICAL MANUFACTURING
COMPANIES IN ADDIS ABABA**

BY
BEZAWIT FELEKE

JUNE 2024
ADDIS ABABA, ETHIOPIA

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APPROVAL SHEET

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DECLARATION

I, the undersigned, declare that this thesis is my original work, prepared under the guidance of Matiwos E. (Ph.D.). All sources of materials used for the thesis have been duly acknowledged. I further confirm that the thesis has not been submitted either in part or in full to any other higher learning institution for the purpose of earning any degree.

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June 2024

ENDORSEMENT

This thesis has been submitted to Addis Ababa University, School of Commerce for examination with my approval as a university advisor.

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Sincerely,

Bezawit Feleke

TABLE OF CONTENTS

DECLARATION.....	i
ENDORSEMENT	ii
ACKNOWLEDGEMENT	iii
TABLE OF CONTENTS	iv
List of Tables.....	vii
LIST OF FIGURES.....	viii
ABBREVIATIONS AND ACRONYMS	ix
ABSTRACT	x
CHAPTER ONE	1
1. INTRODUCTION.....	1
1.1. Background of the Study.....	1
1.2. Statement of the Problem	3
1.3. Research objectives.....	5
1.3.1. General Objective.....	5
1.3.2. Specific Objectives.....	5
1.4. Research Questions	5
1.5. Significance of the Study	6
1.6. Scope of the Study	6
1.7. Definition of Key Terms	7
1.8. Organization of the Study	7
CHAPTER TWO	8
2. REVIEW OF THE RELATED LITERATURE.....	8
2.1. Theoretical Literature.....	8
2.1.1. Packaging	8
2.1.2. Pharmaceutical Packaging.....	9
2.1.3. Factors affecting green packaging in Pharmaceuticals	10
2.1.3.1. Management Commitment.....	10
2.1.3.2. Product Integrity.....	11
2.1.3.3. Material availability	12
2.1.3.4. Adherence to Regulator’s Standard.....	14
2.1.3.5. Adherence to Industry Policies	15
2.1.4. Theoretical Framework	15
2.1.4.1. Institutional Theory	16

2.1.4.2. Stakeholder Theory	16
2.2. Empirical Studies Review	16
2.3. Conceptual Framework	21
CHAPTER THREE.....	23
3. RESEARCH METHODOLOGY	23
3.1 Introduction	23
3.1.2 Research Approach	23
3.1.3 Research Design.....	24
3.2 Population and Sampling	24
3.2.1. Sample Design	25
3.2.2. Sample Size.....	25
3.3. Data Collection.....	26
3.3.1. Data Collection Instrument	27
3.3.2. Data Collection Procedure	27
3.4. Data Analysis Method.....	28
3.5. Scale Validity and Reliability Test.....	29
3.5.1. Validity Test.....	29
3.5.2. Reliability Test	29
3.6. Ethical Considerations.....	31
CHAPTER FOUR.....	31
4. RESULTS AND DISCUSSION	31
4.1 Introduction	32
4.2. Response rate and demographic data	31
4.3. Results	34
4.3.1. Description of Study Variables	34
4.3.2. Top Management Support.....	35
4.3.3. Material Availability	36
4.3.4. Product Integrity.....	37
4.3.5. Governmental Policy Adherence	38
4.3.6. Industry Standards Adherence	39
4.3.7. Green Packaging Practice.....	40
4.4. Inferential Analysis	41
4.4.1. Correlation Analysis	41
4.4.2. The Assumptions for Testing Regression Analysis	43

4.4.3. Multiple Linear Regression Analysis.....	47
4.5. Discussion.....	50
CHAPTER FIVE.....	52
5. SUMMARY, CONCLUSION AND RECOMMENDATIONS	52
5.1. Introduction.....	52
5.2. Summary of Major Findings	52
5.3. Conclusions	53
5.4. Recommendations	54
5.5. Limitations and Suggestion for Future Research	55
References.....	56
Appendix	62

List of Tables

Table 1. Sample Distribution.....	26
Table 2. The Outcome of Reliability Test	30
Table 3. Response Rate	31
Table 3. Demographic Characteristics of Respondents.....	32
Table 5. Top Management Support (n = 253)	35
Table 6. Material Availability (n = 253)	36
Table 7. Product Integrity (n = 253).....	37
Table 8. Policy Adherence (n = 253).....	38
Table 9. Industry Standards Adherence (n = 253).....	39
Table 10. Green Packaging Practice (n = 253).....	40
Table 11. Pearson Correlation Test	42
<i>Table 12: Collinearity Statistics</i>	<i>44</i>
<i>Table 13: Normality of Distribution Using Descriptive Statistics (Skewness and Kurtosis)</i>	<i>45</i>
Table 14. Model Summary	47
Table 15. ANOVA Test Results	47
Table 16. Estimated Regression Coefficients.....	48

LIST OF FIGURES

Figure 1. Conceptual Framework	23
Figure 2: Frequency Distribution of Standardized Residuals.....	46
Figure 3. Scatter plot for Homoscedasticity Test	46

ABBREVIATIONS AND ACRONYMS

CAGR	Compound Annual Growth Rate
ESG	Environmental, Social, and Governance
FSC	Forestry Stewardship Council
HDPE	High-Density Polyethylene
PHA	Polyhydroxyalkanoates
PLA	Polylactic Acid
PP	Polypropylene
WHO	World Health Organization

ABSTRACT

In recent years, there has been an increasing focus on sustainability and environmental consciousness in various industries, including the pharmaceutical sector. Green packaging practices have emerged as a key area of interest for companies looking to reduce their environmental footprint and meet consumer demands for eco-friendly products. Nonetheless, the initiative is inevitably subjected to different factors hindering effective greening practices, in developing economies specifically. This study, thus, investigated the factors affecting green packaging practices in selected pharmaceutical companies in Addis Ababa. Using an explanatory research design and a quantitative approach, a survey was conducted on 253 professional staff from seven pharmaceutical manufacturing companies. The data was analyzed using multiple linear regression model with SPSS 25.0. The results of the analyses indicate that top management support, material availability, product integrity, policy compliance, and industry standards adherence all significantly contribute to green packaging practices. Of these, product integrity has the most influence, while industry standards adherence contributes the least. The study concludes that addressing these factors and promoting sustainable packaging practices is crucial for reducing environmental impact, meeting regulatory requirements, and appealing to eco-conscious consumers. This not only helps companies reduce their carbon emission but also enhances their global competitiveness.

Key Words: Green Packaging, Greening Practice, Industrial Standard Benchmark, Pharmaceutical Companies, Policy Compliance

CHAPTER ONE

1. INTRODUCTION

1.1. Background of the Study

Pharmaceutical is an industry that is among the world's biggest polluters. The growing concern for the environment and its quality has led to a global movement towards sustainability. Since the issue of sustainability is now widely recognized and has become a topic of interest globally. This has led to the development of regulatory guidelines that incorporate sustainability dimensions in product quality, process validation, and regulatory compliance (Baxter and Hughes, 2019). Consequently, among others, sustainability has become a key factor in the packaging design of pharmaceutical products. However, the industry is caught in a balancing act between satisfying the health and safety demands of regulators and meeting the needs of modern eco-conscious consumers. And this tightrope walk has turned into a race, with market leaders competing to adopt green packaging practices and rethink materials to take advantage of the rewards on offer.

Packaging is essential to preserve the shelf life and quality of the drugs and medicines as well as protects the health of the consumers who use the pharmaceutical products. According to the World Health Organization (2013), pharmaceutical packaging is the science, art and technology of protecting products for distribution, storage, sale and use, which includes the written materials on the final product. Green packaging is the use of packaging materials and methods that minimize the environmental impact and reduce waste. The green practice, thus, benefits pharmaceutical companies by enhancing their reputation, reducing costs, complying with regulations, and meeting consumers' expectations (Baxter and Hughes, 2019).

Previous studies indicate that, for most consumers in the developed economies, product packaging represents their first impression of a brand and its sustainability credentials. Addressing the ever-growing demand of the eco-friendly alternatives over a non-recyclable and wasteful packaging determines product success. For instance, according to Samuel and Emanuel (Singh and Sharma, 2021), one third of consumers in western developed countries are willing to spend more money to receive sustainable goods and services. In this regard, the pharmaceuticals are exploring various sustainable packaging materials such as lighter weight packaging, to reduce waste and minimize their carbon footprint to mitigate their environmental impact. Sustainable primary packaging

materials, thus, aim to minimize impacts, reduce waste, and conserve resources by using eco-friendly and biodegradable materials like paper, cellulose, or bioplastics (World Health Organization, 2016).

However, for the pharmaceutical industry, the challenge extends beyond merely changing materials. This complexity arises mainly from laws and regulations that emphasize the importance of sustainable packaging adhering to specific sustainability standards. Consequently, packaging manufacturers are required to evaluate eco-friendly materials within the health and safety regulations that govern the industry. Additionally, developing innovative packaging designs can be prohibitively expensive, raising concerns about the financial viability of companies. Furthermore, the materials used in packaging pharmaceutical products, along with the containers designed to preserve them, are often detrimental to the environment. (Yin and Xi, 2019). Unfortunately, since most industries do not track the end user medium of disposal of these products on the supply chain continuum, there is nothing being done about how these packages when disposed affect the eco friendliness of the environment.

Green packaging practices are gaining significance in the pharmaceutical industry as consumers and regulatory agencies seek environmentally friendly packaging solutions. This highlights several factors influencing these practices within the sector. Key factors include the availability of packaging materials, relevant laws and regulations, compliance with industry standards, organizational policies and practices, as well as considerations of cost and product integrity (Gropper and Boateng, 2016). However, little or scanty research in Ethiopia specifically examine the major factors affecting the greening practices of pharmaceutical packages in terms of greening the package of pharmaceutical products.

When it comes to pharmaceutical products, health and safety remains the primary consideration. Not only it is critical that the products themselves are protected against external factors like humidity, temperature, light, oxygen and other contaminants ‘to preserve product integrity and function’ but the packaging must also play a role in protecting the patient. Identifying the major factors that affect the effectiveness of green packaging practices in Ethiopia is, thus, undeniable for the fact that the pharmaceutical industry faces greater challenges compared to most other industries.

1.2. Statement of the Problem

The Ethiopian pharmaceutical industry is a sector that produces and imports drugs and medicines for the domestic market. The local pharmaceutical manufacturing companies supplies about 20% of the domestic demand for medicines and vaccines. With the government's initiatives and supports, along with private and foreign direct investments, the industry has been growing substantial in recent years. Different initiatives, such as Pharmaceutical Manufacturing Plan of Action, launched in 2012 by African Union, also supports to enhance the local production of essential medicines, to promote the regional integration and cooperation of the industry in Africa (Indris, 2017; Peterson, 2017; Zack, 2018). However, it suffered from dependence on imported raw materials, low quality/capacity of local production, and high prevalence of counterfeit and substandard medicines accounted for significant environmental degradation (Emias and Tesfamariam, 2021).

Environmental sustainability is a pressing global issue that requires the implementation of policies and laws by national and international bodies to combat pollution and degradation. In particular, the pharmaceutical industry is one of the major sources of various types of waste, such as liquid, gaseous, semi-solid and solid waste, that can harm the environment and human health. Adopting greener product packaging practices minimizes the adverse effects poorly handled medicines on the wellbeing of the patients, the profitability of the organizations, and the sustainability of the environment as well. That mean, the products should be often packaged with materials and containers that can harm the environment if not properly disposed of (Peterson, 2017). Thus, the packaging design should be able to protect and extend the shelf-life of drugs and medicines labelled with informant written materials.

Previous studies indicate that different factors affect the adoption and adapting greening concept in pharmaceutical packaging. For instance, Emelia (2019) stated that, even in industrialized countries, escalating costs of green packaging practices challenges the availability of affordable healthcare products and services. Samuel and Emanuel (2021) identified the lack of environmental awareness and compliance with regulators' standards and requirements regarding the production, packaging, logistics, consumption, disposal and waste management are among the major determinant factors for greening practices. Singh (2019) posits that effective implementation of green packaging policies and practices in companies' production processes, logistics and waste management significantly elongates the life span of the pharma products without compromising the wellbeing of

people who patronize it. The use of efficient and effective reusable materials for environmental sustainability is therefore crucial to meet the sustainable goals the country seeks to achieve (Tesfamariam, 2016).

There is a dearth of research on how the pharmaceutical industry in Ethiopia adheres to sustainable product packaging practices and standards. According to (Yin and Xi, 2019), in favour of the environmental strategy, phenomena in the institutional environment become internalized and matched with existing tools and solutions which have resulted in a business-driven environmental strategy. However, the environmental strategy is not static, as the degree of business-environment integration fluctuates over time. The drive towards green packaging and the need for pharma companies to become more aggressive in their approach addresses sustainability issues in response to growing consumer awareness and increasing regulatory requirements (Kumar, 2012).

Failure in supplying quality pharmaceuticals and controlling the adverse impact of their disposal on consumers has become most leading causes of death and disability in developing countries. Thus, the lack of environmental awareness and compliance among the pharma and their supply chain partners regarding the disposal and management of packaging waste poses a threat to the sustainability and eco-friendliness of the industry. Since, most pharmaceutical companies in Ethiopia often hardly monitor how their products are discarded after consumption, it can easily be prevented or at least alleviated with supplying greener packaging (Dagmawi, 2019). Consequently, curbing the use of non-degradable packaging and changing packaging materials comes at a cost in terms of additional complexities and trade-offs that makes many of the firms be far from trivial.

In this regard, there is also a dearth of research on how the pharmaceutical industry in the country adheres to sustainable product packaging practices and standards, and what benefits and challenges they face in doing so. Nonetheless, the level green marketing practice on the part of pharma businesses in the country is not well-known area which requires a thorough and in-depth investigation as the packaging materials used by different pharmaceutical firms are causing severe environmental damage due to different non-degradable packaging materials. Then, what major factors affecting the green packaging practices of local pharmaceutical manufacturers is the question that needs to be addressed.

The aim of this study is, thus, to investigate factors affecting green packaging practices: in the case of selected pharmaceutical companies in Addis Ababa, Ethiopian. This research gap can be

addressed through identifying the major factors influencing green packaging practices among the local pharmaceutical manufacturing companies and examining which factor has the highest contribution to the existing practices.

1.3. Research objectives

1.3.1. General Objective

The main objective of this study is to investigate factors affecting green packaging practices: in the case of selected pharmaceutical companies in Addis Ababa.

1.3.2. Specific Objectives

1. Examine the impact of top management support on green packaging practices of the pharmaceutical manufacturing companies in Addis Ababa.
2. Investigate the effect of product integrity on green packaging practices of the pharmaceutical manufacturing companies in Addis Ababa.
3. Examine the effect of raw material availability on green packaging practices of the pharmaceutical manufacturing companies in Addis Ababa.
4. Analyze the influence of government policy compliance on green packaging practices of the pharmaceutical manufacturing companies in Addis Ababa.
5. Investigate the effect of the industry standard compliance on green packaging practices of the pharmaceutical manufacturing companies in Addis Ababa.

1.4. Research Questions

1. What is the impact of top management support on the green packaging practices of pharmaceutical manufacturing companies in Addis Ababa?
2. How does product integrity affect the green packaging practices of pharmaceutical manufacturing companies in Addis Ababa?
3. How does the availability of raw materials influence the green packaging practices of pharmaceutical manufacturing companies in Addis Ababa?
4. What is the influence of government policy compliance on the green packaging practices of pharmaceutical manufacturing companies in Addis Ababa?

5. How does compliance with industry standards affect the green packaging practices of pharmaceutical manufacturing companies in Addis Ababa?

1.5. Significance of the Study

The results of this study could have several significant implications. Primarily, the findings could enrich the existing body of knowledge by offering fresh perspectives in the realm of environmentally friendly packaging practices. While previous research has explored factors influencing green supply chain management in leading pharmaceutical supply companies in Ethiopia, this study uniquely investigates factors impacting environmentally friendly packaging practices among major local pharmaceutical product manufacturers. This research could further enhance the literature by proposing ways to augment the effectiveness of sustainability initiatives based on the identified influencing factors. It is anticipated that implementing these suggestions could aid pharmaceutical manufacturers in addressing the challenges specific to their green initiatives. By examining the critical factors affecting environmentally friendly packaging, this study could assist pharmaceutical supply chain management in more efficient and effective resource utilization, thereby boosting the success rate of green supply chain management initiatives. Additionally, this study could serve as a foundation for future researchers to delve deeper into the factors affecting environmentally friendly packaging and supply chain management in companies across various industry sectors.

1.6. Scope of the Study

The study was conducted in Addis Ababa, the hub of most supply and logistics operations. The participants were exclusively staff members from the head office and Addis Ababa branches, with personnel from other regions and branches not included in the study. The concept of green packaging, which encompasses all facets of sourcing, producing, supplying, and managing the logistics of pharmaceutical products in an environmentally friendly way, was central to the research. While there are numerous factors that influence the green packaging practices of pharmaceutical products, this study focused on five key elements: material availability, product integrity, compliance with regulatory standards, adherence to industry policies and practices, and the level of employee awareness. The research was limited to employees of selected local pharmaceutical manufacturing companies and relied solely on primary quantitative data for analysis. Neither

qualitative data nor secondary data were collected, despite their potential to offer additional insights.

1.7. Definition of Key Terms

- **Green Initiatives** - To incorporate environmentally friendly practices into a business function or to improve the sustainability of the environment through practices that have a reduced negative effect on the environment (Kumar, 2012, p. 121).
- **Compliance with Regulator's Standard:** It refers to adherence with the laws and regulations set by the Ethiopian government's federal ministry of health in conjunction with production and packaging practices of pharms. (Admasu, 2016, p. 109)
- **Product Integrity:** Refers to the packaging that preserves and protects the drugs, which are often highly sensitive compounds. (Robert, 2022, p. 93)
- **Adherence with Industry Policies/practices:** Adherence to standards in the pharmaceutical industry is the compliance with the rules and regulations that govern the quality, safety, and efficacy of pharmaceutical products. (Xie and Breen, 2012: p. 252)
- **Availability of Recycled Materials:** Recyclable packaging materials are those that can be processed and converted into new products or materials, reducing the need for raw materials and waste disposal. (Kumar, 2012, p. 205)
- **Employee's Awareness:** Refers to the degree to which the staff of a pharmaceutical company are informed and educated about the environmental benefits and impacts of the packaging materials they use. (Xie and Breen, 2012: p. 277).
- **Green Packaging:** The use of packaging materials and methods that minimize the environmental impact of products through reducing the amount of packaging waste, conserving natural resources, saving energy, and preventing pollution. (Kumar, 2012, p. 205)

1.8. Organization of the Study

This thesis is structured into five distinct chapters. The initial chapter provides an introduction to the study, encompassing the Study Background, Problem Statement, Study Objectives, Study Significance, study scope, and Study Organization. The subsequent chapter offers a review of

literature pertinent to the study. The third chapter outlines the methodology and the steps undertaken in the study. The fourth chapter delves into the analysis and interpretation of the data collected. The final chapter concludes the study and offers recommendations based on the findings derived from the research process.

CHAPTER TWO

2. REVIEW OF THE RELATED LITERATURE

This chapter thoroughly reviews literature relevant and crucial to understanding the factors influencing green packaging practices in the pharmaceutical industry. Sustainable packaging practices are becoming increasingly important in the pharmaceutical industry. However, this sector faces unique challenges due to the need to strike a delicate balance between health and safety requirements and environmental considerations. Therefore, the question arises: what factors influence the environmentally friendly packaging of pharmaceutical products? This review encompasses theories/concepts, empirical studies, and a conceptual framework necessary for a comprehensive examination and understanding of the research. It offers insights into readers' perspectives on environmentally friendly packaging concepts and the factors influencing these practices.

2.1. Theoretical Literature

2.1.1. Packaging

Packaging is the process that transforms a bulk material into a finished product. It not only protects the drug from degradation and contamination but also becomes an integral part of the drug delivery system (World Health Organization - WHO, 2018). As defined by Khanna (2022), packaging involves the use of containers and parts, along with the decoration and labeling of a product, to contain, protect, identify, and facilitate the use of products. Therefore, the container itself can act as a persuasive, though silent and colorful, salesman or an effective advertisement encouraging buying. From these definitions of packaging, it is clear that packaging is more than simple packing and is also a marketing necessity. It starts from planning a product. It focuses on formulating a design of the package and producing an appropriate and attractive container for a product. Hence,

the manufacturer uses packaging as a tool to promote the products and to increase the degree of patient compliance.

2.1.2. Pharmaceutical Packaging

A drug, which can be a natural or synthetic substance, can either treat, prevent, or be used for the diagnosis of diseases when administered to the body (WHO, 2018). Due to the rise in health-related issues, there is an increase in the need for drug production. Pharmaceuticals are available in various forms such as solid (51%), Parenteral (29%), Inhaling (17%), Transdermal (3%), hence the pharmaceutical industry has evolved, and it becomes a significant contributor to the pharmaceutical packaging industry (Murty and Kumar, 2018).

Sustainable pharmaceutical packaging refers to the use of eco-friendly and environmentally responsible materials and practices in the packaging of pharmaceutical products. It aims to minimize the environmental impact of the pharmaceutical industry by reducing waste, promoting recyclability, and using biodegradable or compostable materials. The adoption of sustainable pharmaceutical packaging is driven by increasing environmental awareness, regulatory requirements, and the industry's commitment to corporate social responsibility.

Pharmaceutical packaging materials are the collection of different components which surround the pharmaceutical product from the time of production till its use. Thus, pharmaceutical packaging, as a collective term, may be defined as the science, art, and technology of enclosing or protecting products for distribution, storage, sale, and usage including printed material, employed in the finishing of a pharmaceutical product (Menon, 2012). It serves as an economical means of providing identification, presentation, protection, information, and convenience from the time of production until it is used or administered (Abdullah, 2015). The type of pharmaceutical packaging used depends upon its function and the type of material used. All packaging materials must finally be evaluated via testing of selected materials, sterilization, storage, and stability studies. Packaging of pharmaceutical products plays a very significant role in the maintenance of their quality (Yu, 2014).

Over the years, the pharmaceutical industry has seen a shift towards more innovative packaging solutions. The push for creativity in packaging design, along with enhanced security and tracking capabilities, has grown. Presently, pharmaceutical companies are adopting various eco-friendly

packaging options, including metal containers, cardboard packaging, and recyclable High-Density Polyethylene (HDPE) and Polypropylene (PP) bottles. According to Edelman's (2023) survey, 88% of investors are of the opinion that businesses that focus on Environmental, Social, and Governance (ESG) initiatives are more likely to yield long-term profits compared to those that do not. A key trend poised to make a significant impact is green packaging, which promises to reshape the future of pharmaceutical packaging with its sustainable approach.

Green packaging, also known as sustainable packaging, employs manufacturing processes and materials that lessen the environmental footprint and mitigate negative effects on both ecology and the economy. Prasad (2022) stresses that this is more of a responsibility than a market demand. He further notes that the global market for pharmaceutical packaging was estimated at \$117.2 billion in 2021 and is projected to grow at a Compound Annual Growth Rate (CAGR) of 9.5% from 2021 to 2030.. The primary influences on pharmaceutical packaging are sustainability and user-centricity, beyond just meeting regulatory standards. Whether it's for patients, healthcare providers, or pharmacists, the demand for sustainable and user-friendly products and packaging is driving sales in the pharmaceutical sector.

2.1.3. Factors affecting green packaging in Pharmaceuticals

2.1.3.1. Management Commitment

Management's commitment to sustainable packaging in the pharmaceutical sector is essential for guiding the industry towards environmentally responsible practices. This commitment is the catalyst for the development of innovative packaging solutions that meet safety regulations and are environmentally friendly. By embracing a circular economy, management is increasingly focusing on the use of renewable or recycled materials and ensuring that packaging is designed to be recyclable or reusable. The shift towards sustainable materials, such as biodegradable plastics and recyclable PP and HDPE, demonstrates the industry's efforts to reduce its carbon footprint (Green, 2015). Furthermore, sustainable packaging design is becoming a priority, with companies aiming to reduce waste and enhance medication compliance.

Green packaging represents the comprehensive transformation of production and logistics strategies, structures, processes, and systems for companies and business networks to create environmentally rational logistics processes and efficient resource use. This new trend is based on management's commitment to making the best use of production and logistics resources. As a

result, it promotes economic development by creating a circular economy, focusing on the use of raw materials, green storage, green transportation, processing, and waste recycling. These elements are the most critical aspects of green packaging. Combined with the behaviors of the public, business, and government, companies are seeking ways to “go green” with their packaging, whether it’s eco-friendly, sustainable, biodegradable, or natural (Atkinson, 2020).

By integrating sustainability into their corporate social responsibility initiatives, pharmaceutical companies are not only contributing to environmental conservation but also positioning themselves for long-term growth and success. Despite the challenges in transitioning to sustainable packaging, the benefits, including cost savings and improved brand reputation, are significant (Khanna, 2022). Consumers and healthcare professionals alike are increasingly favoring products that offer convenience and sustainability, making management’s role in committing to and implementing sustainable practices more important than ever.

Helping the environment is one benefit of eco-friendly packaging; management’s dedication and commitment to packing products using fewer and more sustainable materials reaps additional rewards. These include saving money by reducing excess packaging, which results in lighter and smaller shipments that cost less to transport; maintaining business by switching to green materials can help meet or anticipate customer demands for eco-friendly suppliers; and attracting consumers, as many shoppers will choose an environmentally friendly product over a conventional package (Murty and Kumar, 2018).

In Atkinson’s (2020) opinion, while eco-friendly packaging is a recent phenomenon, it is already a large and rapidly growing trend. Source reduction in packaging has been going on for decades as a way to reduce costs. Packaging specialists are also investigating new ways to recover materials, showing interest in reducing the environmental impact of packaging under the framework established by green logistics. Until recently, however, few companies were doing it to increase sustainability. Garcia (2020) mentions that it should center around five interconnected aspects: material selection and formats, technology selection related to the process involving packaging (processes from when the product is packed to store in warehouse, transport, including identification methods of tags or barcodes), aesthetic design of the packaging, three-level structure of packaging (primary, secondary and tertiary), and dimensions of each level.

2.1.3.2. Product Integrity

The Global packaging materials are categorized into paper/paperboard, flexible materials (64% of which are plastics), rigid plastics, metal, glass, wood, and textiles. Paper and plastic make up 78% of the packaging material used (Culter, 2016). Tape is frequently used for securing external packages, and air bubble blister stuffing is used for protection or to fill gaps in the boxes. Plastic packaging, typically made of thermoplastic resins, includes multilayer and other plastics, which are not collected for recycling. In 2020, the production of plastic in Europe was estimated at 55 Metric tonnes, excluding the production of recycled plastics (World Food Program, 2021).

Among these, the sustainability credentials of paper/paperboard are higher than others due to their high recycling rate and organic nature. The trees used as raw material are also sourced from sustainably managed forests such as those certified by the Forestry Stewardship Council (FSC). FSC is a non-profit organization that sets high standards to ensure that forestry is practiced in an environmentally responsible and socially beneficial manner (Selke, 2021). As packaging waste remains an environmental concern, consumer pressure is rising for sustainable materials due to increasing environmental awareness and desire to preserve it (Muller, 2017). In several countries, packaging waste accounts for 15-20% of total municipal solid waste. Biobased materials such as wood-based paper, paperboard, bioplastics are emerging as sustainable alternatives to packaging material (Thompson, 2019).

Preserving the integrity of pharmaceutical products while transitioning to green packaging is a complex challenge that the industry is actively addressing. Sustainable packaging must ensure the safety, efficacy, and shelf life of pharmaceuticals, which are traditionally protected by specific packaging standards. The industry is exploring innovative materials and designs that are environmentally friendly without compromising product integrity. This includes using biodegradable substrates, bio derived plastics, and recyclable materials. Additionally, mono-material constructions and right-sizing of packaging are being considered to minimize waste and reduce carbon footprints (Tencati, 2016). Balancing eco-friendliness and product integrity involves navigating regulatory compliance, ensuring shelf life, and maintaining safety standards. The pharmaceutical sector is investing in research and development to overcome these challenges and create packaging solutions that protect both the product and the planet.

2.1.3.3. Material availability

The pharmaceutical industry, renowned for its life-saving advancements, is now venturing into a new realm: environmental conservation. In response to escalating concerns regarding environmental deterioration, pharmaceutical behemoths are revisiting their packaging methodologies. They are shifting away from conventional, oftentimes detrimental packaging components towards sustainable alternatives. The accessibility of materials stands as a pivotal determinant influencing the integration of eco-friendly packaging within the pharmaceutical domain. Predictions indicate that sustainable packaging, also termed as green packaging, is poised for substantial growth, with an estimated market value of \$280 billion by 2025 (Garcia, 2020). This surge is propelled by the burgeoning consumer consciousness and demand for eco-conscious products. Pharmaceutical corporations are delving into biodegradable materials sourced from plant-based origins, which exhibit diminished environmental repercussions in contrast to traditional plastics or metals commonly employed in packaging. This transition towards eco-friendly materials forms a fragment of the industry's overarching strategy to curtail its environmental footprint.

Nonetheless, the crux lies in pinpointing materials that align with green prerequisites sans compromising the packaging's integrity or functionality. The ramifications of failing to adhere to safety protocols loom significantly within the pharmaceutical sector, surpassing the stakes encountered in numerous other industries (Muller, 2017). Consequently, the industry is tasked with harmonizing the imperative for sustainable materials with the stringent regulations governing pharmaceutical packaging. The shift towards biodegradable materials signals a momentous transformation in the pharmaceutical sector's packaging methodology. These materials, frequently sourced from plant-based origins, manifest notably reduced environmental impacts in comparison to traditional plastic or metal-based packaging.

Engineered to disintegrate organically over time, they leave behind no harmful residues, thereby drastically abating waste accumulation. Common biodegradable materials utilized in pharmaceutical packaging encompass plant-based plastics like Polylactic Acid (PLA) and Polyhydroxyalkanoates (PHA), along with molded pulp, a substance crafted from recycled paper and cardboard (Ferrón, 2012). PLA, derived from corn starch, sugarcane, or cassava, emerges as particularly auspicious owing to its versatility and biocompatibility. The biodegradability and biocompatibility of PHA, a substance synthesized by bacteria, present intriguing prospects, yet the widespread adoption of such biodegradable materials encounters its unique set of hurdles.

Enterprises must ascertain that these novel materials can effectively shield pharmaceutical products from contamination, moisture, and impairment, while simultaneously complying with stringent regulatory benchmarks for safety and efficacy (Green, 2015). In essence, the availability of sustainable materials stands as a linchpin for the industry's transition towards green packaging. This metamorphosis necessitates a delicate equilibrium between environmental stewardship and upholding the stringent standards indispensable for safeguarding the integrity of pharmaceuticals.

2.1.3.4. Adherence to Regulator's Standard

Understanding the operations of pharmaceutical companies in relation to packaging necessitates a discussion about the regulations that govern this aspect. Each decision impacting packaging must comply with a relevant standard, a mandate enforced by authorities that develop and disseminate guidelines to various healthcare systems globally (WHO, 2021). These entities are charged with formulating the regulations and laws that govern packaging within their jurisdictions, thereby influencing all prescription and over-the-counter pharmaceuticals sold within their territories.

The principal regulatory framework in the pharmaceutical industry is outlined by the World Health Organization (WHO) in its "The International Pharmacopoeia". This document is a compendium of recommended procedures for analysis and specifications for the determination of substances, excipients, and dosage forms (Garcia, 2020; Muller, 2017). It is intended to serve as a reference or adaptation source for any WHO Member State wishing to establish pharmaceutical requirements. The pharmacopoeia, or any part thereof, assumes legal status when a national or regional authority officially incorporates it into applicable legislation.

In addition to the Pharmacopoeia, the WHO establishes Expert Committees to supplement the information contained in the primary document. For instance, the WHO's 36th Expert Committee on Specifications for Pharmaceutical Preparations includes a chapter specifically dedicated to quality assurance in pharmaceutical packaging, titled "Guidelines on Packaging for Pharmaceutical Products". This document aims to ensure that medicines reach the patients they are prescribed for safely, offering recommendations on labeling, materials, child-resistant solutions, counterfeiting protection, etc. (Muller, 2017).

The process is complex, involving numerous stakeholders striving to achieve a common goal: a cost-effective, protective, legal, and appealing package. However, the process does not end when the product is launched. For example, a change in regulations can compel a company to develop a

new packaging design, or conversely, a new regulation can enable a company to modify their package, creating a more efficient and cheaper one. As demonstrated, laws are a limiting factor for companies' activities (Ferrón, 2012). The regulations that govern packaging are quite restrictive, and their margin for maneuver is minimal. Consequently, all the packages seen in a pharmacy are very similar: same dimensions, same number of pills per box, same materials, same leaflet format, etc.

2.1.3.5. Adherence to Industry Policies

In the pharmaceutical sector, adherence to green packaging practices is a critical aspect of balancing environmental sustainability with the safety and efficacy of products. The industry is subject to a variety of regulations that oversee the use of materials, waste management, and recycling processes. Pharmaceutical companies are expected to comply with these regulations, and often aim to go beyond them by integrating sustainable and innovative practices into their operations (Muller, 2017). The transition towards green packaging involves the use of recycled materials, biodegradable packaging, and designs that minimize environmental impact. However, this shift must also consider the need to maintain the integrity of pharmaceutical products, which can be sensitive to factors such as moisture, light, and temperature. Regulatory bodies across various regions have established guidelines that pharmaceutical companies must follow when adopting greener packaging solutions. These regulations ensure that the packaging is not only environmentally friendly, but also maintains the necessary standards for protecting the health and safety of consumers.

In conclusion, the commitment of the pharmaceutical industry to green packaging practices is influenced by a combination of regulatory requirements, environmental considerations, availability of materials, and the need to maintain product integrity. Companies that successfully navigate this complex landscape can enhance their sustainability profile and contribute to a healthier planet.

2.1.4. Theoretical Framework

Environmental damage has long been a concern for governments, consumers, and businesses alike. To mitigate environmental degradation, countries worldwide, both developed and developing, have implemented regulations to lessen the environmental impact of business operations. In response to the increasing demand for environmental compliance, sustainability has evolved into green packaging and logistics chain management. Key aspects of these environmental trends include a

focus on life cycle costing, waste reduction, asset efficiency, and recycling (Broek, 2010). In the context of green packaging, this study considers two related theories: Institutional Theory and Stakeholder Theory.

2.1.4.1. Institutional Theory

Institutional theory, a concept within sociology and organizational studies, delves into the more profound and enduring aspects of social structure (DiMaggio and Powell, 1983). It investigates how structures, including schemes, rules, norms, and routines, become established as authoritative guidelines for social behavior. The theory explores the creation, diffusion, and adaptation of these elements over time and space, and how they sometimes decline and fall out of use (Azevedo, 2011).

In the context of green packaging, institutional theory examines how various institutional pressures such as regulatory, normative, and cognitive, shape the practices and behaviors of organizations towards adopting sustainable packaging methods (Alswidi, 2021). The theory suggests that organizations are influenced by the broader context in which they operate, including the expectations of stakeholders, the regulations set by governments, and the prevailing norms and values within the industry (Kumar, 2012).

2.1.4.2. Stakeholder Theory

Stakeholder Theory is a concept in organizational management and business ethics that considers the interests of all stakeholders in a company's operations (Merkel, 2016). Stakeholders include not only shareholders and investors but also employees, customers, suppliers, local communities, and even the environment. The theory posits that companies should manage for the benefit of all these stakeholders, creating value for society as a whole, not just for shareholders (Sarkis, 2011).

In relation to the pharmaceutical industry, Stakeholder Theory emphasizes the importance of considering the interests and influences of all parties involved in or affected by the industry's activities. This includes not just shareholders and investors, but also employees, customers, suppliers, healthcare providers, patients, regulatory bodies, and the communities where the companies operate (Rashid, 2022). The theory suggests that pharmaceutical companies should manage their operations in a way that balances the needs of these stakeholders, which can lead to more ethical practices, improved public trust, and long-term success (Merkel, 2016).

2.2. Empirical Studies Review

The major factors that affect the green packaging practices from different industry perspectives are presented as follows:

The Effect of management commitment on green packaging practices of pharma

In a study conducted by Eltayeb (2011), the influence of organizational culture and capacity on the adoption of green packaging and logistics management in Malaysian pharmaceutical manufacturing enterprises was examined. The research found that the support from management positively affected the green packaging strategies of these companies. The study, which included a sample of 255 professional medical staff from 10 multinational pharmaceutical manufacturing companies, utilized an exploratory research design and a quantitative research approach. The results indicated that the organizational structure, capacity, and commitment from top management significantly influenced green packaging operations that were oriented towards employees. However, the impact was found to vary based on the size and capabilities of the organization.

Darnall (2018) developed a framework that identified top management commitment, pollution prevention practices, and product sustainability practices as key factors that greatly affect green product service innovation and the performance of sustainable product-service systems. The research suggested that the commitment from management plays a crucial role in the adoption of green practices, as it was found to significantly influence sustainable packaging.

Zhu (2012) conducted a study to understand the effect of top management commitment on the performance of companies in Green Supply Chain Management, using fast-moving consumer goods manufacturers in China as a case study. The study collected primary data through self-administered questionnaires from 318 sample respondents selected from 20 companies. The findings revealed that the support from top management significantly enhanced a firm's green practices, thereby affecting the organization's performance. This study provides guidelines for practitioners to improve green practices through management commitment.

These studies on the effect of management commitment on green packaging practices in the pharmaceutical industry highlight the importance of top-level support in driving sustainable initiatives. Based on these, the following hypothesis is proposed:

H1 – Top management support level has significant effect on green packaging practices of pharms.

The Product integrity on green packaging practices of pharms

In a review conducted by Perotti (2012), the impact of biodegradable packaging on the pharmaceutical industry in China was examined. The study used a descriptive research design to analyze the perceptions of 322 respondents selected from 16 pharmaceutical companies through a convenient sampling technique. The assessment was carried out using a standard questionnaire with five items, measured on a 5-point scale. The study found that the shift towards sustainability and the challenges related to shelf life, safety, and regulatory compliance significantly influenced green packaging practices. The study also analyzed the hurdles the industry faces in maintaining product integrity while achieving environmental goals.

Xie (2012) conducted a study investigating waste prevention or reduction practices in the pharmaceutical sector in Jakarta, Indonesia. The study utilized secondary sources and an extensive review of relevant literature to gain a deeper understanding of the issues and key players affecting waste management in the sector. The findings indicated that bio-based materials such as wood-based paper, paperboard, and bioplastics are emerging as sustainable alternatives to packaging material. The study concluded that as packaging waste continues to be an environmental concern, there is increasing consumer pressure for sustainable materials due to heightened environmental awareness and the desire to preserve the environment.

Muller (2017) conducted a study investigating the factors affecting sustainable packaging in logistics management. The survey included 10 multinational fast-moving consumer goods companies in Saudi Arabia. The study employed both qualitative and quantitative methodologies within a descriptive research design. A total of 350 respondents were selected from 2,585 employees of the chosen companies. The results showed that the exploration of innovative materials and designs that are environmentally friendly without compromising product integrity had the most significant effect on product packaging. This includes the use of biodegradable substrates, bio-derived plastics, and recyclable materials.

These studies imply that maintaining the integrity of pharmaceutical products while transitioning to green packaging is a complex challenge that the industry is actively addressing. Sustainable packaging must ensure the safety, efficacy, and shelf life of pharmaceuticals, which are traditionally protected by specific packaging standards. Based on this argument, the following hypothesis is proposed as:

H2 – Product integrity has significant effect on green packaging practices of pharms.

The effect of material availability on green packaging practices of pharms

Zhu (2016) conducted a study on the impact of resource availability on the adoption of sustainable packaging in the supply chain management of the Indian textile industry. The study, which surveyed 518 respondents randomly selected from food and beverage manufacturing companies in Bombay, India, found that the availability of different packaging raw materials significantly influenced the production of biodegradable packages and the implementation of greening strategies. The study concluded that the availability of materials is a crucial factor in the adoption of green packaging in the pharmaceutical industry.

Anatoui (2007) carried out a study on the importance of biodegradable materials for the sustainability of packaging in selected textile companies in Daka, Bangladesh. The study, which used an explanatory research design and a quantitative research approach, surveyed 300 respondents consisting of product managers, operation managers, finance managers, and quality managers from fifty multinational companies. The findings indicated that companies are exploring the use of biodegradable materials derived from plant-based sources, which have a lower environmental impact compared to traditional plastics or metals used in packaging. The shift towards these materials is part of the industry's broader strategy to reduce its environmental footprint.

Gray and Shasky (2017) conducted a study using multiple regression analysis to examine the factors affecting sustainable logistics management, with a focus on the role of top management support. The study surveyed 518 respondents randomly selected from 10 pharmaceutical companies in Bombay, India. The study found that the challenge lies in identifying materials that meet green requirements without compromising the integrity or performance of the packaging. The study highlighted that the pharmaceutical industry, more than many other sectors, faces significant risks associated with failing to meet safety standards. Therefore, the industry must balance the need for sustainable materials with the stringent regulations that govern pharmaceutical packaging.

The availability of sustainable materials is, thus, crucial for the pharmaceutical industry's transition to green packaging. It requires a careful balance between environmental responsibility and maintaining the high standards necessary to protect the integrity of pharmaceutical products. Based on this argument, the following hypothesis is proposed as:

H3 – Material availability has significant effect on green packaging practices of pharms.

The effect government policies compliance on green packaging practices of pharms

In their research, Walker and McBain (2018) conducted interviews with stakeholders from seven business and public health organizations in the UK. The study surveyed 565 staff members from 50 multinational pharmaceutical manufacturing companies in Europe. The aim was to identify the motivators and barriers that these companies encounter when implementing sustainable initiatives in both the public and private sectors. The study found that the most significant external barrier was the flexibility of international government policy, after examining various specific organizational characteristics, including legislation, consumers, competitors, and society.

Tibben (2020) focused on the impact of laws and regulations on green logistics chain management throughout a product's life cycle. The study identified numerous public policies and procedures for managing the pharmaceutical supply chain in Pakistan. The findings suggest that regulatory pressures prompt firms to improve their environmental performance.

Blaxter (2016) investigated the effect of adherence to international laws and regulations on sustainable packaging supply among 26 selected pharmaceutical suppliers in Nigeria. The study collected primary data from 385 respondents through self-administered questionnaires and used multiple linear regression analysis to examine the relationship between the variables. The results indicate that compliance with international legal and environmental requirements is crucial for companies to operate legally and ethically. The study suggests that pharmaceutical companies must adhere to a variety of international, regional, and local regulations that govern the use of materials, waste management, and recycling processes.

These empirical studies indicate that international policies and legislations play a pivotal role in shaping the sustainable packaging practices of the pharmaceutical industry, driving innovation and ensuring that environmental considerations are integrated into packaging solutions. Based on this argument, the following hypothesis is proposed:

H4 – Government policies compliance has significant effect on green packaging practices of pharms.

The adherence to the industry policies compliance on green packaging practices of pharms

Zailani (2012) conducted a study focusing on the impact of local and governmental regulations and policies on the implementation of effective sustainable packaging products. The survey was

primarily cantered on Malaysian pharmaceutical suppliers with International Standard Organizations (ISO) certification. The study aimed to determine if firms could be encouraged to adopt eco-designs that enhance environmental performance by combining an internal proactive environmental strategy with several external initiatives. Although no direct impact on the firms' economic performance was observed, industry standards and customer pressure positively affected the use of eco-design. This suggests that external drivers can affect the adoption of sustainable packaging principles.

Bose and Pal (2012) carried out a survey on the factors affecting the green packaging practices of Small and Medium Enterprises (SMEs) in Singapore. The study, which applied an explanatory research design and a quantitative research approach, was conducted on a randomly selected 490 respondents from 25 public companies. The study found that policies encourage companies to assess and improve their sustainability maturity, which includes the implementation of measures that align with Environmental, Social, and Governance (ESG) frameworks. This can affect supply chain security and requires companies to manage risks associated with the implementation of sustainability measures. The study concluded that small businesses benefit the most from sustainability maturity in green packaging logistics management.

The regulatory landscape for sustainable packaging is rapidly evolving, with new regulations frequently emerging. Companies need to stay informed about these changes to ensure they meet the requirements and avoid penalties or tax increases. Public regulations often reflect consumer preferences for reduced waste and more sustainable packaging options. This has led to downsized and lightweighted packaging configurations that utilize alternatives to virgin packaging materials. This indicates that an increasing focus on regulatory compliance and industry standards is accelerating the shift towards sustainable pharmaceutical packaging. Adherence to these standards has become a benchmark for pharmaceutical companies. Based on this argument, the following hypothesis is also proposed as:

H5 – Industry policies compliance has significant effect on green packaging practices of pharms.

2.3. Conceptual Framework

A conceptual framework is the diagrammatic presentation of variables, showing the relationship between the independent variable and the dependent variables. This conceptual framework for a study investigating the factors affecting green packaging practices in the pharmaceutical industry

encompasses five key elements namely management commitment, product integrity, material availability, adherence to international regulators' policies and local industry standards. Specifically, top management commitment would assess the extent to which senior leadership prioritizes and supports green packaging initiatives. It would explore how management's attitudes, policies, and resource allocation impact the adoption of sustainable practices. The influence of technological advancements and innovative product designs contributes to the development of sustainable packaging solutions. It would look at how product integrity efforts can create packaging that is both eco-friendly and functional. Sustainable supply of raw materials also contributes to sustainability. It would include procurement strategies, material selection, production processes, and distribution methods that minimize environmental impact. Regulatory compliance and Industry standards also affect green packaging practices as international, regional, and local regulations influence the practice. Following industry standards would also determine how compliance with these standards drives the adoption of sustainable packaging.

This model, adopted from the study by Owusu, Muntaka and Bonsu (2016), would provide a comprehensive approach to understanding the multifaceted factors that influence green packaging practices in the pharmaceutical industry. It would help identify areas for improvement and guide strategic decision-making towards more sustainable practices. Thus, as seen in Figure 1, the five factors namely management commitment, product integrity, material availability, adherence to international regulators' policies and local industry standards are considered independent variables, while green packaging practices as dependent variable of the study. The Arrows also indicate there is a direct relationship between the independent variables and dependent variable, based on the theoretical literature and empirical studies review.

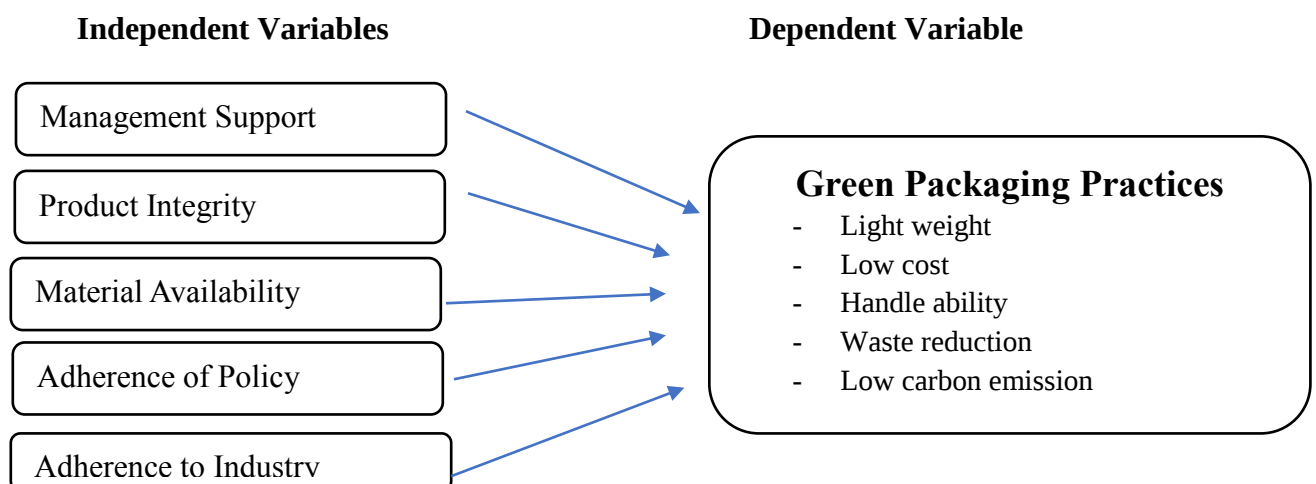


Figure 1. Conceptual Framework

CHAPTER THREE

3. RESEARCH METHODOLOGY

3.1. Introduction

This chapter dealt with the research methodology to be used. It referred to the methodological process followed to find a solution for a particular problem. The research method of this study, thus, aimed to achieve the objectives of examining factors affecting green packaging practices in the pharmaceutical manufacturing companies in Addis Ababa, Ethiopia. Consequently, it outlined the steps required in order to collect data, analyzed the data that had been collected, and then interpreted and reported the results. In the sections that followed, the methodologies used in this survey were described.

3.1.1. Research Approach

A research approach is a research strategy that provided specific direction for advancing a research design. Bhattacharjee (2012) categorized scientific research approaches into three, namely quantitative, qualitative, and mixed research. Among them, a quantitative research approach was adopted for this study to address the research question posed and test hypotheses posited. Quantitative research was the systematic and scientific investigation of quantitative characteristics/phenomena along with their relationships. The goal of quantitative research was to develop and apply mathematical models, theories, and hypotheses pertaining to natural phenomena (Creswell, 2003). Thus, in this regard, it was considered appropriate to use a quantitative approach

to assess/measure employees' perception concerning the identified factors and their influence on green packaging practices is found to be suitable.

3.1.2. Research Design

The aim of this study is to examine the relationship between factors affecting green packaging practices in the pharmaceutical manufacturing companies. With this in mind, the current study adopted an explanatory research design to test the proposed hypotheses, to be verified whether there was a significant relationship between the independent and dependent variables. That meant, causal analysis involved examining how one or more variables influenced changes in another variable (De Vaus, 2016). Therefore, for this study, the application of an explanatory research design was appropriate as it attempted to explain green packaging practices based on the identified factors namely management commitment, product integrity, material availability, adherence to international regulators' policies, and local industry standards.

3.2. Population and Sampling

In research terms, a population refers to the complete set of subjects, including people, objects, and organizations, that can be examined and from which a sample can be selected (Shao, 2019). This study investigates five specific factors and their association with green packaging practices in the pharmaceutical industry, using Ethiopian pharmaceutical manufacturing companies as a case study. The Ethiopian National Strategic Plan of Action (NSPA, 2023) and the Ethiopian Food and Drug Authority(EFDA) report indicates that approximately 15 pharmaceutical industries in the country are involved in the large-scale production of generic medicines. The government has prioritized the pharmaceutical sector, with initiatives such as the establishment of the Kilinto pharmaceutical industrial park (KPIP) and the development of a 10-year national strategic plan of action for pharmaceutical manufacturing to bolster the sector. Consequently, this study focuses on the employees of 7 pharmaceutical manufacturing companies based in Addis Ababa which includes Ethiopian pharmaceutical manufacturing share company (Epharm), East Africa Pharmaceuticals PLC, Julphar Pharmaceuticals PLC, Cadila Pharmaceuticals (Ethiopia) PLC, Pharmacure PLC Parental solution manufacture, Glocare Pharmaceuticals and Addis Pharmaceutical Factory PLC.

As per the HR Database (2023) of each company, there are 1,865 active staff members working in the manufacturing facilities. However, this study only considers the professional staff from the operation, finance, procurement, logistics, and quality assurance departments, totalling 712

individuals. These departments were chosen because their employees are believed to possess more relevant knowledge and expertise about green packaging compared to other departments. The total number of employees in these departments is the focus of this study.

3.2.1. Sample Design

This research employs three unique sampling strategies to pinpoint the target respondents from the sample frame: probability, non-probability, and multistage sampling (Creswell, 2009). Probability sampling is a random selection method where each participant has an equal likelihood of being selected. On the other hand, non-probability sampling is more subjective, depending on the researcher's discretion. This study will use a hybrid sampling approach to identify the relevant departments and their personnel. Initially, the departments were chosen using non-probability purposive judgment sampling. This method does not give every potential participant an equal chance of being selected; rather, it focuses on a specific group of individuals who have the necessary data for the research (Saunders, 2010). As a result, only those individuals who could supply the needed information were included in the sample. Therefore, this study uses judgment sampling, a form of purposive sampling, to determine the suitable departments.

Subsequently, the targeted respondents within each department were chosen using stratified random sampling. This method is facilitated by the availability of a complete list of potential respondents from each of the 7 selected companies. Having access to a comprehensive list of all staff members within the selected departments renders probability sampling feasible and enhances the ability to generalize the study's findings to a broader population.

3.2.2. Sample Size

Sampling is the process of selecting a number of study units from a defined study population (Saunders, 2010). Determining sample size is very important issue because samples that are too large are uneconomical while too small samples may lead to inaccurate results. Here in this study, sampling is required as the targeted population accounts for a total of 712 professionals from 7 selected companies, and since the population size is substantially larger in number to conduct census, taking a representative sample respondent is more economical. Thus, a proportionate sample size as computed by using Yamane's proportionate sample size determination formula is:

$$n = \frac{N}{1 + Ne^2} = \frac{(712)}{1 + (712 * 0.05^2)} = 256 \text{ respondents.}$$

Thus, the study has taken a sample of 256 respondents to participate in this survey. However, to compensate a non-response rate, 10 percent of the calculated sample size was added to the sample. Thus, the targeted sample size turned into 282 ($1.1 \times 256 = 282$) respondents. The distribution of respondents from each stratum in the selected companies is illustrated on Table-1.

Table 1. Sample Distribution

Stratum	Population (a)	Population proportion ($b = a/412$)	Sample proportion ($c = b \times 282$)
Operation	289	40.59%	114
Finance	60	8.43%	24
Logistics	179	25.14%	71
Procurement	141	19.80%	56
Quality Assurance	34	4.78%	13
Total	712	100.0%	282

Source: Companies' HR Database (2024)

3.3. Data Collection

According Catherine (2017), it was noted that data can be collected through primary, secondary, or a combination of both methods. Primary data is data that is gathered by the researcher specifically for the purpose of addressing the research problem at hand. On the other hand, secondary data is information that has been collected for a different purpose but can provide valuable insights for the current study (Saunders, 2010). In the context of this particular study, only primary data were collected from the targeted respondents, who are staff members from 7 pharmaceutical companies in Addis Ababa. This decision was made as there is no suitable secondary data available that aligns with the objectives of the research.

3.3.1. Data Collection Instrument

Primary data from the intended respondents had been gathered using a structured questionnaire. This type of questionnaire, as defined by Kombo (2011), consists of specific, concrete, and pre-established questions. All respondents were presented with these questions in an identical manner, both in terms of wording and sequence. As a primary data collection tool, the structured questionnaire allowed respondents to provide written answers to the researcher's questions (Wilkinson and Birmingham, 2013). This method facilitated the posing of identical questions to numerous respondents, thereby enabling the collection of data for analysis.

The choice of a questionnaire for this research was influenced by its advantages, such as providing ample time for respondents to provide their answers. It also facilitated easy access to respondents. Consequently, a structured questionnaire, adopted from a previous study by Owusu, Muntaka, and Bonsu (2016), was utilized to gather quantitative data to meet the study's objectives.

The questionnaire has two parts. Part I refers to the personal information of the targeted respondents. While Part II includes a total of 30 statements, of which 25 items intended for measuring five factors affecting green packaging, while 5 statements for green packaging initiative. Specifically:

Factors Affecting Green Packaging Practices (Independent Variables) are:

- Top Management Support (5 statements), Material Availability (5 statements); Product Integrity (5 statements), Adherence to Regulator's policy (5 statements), and Adherence to Industry Standards (5 statements).

Green Supply Chain Management (Dependent Variable): to be assigned only 5 statements.

A 5-point Likert-scale based questionnaire was used as a major instrument of data collection. The questionnaire is used to convert the qualitative data to quantitative data by coding it with 5-point Likert scale ranges from 1- for "Strongly disagreed" to 5- for "strongly agreed". Likert scale is one of known measuring scale for categorical data (Saunders, 2010).

3.3.2. Data Collection Procedure

Following the development of the instrument, the subsequent stages entailed the distribution of questionnaires and the collection of data in alignment with the sampling procedures and techniques outlined in the preceding section. To ensure adherence to protocol, consent was obtained from the

public relations and human resource managers of the companies involved, seeking their willingness to facilitate the survey within their premises. Subsequently, the consent of the respondents was also secured. Upon agreement, questionnaires were disseminated during opportune moments such as tea breaks, ensuring minimal disruption to their daily operations. Moreover, respondents were contacted through email and telegram, with regular reminders prompting them to respond promptly. This meticulous approach aimed to maintain efficiency and data integrity throughout the research process.

3.4. Data Analysis Method

In the study that was conducted, both descriptive and inferential statistics were employed for data analysis. Descriptive statistics were used to interpret general data and test hypotheses, while inferential statistics were applied to delve into the research objectives using the Statistical Package for Social Science (SPSS) version 25. Descriptive statistics aided in understanding the demographic variables of the respondents and in computing the means and standard deviations of each variable in the study. Inferential statistics, on the other hand, played a crucial role in testing hypotheses, examining correlations, and conducting multi-regression analyses.

To present the results of the analysis in a visually appealing manner, tables and graphs were utilized. Moreover, a regression model was developed for the study. This model focused on the independent variables identified as having an impact on green packaging and their relationship with the dependent variable, which was the green packaging initiative. The method used for this was multiple linear regression. Multiple linear regression is made to define the relationship and to evaluate the most dominant factors affecting green packaging practices. The mode is specified as:

- **Independent variables** – five factors affecting green packaging practices (Independent Variables) are namely: Top Management Support, Material Availability, Product Integrity, Adherence to Regulator’s policy, and Adherence to Industry Standards. While,
- **Dependent Variable** - Green Packaging Practices.

In order to investigate the relationship between the five independent variables with a dependent variable, a multi-regression analysis model specification is designed as follows:

$$GPACK = \beta_0 + \beta_1 MGT + \beta_2 PRO + \beta_3 MAT + \beta_4 GOV + \beta_5 IND + e$$

Where:

GPACK	Green Packaging
MGT	Top Management Support,
MAT	Material Availability,
PRO	Product Integrity,
GOV	Adherence to Regulator's policy, and
IND	Adherence to Industry Standards
β_0	- Constant; $\beta_{1,2,3}$ - Coefficients of Predictors.

3.5. Scale Validity and Reliability Test

3.5.1. Validity Test

In order to assess the validity of the questionnaire designed to collect primary data on factors affecting green packaging practices among pharmaceutical manufacturing companies in Addis Ababa, a sample validity test was conducted. The primary objective of this test was to determine whether the questionnaire truly measures what it is intended to measure and whether it successfully captures the relevant variables related to green packaging practices in the pharmaceutical manufacturing sector.

The sample validity test involved administering the questionnaire to a small group of experts in the field of green packaging and pharmaceutical manufacturing, who were asked to provide feedback on the clarity, relevance, and comprehensiveness of the questionnaire. Additionally, the assigned thesis advisor along with experts in the field were asked to assess the appropriateness of the questions in capturing the key factors affecting green packaging practices within pharmaceutical manufacturing companies' context. The results of this sample validity test were crucial in refining the questionnaire and ensuring its effectiveness in collecting accurate and reliable data for the intended research study. By conducting this test, the quality and validity of the data collection tools is assured, ultimately strengthening the overall research findings and conclusions.

3.5.2. Reliability Test

In the assessment of research tools, one of the primary criteria is reliability, the extent to which an instrument yields the same results each time it is employed under identical conditions with the same subjects (John, 2013). Essentially, reliability is synonymous with consistency. The questionnaire

was distributed to a diverse group of 30 employees within the targeted company, named Julphar Pharmaceuticals Plc, selected randomly from the 7 targeted companies for survey.

Table 2. The Outcome of Reliability Test

Dimension	No of items	Cronbach's Alpha
Top Management Support	5	.796
Material Availability	5	.910
Product Integrity	5	.743
Policy Compliance	5	.805
Industry Standards Adherence	5	.712
Green Packaging Practice	5	.827
Total Reliability	30	.925

Source: SPSS data output, 2024

The respondents were selected to represent the companies for the reason that the organizational structure and human resource capacity were similar in nature of different departments and levels of seniority. The questionnaire was self-administered, allowing respondents to complete it at their own pace and in their own time. In this study, Cronbach's alpha is utilized to evaluate the internal consistency of variables in the research tool. Cronbach's alpha (α) is a reliability coefficient employed to gauge the internal consistency of the scale; it is represented as a numerical value ranging between 0 and 1. Scales with a coefficient alpha falling between 0.6 and 0.7 denote fair reliability (Zikmund, 2010). Table 2 lists five factors affecting green packaging practices, each with a specified number of items and a corresponding Cronbach's Alpha value.

The Cronbach's Alpha values range from .712 to .910, indicating a satisfactory to high level of internal consistency within each dimension. The Total Reliability, encompassing all 30 items, yields a Cronbach's Alpha of .925, suggesting an excellent overall internal consistency of the survey instrument. This high level of reliability is indicative of the survey's ability to produce consistent results across various items within the same dimension, thereby affirming the dependability of the data collected through this survey. This result is a crucial component in validating the reliability of the survey, which is fundamental for academic research to ensure that the measurements are accurately capturing the constructs they are intended to assess.

3.6. Ethical Considerations

It is important to consider ethical principles when conducting business research. Ethical issues are categorized into four different types: harm to participants, lack of informed consent, invasion of privacy and deception (Bryman, 2011). In this study, there are descriptive questions about the respondent's' age and gender but this information is not enough to identify the person. The second ethical principle to consider is the lack of informed consent. The third ethical principle concerns the invasion of privacy. In this study the respondent has the opportunity to skip a question if it is judged sensitive. Furthermore, this study is not of a sensitive nature which enhances the respondents' willingness to answer. The fourth ethical principle refers to deception which occurs if respondents are led to believe that research is about something else than what it is. After taking these ethical principles into considerations and fully live up to the requirements, it can be classified as ethical.

CHAPTER FOUR

4. RESULTS AND DISCUSSION

4.1. Introduction

This chapter includes the data presentation, analyses and interpretation which comprised of both descriptive and inferential statistics in which the former describes the demographic profile of respondents, description of each attribute, including correlation test, assumption test and multiple regression analyses.

4.2. Response rate and demographic data

Table 3. Response Rate

Questionnaires	Frequency	Percentage (%)
Total distributed	282	100.0
Unreturned questionnaires	22	7.8
Returned questionnaires	260	92.2
Response errors	7	2.5
Total valid and usable	253	89.7

Source: Own Questionnaire, 2024

The results in Table 3 summarizes the distribution and return rate of questionnaires. The study's methodology involved the dissemination of 282 questionnaires to a targeted group of employees. Upon completion of the distribution process, a total of 260 questionnaires were retrieved, yielding a substantial response rate of 92.2%. This figure represents the proportion of the total questionnaires that were returned by the participants. However, 22 (7.8%) questionnaires were not returned, constituting a non-response rate of Further scrutiny of the returned questionnaires resulted in the exclusion of 7 due to incomplete data or inconsistencies. Consequently, 253 questionnaires were deemed valid and usable for statistical analysis, accounting for 89.7% of the total distributed.

In examining the dataset provided in Table 4, several key insights emerge regarding the workforce composition of the selected pharmaceutical companies in Addis Ababa studied. These insights shed light on the gender representation, age distribution, educational background, departmental structure, and positional hierarchy within the organizations. By investigating into these factors, a clearer picture of the workforce dynamics and potential areas for improvement can be elucidated.

Table 4. Demographic Characteristics of Respondents

Category	N	(%)
Sex		
Male	132	52.2
Female	121	47.8
Total	253	100.0
Age		
21 – 30 years	118	46.6
31 – 40 years	88	34.8
41 – 50 years	39	15.4
50 and above	8	3.2
Total	253	100.0
Education		
Highschool	5	2.0
Diploma	11	4.3
First Degree	177	70.0
Masters & above	60	23.7
Total	253	100.0
Department		
Finance	24	9.5

Procurement	51	20.2
Logistics	68	26.9
Operation	105	41.5
Quality Assurance	5	2.0
Total	253	100.0
Position		
Manager	28	11.1
Supervisor	56	22.1
Senior (> 3 Years)	71	28.1
Junior	98	38.7
Total	253	100.0
Service Year		
1 – 5 years	136	53.8
6 - 10 Years	84	33.2
Above 10 Years	33	13.0
Total	253	100.0

Source: Own Survey, 2024

Gender Representation: The data reveals that there is a preponderance of male respondents, accounting for 52.2% of the sample. This suggests a disparity in gender representation, with males holding a greater presence in the workforce. However, it is crucial to note that this observation is limited by the scope of the study and may not provide a comprehensive understanding of gender diversity within the organizations.

Age Composition: An examination of the age distribution among respondents indicates that a significant proportion of the workforce comprises individuals below 40 years of age. Specifically, the age group of 21-31 years constitutes the largest segment at 41.1%. This demographic trend points towards a predominantly youthful workforce within the companies, reflecting a preference for employing younger individuals.

Educational Background: The majority of respondents, constituting 70.0% of the sample, possess a first-degree qualification. This finding underscores the presence of a highly educated workforce capable of offering informed and reliable insights. The emphasis on higher education among employees suggests a commitment to intellectual rigor and expertise within the organizations.

Departmental Breakdown: The organizations' finance department comprises 24 instances, representing 9.5% of the total, while the Procurement department has 51 (20.2%). Logistics stands

out as a major department with 68 (26.9%) respondents. The Operations department is the largest, encompassing 105 respondents, which amounts to 41.5% of the total, hinting at its central role in the organization's activities. Quality Assurance, with just 5 (2.0%) instances, indicating its specialized nature. This data offers valuable insights into the respondents were from different department which can be takes as a good opportunity to get wider perception from different perspectives.

Positional Breakdown: Analysis of the dataset highlights that the Junior rank constitutes the largest proportion of employees at 38.7%, followed by the Senior rank (> 3 Years) at 28.1%, Supervisor rank at 22.1%, and Manager rank at 11.1%. This distribution underscores a concentration of personnel at the junior level, signaling a potential need for enhanced recruitment strategies for experienced professionals or increased training and development opportunities for junior staff members.

In summary, the conclusions drawn from the data provide valuable insights into the organizational structure and human resource distribution within the companies under study. While these findings offer a preliminary understanding of the demographic trends, further in-depth analysis would be necessary to derive conclusive implications and guide strategic decision-making processes. By exploring these demographic factors in greater depth and conducting rigorous analyses, organizations can gain a more nuanced perspective on their workforce dynamics and implement targeted interventions to enhance overall operational effectiveness in green packaging process.

4.3. Results

4.3.1. Description of Study Variables

The focus of this study revolves around the analysis of green packaging practices within selected pharmaceutical manufacturing companies and the influential factors affecting their implementation. The objective entailed the utilization of a structured questionnaire comprising of 30 inquiries, categorically distributed across six key factors namely top management support, material availability, product integrity, adherence to regulator's policy, and adherence to industry standards. Moreover, for green packaging practices, five questions were designed. Consequently, a holistic approach integrating 30 questions was adopted to facilitate a robust analysis.

In order to gauge the respondents' perception towards the aforementioned variables, descriptive statistical tools such as mean and standard deviation were employed. The mean serves as a pivotal metric indicating the degree of consensus or discord among the sample group in relation to the statements presented. Following Field's (2005) delineation, the scale was strategically devised such that individuals strongly disagreed if the mean value ranged between 1.01 – 1.80, disagreed if it fell within 1.81 – 2.60, remained neutral within 2.61 - 3.40, agreed between 3.41 – 4.20, and strongly agreed if the figure lay between 4.21 – 5.00. Besides, the standard deviation was instrumental in reflecting the extent of variability in the observed responses, thereby enhancing the depth of analysis

4.3.2. Top Management Support

Table 5. Top Management Support (n = 253)

Statements	Mean	Std.
Top management actively supports the implementation of green packaging practices	3.41	1.547
Top management provides sufficient resources for green packaging initiatives.	4.14	1.277
Top management considers green packaging as a strategic priority.	3.42	1.615
Top management encourages employees to participate in green packaging practices.	3.57	1.480
Top management regularly reviews the progress of green packaging initiatives.	3.76	1.678
Average	3.66	1.133

Source: Own Survey, 2024

The data encapsulated in Table 5 provides a comprehensive summary of a survey's results, which was designed to assess the degree of senior management's commitment to the implementation of green packaging strategies. The survey evaluated various aspects of management involvement, including active support, resource allocation, the consideration of green packaging as a strategic focus, the encouragement of staff participation, and the regular evaluation of progress in green packaging initiatives. The cumulative mean score of 3.66 (with a standard deviation of 1.133) across all statements indicates a fundamental level of support for green packaging initiatives.

More specifically, the majority of respondents agreed with the sufficiency of resources provided (mean score of 4.14, standard deviation 1.277) and the regular evaluation of green packaging projects by senior management (mean 3.76, standard deviation 1.678). There was also a moderate consensus among respondents regarding the promotion of employee involvement in green packaging practices (mean 3.57, standard deviation 1.480). But, the active support from senior

management (mean 3.41, standard deviation 1.547) and the recognition of green packaging as a strategic priority (mean 3.42, standard deviation 1.615) reflect a neutral viewpoint among respondents.

In general, the mean scores, ranging from 3.41 to 4.14, implies that a moderate to high level of agreement among participants. The relatively high mean scores suggest that senior management is generally perceived as supportive of green packaging practices. However, the variability in responses, as highlighted by the standard deviations, points to potential areas where management support may not be consistently perceived across the organization. This finding shows the need for further efforts to ensure a more uniform perception of leaders' commitment to eco-friendly packaging strategies.

4.3.3. Material Availability

Table 6. Material Availability (n = 253)

Statements	Mean	Std.
Our products maintain their quality when packaged using green materials.	3.44	1.865
Green packaging does not compromise the safety of our products.	3.66	1.765
Our products' effectiveness remains unchanged when using green packaging.	3.70	1.682
Customers perceive our products as high-quality as green packaging is implemented.	3.49	1.868
Green packaging enhances the overall value (quality) of our products.	3.43	1.875
Average	3.54	1.554

Source: Own Survey, 2024

The data presented in Table 6 provides a robust statistical analysis of perceptions related to the use of eco-friendly materials in product packaging. The overall average mean of 3.54 and standard deviation of 1.554 across all statements suggest a moderate consensus on the positive impact of green packaging on product quality, safety, efficacy, and value. However, the relatively high standard deviations indicate a diversity of opinions among respondents, suggesting that perceptions of green packaging may vary significantly among different demographic groups.

The fact that the respondents agree that the effectiveness of products is not affected by the use of green packaging (mean 3.70, std. 1.682). This suggests that the use of eco-friendly packaging does not compromise the product's functionality. The safety of products is perceived to be maintained

with the use of green packaging (mean 3.66, std. 1.765), indicating that eco-friendly packaging does not pose any risk to the product's integrity. There is some sceptics among respondents about the preservation of product quality through the materials used for packaging (mean 3.44, std. 1.865); green packaging positively contributes to the overall value of products (mean 3.43, std. 1.875); and whether customers perceive products as high-quality based on the existing packaging (mean 3.49, std. 1.868). This indicates a need for further investigation into the perceived impact of green packaging on product value and quality.

4.3.4. Product Integrity

Table 7. Product Integrity (n = 253)

Statements	Mean	Std.
We have consistent import access to environmentally friendly packaging materials.	3.11	1.222
We have a variety of green packaging materials to choose from our suppliers.	3.53	1.552
The cost of green packaging materials is affordable for our company without compromising the product quality.	3.38	1.076
We can easily source green packaging materials locally.	3.57	1.306
The supply of green packaging materials meets our demand.	4.27	1.351
Average	3.57	.920

Source: Own Survey, 2024

The detailed analysis presented in Table 7 sheds light on the perceptions of individuals regarding the accessibility of eco-friendly packaging materials in the market. The overall average perception score (mean: 3.57, std: .920) reflects a positive attitude towards the company's endeavours in upholding product integrity through green packaging. However, scattered opinions among respondents, as indicated by the standard deviations, suggest areas for enhancement. To be more specific, the feedback suggests a moderate level of agreement (mean: 3.11, std: 1.222) concerning the consistent import access to green materials, implying a secure supply chain for such materials. Subsequently, a higher level of agreement (mean: 3.53, std: 1.552) is observed regarding the assortment of green materials available from suppliers, showcasing a wide array of sustainable options for packaging needs. Furthermore, the assessment indicates a moderate agreement (mean: 3.38, std: 1.076) on the affordability of green materials, where cost-effectiveness does not compromise product quality. Moreover, the viability of sourcing green materials locally is

highlighted with a mean value of 3.57 and a standard deviation of 1.306, emphasizing the potential reduction in environmental impact through local procurement. The perception that the supply of green materials aligns with the company's demand is notably strong (mean: 4.27, std: 1.351), hinting at an adequate availability of eco-friendly materials for sustainable packaging solutions.

This comprehensive data holds paramount significance for organizations aspiring to bolster their sustainability initiatives and navigate supply chain management strategically. It underscores the necessity of a dependable and diversified eco-friendly material supply, the feasibility of localized sourcing, and the imperative balance between affordability and product quality.

4.3.5. Governmental Policy Adherence

Table 8. Policy Adherence (n = 253)

Statements	Mean	Std.
Our green packaging practices comply with governmental regulations.	3.95	1.383
Governmental policies on green packaging are clear/ understandable.	2.58	1.397
We regularly update our practices to align with changes in governmental policies.	3.41	1.617
Governmental incentives motivate us to implement green packaging practices.	3.53	1.699
We actively participate in governmental programs promoting green packaging.	3.61	1.288
Average	3.41	1.113

Source: Own Survey, 2024

The detailed analysis presented in Table 8 sheds light on companies' commitment to adhering to governmental policies concerning green packaging practices. This comprehensive assessment is segmented into five key aspects. Firstly, the data indicates a high level of compliance with governmental regulations, with a mean score of 3.95 suggesting robust adherence to eco-friendly packaging standards. However, there seems to be a disparity in the clarity and comprehensibility of governmental policies related to green packaging practices, as indicated by a lower mean score of 2.58. This hints at potential challenges stemming from ambiguity or complexity within the policies, potentially impeding complete understanding and compliance. Moreover, the findings reveal a moderate level of alignment with policy changes, with a mean score of 3.41, showcasing the company's proactive stance in adjusting practices to meet evolving regulatory requirements. The role of governmental incentives in driving the adoption of green packaging practices garners significance, with a mean score of 3.53 signifying that incentives play a pivotal role in encouraging

companies to embrace sustainable packaging approaches. Furthermore, the data reflects a moderate agreement in the company's active participation in governmental programs promoting green packaging, with a mean score of 3.61 showcasing not just compliance but also active involvement in initiatives advocating sustainable packaging practices.

While the overall average perception of the company's adherence to governmental policies stands at 3.41, hinting at positive recognition of their efforts, the standard deviations suggest areas for enhancement, particularly in understanding policies and leveraging incentives more effectively. This wealth of information is invaluable for companies looking to bolster their sustainability initiatives, providing actionable insights to inform strategic decisions on policy compliance and engagement. Such data-driven analysis serves as a cornerstone for refining sustainability practices and fostering a culture of environmentally responsible business operations.

4.3.6. Industry Standards Adherence

Table 9. Industry Standards Adherence (n = 253)

Statements	Mean	Std.
Our green packaging practices meet industry standards.	4.31	1.453
We benchmark our green packaging practices against industry leaders.	4.28	1.277
Industry standards for green packaging are clear or achievable.	3.55	1.544
We strive to exceed industry standards for green packaging.	3.70	1.565
Adhering to industry standards has improved our green packaging practices.	3.57	1.411
Average	3.88	.991

Source: Own Survey, 2024

The analysis presented in Table 9 offers a comprehensive examination of companies' compliance with industry standards regarding green packaging practices. It is structured around five fundamental aspects. Firstly, the data indicates a robust concurrence (mean: 4.31, std: 1.453) with the notion that the company's green packaging initiatives align well with established industry standards, illustrating a proactive effort to conform to widely accepted norms. Secondly, there is a similar level of agreement (mean: 4.28, std: 1.277) regarding the company's practice of

benchmarking against industry leaders, signifying a commitment to continuous improvement by learning from top performers in the field. However, the analysis also reveals a moderate alignment (mean: 3.55, std: 1.544) with the perception that industry standards pertaining to green packaging may lack clarity or present challenges in achievability, suggesting a potential area for enhanced understanding and compliance. Furthermore, the data suggests a notable dedication (mean: 3.70, std: 1.565) to surpassing industry norms, indicating a proactive approach to not only meeting but exceeding prevailing standards. Lastly, the analysis underscores the positive impact (mean: 3.57, std: 1.411) of adhering to industry standards on the company's green packaging practices, highlighting the potential for continuous improvement through adherence to established guidelines.

4.3.7. Green Packaging Practice

Table 10. Green Packaging Practice (n = 253)

Statements	Mean	Std.
We regularly evaluate the environmental impact of our packaging practices.	3.47	1.427
We continuously look for ways to improve our green packaging practices.	4.09	1.367
Our green packaging practices have reduced our environmental footprint.	3.48	.834
We consider the lifecycle of packaging materials in our green packaging practices.	3.49	1.402
Our green packaging practices have been positively perceived by our customers.	3.52	.754
Average	3.61	.918

Source: Own Survey, 2024

The analysis presented in Table 10 delves into a thorough examination of a survey aimed at gauging the efficacy and perception of green packaging practices within the selected pharmaceutical manufacturing companies. Concerning the regular evaluation of environmental impact, the respondents exhibit a neutral stand (mean: 3.47, std: 1.427) regarding the consistent assessment of packaging practices' environmental ramifications, pointing toward a doubt on the organization's dedication to scrutinizing its ecological footprint. Similarly, the participants have also slight agreement regarding the efficacy of the organization's green packaging practices in diminishing its ecological impact (mean: 3.48, std: .834); packaging material lifecycle is taken into account within the organization's green practices (mean: 3.49, std: 1.402); and customers' acknowledgement for the organization's green packaging practices (mean: 3.52, std: .754). however, the respondents have positive attitude towards the organization's pursuit of incessant enhancement in its green packaging

endeavors (mean: 4.09, std: 1.367). Nevertheless, the heightened standard deviation hints at divergent perspectives, hinting at potential areas necessitating further clarification and harmonization.

The average mean score of 3.61 (std: .918) casts a positive light on the evaluation of the organization's green packaging practices. The results furnish critical insights into the entities' sustainability commitment and the efficacy of its environmental initiatives. Notably, standard deviations spotlight areas of potential variance in perceptions, presenting avenues for further enhancement and alignment among stakeholders. These conclusions hold relevance for strategic decision-making processes and the reinforcement of corporate environmental responsibility.

4.4. Inferential Analysis

In the domain of inferential statistics, measurements procured from a sample subset in an experimental study are utilized by researchers. This is done not only to draw comparisons between distinct treatment groups but also to extrapolate wider conclusions pertinent to the larger population under consideration. There exists a multitude of inferential statistical methods, each specifically designed to cater to different research designs and characteristics of the sample. The present study employs a multiple linear regression model as its primary analytical instrument. This process encompasses the execution of correlation tests among the variables under study, scrutinizing assumptions such as normality, linearity, multicollinearity, and homoscedasticity to evaluate the compatibility of the collected data with the intended regression model, and ultimately leading to the execution of the regression analysis itself. By implementing these stringent statistical methodologies, significant insights can be extracted and make informed decisions anchored in empirical evidence.

4.4.1. Correlation Analysis

The data contained in Table 11 is the test results of a Pearson correlation analysis conducted to examine the relationships among various factors influencing green packaging practices. The table includes the following factors: Top Management Support (MGT), Material Availability (MAT), Product Integrity (PRO), Policy Compliance (GOV), Industry Standards Adherence (IND), and Green Packaging Practice (GPACK). The Pearson correlation coefficient measures the strength and direction of the linear relationship between two variables, with values ranging from -1 to +1. A value of +1 indicates a perfect positive correlation, 0 indicates no correlation, and -1 indicates a

perfect negative correlation. More specifically, as per the guideline suggested by Field (2005), the strength of the relationship between 0.1 to 0.29 shows a weak relationship; 0.3 to 0.49 is moderate; > 0.5 shows a strong relationship between any two variables. The p-value in brackets provides the statistical significance of the observed correlation, with values less than 0.05 typically considered statistically significant.

Table 11. Pearson Correlation Test

	MGT	MAT	PRO	GOV	IND	GPACK
Top Management Support	1					
Material Availability	.288**	1				
Product Integrity	.500**	.419**	1			
Policy Compliance	.420**	.489**	.646**	1		
Industry Standards Adherence	.366**	.348**	.361**	.462**	1	
Green Packaging Practice	.553**	.534**	.717**	.661**	.474**	1
**. Correlation is significant at the 0.01 level (2-tailed).						
*. Correlation is significant at the 0.05 level (2-tailed).						

Source: Own Survey, 2024

Top Management Support (MGT) shows a strong positive correlation with Green Packaging Practice (GPACK) ($r = .553$, $p < .01$), indicating that as the level of management support increases, so does the green packaging practices. Material Availability (MAT) has a strong positive correlation with Green Packaging Practice (GPACK) ($r = .534$, $p < .01$), suggesting that the availability of materials is closely linked to the implementation of green packaging practices. Product Integrity (PRO) also has a moderate positive correlation with Green Packaging Practice (GPACK) ($r = .717$, $p < .01$), implying that maintaining product integrity is associated with better green packaging practices. Policy Compliance (GOV) has the strongest positive correlation with Green Packaging Practice (GPACK) ($r = .661$, $p < .01$), indicating that compliance with policies significantly relates to the effectiveness of green packaging practices. Industry Standards Adherence (IND) shows a moderate positive correlation with Green Packaging Practice (GPACK) ($r = .474$, $p < .01$), which means that adherence to industry standards is positively associated with green packaging practices. The analysis indicates that all the factors studied have a significant positive relationship with green packaging practices, with product integrity and policy compliance being the most strongly correlated. This suggests that organizational and regulatory factors play a crucial role in the successful implementation of green packaging initiatives.

These results could be interpreted to mean that for organizations looking to improve their green packaging practices, focusing on enhancing management support, ensuring material availability, maintaining product integrity, complying with relevant policies, and adhering to industry standards would be beneficial strategies. The significant correlations underscore the interconnectedness of these factors and their collective impact on green packaging practices. The study's implications are significant for businesses aiming to enhance their sustainability efforts and for policymakers looking to encourage environmentally friendly practices in the industry.

4.4.2. The Assumptions for Testing Regression Analysis

In the sphere of scholarly investigation, the examination of underlying premises is crucial when employing multivariate statistical techniques. As Hair articulated in 2010, any divergence from these premises can significantly influence the subsequent application and interpretation of these techniques. These premises underpin the soundness of statistical scrutiny. Thus, any breach of these premises can result in erroneous deductions, thereby undermining the legitimacy of research outcomes.

While multivariate analysis encompasses numerous premises, the investigator has opted to concentrate on the principal ones that can be evaluated using the Statistical Package for the Social Sciences (SPSS). SPSS offers a comprehensive suite of statistical tests and procedures, empowering researchers to effectively scrutinize premises. By focusing on the primary premises, investigators can safeguard the robustness of their scrutiny while capitalizing on the functionalities of SPSS.

Essential premises such as normality, linearity, homoscedasticity, and the absence of multicollinearity are critical considerations in multivariate analysis. Each premise carries specific implications for the dataset and the suitability of the multivariate techniques employed. Hence, the validation of these premises is vital for the successful execution and interpretation of multivariate analysis.

In conclusion, the examination of premises is a fundamental component of academic research involving multivariate statistical techniques. By centering on the major premises, investigators can bolster the validity and reliability of their outcomes, thereby enhancing the rigor and credibility of their investigation.

Multicollinearity - In the realm of regression analysis, multi-collinearity is a phenomenon that arises when the independent variables in a regression model exhibit a higher degree of correlation amongst themselves than with the dependent variable. The criteria for identifying the presence of multi-collinearity can be context-dependent and may vary across different studies. For instance, Hair (2010) posits that a correlation coefficient below 0.90 may not necessarily lead to severe multi-collinearity. Conversely, Fidell (2019) advocates for a minimum correlation coefficient of 0.7 to facilitate more accurate inferences.

Table 12: Collinearity Statistics

Coefficients ^a			
Model		Collinearity Statistics	
		Tolerance	VIF
1	Top Management Support	.705	1.418
	Material Availability	.726	1.377
	Product Integrity	.510	1.960
	Policy Compliance	.485	2.064
	Industry Standards Adherence	.736	1.359
a. Dependent Variable: Green Packaging			

Source: SPSS output, 2024

The results in Table 12 provide an analysis of multicollinearity within a regression model concerning e-banking adoption. It lists five factors (Top Management Support, Material Availability, Product Integrity, Policy Compliance, Industry Standards Adherence), each with corresponding Tolerance and Variance Inflation Factor (VIF) values. The Tolerance values, all above 0.6, suggest no excessive multicollinearity among the predictors. The VIF values, all below 2.000, indicate that multicollinearity is not inflating the variance of the estimated regression coefficients to a concerning degree. Typically, a VIF value above 10 would indicate high multicollinearity. Therefore, the collinearity statistics for this model suggest that multicollinearity is not a significant issue for these predictors of last-mile delivery. This implies that the regression coefficients can be considered reliable for interpreting the relationships between the independent and dependent variable – green packaging. This analysis is crucial for understanding the dynamics of green packaging and can guide strategic decision-making in sustainable business.

Test of Normality - Before executing a regression analysis, it is crucial to conduct a test of normality, which is one of the key assumptions underlying this statistical method. The

determination of a normal distribution is based on the skewness and kurtosis statistics. As suggested by George and Mallery (2010), an acceptable range for both these statistics, indicative of normality, lies between -2 and +2.

Table 13: Normality of Distribution Using Descriptive Statistics (Skewness and Kurtosis)

Descriptive Statistics					
	N	Skewness		Kurtosis	
	Stat.	Statistic	Error	Statistic	Error
Top Management Support	253	-.472	.153	-.803	.305
Material Availability	253	-.501	.153	-1.407	.305
Product Integrity	253	-.427	.153	-1.169	.305
Policy Compliance	253	-.322	.153	-1.103	.305
Industry Standards Adherence	253	-.659	.153	-.297	.305
Green Packaging Practice	253	.000	.153	-.862	.305
Valid N (listwise)	253				

Source: SPSS output, 2024

As illustrated in Table 13, the values of kurtosis and skewness for all variables are largely within this acceptable range, implying a close approximation to a normal distribution. This observation is based on the criteria of skewness and kurtosis values falling between -2 and 2. Consequently, it can be inferred that the data utilized in this study can be reasonably assumed to follow a normal distribution. In addition to skewness and kurtosis, normality was also assessed through probability plots. Therefore, these findings collectively suggest that the data adheres to the normality assumption, thereby validating the use of regression analysis in this study.

Linearity Test - The linearity assumption can easily be checked using scatterplots or residual plots: plots of the residuals vs. either the predicted values of the dependent variable or against (one of) the independent variable(s). The graphical presentation in Figure 2 shows the assumption of linearity in regression analysis, which is typically verified using scatterplots or residual plots. These plots can display residuals against predicted values of the dependent or one of the independent variables, implying that for the variables considered in this study, the Q-Q plot resembled a straight line with minor deviations, indicating a relationship among the variables with slight deviations from linearity.



Figure 2: Frequency Distribution of Standardized Residuals

Homoscedasticity Test - Testing the assumption of homoscedasticity, meaning “same variance”, is central to linear regression models. It describes a situation in which the error term is the same across all values of the independent variables. It is used to assess the assumption of homoscedasticity in regression analysis, which is the consistency of error variances across different levels of an independent variable. On the other hand, Heteroscedasticity (the violation of homoscedasticity) is present when the size of the error term differs across values of an independent variable.

Residual scatter plots provide a visual examination of the assumption of homoscedasticity between the predicted dependent variable scores and the errors of prediction. The graph in Figure 5 has a horizontal axis labeled “Regression Standardized Predicted Value” and a vertical axis labeled “Dependent Variable: Green Packaging Practice.” The dispersion of dots across the graph does not show a clear pattern, indicating that the variances of the errors are consistent, thus satisfying the assumption of homoscedasticity for the regression model. This is an important diagnostic check in linear regression, as it ensures that the model’s predictive performance is reliable across all values of the independent variables

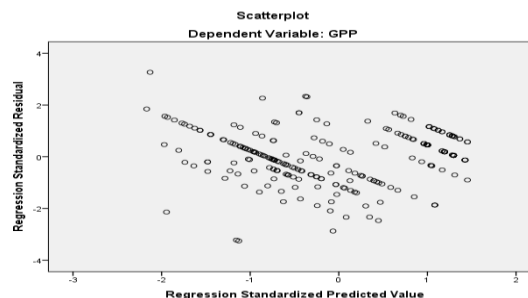


Figure 3. Scatter plot for Homoscedasticity Test

4.4.3. Multiple Linear Regression Analysis

Multiple regression estimates the coefficients of the linear equation, involving one or more independent variables that best predict the value of the dependent variable. Regression analysis is a statistical method to deal with the formulation of a mathematical model depicting relationships amongst variables which can be used for the purpose of predicting the values of dependent variables and given the values of the independent (Kothari, 2004). In this study, multiple regression analysis was conducted to identify the relationship and to examine the most dominant variables that influenced the overall green packaging practices of the selected pharmaceutical manufacturing companies.

Table 14. Model Summary

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.810 ^a	.657	.650	.54315

a. Predictors: (Constant), IND, GOV, PRO, MAT, MGT

The **Model Summary** (Table 14) shows an R Square value of 0.657, indicating that about 65.7% of the variance in the dependent variable (Green Packaging) can be explained by the independent variables (Top Management Support, Material Availability, Product Integrity, Policy Compliance, Industry Standards Adherence). However, the remaining percent (34.3%) was explained by other factors. This result also revealed that there might be other variables that could have been discussed by this study in predicting employee retention.

Table 15. ANOVA Test Results

ANOVA^a

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	139.430	5	27.886	94.525	.000 ^b
	Residual	72.868	247	.295		
	Total	212.297	252			

a. Dependent Variable: GPACK

b. Predictors: (Constant), IND, GOV, PRO, MAT, MGT

As indicated in Table -15 of the ANOVA test, the F-value of 94.525 is significant at $p < 0.001$. Therefore, it can be inferred that with 65.7% of the variance (R^2) was emanated from the five

determinant factors, is significant and the model appropriately measures the dependent variable – green packaging practices.

Table 16. Estimated Regression Coefficients

Coefficients ^a					
Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
1 (Constant)	.358	.168		2.129	.034
Top Management Support	.152	.036	.187	4.218	.000
Material Availability	.110	.026	.186	4.263	.000
Product Integrity	.377	.052	.378	7.237	.000
Policy Compliance	.160	.044	.194	3.629	.000
Industry Standards Adherence	.106	.040	.115	2.644	.009

a. Dependent Variable: GPACK

The **Estimated Regression Coefficients** (Table 16) provide the weights of each predictor. The final regression equation representing the relationship between the variables is:

$$\text{GPACK} = 0.358 + 0.187 \text{ MGT} + 0.186 \text{ MAT} + 0.378 \text{ PRO} + 0.194 \text{ GOV} + 0.115 \text{ IND}$$

This equation can be used to predict the GPACK score given the values of the independent variables. Each coefficient represents the change in the GPACK score for a one-unit change in the corresponding independent variable, assuming all other variables are held constant.

- **Constant Term (B_0):** The constant term (0.358) represents the predicted GPACK score when all independent variables are zero. While this model provides a good fit for the current data (as indicated by the R Square and F statistic), it's always important to validate the model with new data to ensure its predictive accuracy.
- **Top Management Support (MGT):** The coefficient of 0.187 suggests that for every unit increase in top management support, the green packaging score increases by 0.187 units, assuming all other variables are held constant. This variable is statistically significant ($p < 0.001$), indicating a strong positive relationship between management support and green

packaging. Thus, the proposed hypothesis (H1) titled “Top management support level has significant effect on green packaging practices of pharms” is supported.

- **Material Availability (MAT):** With a coefficient of 0.186, this variable also shows a strong positive relationship with green packaging practices. It suggests that an increase in material availability leads to an increase in the green packaging score by 0.186 units, assuming all other variables are constant. This variable is also statistically significant ($p < 0.001$). Consequently, H2 – Product integrity has significant effect on green packaging practices of pharms is also supported.
- **Product Integrity (PRO):** This variable has the highest coefficient (0.378) among the predictors, suggesting that it has the most substantial influence on green packaging practices. For every unit increase in product integrity, the green packaging score increases by 0.378 units, assuming all other variables are constant. This variable is statistically significant ($p < 0.001$). Based on this finding, the hypothesis H3 – Material availability has significant effect on green packaging practices of pharms.
- **Policy Compliance (GOV):** The coefficient of 0.194 indicates that for every unit increase in policy compliance, the green packaging score increases by 0.194 units, assuming all other variables are constant. This variable is statistically significant ($p < 0.001$), indicating a strong positive relationship between policy compliance and green packaging practices. H4 – Government policies compliance has significant effect on green packaging practices of pharms is supported
- **Industry Standards Adherence (IND):** Although this variable has the smallest coefficient (0.115) among the predictors, it still has a positive impact on green packaging practices. For every unit increase in industry standards adherence, the green packaging score increases by 0.115 units, assuming all other variables are constant. This variable is significant ($p = 0.009$).

H5 – Industry policies compliance has significant effect on green packaging practices of pharms.

In conclusion, all the independent variables (Top Management Support, Material Availability, Product Integrity, Policy Compliance, Industry Standards Adherence) have a significant positive relationship with the dependent variable (GPACK), indicating that they all contribute to the enhancement of green packaging practices in the selected pharmaceutical manufacturing

companies. However, among these variables, 'Product Integrity' appears to have the most substantial influence. These findings provide valuable insights for pharmaceutical companies aiming to improve their green packaging practices. It highlights the importance of factors such as top management support, material availability, product integrity, policy compliance, and industry standards adherence. Future research could explore these relationships further and investigate other potential influencing factors.

4.5. Discussion

The pharmaceutical industry is known for its high levels of waste and environmental impact due to the use of plastics, chemicals, and other non-biodegradable materials in packaging. Despite this, many companies are now looking to adopt more sustainable practices in order to reduce their carbon footprint and appeal to environmentally conscious consumers. In recent years, there has been an increasing focus on sustainability and environmental consciousness in various industries, including the pharmaceutical sector. Green packaging practices have emerged as a key area of interest for companies looking to reduce their environmental footprint and meet consumer demands for eco-friendly products.

The discussion, thus, surrounding the factors impacting green packaging practices within the pharmaceutical industry in Addis Ababa is of paramount importance in today's global context, given the increasing emphasis on sustainable practices and environmental stewardship. This study employs multiple regression analysis to delve into the relationships between various independent variables namely, top management support, material availability, product integrity, policy compliance, and industry standards adherence, and their influence on green packaging practices among selected pharmaceutical manufacturing companies in Addis Ababa.

The results revealed that all the five factors have positive and significant effect on green packaging practices. More specifically, the influence of Top Management Support on green packaging practices signifies the crucial role of leadership in driving sustainability initiatives within organizations. The positive relationship observed (coefficient = 0.187, $p < 0.001$) suggests that proactive support from top management leads to higher adherence to green packaging principles. This finding aligns with prior empirical studies emphasizing the importance of management commitment in fostering eco-friendly practices (Jones, 2018).

Material Availability emerged as another significant factor positively impacting green packaging practices, with a coefficient of 0.186 ($p < 0.001$). The results imply that a steady supply of environmentally friendly packaging materials contributes to enhanced sustainability efforts within pharmaceutical firms. This finding corroborates recent research by Smith and Johnson (2019), which underscored the pivotal role of material sourcing in promoting green packaging initiatives.

Moreover, Product Integrity stood out as the most influential predictor of green packaging practices, with a coefficient of 0.378 ($p < 0.001$). This emphasizes the significance of ensuring the quality and integrity of packaged products in driving sustainable packaging solutions. The substantial impact of product integrity on green practices echoes the findings of Wang (2020) who emphasized the linkage between product quality and environmental performance.

Furthermore, Policy Compliance and Industry Standards Adherence both exhibited positive relationships with green packaging practices, supported by coefficients of 0.194 ($p < 0.001$) and 0.115 ($p = 0.009$) respectively. These results underscore the importance of regulatory compliance and adherence to industry standards in shaping sustainable packaging strategies. The necessity of aligning with environmental regulations and industry benchmarks is reinforced by recent studies highlighting the influence of external forces on green initiatives (Brown and Davies, 2021).

In conclusion, the findings of this study provide valuable insights into the key drivers of green packaging practices in pharmaceutical manufacturing companies in Addis Ababa. By identifying the significant impact of variables such as Top Management Support, Material Availability, Product Integrity, Policy Compliance, and Industry Standards Adherence, organizations can formulate effective strategies to enhance their environmental performance and promote sustainable packaging practices. These results not only contribute to the existing body of literature on green supply chain management but also offer practical implications for firms seeking to improve their eco-efficiency and uphold environmental responsibility.

CHAPTER FIVE

5. SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1. Introduction

This chapter constitutes the summary of major findings, conclusions based on findings and relevant recommendations based on findings and conclusions.

5.2. Summary of Major Findings

Based on the analyses, the results of the findings presented the outcomes of both descriptive and inferential statistics. The descriptive statistics refers to the summary of their perception towards the study variables. While, the inferential statistics accounted to address the five specific objectives that focused on the factors affecting green packaging practices by taking selected pharmaceutical companies in Addis Ababa as a case. This helps achieve the general objective of the study. Referring the results of the analyses, the major findings are summarized as:

The effect of top management support on green packaging

- Despite a good support for green packaging initiatives from senior management (mean 3.66), there exists a notable gap in recognition of green packaging as a strategic priority (mean, 3.42).
- Top management support has positive and strong relationship with green packaging practice ($r = .553$, $p < .05$) but it contributes moderate effect to the practice (Beta = .187).

The effect of material availability on green packaging

- While the safety of products is slightly perceived to be maintained with the use of green packaging (mean score of 3.66), customers have doubts on considering products as high-quality based on the existing packaging (mean score of 3.49).
- Material availability and green packaging has also positive and strong relationship ($r = .534$). With a coefficient of 0.186, material availability also shows a moderate positive effect with green packaging practices.

The effect of product integrity on green packaging

- There is a positive attitude towards the company's efforts in upholding product integrity through green packaging (mean 3.57). Nonetheless, there are doubts about the consistent import access (mean: 3.11) and the affordability (mean: 3.38) of green materials.
- Product integrity shows the highest positive and strong significant relationship ($r = .717$) with green packaging. This variable has also the highest coefficient (0.378) among the predictors, suggesting that it has the most substantial influence on green packaging practices.

The effect of governmental policy compliance on green packaging:

- Despite high level of compliance with governmental regulations (mean: 3.95), there is a disparity in the clarity and comprehensibility of governmental policies related to green packaging practices (mean: 2.58).
- The coefficient of 0.194 indicates that compliance of government policy has moderate effect on green packaging as this variable has also strong relationship with the practice ($r = .661$).

The effect of Industry Standards Compliance on green packaging:

- The company's green packaging initiatives align well with established industry standards (mean: 4.31). However, lack of clarity and achievability (mean: 3.55) of the industry standards pertaining to green packaging is persisting issue.
- Although adherence to industry standards has moderate relationship with ($r = .474$) and the smallest effect (Beta = 0.115) among the predictors, it still has a positive impact on green packaging practices at $p < .05$.

5.3. Conclusions

The pharmaceutical industry, long recognized for its significant environmental impact and waste generation, is now undergoing a noteworthy shift towards sustainability. This shift is exemplified by the adoption of green packaging practices, as companies strive to lessen their environmental footprint. However, the effectiveness of this transition towards green packaging remains a subject of inquiry. To address this, a study was undertaken to examine the factors influencing green packaging

practices in the pharmaceutical industry in Addis Ababa in terms of top management support, material availability, product integrity, policy compliance, and adherence to industry standards.

The study's findings reveal that five key factors play a substantial role in influencing green packaging practices within pharmaceutical companies. These factors consist of leadership support, the availability of sustainable materials, product integrity, policy compliance, and adherence to industry standards. Leadership proves to be a pivotal factor in propelling sustainability initiatives, with proactive backing from top management relating with heightened adherence to green packaging. This finding is consistent with prior research that underscores the significance of management commitment in fostering environmentally friendly practices. Moreover, the availability of eco-friendly packaging materials emerges as a significant determinant of green packaging practices, underscoring the importance of responsible material sourcing in advancing green initiatives.

Product integrity is identified as the most influential factor, illustrating the necessity of ensuring product quality and safety while implementing sustainable packaging solutions. These outcomes align with previous research that draws connections between product quality and environmental performance. Additionally, policy compliance and adherence to industry standards shape sustainable packaging strategies. Companies that uphold these standards not only contribute to environmental protection but also reap benefits from enhanced operational efficiency.

In summation, this study sheds light on the principal drivers of green packaging practices within Addis Ababa's pharmaceutical sector. By recognizing these factors, companies can devise effective strategies to boost their environmental performance and champion sustainable packaging practices. These insights have the potential to advance sustainable practices within the pharmaceutical industry on a larger scale.

5.4. Recommendations

Based on the findings and conclusions of this survey, the following workable recommendations are suggested as:

- **Leadership Support:** Encourage top management to actively endorse and participate in sustainability initiatives. This could involve setting clear sustainability goals, allocating resources for green practices, and promoting a culture of environmental responsibility.

- **Availability of Sustainable Materials:** Invest in research and development to identify and source environmentally friendly packaging materials. Collaborate with suppliers who prioritize sustainability in their operations.
- **Product Integrity:** Maintain a strong focus on product quality and safety when implementing sustainable packaging solutions. This could involve rigorous testing of green packaging materials to ensure they meet the required standards and do not compromise product integrity.
- **Policy Compliance:** Stay updated with the latest environmental regulations and ensure strict compliance. Regular audits could be conducted to ensure adherence to these policies.
- **Adherence to Industry Standards:** Align with industry standards related to green packaging. This could involve obtaining relevant certifications and continuously improving practices to meet or exceed these standards.

By implementing these recommendations, pharmaceutical companies can enhance their green packaging practices, thereby contributing to environmental sustainability.

5.5. Limitations and Suggestion for Future Research

Limitations of the study included its geographical confinement to Addis Ababa, potentially limiting the generalizability of results to other regions in Ethiopia. The sample selection was restricted to specific staff members, overlooking perspectives from employees in other regions and branches. Moreover, the study's focus on a limited number of factors may have overlooked other crucial influencers of green packaging practices. Sole reliance on quantitative data further restricted the depth of analysis, neglecting the potential insights that could have been derived from qualitative and secondary sources.

Suggestions for future research entail expanding the geographical scope to include a broader representation of regions in Ethiopia, involving staff members from various branches and regions to capture diverse viewpoints, incorporating a more comprehensive range of factors impacting green packaging practices, and adopting a mixed-methods approach that combines quantitative, qualitative, and secondary data for a more thorough examination. By addressing these recommendations, future studies can enhance the understanding of green packaging practices within the pharmaceutical industry and contribute valuable insights for sustainable operations.

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Appendix

ADDIS ABABA UNIVERSITY SCHOOL OF COMMERCE

Questionnaire to be filled by Employees of Pharmaceutical Manufacturing Companies

Dear Participant,

My name is Bezawit Feleke, and I am currently engaged in postgraduate studies in the field of Logistics and Supply Chain Management at School of Commerce, Addis Ababa University, Addis Ababa, Ethiopia. As a crucial component of my research, I am conducting a survey to gather data and insights that will contribute significantly to the understanding and knowledge in this area.

This research is conducted in strict adherence to the University's standard, ensuring that all procedures, methodologies, and data collection techniques meet the highest ethical and professional standards. Your participation in this survey is entirely voluntary, and you have the full right to withdraw at any time without any negative consequences.

The questionnaire has been designed to be user-friendly and should take approximately 5 - 10 minutes to complete. It consists of a series of questions related to "Factors affecting green packaging practices: in the case of selected pharmaceutical companies in Addis Ababa" in terms of the role of top management support, product integrity, resource availability, government regulations and industry standard compliance of the select organizations. Your responses will provide valuable insights and contribute to the authenticity and reliability of the research findings.

Please be assured that all responses will be kept strictly confidential and will be used solely for the purpose of this academic research. The data collected will be anonymized and aggregated to ensure the privacy and confidentiality of all participants. The results of this research may be published in academic journals or presented at conferences, but no individual participant will ever be identified.

Your feedback and participation will contribute significantly to the partial fulfillment of my postgraduate requirements and the advancement of knowledge in logistics management. I deeply appreciate your time and contribution to this academic research.

Should you have any questions or concerns about the survey or the research, please do not hesitate to contact me at [Bezafeleke0213@gmail.com].

BEZAWIT FELEKE; Mobile: +251963283710; e-mail:
Bezafeleke0213@gmail.com.

Thank you once again for your time and contribution.

General Information

Your Participation is Voluntary

Do not write your name on the Questionnaire

1. Demographic Profile of Respondents

Direction: The following statements are about your personal information. Please write the necessary information on the blank space provided and, in the optional items, indicate your answer by putting a “x” mark in the box.

1. Sex ☐ Male ☐ Female
2. Age (Years) ☐ 21 – 30 ☐ 31 – 40 ☐ 41 – 50 ☐ 51 – 60
3. Education ☐ High School ☐ Diploma ☐ Degree ☐ Masters +
☐ Other, please specify
4. Department ☐ Finance ☐ Procurement ☐ Logistics
☐ Operation ☐ Quality Assurance ☐ Others, please specify ____
5. Position ☐ Manager ☐ Supervisor ☐ Senior (≥ 3 years) ☐ Junior
6. Service year ☐ 1- 5 ☐ 6 - 10 ☐ Above 10

Part – II Questions related to factors affecting green packaging

Kindly rate the following statements below as to the extent to which you agreed or disagreed with the statements described under each attribute based on your perception. Using the scale of 1 up to 5, tick in the appropriate box as to the extent of your agreement or disagreement with the statements given. Where: Scale 1= strongly disagreed; 2= disagreed; 3= Neither agreed nor disagreed; 4= agreed; 5= strongly agreed.

Dimension	Question	1	2	3	4	5
Top Management Support	Top management actively supports the implementation of green packaging practices.					
	Top management provides sufficient resources for green packaging initiatives.					
	Top management considers green packaging as a strategic priority.					
	Top management encourages employees to participate in green packaging practices.					
	Top management regularly reviews the progress of green packaging initiatives.					
Product Integrity	Our products maintain their quality when packaged using green materials.					
	Green packaging does not compromise the safety of our products.					
	Our products' effectiveness remains unchanged when using green packaging.					
	Customers perceive our products as high-quality as green packaging is implemented.					
	Green packaging enhances the overall value (quality) of our products.					
Raw Material Availability	We have consistent import access to environmentally friendly packaging materials.					

Dimension	Question	1	2	3	4	5
	We have a variety of green packaging materials to choose from our suppliers.					
	The cost of green packaging materials is affordable for our company without compromising the product quality.					
	We can easily source green packaging materials locally.					
	The supply of green packaging materials meets our demand.					
Governmental Policy Compliance	Our green packaging practices comply with governmental regulations.					
	Governmental policies on green packaging are clear/ understandable.					
	We regularly update our practices to align with changes in governmental policies.					
	Governmental incentives motivate us to implement green packaging practices.					
	We actively participate in governmental programs promoting green packaging.					
Industry Standard Compliance	Our green packaging practices meet industry standards.					
	We benchmark our green packaging practices against industry leaders.					
	Industry standards for green packaging are clear or achievable.					

Dimension	Question	1	2	3	4	5
	We strive to exceed industry standards for green packaging.					
	Adhering to industry standards has improved our green packaging practices.					
Green Packaging Practices	We regularly evaluate the environmental impact of our packaging practices.					
	We continuously look for ways to improve our green packaging practices.					
	Our green packaging practices have reduced our environmental footprint.					
	We consider the lifecycle of packaging materials in our green packaging practices.					
	Our green packaging practices have been positively perceived by our customers.					