



EFFECT OF GREEN SUPPLY CHAIN ON FIRM PERFORMANCE

BY

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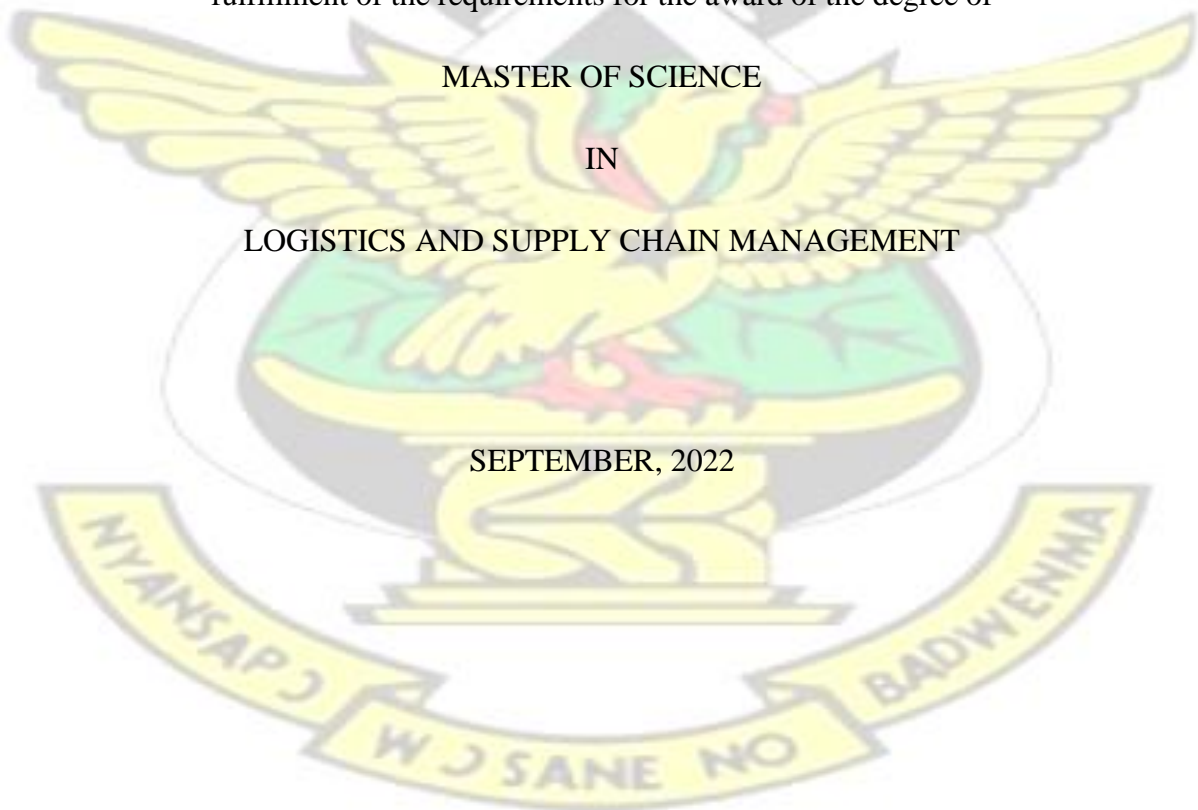
A Thesis Submitted to the Department of Supply Chain and Information Systems of the Kwame Nkrumah University of Science and Technology School of Business, in partial fulfillment of the requirements for the award of the degree of

MASTER OF SCIENCE

IN

LOGISTICS AND SUPPLY CHAIN MANAGEMENT

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DECLARATION

I hereby declare that his research is my own work towards the award of a MSc degree and that, to the best of my knowledge, it contains no material which have been accepted for the award of any other degree at this university or elsewhere, except where due acknowledgement has been made in text.

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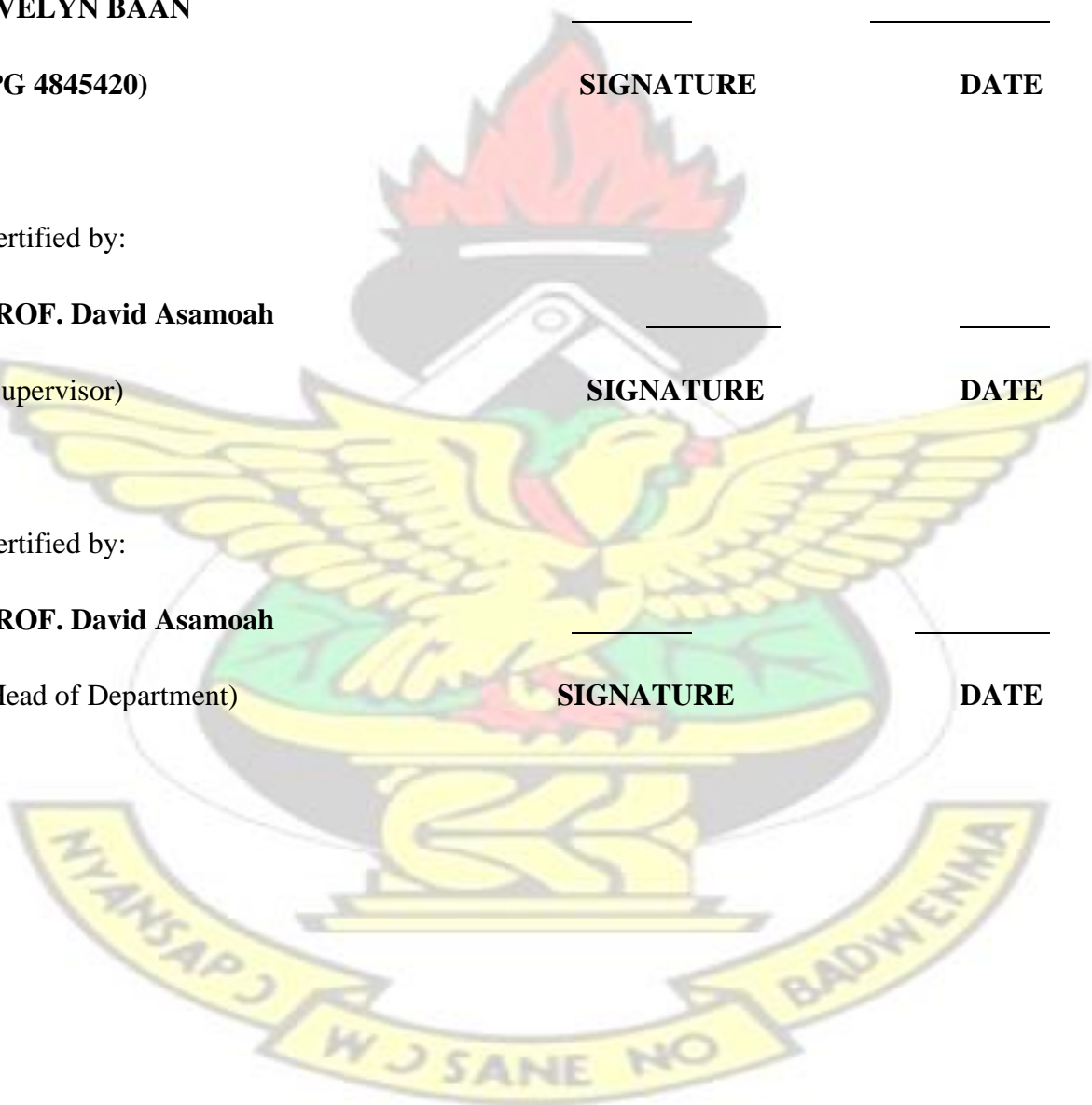
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ABSTRACT

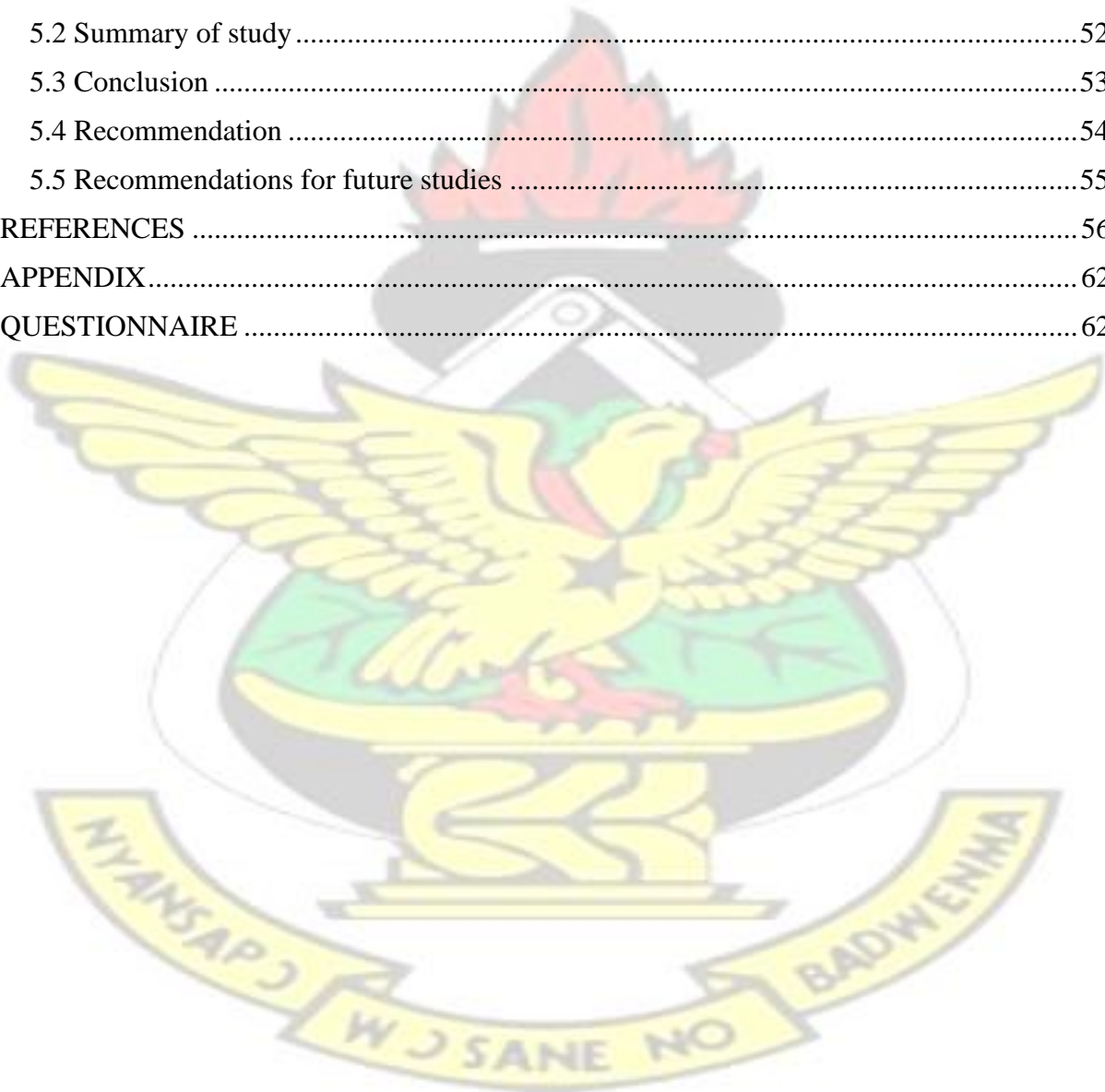
The aim of this study was to examine the impact of green supply chain management on the performance of firms in the Fast Moving Consumer Goods (FMCG) industry. The study specifically focused on: examining the effect of government policies on green supply chain management in FMCG companies, the effect of technology on green supply chain management in FMCG companies and the effect of green supply chain management on performance of FMCG companies. The study adopted the descriptive research design to collect primary data from 60 FMCG companies within the Accra Metropolis using structured questionnaire with close-ended questions. The raw data was subjected to analysis using Statistical Package for Social Sciences (SPSS) for the purposes of making meaning out of the responses. The findings of the study showed that a significant positive association exist between government policies and green supply chain. It was also found that a significant positive association exists between technology and green supply chain. Finally, the results showed that a significant positive association exists between green supply chain and firm performance among FMCG companies in Ghana. The study recommends that great strides be made by government to motivate all FMCG companies to have the incentives in encouraging and employing strategies of green supply chain. Secondly the study recommends that managers of FMCG companies should organize seminars as well as round table discussions and make the structure of green supply chain practices very transparent to customers and employees. Lastly, it is important that the managers organize continuous research to investigate green supply chain management and FMCG firm performance and how these two concepts can help achieve organizational goals.

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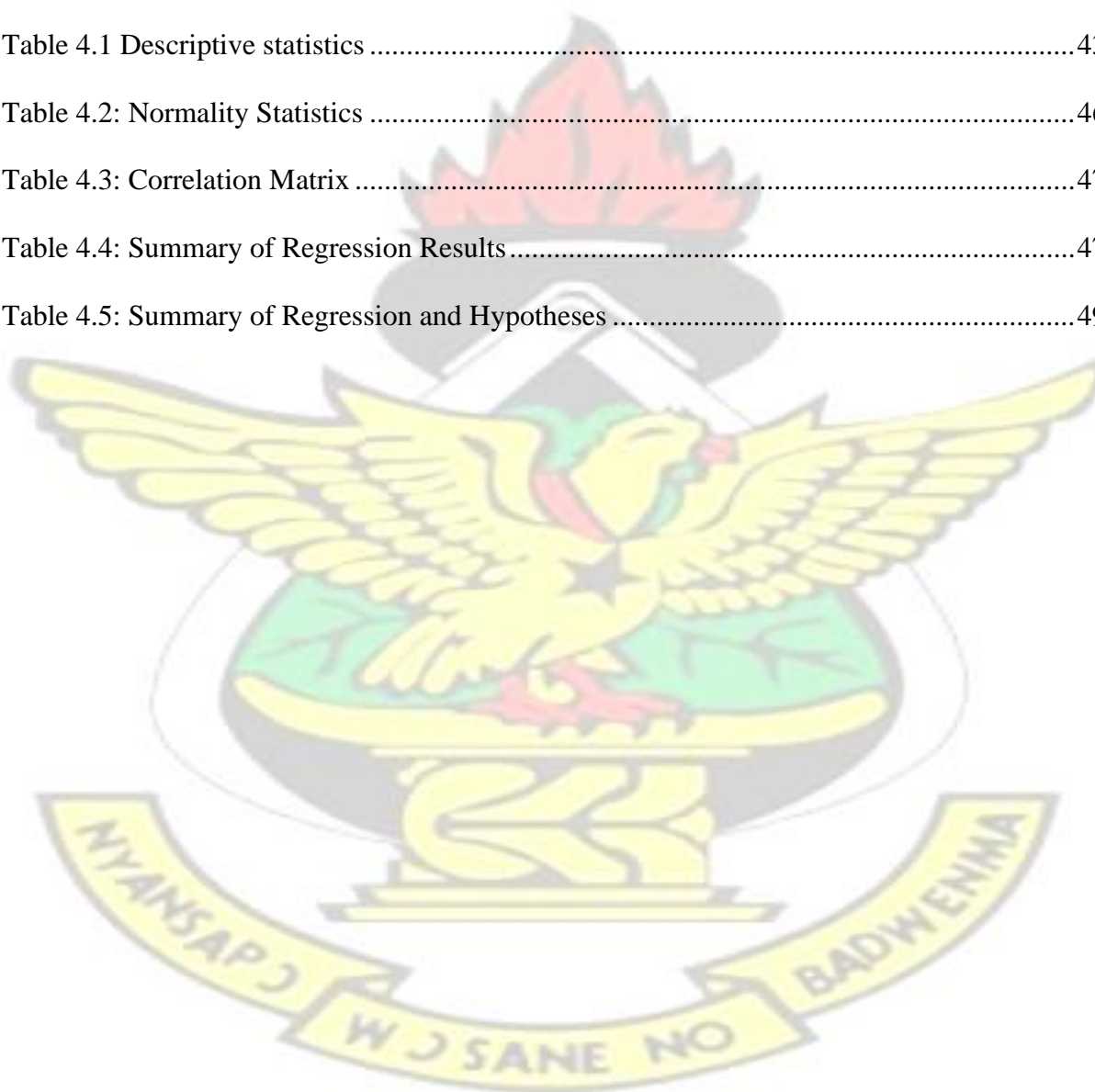
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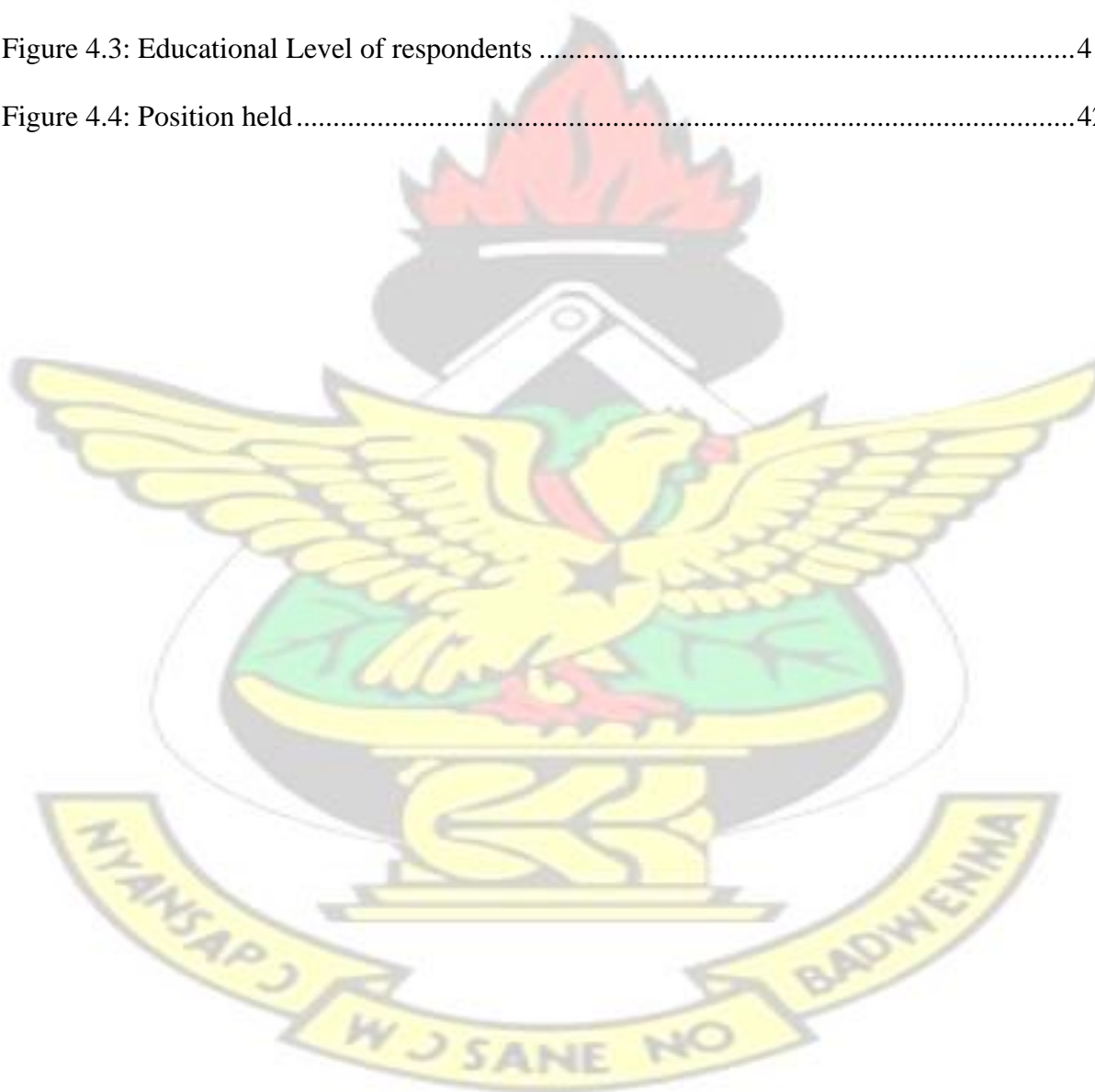
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List of Abbreviations

EPA: Environmental Protection Agency

FMCG: Fast Moving Consumer Goods

GDP: Gross Domestic Product

GSCM: Green Supply Chain Management

ISO: International Standardization Organization

NGOs: Non-Governmental Organizations

NPV: Net Present Value

NRBV: Natural Resource Based View

PDCA: Plan Do Check Act

SPSS: Statistical Package for Social Sciences

TAM: Technology Acceptance Model



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My sincere gratitude goes to the respondents and my Husband (Mr. Theophilus Ayugane) who has been my anchor all throughout the academic journey.



DEDICATION

I dedicate my Thesis to the Almighty God for His protection and guidance through this academic journey. A special feeling of gratitude to my family for their relentless love and support throughout the process. I also thank my Husband (Lawyer Theophilus Ayugane) who is/was my anchor throughout the entire Master's program. You all have being my best cheer leaders. Cheers!



CHAPTER ONE

INTRODUCTION

1.1 Background of the study

Environmental issues in the 21st century have been highly topical in business seminars and conversations today. Business experts have recognized the need to discuss and be proactive about greening the environment because of the direct impact it may have on firm performances (Diab, AL-Bourini & Abu-Rumman, 2011). Due to this underlying knowledge conscious effort have been made by many governments to enable and regulate businesses in such a manner that their operations do not affect the environment in the short or long term (Toke, Gupta & Dandekar, 2016). Companies in highly developed countries such as Germany, for instance, are striving toward the creation of closed loop systems as part of their initiatives to make their supply chains greener (Muller, 2018).

To secure the longevity of the company and a reduction in waste on a global scale, they place their primary emphasis on the components and processes that go into product creation and design. One of the most important factors in determining a company's level of competitiveness is the degree to which it has streamlined its operations, beginning with the purchasing of raw materials and continuing through the delivery of finished goods to end customers, as well as developed sufficient tracking systems to monitor all of the information and materials that are generated and used throughout the production process (Bougie, 2015).

As a growing economy in Africa and contributing a significant share of GDP (Gross Domestic Product), businesses in Ghana have a major role to play in ensuring that their activities are

often 'green' and do not harm the society (Bhardwaj, 2017). Visamitanan and Asarut (2021) indicated that the most important aspect of effective management in an organization is to prioritize green supply chain activities. As explained by many scholars, green supply chain management is a tool that can function effectively and in the highest capacity to distribute environmentally friendly products to customers wherever they are. A very healthy and morally sound business portfolio is one that ensures that supply chain management practices are done in the most sustainable and environmentally friendly manner (Visamitanan and Asarut, 2021).

A green supply chain management is essential for sustainability and this is supported by the notion that materials for distribution will not be wasteful during the function of supply. Reducing waste as a result of carrying out green supply chain management helps to drastically reduce the business's total cost of operation or distribution and enhancing its profit margin at the same time. The importance of this cannot be overemphasized as this is just another importance of green supply chain management in FMCG companies (Imai, 2019). Wibowo, Handayani and Mustikasari (2018) argues that green supply chain management involves the procedures for carrying out a sustainable development plan that will help business entities to improve environmental health and safety performances to boost customer allegiance to the product being supplied.

According to Khan (2018) green supply chain can also be called sustainable supply chain because they both have the ability to integrate sustainable environmentally friendly ways of doing the traditional supply chain. Okeyo (2018) argues that green supply chain moves beyond just value addition to include transportation and reverser logistics practices that helps involving organizations and institutions to enhance organizational image and improve profitability. The total cost of providing logistics for supply chain activities cannot be undermined and only

institutions operating in economies that have efficient transportation systems take advantage of that efficiency to elicit customer engagements with the product to enhance company profitability (Sarkis, Zhu & Lai, 2011).

Essentially, though green supply chain practices require technical abilities of managers to ensure its proper implementation, it is often less difficult to implement than many managers assume. Green supply chain management is essential in doing away with negative supply activities such as product damages, overweight freight and rejected loads. The reason is that all these negative activities that would have been allowed under supply chain management will increase the cost operation thereby affecting the company's profitability levels. A green supply chain manager should be able to identify these negative supply chain activities under green supply chain system so that efficiency is reached (Geng, Mansouri & Aktas, 2017). Other studies have shown that factors such as technology and government policies impacts on adoption and implementation of green supply chain practices. For instance, studies have shown that government policies significantly impact on green supply chain practices (Zhu and Sarkis, 2004; Ganeshkumar and Mohan, 2015). Another study by Visamitanan and Asarut (2021) also found that a significant positive association exists between government policies and green supply chain practices.

The government of Ghana has entered into an agreement with the United Nations on ensuring sustainable practices in business activities. Based on this, there has been enormous pressure from the government of Ghana on business to practice green ways of doing things. Local and international investors, business men/women, companies have now seen the relevance in complying with green practices. Aside this, companies and investors in Ghana have been compelled by business ethics and law to ensure that all aspects of business operations are improved using best practices that enhance the environment not destroy it (Peraturan, 2017).

In recent years illegal mining and finishing have wrecked a lot of havoc to the environment. Limited attention is therefore given to environmental issues surrounding firms that engage in FMCG.

1.2 Problem Statement

In developing nations, research on green supply chains and their influence on company performance abounds (Yang, Lu, Haider, and Marlow, 2013; Mahamati and Azizi, 2017). Despite this, the findings of research on green supply chain practices and company success have been uneven. This is because, while some studies show a positive relationship between green supply chain practices and firm performance (Mahamati and Azizi, 2017; Appiah, Odei, Kumi-Amoah, and Yeboah, 2022), other studies show a negative relationship between green supply chain practices and firm financial performance (Agyabeng-Mensah, Afum, Agnikpe, Cai, Ahenkorah, and Dacosta, 2020). Inconsistencies in research on green supply chain practices and their influence on business performance create a knowledge vacuum, which this study aims to fill.

Another knowledge gap that requires the necessity for this research is that prior studies on the link between green supply chain and business performance have mostly focused on incorporating mediating factors such as total quality management and just in time (Agyabeng-Mensah et al, 2020). The influence of elements such as government regulations and technology on green supply chain practices, on the other hand, has gotten little attention in the literature (Ganeshkumar and Mohan, 2015; Visamitanan and Asarut, 2021).

In this regard, the conduct of this study seeks to fill knowledge gaps identified in literature by assessing the direct effects of factors such as technology and government policies on green supply chain and also assess the impact of green supply chain on firm performance among fast moving consumer goods firms in Ghana.

1.3 Research Objectives

The main objective of this research is to investigate the effect of green supply chain on performance of companies operating in the fast moving consumer goods industry.

1.3.1 Specific Objectives

The following represent the specific objectives of the current study;

1. To examine the relationship between government policies and green supply chain management practices among firms in the FMCG industry.
2. To examine the relationship between technology and green supply chain management practices among firms in the FMCG industry.
3. To assess the relationship between green supply chain and performance of FMCG companies

1.4 Research Questions

The following represent the specific objectives of the current study;

1. What is the relationship between government policies and green supply chain management practices among firms in the FMCG industry?
2. What is relationship between technology and green supply chain management practices among firms in the FMCG industry?
3. What is the relationship between green supply chain and performance of FMCG companies?

1.5 Significance of the study

The study promises enormous benefits. Firstly, the outcome and recommendation of this study offer useful information stakeholders like the Ministry of Environment, Ministry of Trade and Industry, the Ministry of Health and civil society organization to develop policies that will ensure that businesses engage in environmentally-friendly operations.

The study also provides insight into how the application of technology impacts green supply chain practices of firms; as such it will guide management of FMCG to adopt and employ technologies that do not wreak havoc to the environment.

The current study is further relevant at this point where there is heightened conversation on environmental protection and doing businesses that will only influence human life positively. Conducting this research will go a long way to fill the knowledge gap that has existed in Ghana's scholarly literature for so long now. The outcome of this study is therefore useful to future researchers and all those in the field of academia.

1.6 Research Methodology

The study employed a survey design. The target population consisted of companies in the FMCG industry in Accra. The data was collected from firms in the Greater Accra regions of Ghana. The study used primary data address the study's objectives. The data was collected with the aid of questionnaires. The individuals were either the owners and or the managers of FMCG firms. The analysis was conducted using Statistical Product and Service Solutions (IBM version 20).

1.7 Scope of the Study

This study is intended to research is to investigate the effect of green supply chain on performance of companies operating in the fast moving consumer goods industry. The study specifically examined the effect of government policies on green supply chain management practices; the effect of technology on green supply chain management practices and; effect of green supply chain on performance of FMCG companies.

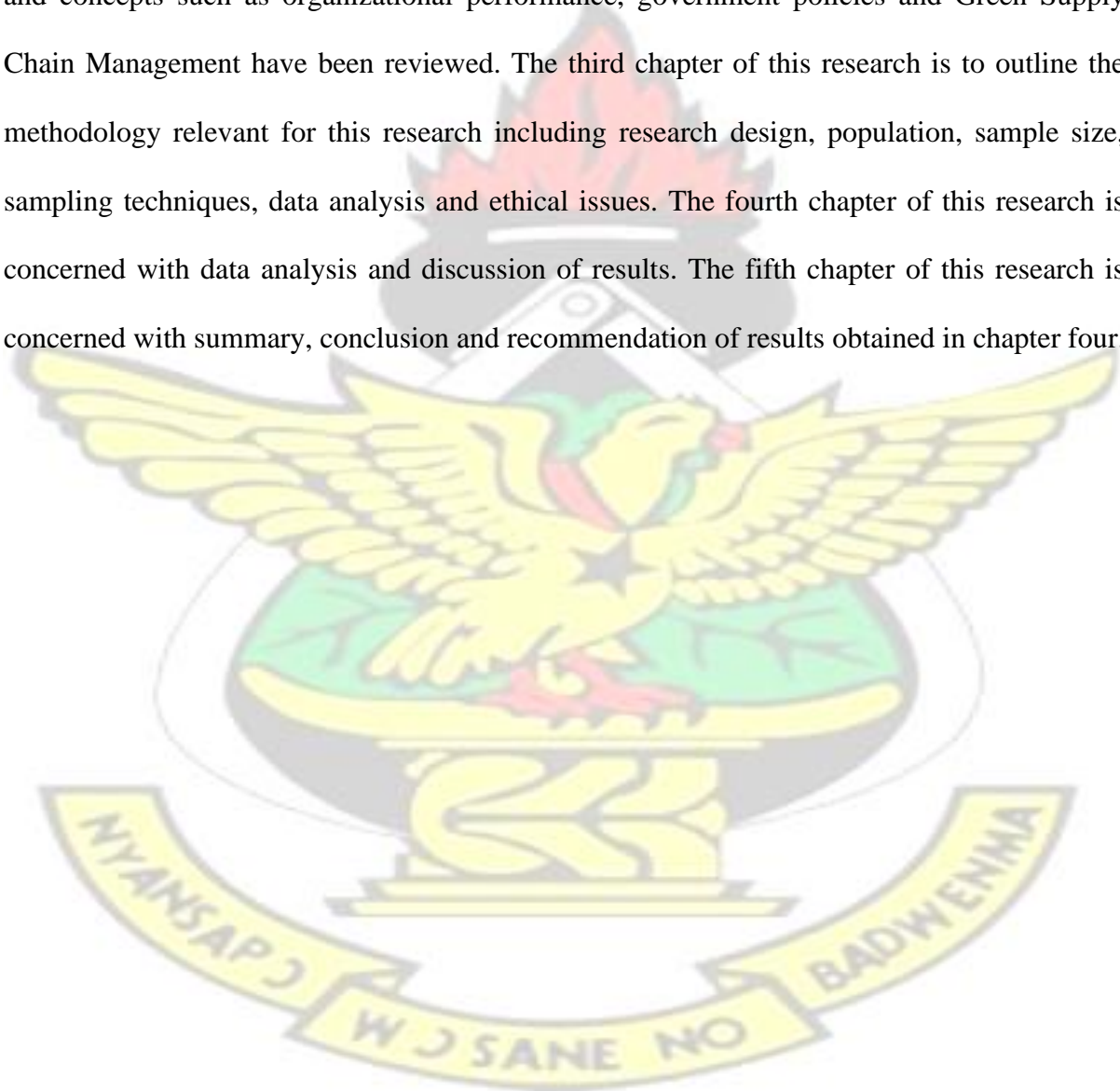
1.8 Limitations of the study

This current study is limited in the area of geography and concept. In this research one may regard the sample size used for FMCG firms in Accra Metropolis to be minimal in the face of some previous studies that used higher sample sizes. Also geographically, the study was concentrated in the capital of Ghana without giving due recognition to other parts of Ghana.

The concepts used in this research are mainly two- Green supply chain management and firm performance. While previous studies used more concepts, this current study focused on two main concepts. Though these limitations exist, they do not deviate from the findings of previous literature and their conclusions on the impact of green supply chain management on firm performance. The research was also limited in terms of the sample size since sixty (60) FMCG companies were used by the researcher. In spite of the limited sample size, there were no problems with the data used for the study as reliability statistics using cronbach alpha values were statistically significant. Also there were no extreme values or outliers that could affect the regression output as skewness and kurtosis values on normality statistics were also less than +/-2.

1.9 Organization of the study

This particular study is divided into five main chapters. The first chapter introduces the research subjects of green supply chain management and firm performance. The subdivisions of the first chapter are the background of the study, problem statement, research objectives, research questions and significance of the study and organization of the study. The second chapter of the study was to reviews theories and concepts that underpin the study. The Systems Theory and concepts such as organizational performance, government policies and Green Supply Chain Management have been reviewed. The third chapter of this research is to outline the methodology relevant for this research including research design, population, sample size, sampling techniques, data analysis and ethical issues. The fourth chapter of this research is concerned with data analysis and discussion of results. The fifth chapter of this research is concerned with summary, conclusion and recommendation of results obtained in chapter four.



CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter contains the relevant literature on green supply chain management, fast moving consumer goods industry, organizational performance and their theoretical background, as well as a review of findings from major empirical studies on the subject under consideration.

2.2 Review of key concepts

This section presents a definition of the key concepts in the study.

2.2.1 Green Supply Chain Management (GSCM)

When compared to sustainable supply chain management, green supply chain management (GSCM) appears to be more narrowly oriented, with a concentrate on the environmental dimension of sustainability at the expense of the social. Muller (2018) provides one of the most popular definitions of GSCM by describing it as the integration of environmental thinking into supply chain management, from product design to material sourcing and selection to manufacturing to distribution to consumers and beyond. Recently, Emerson (2016) conducted a thorough literature analysis, and they discovered 22 different definitions of GSCM. They discovered that the majority of the definitions they examined emphasized the need of coordination and flows while also addressing environmental and economic concerns. Furthermore, GSCM can be defined in a variety of ways, from the backwards-looking activity of merely keeping tabs on basic environmental management programs to the forward-thinking innovation that is "green" (Emerson, 2016).

In response to stakeholder expectations for environmentally friendly products and processes, businesses are implementing "green supply chain management" methods (Green et al. 2012). Traditional categorizations of green supply chain management divide company-wide initiatives into two distinct categories: internal initiatives and those involving external supply chain partners (Henri & Journeault, 2018).

Green supply chain management practices could be internal or external, as stated by Zhu et al. (2013). Environmental responsibility is reflected in an organization's internal GSCM procedures, whereas external GSCM activities often necessitate collaboration with other stakeholders like suppliers and consumers. There are two forms of external GSCM practices developed by (Vachon & Klassen, 2018) that are discussed in this thesis, namely environmental monitoring and environmental collaboration. Suppliers and customers are the focus of this analysis; authorities, rivals, and non-governmental organizations (NGOs) are not included. These methods, by which businesses regulate their interactions with vendors, are also known as governance mechanisms (Gimenez & Sierra 2013). By "environmental monitoring," we mean the activities a purchasing organization undertakes in markets or through arm's-length transactions to select suppliers who have implemented environmental management systems, to inform suppliers of environmental requirements, and to monitor the suppliers' compliance with those requirements. In contrast, environmental collaboration involves the direct participation of the purchasing organization and its suppliers in the establishment and attainment of environmental goals, with the ultimate goal of lessening the environmental impact of the activities coordinated by both parties (Green et al. 2012).

Environmental collaboration and environmental monitoring can occur simultaneously both upstream and downstream in the supply chain because each focal firm works as a buyer to its suppliers and a supplier to its consumers (Caniels, Gehrsitz & Semeijn, 2017). The supply chain methods to sustainability were categorized by Henri and Journeault (2018) as required and collaborative. Typically, purchasing organizations take the lead in implementing the specified approaches and then communicate this information to the upstream participants through more formal channels. Possible unequal distribution of project advantages. Conversely, the cooperative method is geared toward securing a sustainable competitive advantage for the entire supply chain (Golicic & Davis, 2015).

Governance systems are categorized as "hands-on" or "hands-off" by Jahre (2013). The former requires active supervision and substantial inputs of time, energy, and materials, whereas the latter relies on a subtler and standards-based approach. Many books and articles have been written about the challenges of governance and how to pick the right one. According to Jahre (2013), the benefits of a collaborative approach to sustainability outweigh those of a more mandatory one. Suppliers are more likely to participate in growth initiatives like GSCM adoption if they feel a level of confidence and commitment from buyers (McGaughey, 2014).

According to Emerson (2016), there is consensus that environmental performance benefits from green collaboration and green evaluation. According to Green et al. (2012a), prior to environmental monitoring, cooperation is required. The literature has also used the terms "environmental purchasing" and "green purchasing" to refer to supplier-related GSCM procedures (Caniels, Gehrsitz & Semeijn, 2017). Both environmental collaboration and environmental monitoring are addressed in this thesis because of the unique qualities of each.

2.2.2 Implementing a Green Supply Chain

There are four essential strides to execute a green store network. The accompanying model is a dynamic structure proposed by (EPA, 2000) and it depends on the accepted procedures of a few organizations that have effectively started and carried out natural bookkeeping rehearses. In a perfect world, organizations will alter this way to deal with best suit their own authoritative requirements and culture.

2.2.2.1 First Step: Identify Costs

It is fundamental a deliberate audit of the office or cycle is led to decide whether and where critical ecological expenses happen. The investigation empowers the group to later concentrate where the likelihood for huge improvement is most prominent. The stage 1 can go from the assessment of explicit item or interaction to a whole company. A typical Application is at a singular creation office.

It is additionally essential to say that the design of conventional expense bookkeeping framework generally conceals costs and, these "covered up costs" not just obstructs an organization's endeavors to lessen an assortment of ecological weights, yet in addition blocks endeavors to work on monetary execution.

At the point when huge expenses are not assigned to the mindful items and cycles, this approach might prompt incorrect costing information and insufficient navigation. It is important to follow natural expenses straightforwardly to the mindful item, interaction or office since, in such a case that they are concealed in overhead records, business choices are made without adequate thought of the possibly exorbitant ecological effects downstream of the choice (EPA, 2000).

This method of examining the expense design ought to be checked on through the store network to distinguish item or interaction that has massive expenses. What's more, material following is an evaluation of what, where, why and how much material is utilized, consolidated into items and co items, directed into squander streams and can assist with distinguishing those costs.

2.2.2.2 Second step: Determine Opportunities

When an organization has finished the underlying recognizable proof advance, the following stage is to figure out which regions offer the best open doors for development and afterward foster explicit arrangement that diminish expenses and adverse consequences.

As per EPA (2000) many organizations have observed that the Pareto guideline applies, i.e., that a couple of store network upgrades give the vast majority of the attainable additions. Accordingly, the test in this progression is to knowing high-esteem amazing open doors with the restricted data that has been gathered. Two systems that can be utilized to sort and examine the action and cost data acquired in sync 1 are to

- Use Pareto graphs and other bar outlines to show natural expenses by production network movement and to rank open door regions by esteem;
- Distinguish main drivers of squanders by building cause-impact charts or by ceaselessly inquiring as to why certain issues or methods exist. Almost certainly, the answer for the issues become apparent after these strategies.

There are likewise different strategies for recognizing explicit arrangements, for example,

- Talk with creation faculty to comprehend likely open doors for (and hindrances to) change;
- Approach providers of the critical materials and solicitation their backing to bring down costs and decrease impacts;
- Review the accomplishments of different organizations in a similar industry.

– Apply the prescribed procedures accessible from exchange affiliations and public organizations.

2.2.2.3 Third Step: Calculating Benefits

When a bunch of high-need choices has been created, the scientific exercise of working out the expenses and advantages of the different choices starts. One way to deal with the computation cycle is to lead quantitative assessments, which depend on experimental information, like Economic Order Quantity estimations. The IRR is the loan fee at which the net present worth (NPV) of the venture is zero. It takes into contemplations the sum and timing of the expenses, reserve funds, and incomes of the speculations. The higher IRR, the better the undertaking.

The other choice, financial request amount, reexamines the parcel sizes of procurement orders and creation runs as though the organization set up in the nick of time or other lean stock frameworks. A subsequent methodology is to direct subjective assessments, which depend on perception and judgment. Through the ecological expenses, a group can decide the functional advantages, nonetheless, measurement of the expenses and advantages might be less clear than a subjective assessment due to the trouble of estimating a few variables like better picture and upgrading worker fulfillment (by changing from a dangerous material to a non-poisonous substitute). The prescribed methodology is to measure costs when attainable, and afterward to recognize and subjectively esteem those different costs that will better illuminate the dynamic cycle (EPA, 2000).

2.2.2.4 Fourth Step: Decide, Implement and Monitor

When the monetary and ecological enhancements have been assessed, the fourth and last advance is to settle on a choice carry out the changes, and screen progress.

– Choose

Ways to deal with navigation fluctuate fundamentally among organizations. The goal is to choose the choice that works on the two elements of execution.

-Execute

Subsequent to settling on a choice, the last test is carrying out the change. Numerous smart thoughts are executed ineffectively or not in any manner. Regardless, the expected investment funds and ecological advantages are not understood. To guarantee a fruitful execution, EPA's (2000) proposals are: Review past hierarchical change exertion inside the organization to acquire important bits of knowledge on the purposes for those endeavors' victories and disappointments;

Set up a gathering that is exclusively dedicated to directing the expense examinations, carrying out the changes, and the guaranteeing and detailing the triumphs;

Direct at least one pilot studies to show the advantage of this drive and gain support for more extensive execution;

Give suitable preparing to representatives so they start fostering the essential abilities. EPA (2000) features that these execution rules are especially useful and significant during the underlying changes, yet an organization need considerable outcomes to contend with different drives and increment the likelihood of long haul acknowledgment and accomplishment because of the simultaneous organizations are seeking after an assortment of progress drives at an equivalent time.

2.2.2.5 Monitor

Finishing the approach, observing stage is vital for help a basic examination of the enhancements. As in ISO 14000 methodology and following a PDCA (Plan-Do-Check-Act) cycle, an organization ought to occasionally screen its interaction to guarantee proceeded with progress. Moreover, the quick speed of mechanical and natural change requires a work to ceaselessly recognize chances to additionally diminish expenses and lower expected effects. The group ought to likewise occasionally audit in general advancement toward diminishing the squanders and expenses recognized in the initial step.

2.2.3 Organizational Performance

Making an organization's inventory and supply chain more environmentally friendly, sometimes known as "green supply chain management," is an important component of current business operations. Darnall, Jolley, and Handfield (2008) stressed the need of incorporating environmental issues and concerns into an organization's buying choices and long-term supplier relationships. In other words, it is important to achieve profitability while also limiting environmental concerns.

Gold et al. (2010) expanded on this idea by emphasizing that an organization's operations, particularly in manufacturing, include a wide variety of activities such as material handling, packing, preservation, transportation, delivery, procurement, and relationships with suppliers. A firm's or organization's success may be properly judged depending on how these many components of its operations develop.

A company's ability to grow sales over time is a critical measure of its success. When a firm implements green supply chain strategies, it may attract environmentally concerned customers who want to support environmentally friendly goods or services. These customers may choose organizations that exhibit a commitment to sustainability, which may lead to higher sales and market share.

Green supply chain operations often entail the use of novel technology and procedures targeted at decreasing environmental consequences. This might involve using energy-efficient production equipment, developing sustainable packaging options, or using environmentally friendly transportation techniques. Technological progress may improve operational efficiency and save costs while also aligning the business with long-term objectives.

Companies that thrive at incorporating green practices into their supply chains might gain a competitive advantage. Reduced operational costs owing to resource conservation, increased brand image, and access to new markets or consumers that prefer eco-friendly goods may all contribute to this benefit. According to Ganeshkumar and Mohan (2015), a company's competitiveness and capacity to surpass rivals may serve as a trustworthy performance gauge.

2.2.4 Competitive Advantage

Competitive advantage is a basic notion in strategic management, and it is critical to an organization's capacity to prosper in its sector. It refers to the variables that allow a firm to retain a leadership position in its field while still producing superior-quality and more cost-effective goods or services than rivals. A firm's competitive advantage is influenced by a variety of factors, which may be measured using several performance indicators.

Sarkis, Zhu, and Lai (2011) discuss methods to assess an organization's competitiveness. They highlight numerous crucial dimensions:

Production Costs: Effective cost management is critical for sustaining a competitive advantage. Organizations that can manufacture items or provide services at a reduced cost may either provide competitive pricing to attract cost-conscious consumers or preserve bigger profit margins. Cost efficiency often entails improving processes, reducing waste, and leveraging economies of scale to lower manufacturing cost (Sarkis et al., 2011).

Production Quality: The quality of a company's goods or services has a substantial influence on its competitiveness. Offerings of high quality not only fulfill consumer expectations, but also result in customer happiness, loyalty, and excellent word-of-mouth. Quality assurance systems, continuous improvement initiatives, and adherence to industry standards are all critical in attaining and maintaining high product or service quality (Sarkis et al., 2011).

Delivery Reliability: Delivering goods or services on schedule and as promised is critical for establishing confidence with consumers and partners. Customers can depend on your business to satisfy their demands on a constant basis if you are reliable in your delivery. This entails efficient supply chain management, as well as rigorous scheduling and planning systems (Sarkis et al., 2011).

Creativity and invention: Developing a culture of creativity and invention enables businesses to remain ahead of the competition. New goods, services, or procedures that satisfy increasing consumer requirements or market trends are examples of innovations. Ingenuity and innovation often need a willingness to take measured risks, foster employee ingenuity, and engage in R&D (Li et al., 2006).

Market timeliness: In dynamic sectors, the capacity to adapt quickly to market changes provides a competitive edge. Being the first to propose new goods or adjust old ones to shifting client preferences might help you gain market share and create income early on. Timeliness to

market necessitates decision-making agility, effective product development procedures, and a thorough awareness of market dynamics (Li et al., 2006).

Li, Ragu-Nathan, Ragu-Nathan, and Rao (2006) emphasize the significance of certain competitive qualities. Value/cost, delivery, quality, and adaptability are seen as critical competitive skills within business sectors. These aspects are consistent with those emphasized by Sarkis, Zhu, and Lai (2011), who emphasize the relevance of cost-effectiveness, product quality, dependability, and flexibility. Rao and Holt (2005) made significant contributions to this topic by providing a framework for investigating the link between organizational competitiveness and performance. This paradigm offers a methodical way to comprehending how competitive qualities influence overall organizational performance.

2.2.5 Government Policies and Green Supply Chain Management (GSCM)

In recent years, there has been a rise in the level of interest shown by academics and professionals in the effects that companies and their suppliers have on ecosystems, communities, and financial outcomes (Walker, & Wendy 2006). Numerous research on green procurement have been undertaken, concentrating on the pressures, procedures, and outcomes found in sectors such as the Chinese auto industry and the Thai electronics industry (Zhu et al., 2007; Ninlawan et al., 2011). Lamming and Hampson (2006) discovered and related a variety of environmentally friendly procurement techniques to a variety of ideas of ecologically sound management. Working with suppliers to allow changes, analyzing vendors, engaging in collaborative supply strategies, and implementing environmental procurement standards are a few examples of these green procurement activities. Other research has looked at the introduction of green procurement techniques in the electronics sector (Chien & Shih, 2007; Ninlawan et al., 2011; Luthra et al., 2011). Green procurement, green production, green

distribution, and reverse logistics are all included in these studies. Furthermore, these studies investigate green procurement strategies, green procurement performance, and green procurement pressure/driver.

The fundamental problem with conventional buying tactics, according to The Responsible Buying Network (2015), is that they have far-reaching negative implications on both public health and the environment. This is a reason for worry since traditional buying methods remain prevalent. Businesses are beginning to assess environmental issues from a competitive aspect in order to increase organizational effectiveness, decrease waste, manage supply chain risk, and strengthen their market position (Humphreys, 2003).

Procuring organizations and other supply chain partners are becoming more actively involved in the design and implementation of sustainable procurement policies in order to better integrate environmental and other issues related to the pillars of sustainable development into procurement activities. This is being done in order to better incorporate these challenges into the procurement process's operations (Hussein & Shale, 2014). According to Kalubanga (2012), procurement managers are in a unique position to influence the environmental and social performance of their organizations through decisions such as product or service specification, evaluation, and supplier selection, as well as performance evaluation of the provider. This is due to the judgments procurement managers make on the provider's performance assessment.

2.3 Theoretical Review

2.3.1 Natural Resource Based View (NRBV)

The natural resource based view (NRBV) was developed by Hart (1995). According to the NRBV, the ability of a firm to attain competitive advantage is dependent on its association with the natural environment. According to Hart (1995) for organizations to achieve competitive advantage, their capabilities must be centered around pollution prevention, product stewardship and sustainable development. Regarding pollution prevention, firm's business activities and operations must ensure that emissions are minimized and wastes are also properly managed. Firms also need to develop product stewardship capabilities by ensuring that life cycle costs of products are being minimized. Sustainable development can also be achieved when firms develop capabilities that ensure the minimization of environmental burden which results from firm growth and development (Hart, 1995). The natural resource based view could be used to explain the relationships between green supply chain and firm performance among FCMG companies in Ghana. This is because, the adoption of green supply chain practices will ensure that FCMG companies carry out their operations in manner that ensures the prevention of pollution, enhancing product stewardship and also enhancing sustainable development in order to achieve competitive advantage.

2.3.2 Institutional theory

In organizational studies, institutional theory holds that numerous institutional variables, such as formal rules, laws, conventions, traditions, and shared beliefs, have a substantial impact on an organization's performance and behavior (Suddaby, 2015). Organizations that adapt to these institutional forces, according to this idea, are more likely to attain productivity and success (Peters, 2022). The institutional theory provides useful insights into how external factors drive

organizational behavior while investigating the effect of government legislation on green supply chain practices.

Government regulations are critical in regulating and supporting environmentally friendly company operations. These regulations are intended to address critical environmental challenges such as pollution control and increased sustainability. The institutional theory offers a framework for understanding how policy compliance gets integrated into organizational strategy (Peters, 2022).

Government policies are often manifested as formal rules and regulations that set the legal foundation for environmental actions. These policies are usually intended to address particular environmental issues. Regulations, for example, may require corporations to reduce carbon emissions, which may lead to the adoption of greener energy sources or more fuel-efficient transportation techniques. Similarly, rules for hazardous materials disposal may require firms to adopt adequate waste management and recycling systems. Compliance with these laws is not voluntary; companies are required by law to do so. Failure to do so may result in penalties, legal action, and harm to one's reputation.

2.3.3 Technology Acceptance Model

Davis's Technology Acceptance Model (TAM), developed in 1989, is a generally accepted paradigm for analyzing the elements that drive technology adoption in businesses. According to TAM, effective technology adoption is dependent on two core factors: perceived ease of use and perceived utility (Davis, 1989). These two characteristics play an important role in molding workers' attitudes and actions regarding embracing new technology in the workplace.

Perceived Ease of Use: Perceived ease of use relates to how much workers believe a technology is user-friendly and simple to understand (Hansen et al., 2018). It assesses the technological interface's simplicity and intuitiveness. Employees are more likely to adopt technology that is viewed as simple to use because they feel it will not need substantial effort or lengthy training to integrate it into their work habits (Mohd Amir et al., 2020).

The perceived ease of use of technology might be critical in the context of green supply chain activities. Changes in procedures and systems are often required when implementing environmentally friendly supply chain solutions (Lanlan et al., 2019).

Green supply chain strategies may be more easily adopted if technologies are user-friendly and need less training. Easy-to-use software for monitoring and improving transportation routes, for example, may help firms minimize carbon emissions in their logistics operations.

Perceived Usefulness: This metric measures how workers see the potential of technology to improve their job and contribute to the organization's objectives (Abdullah et al., 2016). It assesses if the technology is in line with the organization's goals and whether workers feel it will make their jobs easier or more efficient (Muchran & Ahmar, 2019). Perceived usefulness is crucial in the context of green supply chain activities because it helps workers understand the value of technology in supporting sustainability goals. Technologies that allow improved data collection, analysis, and reporting on environmental indicators may be seen as important instruments for enhancing the supply chain's environmental performance (Rahmi et al., 2018). A software system that offers real-time data on energy use in a manufacturing plant, for example, may be seen as beneficial for finding places where energy efficiency improvements might be performed (Yoon, 2018).

The Technology Acceptance Model may be used to describe the link between green supply chain practices and technology uptake. The perceived ease of use and utility of technology play

an important role in deciding whether technology adoption contributes positively or adversely to green supply chain operations. Employees are more likely to accept a new technology for measuring and lowering carbon emissions if they find it user-friendly (perceived ease of use) and feel it will help the business accomplish its sustainability objectives (perceived utility). On the contrary, opposition to adoption may be more widespread if the technology is viewed as difficult to use and does not clearly connect with the organization's sustainability goals.

2.4 Empirical Review

Yang, Lu, Haider, and Marlow (2013) investigated the impact of green supply chain management on environmental performance and business competitiveness in the context of container shipping in Taiwan. The research relied on original data gathered from a survey of 163 container transportation companies. Primary data was supplemented with project papers and other corporate literature for the research. The research discovered that internal green practices and external green cooperation had a favorable influence on green performance, aiding in the competitiveness of firms. However, since the research was confined to Taiwanese shipping companies, it could not be applicable to African shipping companies. The research also failed to determine the precise influence of green supply chain on firm performance, such as sales performance.

Kim and Youn (2011) have performed research to evaluate business performance via green supply chain management perspective. A survey questionnaire was utilized to obtain primary data from 124 heads of departments from chosen organizations through telephone interview. According to the findings of the research, Green Supply Chain Management approach has a favorable impact on business performance. The research, however, did not reveal the precise effect of the green supply chain on the company, and therefore whether or not it improves performance in terms of sales or customer retention.

Maharmati and Azizi (2017) conducted another research on the association between GSCM and company performance and competitiveness in Iran. 110 people were polled for primary data. The study's findings demonstrated that both internal and external GSCM procedures are associated with business performance. The research also discovered that competition has a substantial influence on the relationship between GSCM and company performance. Visamitanan and Asarut (2021) do more research on the influence of GSCM on a firm's performance and commitment. Data was collected quantitatively from 268 workers of a GSCM-oriented firm in Thailand. The study's findings were shown using a linear regression model. The research showed that all three factors had a beneficial influence.

Diab, AL-Bourini, and Abu-Rumman (2011) conducted research to investigate the impact of green supply chain management on business performance in Jordan's food sector. The quantitative technique was used in the research to gather primary data using a questionnaire. According to the findings, there is a favorable association between GSCM and company performance.

2.5 Conceptual framework and Hypotheses Development

This section simplifies the entire study in a diagrammatical format by synthesizing the theories and concepts that have been reviewed.

Figure 2.1 Conceptual Framework



Source: Author's Construct, 2022

In figure 2.1, the research model presented depicts vividly the outline of this current research hypothesis and objectives. This particular study theorizes or hypothesis that technology and government policies are major parts of ensuring that practices of GSCM are established. The study further theorize that the components of GSCM and GSCM itself play a significant role on the influence of organizational performance of FMCG firms. Therefore, this figure showed the diagrammatic presentation of the indications made in the first chapter of this research. Based on this conceptualization the research found that there is a direct impact of technology and government policies on firm performances as far as GSCM is concerned. Also the study's findings confirm this theory that there is a positive effect between GSCM and FMCG firms. \

2.5.1 Government Policies and Green Supply Chain Management

Davis (1989) proposed the technology acceptance paradigm. The adoption of technology in an organization is reliant on two important variables, according to the technology acceptance model: perceived ease of use and perceived utility. To describe the link between technology and green supply chain practices, the technology acceptance model is employed. This is due to the fact that the perceived utility and simplicity of use of technology play a part in deciding whether technology adoption contributes favorably or adversely to green supply chain practices, and vice versa. Empirical research by Visamitanan and Asarut (2021) has shown some impact of technology applications on green supply chain management. For this reason, this current study proposes the hypothesis below;

H₁: Government Policies has a positive relation with green supply chain management

2.5.2 Technology and Green Supply Chain Management

Davis (1989) proposed the technology acceptance paradigm. The adoption of technology in an organization is reliant on two important variables, according to the technology acceptance model: perceived ease of use and perceived utility. To describe the link between technology

and green supply chain practices, the technology acceptance model is employed. This is due to the fact that the perceived utility and simplicity of use of technology play a part in deciding whether technology adoption contributes favorably or adversely to green supply chain practices, and vice versa. Empirical research by Visamitanan and Asarut (2021) has shown some impact of technology applications on green supply chain management. For this reason, this current study proposes the hypothesis below;

H₂: Technology has a positive relation with green supply chain management

2.5.3 Green Supply Chain Management and Organizational Performance

Hart (1995) established the natural resource based view (NRBV). According to the NRBV, a firm's capacity to gain a competitive edge is depending on its relationship with the natural environment. The natural resource-based perspective might be utilized to understand the links between green supply chain and business performance in Ghanaian FCMG firms. This is because adopting green supply chain methods would guarantee that FCMG firms conduct their operations in a way that prevents pollution, improves product stewardship, and promotes sustainable development in order to gain a competitive edge. There is also empirical evidence that green supply chain management has an impact on organizational performance (Paulraj, 2011; Yang et al, 2013; Maharmati and Azizi, 2017). In the sense that firms that employ Supply Chain Management have various advantages that might help them stand out from their competition. It might also help companies optimize their profit margins by lowering their manufacturing costs. For this reason, this current study proposes the hypothesis below;

H₃: Effective supply chain management has a positive impact on the performances of organizations

CHAPTER THREE

METHODOLOGY AND ORGANISATIONAL PROFILE

3.1 Introduction

This chapter describes the approach, techniques and methods that were used to select respondents and how the data was analyzed. It specifically describes the study area, study design, research paradigm, data and sources, target population, sample size determination and sampling procedures/techniques. In addition, it includes the data collection instrument, pre-testing of instrument, ethical issues, data processing and analysis.

3.2 Research Design

The research design that was used in this research to determine the effect of green supply chain management on performance of FMCG firms is the quantitative research design. Under the quantitative research approach, the descriptive research design is used in order to describe the responses of the target respondents. Essentially, the descriptive research design requires a numeric approach in analyzing the responses that have been obtained from the target audience. In this research, the descriptive research design also used to define the people, status, and tabulation of collected data from the target respondents (Cooper & Schindler, 2007). Aside the descriptive research design, an explanatory research design is relevant in this research because it helped in explaining the key variables that were outlined in this research. An explanatory design also helped to describe the relationship, effect and significance between green supply chain management and FMCG firm performances.

3.3 Research Purpose

Research can be categorized as either descriptive or explanatory depending on its goals (Saunders et al., 2007). One of the many uses of descriptive studies in research is to uncover connections between variables and to provide descriptions of events or features connected with a subject group (Cooper and Schindler, 2014). Explanatory studies are those that try to figure out why something happened (Zikmund et al., 2010). This study can be described as explanatory as it seeks to measure the relationships that exist among the variables of green supply chain management, government policies and technology.

3.4 Research Approach

The research approach refers to the broad approach to conducting social science research. The quantitative strategy was used. Quantitative research is business research that fulfills research objectives through empirical assessments involving numerical measurement and analysis methods. This study took a strictly quantitative approach. As stated at the outset of the study, there is a plethora of research on the study, allowing the researcher to design numerical constructs to reliably measure the variable.

3.5 Population of the study

The concept of population refers to the total number of observations that make up the whole group from which a representative sample is selected (Singh, 2006). Cooper and Schindler (2014) believe that when referring to the study population, the phrase "target population" is the

most suitable. The "target population" consists of all individuals, events, or records that contain the desired information that the researcher needs in order to address the objectives of the study.

The study targeted Fast Moving Consumer Goods industries in the Accra Metropolis. The population was carefully selected because Accra represents a strategic location where major FMCG companies in Ghana operate. The study specifically targeted 100 FMCG companies in the Accra Metropolis.

3.6 Sample Size and Sampling technique

The study was conducted with a sample size of 60 FMCG companies in the Accra Metropolis. Convenience sampling technique was used to select 60 FMCG in the Accra Metropolis. The researcher therefore selected only FMCG firms that expressed willingness to participate in the study. Convenience sampling was selected as the technique of selection in this context owing to its convenience and viability for this investigation. Given time, resource, and access limits to FMCG firms, convenience sampling enabled the researcher to efficiently gather data from consenting participants. Rather than using more sophisticated or resource-intensive selection approaches like random or stratified sampling, convenience sampling focused on choosing FMCG businesses that were easily accessible and indicated a desire to participate in the study.

3.7 Measurement Instrument

The measurement instrument was developed after a review of the pertinent literature was conducted. The scales used in the study were continuously refined through consultation of experts in supply chain. The pilot study was also helpful in refining the items in the questionnaire. The instrument was arranged under four main sections as follows: Section A was demographic background of Respondents; section B was Green Supply Chain; Section C

was Technology and Government Policies while Section D was performance. The responses were received in five-point likert scale where: 1 = Strongly Disagree 2= Disagree 3= Neither Agree nor Disagree 4= Agree 5= Strongly Agree. The questionnaire made it expedient for the researcher to collect the data on time. The instrument was structured in such a way as to meet the research objectives.

Table 3.1: Instruments for measuring variables and their sources

Variable	Number of items	Source (s)
Green Supply Chain	7	Maharmati and Azizi, 2017).
Technology	4	Visamitanan and Asarut (2021)
Government Policies	4	Visamitanan and Asarut (2021)
Firm Performance	4	Yang et al, 2013

3.8 Data Collection Method

Primary data, according to Yin (2003), is data observed or obtained directly from first-hand experience. Observation, discussions, interviews, and the distribution of questionnaires can all be used to collect primary data. In order to collect primary data for this study, questionnaires were used. All study questions were answered using primary data.

3.9 Data Analysis

The ability to break down data and define the nature of the component pieces and their interaction is referred to as data analysis (Saunders et al., 2007). SPSS version 21 was used to

edit, code, and analyze the collected data. The data analysis was conducted purely quantitatively. Statistics were used for both descriptive and inferential purposes. To present the data's characteristics, descriptive statistics were used. To assess for mediation effects, regression approaches were applied.

Regression analysis was used to determine the relationship between the independent variables and the dependent variables. The study employed the multiple regression model, where a response variable has several predictor variables.

The model is expressed in the form

$$Y = B_0 + B_1X_1 + B_2X_2 + B_3X_3 + B_4X_4 + \dots + B_nX_n + \epsilon \dots \dots \dots (1)$$

Where $X_1, X_2, X_3, \dots, X_n$ are the predictor variables, also termed as the independent variables.

3.10 Validity and Reliability

The importance of validity and reliability in the study is critical to the usefulness of the study and “can be approached through careful attention to a study’s conceptualization and the way in which the data is collected, analyzed, and interpreted, and the way in which the findings are presented” (Shadish, 2002). Frank and Wallen (2003) defined validity as the degree to which proper conclusions may be drawn from instrument data. To guarantee the validity of the research instrument, the questionnaire was provided to a supply chain management research specialist for assessment in terms of content and design, as well as supervisor input. Hair (1995) defines reliability as the degree to which a scale is devoid of random mistakes and consequently produces consistent results. Cronbach's alpha is the most often used approach for estimating dependability, and Nunnally (1978) proposes 0.7 as the acknowledged Cronbach's alpha benchmark. According to Nunnally (1978), a low cronbach alpha indicates that the things

measuring the scale have little in common. The acquired Cronbach's alpha of 0.78 shows that the research result is credible.

Table 3.2: Reliability Statistics

Variables	Number of Items	Cronbach Alpha
Green Supply Chain	7	0.873
Technology	4	0.791
Government Policies	4	0.793
Firm Performance	4	0.788

According to the results from table 3.2, it could be rightly deduced that the items used for measuring each of the variables had higher levels of internal consistency since their cronbach alpha values were greater than 0.7. This indicates that the items used for measuring each of the constructs is statistically reliable.

3.11 Ethical Considerations

Every research includes ethical concerns. Several ethical issues were investigated, including informed consent, anonymity and secrecy, and sympathetic neutrality. The researcher ensured that respondents did not submit their names or phone numbers on the instrument to maintain anonymity and confidentiality of respondents and information.

Furthermore, since participation in a research study must be voluntary, and researchers should not coerce respondents into participating in a research process (Neuman, 2007), prior to starting the study, approval was requested from management and staff of the firm involved in the study.

In order to establish respondent faith in the research and get access to restricted firms, each FMCG company got a letter of recommendation from the KNUST School of Business.

3.12 Profiles of some Fast Moving Consumer Goods (FMCGs) Companies

3.12.1 Unilever Ghana Limited

Unilever Ghana Limited is a subsidiary of the worldwide giant Unilever PLC, and it has a substantial influence in Ghana's FMCG business. To fulfill the demands of Ghanaian customers, the firm provides a diverse selection of FMCG items across many categories. Unilever Ghana offers well-known brands such as Lux and Pepsodent in the personal care category. Lux is known for its aromatic and luscious soap, which provides a pleasurable bathing experience. Pepsodent, on the other hand, is a well-known brand of toothpaste that stresses dental hygiene and oral wellness.

Unilever has a presence in the food goods sector, where it sells items under the Lipton and Blue Band brands. Lipton is a well-known tea brand that offers a wide range of tea blends to suit a variety of tastes and preferences. Blue Band margarine is a popular option for a diverse culinary ingredient and bread spread. Unilever Ghana Limited is well-known for its dedication to sustainability and social responsibility in addition to its product offers. Various measures have been implemented by the corporation to decrease its environmental imprint, encourage ethical sourcing, and contribute to local communities. Unilever's commitment to sustainability is consistent with its worldwide company aim to make sustainable living a norm.

3.12.2 Nestle Ghana Limited

Nestlé Ghana Limited is a significant player in Ghana's Fast-Moving Consumer Goods (FMCG) industry. As part of the global corporation Nestlé S.A., the company has established a significant presence in the country, offering a diverse range of food and beverage goods

tailored to Ghanaian consumers' needs and preferences. Nestlé's product portfolio includes household names including Nescafé, Milo, Cerelac, and Nestlé Pure Life bottled water. Nescafé is well-known around the world for its premium coffee blends, which provide consumers rich and aromatic coffee experiences. Milo, a well-known chocolate malt beverage, is notably popular among Ghanaians as a nutritious beverage for children. Cerelac, a well-known infant cereal, is a mainstay in many families' meals. Nestlé Pure Life offers high-quality bottled water while emphasizing the need of hydration and clean drinking water.

In addition to its product offerings, Nestlé Ghana places a strong emphasis on nutrition, health, and well-being. The company is committed to fostering healthy living and has established initiatives to educate clients on the advantages of a well-balanced diet and regular physical activity. Nestlé's global commitment to environmental sustainability is reflected in the firm's actions in Ghana, where the business seeks to minimize its environmental impact while also aiding local people. Nestlé Ghana Limited has earned a position in the country's FMCG landscape due to its reputation for quality and dedication to improving Ghanaians' quality of life. Nestlé continues to play an essential role in Ghanaians' daily lives via its wide product portfolio and commitment to consumer and environmental well-being.

3.12.3 Fan Milk Limited

Fan Milk Limited, a well-known participant in Ghana's FMCG market, specialising in dairy and frozen dessert goods. The firm, which was founded in 1962, has deep roots in Ghana and has gained a great reputation for its quality and creative goods. Fan Milk is a subsidiary of the international food corporation Danone, which expands its worldwide reach and resources. "FanIce," a hallmark frozen dairy delight that has become a household favorite in Ghana and abroad, lies at the core of Fan Milk's product assortment. FanIce is available in a variety of

flavors and styles, offering customers a delectable and refreshing dessert choice. The brand has developed a deep emotional connection with its customers, making it a symbol of happiness and fulfillment. In addition to FanIce, Fan Milk sells "FanYogo," a yogurt-based product that comes in a variety of flavors and is frequently regarded as a healthful and pleasant snack. "FanChoco" is another well-known brand, giving a rich and creamy chocolate-flavored drink that appeals to both children and adults.

Fan Milk's dedication to product quality and safety is shown in its manufacturing procedures, which correspond to worldwide standards. To maintain the freshness and quality of its goods, the firm focuses a great emphasis on dairy procurement and manufacturing. Fan Milk Limited has grown its footprint in West Africa over the years and currently operates in various nations. This growth has enabled the firm to promote its famous goods to a wider audience while remaining committed to bringing pleasure via its dairy and frozen dessert offerings. The success of Fan Milk goes beyond its products; the firm actively participates in corporate social responsibility activities, supporting education, health, and environmental sustainability programs in the areas where it works. This dedication to social responsibility is consistent with the firm's mission of becoming both a leading FMCG company and a good corporate citizen.

3.12.4 Promasidor Limited

Promasidor Limited, a key participant in the FMCG market, has established itself as a leading producer and distributor of a diverse range of goods across Africa. Founded in Lagos, Nigeria, in 1979, the firm has subsequently extended its operations to other African nations, making it a major participant in the continent's FMCG industry. Promasidor's dairy and beverage solutions are at the heart of its product line. Cowbell Milk is a household name in many African nations, and the firm is recognized for its distinctive brand, "Cowbell," which comprises a

variety of dairy products, including milk powder and chocolate milk. These goods are prized for their high quality and nutritional content, and they are often seen as necessities for families. In addition to Cowbell, Promasidor sells well-known brands including "Miksi" powdered milk and "Cowbell Chocolate." These products appeal to a wide range of customer tastes and nutritional requirements, reinforcing Promasidor's position in the dairy market.

The dedication of Promasidor to quality and nutrition goes beyond its product offers. The corporation prioritizes corporate social responsibility (CSR) and community involvement. It has implemented a number of CSR projects in the areas where it works, including funding for education and healthcare programs. Promasidor has created a reputation for quality, innovation, and a focus on customer well-being over many decades. Its continuing development throughout Africa demonstrates its commitment to producing healthy and high-quality FMCG goods to fulfill the region's different customer demands.

3.12.5 PZ Cussons Limited

PZ Cussons Ghana Limited is a long-standing subsidiary of PZ Cussons Holdings, a significant international consumer products corporation with a global presence. PZ Cussons Ghana has played an important part in Ghana's FMCG business, delivering a diverse variety of personal care and homecare goods. The company's history in Ghana extends back many decades, solidifying its reputation as a reliable supplier of high-quality goods. "Imperial Leather," a well-known brand under PZ Cussons Ghana Limited, is noted for its opulent and scented soaps and shower gels. These products are popular because to their high quality and delectable smells, which provide customers with a refreshing and enjoyable bathing experience. Imperial Leather has become a household name among Ghanaians, demonstrating the company's ongoing appeal.

PZ Cussons also sells well-known products such as "Morning Fresh," a dishwashing liquid noted for its efficacy in cleaning dishes and kitchen utensils. Morning Fresh is well-known for its ability to cut through grease and give sparkling clean results, making it a reliable home pick. PZ Cussons Ghana Limited is devoted to corporate social responsibility (CSR) and environmental activities in addition to its product offers. The firm is actively involved in projects that promote environmental responsibility and community development. This devotion is consistent with PZ Cussons' worldwide objective to positively influence society and the environment. PZ Cussons Ghana's history and commitment to providing high-quality personal care and homecare products have cemented its status as a reputable FMCG firm in Ghana. With its iconic brands, the firm continues to fulfill the changing demands and tastes of Ghanaians while also contributing to the local economy and communities via CSR activities.



CHAPTER FOUR

DATA PRESENTATION, ANALYSIS, AND DISCUSSION OF RESULTS

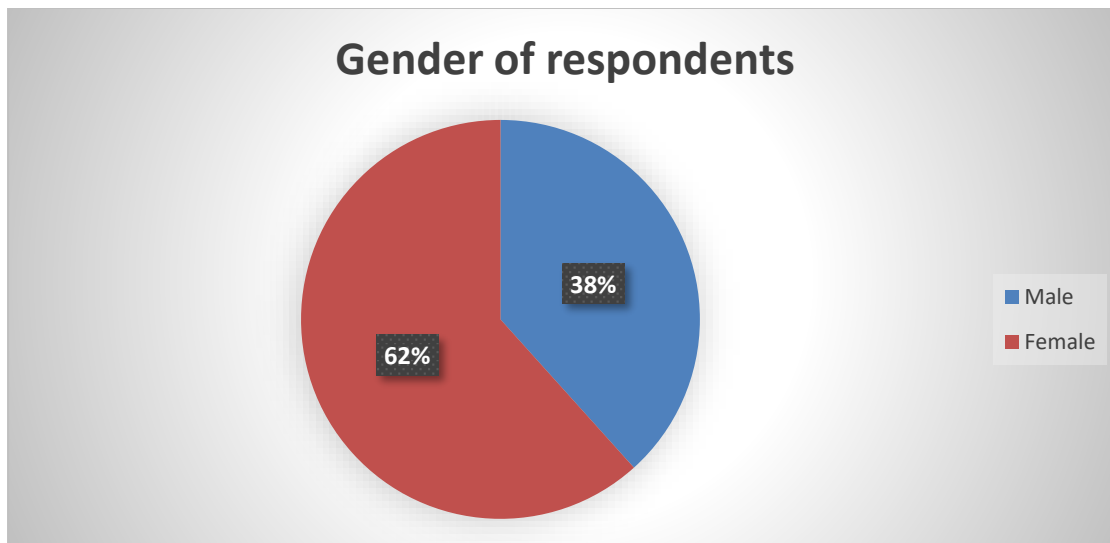
4.1 Introduction

The current research investigates and presents analytical solutions to the study of key variables such as green supply chain management, government policy, technology and FMCG firm performance. This section of the research is structured in an understandable manner that the presentation of the findings is clear and concise. This part of the study ensured that the analysis is presented to project the research objectives of the study. Some specific analytical tools such as arithmetic mean, standard deviations, frequency, percentages, correlation and regression were used to ensure that the objectives of the study are duly covered. The following research objectives that guided this analysis include: effect of government policies on green supply chain management; effect of technology on green supply chain management; and the effect of green supply chain on performance of FMCG companies.

4.2 Demographic Analysis

This part of the analysis describes the demographic features of the staff of the selected FMCG companies. The demographic features include gender, age category, educational level, tenure of work and position held in the organization.

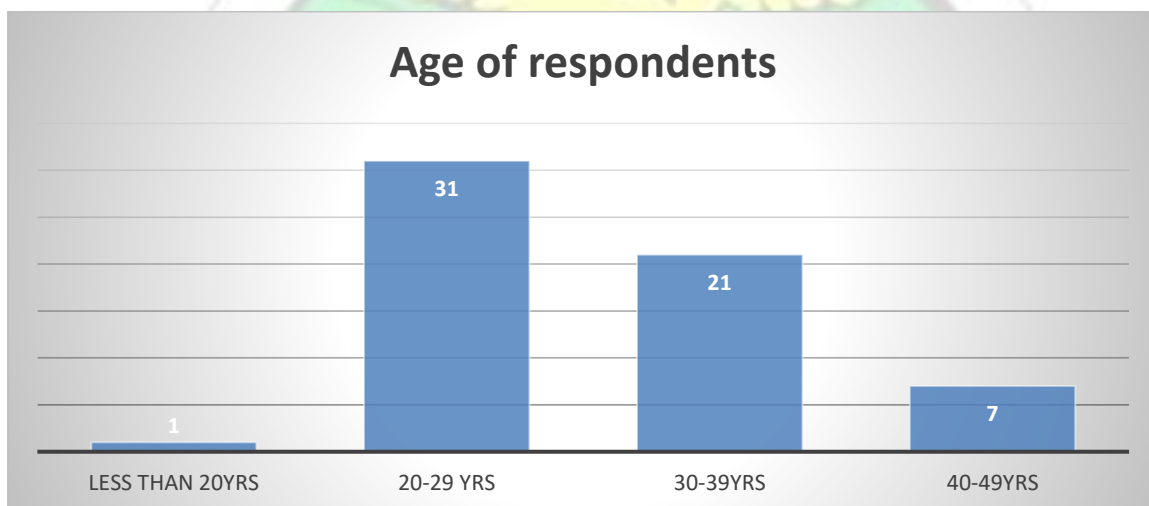
Figure 4.1: Gender of respondents



Source: Author's Fieldwork, 2022

Figure 4.1 presents the gender category of respondents from selected FMCG firms. Out of 60 respondents 62% are females while 38% are males. The information showed that in FMCG business, females are quite dominant.

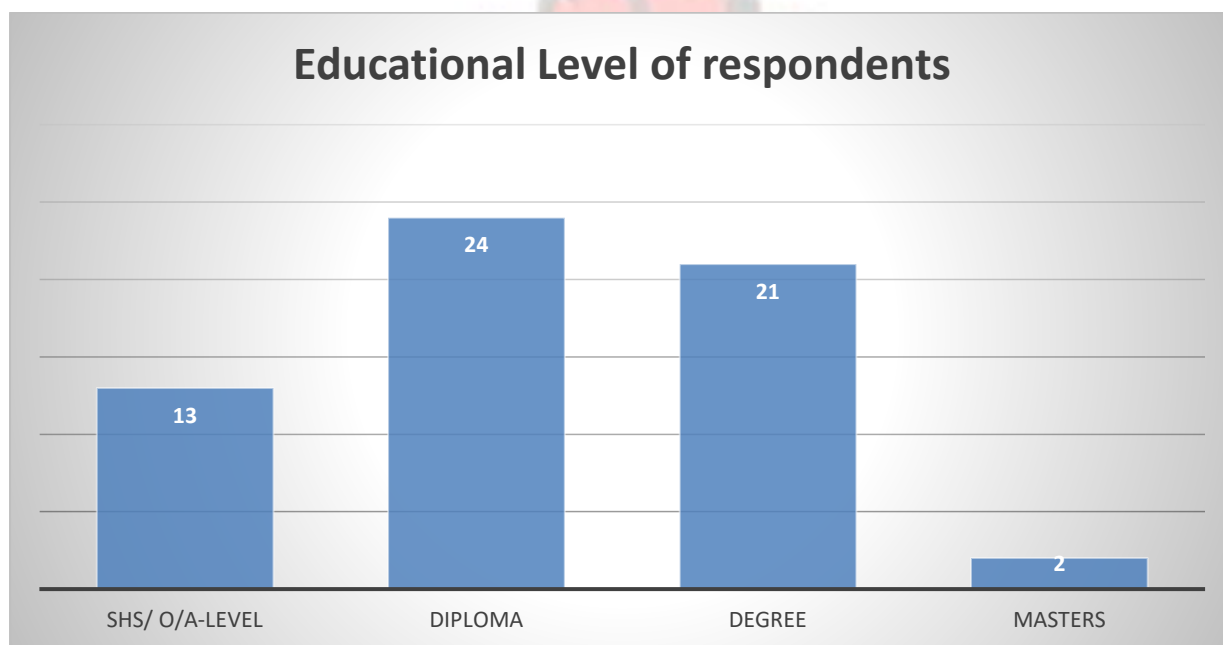
Figure 4.2: Age of respondents



Source: Author's Fieldwork, 2022

Figure 4.2 presents information on the age category of respondents sampled from FMCG companies. Out of 60 respondents, 31 are between 20-29years while 21 are between 30-39years. Only 7 respondents are between 40-49 years. From the data it showed that most staff of FMCG are between 20-29years.

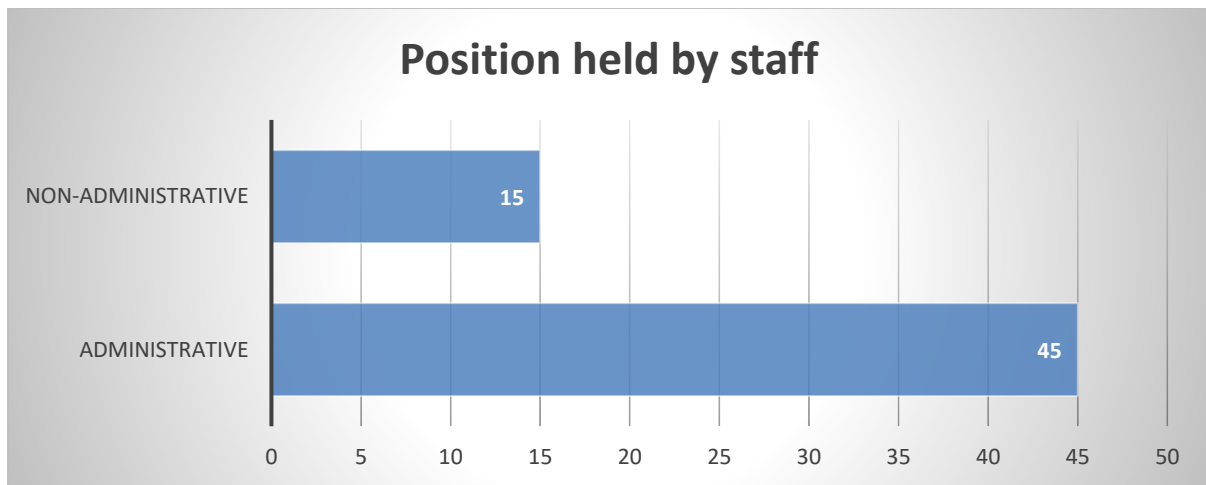
Figure 4.3: Educational Level of respondents



Source: Author's Fieldwork, 2022

Figure 4.3 presents information on the educational level of respondents. Out of 60 respondents, 24 of them have obtained Diploma. However, 21 respondents have first Degrees while only 2 staff of FMCG companies have obtained Masters. Only 13 staff of FMCG have SHS level of education.

Figure 4.4: Position held



Source: **Author's Fieldwork, 2022**

Figure 4.4 presents information on the position held by staff of FMCG. Out of 60 respondents, 45 are administrative staff while 15 are non-administrative staff of FMCG companies. The most dominant group sampled are administrative staff who have in-depth knowledge on the operations of FMCG companies.

4.3 Descriptive statistics

This section presents results on the descriptive statistics of the variables used for the study namely green supply chain management, information technology, government policies and firm performance.

Table 4.1 Descriptive statistics

Green Supply Chain Management	N	Minimum	Maximum	Mean	Std. Deviation
We have knowledge about Green supply chain management	60	2	5	4.12	.691
This organization deals in green supply chain management practices.	60	2	5	4.18	.833
The management of this organization are aware of the relevance of green supply chain management.	60	1	5	3.85	.840
Green supply chain may have a positive influence on this firm's performance.	60	2	5	4.07	.778
It is too expensive to ensure green supply chain in this organization	60	2	5	3.98	.813
Using adequate green features is vital for green supply chain management	60	1	5	4.25	.895
Green supply chain can bring immense profit to this business	60	2	5	4.20	.777
Information Technology	N	Minimum	Maximum	Mean	Std. Deviation
Our IT system supports the use of automatic data capture systems across the supply chain	60	2	5	4.20	.659
Our IT system allows common definitions of key data elements across the supply chain	60	1	5	4.17	.847
Our IT system offers consistency in storing the same data in different databases across the supply chain	60	1	5	4.00	.803

Transaction applications are able to be communicated in real time	60	1	5	4.08	.889
Government Policies	N	Minimum	Maximum	Mean	Std. Deviation
Government policies encourage green supply chain practices	60	1	5	4.22	.825
Government policies on environmental protection is vital for green supply chain management	59	1	5	4.12	.911
Government policies include an investment into green supply chain practices	60	1	5	4.05	.811
Implementing government policies on green supply chain is not expensive for this firm	60	3	5	4.25	.628
Firm Performance	N	Minimum	Maximum	Mean	Std. Deviation
Green Supply Chain practices increases the financial performance of the firm.	60	3	5	4.17	.642
Green Supply Chain management reduces the cost of production in the firm.	60	3	5	4.25	.728
Green supply chain practices improves the firm's timeliness to the market.	60	2	5	4.38	.691
Green supply chain management increases the firm's level of competitiveness.	60	3	5	4.13	.650

Source: Author's Fieldwork, 2022

According to results from table 4.1, green supply chain management was measured using seven (7) items with minimum values of 1 and 2 and maximum value of 5. Mean scores attained for

each of the seven (7) items were greater than the midpoint value of 3.00. This is an indication that most respondents gave high ratings of 4=Agree and 5=Strongly Agree on green supply chain management among FMCGs. Standard deviation values were also not closer to their respective mean values, which means that the dataset was widely dispersed from each other.

Information Technology was assessed using four (4) items with minimum and maximum values of 1 and 2. The mean scores obtained for each of the four (4) items exceeded the midpoint value of 3.00. Thus, the majority of respondents gave information technology in FMCGs high scores of 4=Agree and 5=Strongly Agree. The standard deviation values were likewise not closer to their respective mean values, indicating that the dataset was widely spread.

Government policies were examined using four (4) items with minimum and maximum values of 1 and 3. The mean scores obtained for each of the four (4) items exceeded the midpoint value of 3.00. This implies that the majority of FMCG respondents rated government policies as 4=Agree or 5=Strongly Agree. The standard deviation values were likewise not closer to their respective mean values, indicating that the dataset was widely spread.

Four (4) items with minimum values of 2 and 3 and a maximum value of 5 were used to assess firm performance. The mean scores obtained for each of the four (4) items exceeded the midpoint value of 3.00. This means that the majority of respondents gave company performance among FMCGs high scores of 4=Agree and 5=Strongly Agree. The standard deviation values were likewise not closer to their respective mean values, indicating that the dataset was widely spread.

4.3 Data Analysis

This section presents the analysis of primary data that was obtained from 60 FMCG companies in the Accra metropolis. Multiple regression and simple linear regression were used to analyze the data gathered. Multiple regression was used to assess the relationships between government policies, technology and green supply chain.

On the other hand, simple linear regression was conducted to assess the relationship between green supply chain and firm performance of FMCG companies. Before the regression analysis was conducted, the researcher first conducted normality statistics using skewness and kurtosis and also correlation analysis.

Table 4.2: Normality Statistics

	N	Skewness		Kurtosis	
		Statistic	Std. Error	Statistic	Std. Error
Green Supply Chain	60	-.451	.309	-.422	.608
Technology	60	.042	.309	-.832	.608
Government Policies	60	-.052	.309	-.683	.608
Firm Performance	60	-.229	.309	-.941	.608

Source: Author's Fieldwork, 2022

The normality statistics indicated that the dataset utilized for the regression analysis was normally distributed since the skewness and kurtosis values were less than +/-2. This implies that there were no extreme values or outliers that may have influenced the regression outcome.

Table 4.3: Correlation Matrix

Variables	GSCM	Tech	GovPol	FP
GSCM	1.00			
Tech	0.683**	1.00		
GovPol	0.615**	0.566**	1.00	
FP	0.660**	0.642**	0.679**	1.00

Source: Author’s Fieldwork, 2022

From the correlation matrix, significant positive relationships exist between the following variables; green supply chain and technology ($r=0.683^{**}$), green supply chain and government policies ($r=0.615^{**}$), and also green supply chain and firm performance ($r=0.660^{**}$). The results of the study also showed that positive associations exist between technology and government policies ($r=0.566^{**}$), technology and firm performance ($r=0.642^{**}$) and also government policies and firm performance ($r=0.679^{**}$).

Table 4.4: Summary of Regression Results

	Standard estimates (B)	
	Model 1	Model 2
Hypothesized Direct effect		
Technology	0.493**	
Government Policies	0.336**	
Green Supply Chain		0.660**
FIT INDICES		
R2	0.543	0.436
Adjusted R2	0.527	0.426
Sig	0.000	0.000
Df2	59	59

DV (Model 1) =Green Supply Chain; DV (Model 2) =Firm Performance; ()**

=significant at 0.05 level of significance

This table presents the regression results based on the objectives of the study. The first model used multiple regression to assess the relationship between technology and government policies on green supply chain among FCMG companies. The second model used simple linear regression to examine the relationship between green supply chain and firm performance among FCMG companies.

For model 1, an R-square value of 0.543 was attained which implies that 54.3% of the variation in green supply chain was explained by technology and government policies. The standard estimates showed that a significant positive relationship exist between technology and green supply chain ($B=0.493$, $p=0.000$). It was also found that a significant positive association exist between government policies and green supply chain ($B=0.336$, $p=0.000$).

For model 1, an R-square value of 0.436 was attained which gives the implication that 43.6% of the variation in firm performance was accounted for by green supply chain. The standard estimates also showed that a significant positive association exists between green supply chain and firm performance among FMCG companies ($B=0.660$, $p=0.000$).

4.4 Summary of hypotheses

The table below presents the result of the three hypotheses. First, the study hypothesizes that government policies have positive effect on green supply chain management practices of FMCG companies. Again, the study hypothesizes that technology positive effect on green supply chain management practices of FMCG companies. Lastly, the study hypothesizes that green supply chain management is positively associated with performance of FMCG companies. The summary of the regression results is provided in the table below:

Table 4.5: Summary of Regression and Hypotheses

Hypotheses	Path	Coefficient (B-value)	T- Statistics	p-value	Remarks
H 1	Government Policies →Green				Supported
	Supply Chain Management	0.493	4.534	0.000	
H2	Technology → Green				Supported
	Supply Chain Management	0.336	3.091	0.000	
H3	Green Supply Chain → Performance	0.660	6.691	0.000	Supported

Source: Author’s Fieldwork, 2022

4.5 Discussion of main Findings

This section presents the key findings of the study and compares the current outcome with findings of earlier researchers on the same subject matter. The section has been presented under the following headings in line with the study objectives as follows: the effect of government policies on green supply chain management, the effect of technology on green supply chain management and the effect of green supply chain management on performance of FMCG companies.

4.5.1 Effect of Government Policies on Green Supply Chain Management

The first objective of the study was to examine the effect of government policies on green supply chain management practices among FMCG companies in the Accra Metropolis. From the regression analysis conducted government policies was found to have a positive effect on green supply chain practices of FMCG firms. This result indicates that an improvement in government policies will lead to an increase in green supply chain management practices

among firms in the FMCG industry with an adjusted $R^2 = 0.543$, indicating that an improvement in government policies will lead to an increase in green supply chain management practices by 54.3% and vice versa. This result is consistent with the findings of a study by Zhu and Sarkis (2004), which revealed that government policies influence green supply chain management practices.

The systems theory of Green Supply Chain Management explains the relationship between government policies and green supply chain management. The effect of government policies on green supply chain practices could be explained using the institutional theory. This is because, the adoption and implementation of governmental policies on green supply chain practices compels organizations to abide by the formal rules and regulation set by the government to ensure that their supply chain practices are in congruence with prevention of pollution and also enhancing sustainability. In this regard, the strong implementation on government policies has the potential to make it obligatory for FMCG's to adopt green supply chain practices in their supply chain operations.

4.5.2 Effect of technology on Green Supply Chain Management

The second objective of the study was to examine the effect of technology on green supply chain management practices among FMCG companies in the Accra Metropolis. The outcome of the study shows that there is a positive relationship between Technology and Green Supply Chain Management with adjusted $R^2 = 0.543$ shows that an increase in technology will lead to improvement of Green Supply Chain Management Practices by 54.3% and vice versa.

According to Visamitanan and Asarut (2021), technological applications have an impact on green supply chain management. To describe the link between technology and green supply

chain practices, the technology acceptance model is employed. This is because, the perceived usefulness and perceived ease of use of the technology has a role to play in determining the extent to which technology adoption contributes positively or negatively to green supply chain practices and vice versa.

4.5.3 Effect of green supply chain management on performance of FMCG companies

From the regression analysis conducted green supply chain management was found to have a positive effect on the performance of FMCG firms. The positive effect between the variables means that an increase in effect green supply chain management leads to a direct increase in performance of FMCG firms with $R^2 = 0.436$ which shows that an increase in Green Supply Chain will have 43.6% impact on Performance of FMCG companies. Some studies over the years have indicated similar stance when it comes to the effect between green supply chain management and performance of FMCG firms.

Scholars such as Yang, Lu, Haider and Marlow (2013) showed that green supply chain management has positive effect on performance of FMCG firms. The natural resource based view could be used to explain the relationships between green supply chain and firm performance among FCMG companies in Ghana. This is because, the adoption of green supply chain practices will ensure that FCMG companies carry out their operations in manner that ensures the prevention of pollution, enhancing product stewardship and also enhancing sustainable development in order to achieve competitive advantage.

CHAPTER FIVE

SUMMARY OF FINDINGS, CONCLUSIONS, RECOMMENDATIONS

5.1 Introduction

The fifth chapter of this research provides the summary, conclusion and recommendations necessary for the findings that have been obtained in this research. The aim of this research was to find out what effect green supply chain has on performance of companies operating in the fast moving consumer goods industry. This is the last chapter of the entire project and findings are presented in line with the specific objectives of the study.

5.2 Summary of study

The current study investigates the effect of green supply chain management on FMCG firm performance. This project has become utterly vital because of the limited amount of scholarly works committed to this area of research in Ghana. This study has been conducted previously in other jurisdictions but very little information is available on GSCM and FMCG firm performances in recent years. Because of the limited information available, the researcher thought it wise to provide the most current and thought provoking information and findings on this subject matter with the aim of complementing or adding current information to previous studies. The study specifically focused on the following objectives: to examine the effect of government policies on green supply chain management, to examine the effect of technology on green supply chain management and assess the effect of green supply chain management on performance of FMCG companies.

The current study was supported by the literature assembled. The literature review is professed in the empirical and theoretical nature. The theoretical literature is premised on the assumptions of key concepts while the empirical literature presents some research findings to support the current finding. This current study used the positivist approach where the quantitative research approach was mainly adopted. Under the quantitative approach the descriptive as well as the explanatory research designs were thoroughly used to aid the research in describing and explaining the major findings that are aligned to the research objectives. Primary data was collected from 60 FMCG companies in the Accra Metropolis. After the questionnaires were collected, cleaning and data entry was done. The data analysis was divided into demographic analysis where a brief profile of the kind of respondents sampled were provided.

The second part of the study was an inferential statistics of the data which was conducted regression analysis. Finally, the research investigated the hypothesis and determined the impact of government regulations on green supply chain management, the impact of technology on green supply chain management, and the impact of green supply chain management on FMCG business performance. The regression study revealed that green supply chain management has a favorable and substantial influence on FMCG performance. The research also discovered that government initiatives had a favorable impact on FMCG businesses' green supply chain management. Technology also has a favorable impact on FMCG firms' green supply chain management.

5.3 Conclusion

This study concludes on the various research objectives outlined for this study. The conclusion of the study is given below.

The research concludes that the Ghanaian government's initiatives on green supply chain management have a substantial and favorable association with the performance of FMCG enterprises.

According to the research, technology as a variable has a favorable link with green supply chain management. This positive link was found to be both significant and strong. As a result, both technology and green supply chain management have a favorable and substantial relationship with FMCG business success.

Finally, the research concludes that green supply chain management has a favorable impact on the success of FMCG enterprises. This impact suggests that improving green supply chain management leads to an improvement in FMCG business performance. The research also found that green supply chain management has a favorable and substantial impact on FMCG business performance.

5.4 Recommendation

The following represent the recommendations outlined for the study;

The study recommends that great strides be made by government to motivate all FMCG companies to have the incentives in encouraging and employing strategies of green supply chain. This is so important because green supply chain practices bring to the fore some sustainable development in the business environment.

Secondly the study recommends that managers of FMCG companies should organize seminars as well as round table discussions and make the structure of green supply chain practices very transparent to customers and employees.

Lastly, it is important that the Research manager organize continuous research to investigate green supply chain management and FMCG firm performance and how these two concepts can help achieve organizational goals.

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5.5 Recommendations for future studies

The research looked at the relationship between green supply chains and business performance in Ghanaian FMCG industries. Based on the findings of the study, the researcher suggests that future researchers broaden the scope of the study to include additional FMCG firms in Ghana. The report also suggests that future researchers reproduce this study in other industries in Ghana, such as health, manufacturing, education, and banking, since concerns related to green supply chain and sustainability touch several sectors of the economy.



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APPENDIX

QUESTIONNAIRE

This study is being conducted on the topic examine the effect of green supply chain on firm performance. This survey will contribute to the study being conducted and submitted to the Kwame Nkrumah University of Science and Technology in partial fulfillment for the requirements of the award of Master's degree Supply Chain. Participants are assured of the strictest confidentiality concerning answers given as facts in relation to the study needed for academic purposes. Participation in this study is voluntary and all who participate will remain anonymous. This questionnaire will be applied to only staff of FMCG companies.

SECTION A: Demographic Profile of Respondents

1) Gender of respondent

- A. Male [] B. Female []

2) Age of respondent

- A. Less than 20yrs [] B. 20-29 yrs. [] C. 30-39yrs [] D. 40-49yrs []
E. 50yrs or more []

3) Educational level of Respondent

- A. SHS/ O/A-Level [] B. Diploma [] C. Degree [] D. Masters/PhD []

4) How long have you been in the organization? (Tenure of work)

- A. 1-5yrs [] B. 6-9 yrs [] C. 10yrs and above []

5) Position held in the institution?

- A. Administrative staff []
B. Non-Administrative Staff (Sales/Marketing, supply chain expert) []

SECTION B: GREEN SUPPLY CHAIN

Choose the extent to which you practice the following approaches with regards to Green supply chain management by **checking the box against** your preferred option.

Options: 1 = Strongly Disagree 2= Disagree 3= Neither Agree nor Disagree
4= Agree 5= Strongly Agree

S/N	STATEMENT	1	2	3	4	5
1	We have knowledge about Green supply chain management					

2	This organization deals in green supply chain management practices.					
3	The management of this organization are aware of the relevance of green supply chain management.					
4	Green supply chain may have a positive influence on this firm's performance.					
5	It is too expensive to ensure green supply chain in this organization					
6	Using adequate green features is vital for green supply chain management					
7	Green supply chain can bring immense profit to this business					

SECTION C: TECHNOLOGY & GOVERNMENT POLICIES

Choose the extent to which you practice the following with regards to Green supply chain management and firm performance by **checking the box against** your preferred option.

Options: 1 = Strongly Disagree 2= Disagree 3= Neither Agree nor Disagree
4= Agree 5= Strongly Agree

S/N	INFORMATION TECHNOLOGY	1	2	3	4	5
1	Our IT system supports the use of automatic data capture systems across the supply chain					
2	Our IT system allows common definitions of key data elements across the supply chain					
3	Our IT system offers consistency in storing the same data in different databases across the supply chain					
4	Transaction applications are able to be communicated in real time					
GOVERNMENT POLICIES						
5	Government policies has legal framework on green supply chain practices					
6	Government has public education policies on green supply chain management					

7	Government ensure enforcement of laws on green supply chain practices					
8	Implementing government policies on green supply chain is not expensive for this firm					

SECTION D: PERFORMANCE

Choose the extent to which you agree or disagree with the following statements with regards to Green supply chain management and firm performance by **checking the box against** your preferred option.

Options: 1 = Strongly Disagree 2= Disagree 3= Neither Agree nor Disagree
4= Agree 5= Strongly Agree

S/N	PERFORMANCE	1	2	3	4	5
1	Green Supply Chain practices increases the financial performance of the firm.					
2	Green Supply Chain management reduces the cost of production in the firm.					
3	Green supply chain practices improves the firm's timeliness to the market.					
4	Green supply chain management increases the firm's level of competitiveness.					