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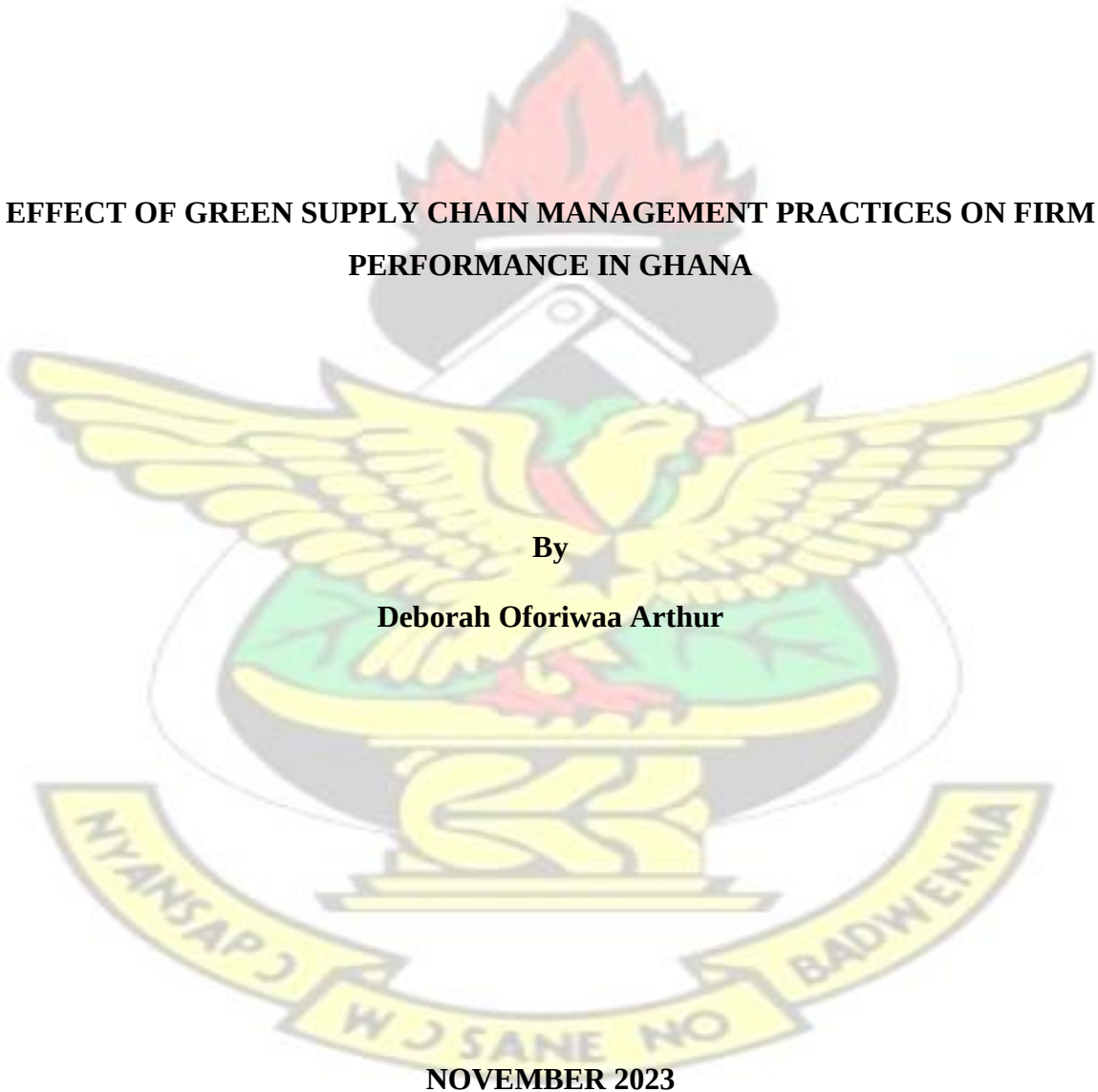
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**EFFECT OF GREEN SUPPLY CHAIN MANAGEMENT PRACTICES ON FIRM
PERFORMANCE IN GHANA**

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ABSTRACT

The study attempted to examine the effect of GSCM on the performance of firms in Ghana. The current study adopted a quantitative methodology with a cross-sectional descriptive research design. The study sampled 94 managers of various firms using structured questionnaire as the main data collection instrument. Both descriptive and inferential statistics were used to present the study's findings. The study results discovered that the GSCM practices mainly utilized by firms in Ghana are green manufacturing, remanufacturing, and internal environmental management. Whilst the economic performance of firms in Ghana was also high, the environmental performance and operational performance were average. The study outcomes also demonstrated that GSCM practices had significant positive effects on the environmental, economic, and operational performance of firms in Ghana. The study recommended that the management of the various firms invest in the other GSCM practices to reduce environmental pollution and further boost the performance of their various firms.

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

Most businesses' main goal is to establish and control a supply chain that can effectively boost their financial results (Achuora, 2018). From the early 1990s onwards, studies have showcased that the management of the supply chain has a significant role in aiding companies to enhance their overall performance. (Achuora, 2018; Mentzer, DeWitt, Keebler, Min, Smith, & Zacharia, 2001). To mitigate their adverse environmental and social consequences while simultaneously reaping economic benefits, corporations are integrating ecological efforts into their supply chain operations and activities.. Environmental and social aspects, according to Senyo, Acquah, and Afum (2021), influence supply chain systems, causing enterprises to have socioenvironmental repercussions. Starting with the phases of product design and extending to the product's lifecycle conclusion, Green Supply Chain Management Practices (GSCMPs) involve integrating environmentally conscious methods into supply chain operations and activities. The aim is to diminish or eradicate solid waste, decrease pollution, lower energy usage, and enhance the conservation of resources (Senyo et al., 2021).

Feng, et al. (2017) opined that green supply chain management (GSCM) entails intra- and inter-firm management of the upstream and downstream supply chains, as well as internal and external GSCM techniques, with the goal of reducing the environmental effect of both forward and reverse flows. It is considered that the involvement and integration of supply chain partners is critical to the implementation of successful green practices. As a result, green practices, such as GSCM practices, are critical strategic variables that influence a

firm's supply chain; as a result, such green practices must be accompanied by effective collaboration among all essential supply chain partners. When suppliers accept a company's environmental criteria, the supply chain becomes green (Afum et al., 2020).

Organizations assessing their business processes should look beyond their factory walls as part of the shift to a greener supply chain. Organizations should seek out suppliers who have a low environmental effect without compromising product quality or considerably increasing expenses. Organizations can start their transition to a green supply chain from the upstream by purchasing items from green suppliers (Cucchiella, 2014). Organizations should examine their return process in the downstream. Many companies, on the other hand, have yet to build an effective refurbishment program for their returned or exchanged products. Organizations can broaden their consumer base and boost purchase options for their customers by supplying reconditioned products, all while reducing their products' environmental effect (Cucchiella, 2014).

The growing interest in the performance implications of GSCM has led to a surge in research activity in this domain in recent years. There is a limited amount of research available on the performance implications of GSCM for businesses, particularly in poor countries (Achuora, 2018). The objective of this study is to investigate the effect of GSCM practices on the performance of companies operating in Ghana.

1.2 Problem Statement

Despite the potential advantages associated with the adoption of GSCM as highlighted by Bhool and Narwal (2013), numerous organizations across various industries and nations are hesitant to embrace GSCM due to a multitude of hurdles that impede its successful implementation, as discussed by Elbarky and Elzarka (2015). Peprah, Opoku-Fofie, and

Nduro (2016) investigated the variables influencing the green supply chain in Ghana's mining industry and found that the products/goods mining businesses buy had detrimental environmental effects. Peprah et al., (2016) state that there are several important reasons that play a role in Ghanaian mining companies' limited adoption of green supply chains. These factors include a lack of political commitment, a lack of knowledge and expertise in green supply chains, a lack of awareness of the potential economic benefits of these chains, a lack of learning capacity to evaluate these chains, the high costs of environmental programmes, and an inefficient system of fines for environmental infractions. Additionally, Barve and Muduli (2013) pointed out that there is a considerable disparity in the degree to which the application of GSCM influences firm performance outcomes. That is, while GSCM has been conceptually linked to improved performance, empirical validation of such theoretical assertion remains under explored, as a result, the current study seeks to ascertain the effect of GSCM practices on the performance in the Ghanaian setting.

1.3 Research Objectives

The main goal of the study is to ascertain the effect of green supply chain management (GSCM) practices on the firm performance in Ghana. To achieve this goal, the following specific objectives have been outlined to:

1. Assess the GSCM practices utilized by firms in Ghana.
2. Evaluate the performance level of firms in Ghana.
3. Examine the effect of GSCM practices on the performance of firms.

1.4 Research Questions

The current study will be steered by the following research inquiries:

1. What are the GSCM practices utilized by firms in Ghana?

2. What is the performance level of firms in Ghana?
3. What is the effect of GSCM practices on the performance of firms in Ghana?

1.5 Significance of the Study

To begin with, the findings of this study will add to the existing literature on green supply chain management practices and firm performance. As a result, future researchers who are interested in further researching the same study factors of GSCM practices and firm performance can refer to this paper as a source of literature.

Second, the outcomes of the study will aid in bridging the knowledge gap between GSCM practices and firm performance in Ghanaian setting.

The results of this study will have important implications for managers and stakeholders in manufacturing organizations that are seeking to enhance their practices in GSCM to gain a competitive advantage in their respective industries.

1.6 Brief Methodology

To explore the effect of GSCM practices on the performance of firms in Ghana, the current study used a quantitative research approach with a cross-sectional research design. The population of the study comprised of senior managers from various sectors of the industry. The study purposively sampled 150 managers of firms from various sectors of the economy Greater Accra. A structured questionnaire was used to solicit data from the study participants. The data was analysed using descriptive and inferential statistics with the aid of SmartPLS 3 and IBM SPSS 26 software.

1.7 The Scope of the Study

In geographical terms, the study was limited to firms operating in Ghana from the manufacturing, service, agricultural/agribusiness, and the mining/extraction sectors. The study also focused on the GSCM practices, the performance level of firms and the effect of green supply chain management practices on the performance of firms in Ghana.

1.8 Limitations of the Study

Like all other research studies, the conduct of the present study was prone to some drawbacks. First, the instrument to be used for data collection will be purely quantitative in nature and structured (close-ended), implying that the respondents will have limited ability to freely express their opinions in relation to the variables explored in the study.

Further, the unwillingness of some study participants (managers of firms in Ghana) to participate and complete the questionnaire is anticipated prolonged the entire data collection period and hence, the completion of this project report.

1.9 Organization of the Study

This current study was organized into five main chapters as elaborated as follows:

Chapter One: The introductory chapter of the study entails the background of the study, problem statement, objectives and research questions, significance, and scope of the study.

Chapter Two: This chapter reviewed both theoretical and empirical literature on GSCM practices and firm performance. The conceptual framework for the study was also included in this chapter. Chapter Three: The methodology section described the basic research plan which entailed the research design, population and sampling, instrumentation, data collection and data analysis. Ethical issues were also addressed here. Chapter Four: In this chapter, the study results and findings were presented and discussed in relation to the

empirical literature and other prior studies. Chapter Five: This chapter presented a summary, conclusions and recommendations based on the study's findings.

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CHAPTER TWO

LITERATURE REVIEW

2.0 Introduction

This chapter reviews relevant literature by other researchers or authors on the topic under study. The review of literature is focused on both theoretical and empirical literature relating to green supply chain management practices and firm performance as well as the conceptual framework and hypothesis development.

2.1 Supply Chain

A supply chain is the interconnected series of firms, organizations, and individuals involved in the creation and distribution of a good or service. Suppliers, manufacturers, wholesalers, retailers, customers, and others are all linked together in this system. It functions in both upstream and downstream directions, easing the transfer of materials, data, and money (Ai et al., 2015). Martins and Pato (2019) define a "network" as a group of organizations engaged in a variety of value-creating processes and activities for the benefit of end users. Relationships upstream and downstream in the supply chain work together to create value. According to Martins and Pato (2019), a consortium refers to a collective of three or more entities, which can be organizations or individuals, that are actively engaged in the movement of products, services, finances, and/or information from a source to a client. The primary tasks associated with suppliers encompass supplier evaluation, selection, and development, alongside specific sourcing, and procurement activities, such as purchasing. According to Martins and Pato (2019), the focal business places significant importance on tasks such as network redesign, product design and development, (re)manufacturing, in-house logistics, and outsourcing.

Considering supply chains are the lifeblood of any economic endeavor, supply chain management has an impact on society's social fabric (Golicic et al., 2020). The process of industrialization and globalization in developing nations presents a dual effect, wherein it creates enhanced prospects for manufacturing enterprises, while simultaneously exacerbating environmental challenges. The current shifts in environmental regulations have resulted in modifications to manufacturing practices and an increased focus on the implementation of Environmental Management (EM) solutions within supply chains (Ojo et al., 2007).

2.2 Supply Chain Management

The term "supply chain management" refers to the coordinated effort put into the preparation, implementation, and control of supply chain activities with the end goal of efficiently meeting consumer demands. Transporting and storing goods from their point of origin to their destination—the consumer—requires careful planning and management by those in the supply chain. Raw materials, WIP, and final goods are all handled during these phases (Martins & Pato, 2019). Traditional business activities and strategies inside an organization and across the supply chain must be systematically and strategically coordinated through supply chain management (SCM). The primary aim is to improve the long-term performance of individual firms and the entire supply chain (Martins & Pato, 2019).

The administration of a supply chain network is complex and hard due to the intricate nature of its many subsystems, activities, relationships, and operations. The field of supply chain management (SCM) involves the implementation of various strategies and activities by organizations to effectively align supply and demand, resulting in improved supply

chain management (Ai et al., 2015). Downstream supply chain management (SCM) operations encompass many activities such as transportation, marketing mix, and customer relationship management. Reverse logistics and closed-loop supply chains have become prevalent functionalities in the overall supply chain designs (Martins & Pato, 2019).

The primary objective of supply chain management (SCM) is to provide the correct product effectively and efficiently to the intended customers, at the suitable price, within the designated timeframe, while ensuring the desired level of quality, conforming to the specified specifications, and in the optimal quantity. In addition, the short-term strategic objective of Supply Chain Management (SCM) is to reduce cycle time and inventory levels, hence enhancing productivity. Conversely, the long-term objective of SCM is to enhance profitability by expanding market share and ensuring customer satisfaction (Ai et al., 2015).

Conventional supply chains typically encompass the progression of raw materials to the final product, ultimately reaching the client (from inception to disposal). In contrast, environmental considerations need the incorporation of novel procedures, such as the implementation of a recovery phase, to mitigate the ecological consequences. Consequently, the closed loop supply chain facilitates the inclusion of end-of-life products, obtained from customers, into subsequent recovery processes (Wibowo, 2018). There is no evidence that the shift from traditional supply chain management to GSCM is fueled by the desire to make a profit in the business world, because the focus of GSCM is on the environment rather than pursuing financial goals. This could imply that the three drivers of coercive, mimetic, and normative pressures from regulations, society, and customers could have an impact on firms' adoption of GSCM practices (Tan et al., 2016).

The majority of manufacturers operate in oligopolistic markets, which necessitates taking competitive behavior into account before developing a pricing strategy. Furthermore, pricing techniques in SC management place the value chain in context, requiring consideration of the value added through each chain step as well as the value perceived by customers (Kusi-Sarpong et al., 2016).

2.3 Green Supply Chain Management

The subject of Green Supply Chain Management (GSCM) is characterized by its broad scope, lacking a definitive and all-encompassing description. The definition of Green Supply Chain Management (GSCM) is challenging to establish definitively due to variations in its conceptualization among experts (Tseng et al., 2019). The concept of 'green' encapsulates the practice of engaging in actions that incorporate environmental or ecological considerations. The supply chain plays a pivotal role in the field of operations management, exerting a significant influence on many environmental factors such as emissions, pollution, and community health hazards. In recent years, there has been a growing trend among companies to mitigate their ecological footprint by integrating environmental factors into their supply chain operations (Tseng et al., 2019). The concept of integrating sustainable environmental practices within the conventional supply chain is commonly known as a sustainable or green supply chain. Various processes, including as supplier selection and material procurement, product design, product manufacture and assembly, distribution, and end-of-life management, exemplify this phenomenon (Khan, 2018).

The fundamental principle of the green concept is centred around enhancing environmental sustainability. However, businesses often leverage this concept to achieve dual benefits.

By implementing a green supply chain, companies can effectively mitigate pollution and lower production costs. Simultaneously, this approach can stimulate economic growth, thereby providing a competitive edge through enhanced customer satisfaction, a positive brand image and reputation, and facilitating product exportation to environmentally conscious nations (Khan, 2018). Various factors contribute to the integration of sustainability programmes into the supply chain activities of organizations. These factors include social limitations, more stringent government legislation, the need to maintain a positive business image, heightened public awareness, and commercial pressures (Kusi-Sarpong et al., 2019). The implementation of green supply chains has been shown to effectively mitigate air, water, and waste pollution, while simultaneously enhancing the operational performance of businesses through practices such as waste reduction in manufacturing, product reuse and recycling, cost savings, improved asset efficiency, positive brand image development, and heightened customer satisfaction (Khan, 2018). The objective of Green Supply Chain Management (GSCM) was to integrate environmental factors into the management of the supply chain. This encompasses aspects spanning from product design and material procurement to manufacturing procedures, product distribution, and the management of a product's end-of-life phase (Sezen, 2019). GSCM is a collection of environmental practices that help two or more firms within the same supply chain enhance their environmental performance (Oliveira et al., 2014). Every firm must create a balance in economic, social, and environmental processes and be successful in its efforts in all three aspects to be sustainable. However, due to the complexity of these variables and their interrelationships, achieving this balance and achieving success is difficult. GSCM could be an effective technique to strike a balance

between environmental, economic, and social benefits. The incorporation of environmental factors into supply chain management involves several strategies, including the implementation of ecological product design, the acquisition of green materials and components, the restructuring of production processes to enhance environmental sustainability, and the management of product reverse logistics at the end of its useful life (Khan, 2018).

Green supply chains integrate eco-conscious principles into supply chain management with the aim of enhancing environmental sustainability. This is achieved through a range of green practices such as eco-friendly procurement, environmentally conscious distribution and warehousing, adoption of biofuels for transportation, ecologically sensitive manufacturing processes, and efficient management of a product's end-of-life phase (Khan, 2018). By curtailing energy consumption and material usage, fostering engagement from stakeholders, reducing expenses, and elevating product quality, these environmentally focused strategies can elevate the sustainability performance of businesses. Nonetheless, the existing literature offers limited research assessing the impact of GSCM practices on all three dimensions of sustainability – economic, environmental, and social (Sezen, 2019). Environmental impact is defined as the potential negative impact on the environment that a business may have because of the use and re-leasing of substances from/into the environment. Environmental costs comprise both internal costs that directly affect a company's income statement – such as waste treatment, discharge expenses, and energy consumption – and external costs imposed on society, not absorbed by the originating company (Al-sheyadi et al., 2019). Due to their super-additive impact, we propose that a company's capacity to simultaneously develop and implement diverse environmental

measures serves as a foundation for sustainable competitive advantage. This concept is denoted as “collective Green Supply Chain Management (GSCM) expertise.” The GSCM competency encompasses four distinct yet interconnected proactive environmental activities: Environmental Management Systems, Eco-Design, Source Reduction, and External Environmental Management. (Al-Sheyadi et al., 2019). Prior studies on the link between "supply chain" and "environmental challenges" were considered as part of the evolution of the GSCM idea. An investigation of how corporations might deal with environmental pressure by incorporating environmental issues into a supply chain network, for example, has been mentioned by Tseng et al. (2019). Businesses are facing increased pressure to improve their environmental performance due to the escalating phenomenon of global warming and alterations in biodiversity.

Moreover, stakeholders exhibit a heightened degree of environmental consciousness, thereby motivating enterprises to mitigate their adverse environmental effects. The supply chain network of the corporations is responsible for much of the environmental devastation. As a result, in order to counteract environmental degradation, special attention should be paid to the supply chain network (Tseng et al., 2019).

In recent times, several well-known companies have started acknowledging the importance of collaborating within the supply chain to implement environmentally sustainable strategies. A notable instance is Coca-Cola, which has initiated various collaborative green projects, including the Community Water Partnership. Notably, the creation of PlantBottle, the inaugural recyclable plastic beverage container derived partially from plants, resulted from collaborations with bottling partners and environmental organizations. Additionally, the H. J. Heinz Company, utilizing PlantBottle for its ketchup, has established a strategic

affiliation with Coca-Cola (Choi et al., 2017). Researchers looked into consumers' willingness to pay (WTP) for ecologically friendly items in a study done in the wood industry and agriculture sector. The findings reveal that there is no discernible effect on kitchen waste bag purchasers (Abdul et al., 2017). It was discovered that GSCM is largely used in industrial industries and only a few in construction. Some developing countries, such as Singapore, India, China, Hong Kong, Malaysia, and South Africa, have tested GSCM. Construction companies in South Africa, on the other hand, are still lagging behind in terms of adopting GSCM (Ojo et al., 2007).

2.4 Green Supply Chain Practices

The phrase "green supply chain practices" (GSCP) is commonly employed to denote a variety of measures implemented by an organization with the aim of mitigating their adverse environmental impacts. Supply chains strive to ensure both internal sustainability and environmental well-being through their capacity to autonomously adapt in response to external environmental cues (Diab et al., 2015; Vochon & Klessen, 2007).

2.4.1 Green Purchasing

Green purchasing encompasses an organization's evaluation of their suppliers' environmental performance, necessitating suppliers to implement measures that ensure environmental integrity within their operational frameworks. Green procurement is described as "long-term environmental strategies for procuring a company's materials, components, or systems," implying that the procurement process could assist in gauging the volume of waste entering corporate systems (Zhu & Sarkis, 2007).

2.4.2 Green manufacturing

Green manufacturing places significant emphasis on several environmentally friendly practices, including but not limited to the utilization of fewer nonrenewable natural resources, the mitigation of waste and pollution, and the restriction of emissions. Currently, prioritizing the reduction of energy use is crucial in the pursuit of adopting environmentally sustainable practices. The operation necessitates a significant amount of energy consumption, including several aspects such as lighting, equipment usage, as well as heating and cooling requirements. Fortunately, individuals could reduce their dependence on fossil fuels using alternative energy sources such as hydropower, wind power, solar energy, and biofuels. The use of more advanced production techniques and the adoption of simple alterations, such as the installation of light-emitting diode lights, can lead to a substantial reduction in energy consumption.

2.4.3 Green packaging

The concept of green packaging encompasses all phases of a package's life cycle. This encompasses all facets, ranging from the procurement strategies employed by suppliers to the practices adopted by customers for the disposal of packaging materials. An intelligent approach would involve utilizing boxes and packing materials that have been produced utilizing post-consumer recycled resources. Recycled paper and corrugated cardboard filler exhibit a diverse range of options within the market. An alternative option is the utilization of biodegradable packing material. The material, comprising a variety of components ranging from grains to mushrooms, possesses a propensity for rapid decomposition within the gardens of consumers or, in more extreme circumstances, within a landfill site. This raises an additional aspect: it is imperative to educate consumers on the proper methods of

recycling packaging. Don't expect your customer to be aware that those cornstarch packing peanuts may be composted in the backyard and dissolved in water.

2.4.4 Eco-design and Packaging

The concept of eco-design requires manufacturers to develop products that prioritize the reduction of material and energy consumption, facilitate the reusability, recycling, and recovery of component materials and parts, and minimize or eliminate the use of hazardous substances in the manufacturing process (Sarkis, 2003).

2.4.5 Warehousing and green building

The examination of geographical placement should ensure the security of storage facilities and infrastructure during the processes of storing, transporting, packing, and distributing goods, including the activities involved in forward logistics. Furthermore, it is imperative to consider investment recovery, which encompasses the process of selling surplus goods, disposing of scrap and used materials, and liquidating excess capital equipment. The process includes the retrieval of investments by means of surplus material sales, scrap and used material sales, and excess capital equipment sales (Hall, 2001).

2.5 Firm performance

The measurement of performance is a crucial practice for all businesses as it enables them to conduct an impartial evaluation of the efficiency with which their financial and non-financial resources are utilized to accomplish their goals (Agyabeng-Mensah et al., 2020). The assessment of firm performance plays a crucial role in evaluating the achievement of predetermined goals and devising strategies to enhance profitability, so ensuring the sustainability of a corporation.

Based on empirical research, the assessment of performance poses significant challenges for both professionals and scholars in the field. According to Agyabeng-Mensah et al. (2020), the assessment of corporate success often revolves around financial metrics, as profit-oriented organizations primarily strive to enhance shareholder value. However, the introduction of the balanced scorecard has incorporated non-financial performance metrics, including social, market, and environmental factors. Senyo et al., (2021) suggest that business performance serves as a means of assessing the effectiveness of managerial strategies. It is imperative for organizations to conduct a comprehensive evaluation and ascertain the accurate conversion of their available resources into the realization of organizational objectives. This may be accomplished by carefully analyzing the impact of these resources on various performance indicators. The utilization of this approach may aid firms in evaluating the efficacy of their existing resources in obtaining objectives, as opposed to assessing overall goal achievement. This is particularly relevant as it allows for the identification of potential inefficiencies in resource allocation for specific goals, which may otherwise remain concealed (Senyo et al., 2021). Due to the forces of globalization and the liberalization of markets, a substantial number of rivals have emerged, each vying to introduce their respective products to the market. Nevertheless, organizations may only acquire competitive advantages if they possess a comprehensive comprehension of consumer demands and desires, and can fulfil them (Habib et al., 2021).

GSCM practices will be adopted by enterprises if clear financial and operational benefits can be identified. The overall goal of GSCM is to reduce the supply chain's negative environmental impacts. Green techniques have been disputed as having competitive benefits due to waste reduction, resource conservation, and productivity enhancement. The

implementation of environmentally sustainable practices throughout various stages of the supply chain results in the establishment of an interconnected green supply chain. This, in turn, contributes to enhanced competitiveness, as well as improved economic and operational performance (Famiyeh et al., 2018). The emphasis on company success has undergone a transformation considering contemporary global environmental demands. Previously, the primary emphasis of this concept was on generating wealth through exceptional economic performance, as measured by assets, liabilities, and overall market strength. However, it has now evolved to prioritize environmental and social performance alongside economic performance, with the aim of attaining optimal levels of sustainability performance. The concept of corporate social responsibility is intrinsically connected to the pursuit of sustainability as a strategic approach employed by companies. The interdependence of organization, environment, and society triads is crucial for the attainment of shared value or a "win-win-win" solution (Ai et al., 2015).

The financial performance of a firm is directly impacted by three key elements: return on assets (ROA), gross margin (GM), and Tobin's Q (TQ). The results of the study indicate that there are several firm-specific characteristics that play a crucial role in explaining the variations in financial performance and competitiveness among Turkish firms. These findings might be used by financial managers to make decisions, and they could utilize various instruments to regulate certain of the firm's attributes to get better performance outcomes (Akben-Selcuk, 2016). In addition to financial performance, our analysis encompasses operational excellence, revenue growth, and customer connections as key factors in evaluating a company's performance. The inclusion of a comprehensive overview of firm performance enables a more comprehensive and equitable viewpoint, so reducing

dependence on metrics that are susceptible to manipulation or fail to encompass all dimensions of real business performance (Chan et al., 2017). Firms that develop differentiated capabilities by combining strategic assets in novel ways might gain an advantage over competitors and generate higher-than-average returns (Choi et al., 2017). According to Huang (2017), the results obtained as a result of implementing GSCM can be grouped into three categories: environmental performance, economic performance and operational performance.

2.5.1 Environmental Performance

Environmental performance is defined as the ecological outcomes of a company-wide commitment to protecting and improving the environment. The measurement and evaluation of environmental performance are becoming more crucial than ever before, with the growing number of businesses devoted to producing social and environmental value (Choi et al., 2017). Environmental performance is again defined by Afum et al. (2020) as a company's ability to reduce pollution and solid waste, as well as the usage of hazardous products and the occurrence of environmental mishaps. Numerous studies within the field of GSCM have extensively examined the impacts on competitiveness resulting from different initiatives, with a particular focus on pollution control (Choi et al., 2017). According to Choi et al. (2017), there is a positive association between pollution prevention technology and firm performance, as opposed to pollution control technologies. Consequently, companies that perform better in terms of the environment are also the most profitable (Choi et al., 2017). GSCM initiatives are beneficial for organizations as they contribute to the enhancement of their environmental performance. This is achieved through various means, such as the reduction of carbon emissions, the elimination of waste

throughout the entire supply chain, and the promotion of reuse, recycling, and remanufacturing. These positive outcomes are facilitated by establishing effective and robust collaborations with suppliers (Khan, 2018).

Green manufacturing offers numerous benefits to both an enterprise and the environment. It acts as a guide for businesses looking to strike a balance between their environmental, social, and economic goals (Afum et al., 2020). Environmental policies have been perceived as a drain on company profits since adopting green practices within the production process necessitates significant investments in technology, processes, and personnel training (Abdul et al., 2017). In their study analyzing the business perception of how environmental management effects economic performance, they used environmental competitiveness and overall company competitiveness as the measures for economic success (Tan et al., 2016).

2.5.2 Economic performance

Environmentally friendly supply chain practices not only improve environmental performance but also improve economic performance. Empirical studies have discovered a link between green product design and corporate performance (Abdul et al., 2017). Choi et al. (2017) assessed the economic implications of green supply chain management of the Toyota Motor Corporation and the Xerox Company and found out that to improve the environmental performance of its automobiles, Toyota Motor Corporation has implemented an LCA system called Eco-VAS (Eco-Vehicle Assessment System). Since its launch in 1997, the Toyota Prius has gained a reputation as the first hybrid automobile, with strong sales growth. As a result, it is acceptable to assume that eco-design adds to both financial and environmental performance (Choi et al., 2017). The Xerox Green World

Alliance is an asset recovery programme that has been implemented by Xerox. Its primary objective is to enhance the environmental performance of Xerox's end-of-life products by implementing a closed-loop supply chain system. During the past twenty years, the programme has significantly contributed to Xerox's cost reduction in raw materials, resulting in savings up to millions of dollars. Therefore, it can be inferred that investment recovery yields advantages in terms of both financial and environmental performance (Choi et al., 2017).

According to Abdul et al. (2017), there is a contention that the use of green supply chain approaches does not constitute a requisite for attaining a competitive advantage or enhancing economic or financial performance. The correlation between green legislation and economic competitiveness lacks substantial development. According to Chan et al. (2017), The drivers of economic or financial performance in a business is controlled by:

- Return on investment (ROI) after tax.
- Growth in ROI
- Sales growth
- Return on sales.
- Growth in return on sales

2.5.3 Operational performance

Operational performance pertains to the ability of a company to effectively fulfil its customers' requirements for timely delivery, superior quality, and adaptability, all while maintaining cost efficiency. It serves as a standard against which the firm's competitiveness in the market is evaluated. Operational performance encompasses the strategic dimensions through which a corporation determines its competitive approach. Furthermore, through the use of reverse logistics, environmental management strategies save operational costs (Famiyeh et al., 2018). According to Khan (2018), the use of GSCM methods can enhance

the operational performance of firms through the improvement of product quality and delivery service. Due to client demand, customer pressure has long been considered as a crucial driving element because companies have no choice but to manufacture green products to meet customer demand (Abdul et al., 2017). There is no considerable improvement in company economic performance and just a slight improvement in operational and environmental performance, according to the research (Abdul et al., 2017).

2.6 Theoretical Reviews

2.6.1 Ecological Modernization Theory

The theoretical framework of ecological modernization theory (EMT) originates from sociology theory and has subsequently been extended to encompass policy and organizational theories (Spaargaren & Mol, 1992). The Eco-innovation and Modernity Theory (EMT) serves as a comprehensive framework that aims to simultaneously promote economic progress and environmental conservation using innovative strategies and technical advancements (Jänicke, 2008; Murphy & Gouldson, 2000).

The utilization of Environmental Management Tools (EMT) has been commonly observed in the context of enterprises' environmental planning and the implementation of production methods aimed at reducing the environmental footprint of major manufacturers (Murphy, 2000). According to Jänicke (2008), German companies who used ecologically modernized strategies experienced improvements in both their economic and environmental performance. An ecological modernization (EM) conceptual framework for Green Supply Chain Management (GSCM) is presented by Murphy and Gouldson (2000). Eco-design, updated gear, vendor involvement, and ISO14001 certification are only some of the latent variables accounted for in this approach.

Green buying and green manufacturing practices used by businesses are seen as essential to advancing the eco-supply chain, as stated by Gibbs (2000). The purpose of these actions is to improve ecological and monetary outcomes. Manufacturers can be incentivized to adopt GSCM practices by means of ecological rules and policies, according to EMT (Jänicke, 2008), which highlights the importance of governments establishing appropriate institutional frameworks and legal structures to promote GSCM-related practices (Kassolis, 2007).

According to Gibbs (2000), there is a scholarly consensus that EMT serves as the fundamental framework for the incorporation of environmental policies into manufacturing enterprises. This integration of environmental policies is considered crucial for the development of GSCM, as highlighted by Berger et al. (2001). From an EMT perspective, the implementation of GSCM is in accordance with the notion of environmental innovation. Manufacturers adopt GSCM by incorporating technological advancements, which include both hardware (such as cleaner production equipment) and software (such as enhanced supplier collaboration in eco-design) innovations (Zhu et al., 2010c). Industrial ecology, an important field that encompasses GSCM, is seen as a vital element in the pursuit of sustainable development within the framework of ecological modernization (Huber, 2000).

Studies grounded in Ecological Modernization Theory (EMT) shed light on how environmental policies can foster the adoption of Green Supply Chain Management (GSCM) and substantiate that GSCM can yield both economic and environmental benefits (Hall, 2001). In a similar vein, Revell (2007) employs EMT to elucidate the correlation between firms' enhancement of manufacturing processes from an ecological standpoint and

their overall performance. Revell explains that by embracing eco-modernization strategies for machinery and processes, companies can curtail solid waste, diminish hazardous materials, conserve energy, and cultivate customer loyalty, thereby enhancing their performance. EMT underscores the significance of eco-modernizing machinery and processes as a foundational aspect in comprehending and defining GSCM practices.

2.6.2 Resource Based View

According to the resource-based view, the perspective on competitive advantage posits that a lasting competitive edge can be developed by effectively using unique resources that possess characteristics such as rarity, value, inimitability, and non-substitutability (Hart & Dowel, 2010). According to Helfat and Peteraf (2003), a firm's resources can be described as a comprehensive collection of assets, capabilities, organizational processes, attributes, information, and knowledge that are under the control of a business. These resources enable the firm to develop and implement strategies with the goal of improving efficiency and effectiveness, ultimately enhancing its competitiveness. In further elaboration of this notion, Helfat and Peteraf (2003) as well as Hart and Dowel (2010) have expanded upon the resource-based view by integrating dynamic capacities and natural resources into the framework.

In contrast to the ecological modernization theory (EMT), the resource-based view (RBV) presents a different perspective on GSCM. While EMT focuses on integrating eco-modernizing machinery and processes, RBV emphasizes the role of GSCM as a resource that can offer customers quality, flexibility, and environmental performance (Vachon & Klassen, 2006b). The development of these operational capacities by implementing environmentally sustainable practices in supply chains enhances the value, scarcity,

inimitability, and non-substitutability characteristics of the Resource-Based View (RBV) theory (Helfat & Peteraf, 2003). Vachon and Klassen (2006b) assert that the integration of ecological issues into management practices has the potential to yield unique resources, which can contribute to improved overall performance and have a significant positive effect on the environment.

Presenting a model of GSCM with firm performance as the outcome variable, Vachon and Klassen (2006b) lay out well-defined explanatory variables linked to environmentally conscious practices. In a similar vein, Lai et al., (2010) identify green manufacturing, green procurement, and green distribution as essential strategic resources that companies can leverage to attain a competitive edge. Using the Resource-Based View (RBV) framework, Sarkis (2009) describes GSCM as a strategic resource that has the potential to enhance a company's reputation, image, and financial performance.

It is noteworthy that the advantages associated with implementing sustainable practices in the supply chain extend beyond the upstream stages of vendor management, contrary to the assertions made by the Ecological Modernization Theory. Alternatively, in subsequent stages involving customers, they may possess greater significance, particularly in relation to green distribution and the capacities and assets of green marketing (Lai et al., 2010; Shang et al., 2010). Other studies including (Cheng & Tang, 2010; Hart & Dowel, 2010; Lambert & Burduroglu, 2000; Stock et al., 2002), have conducted examinations using the Resource-Based View (RBV) framework. These studies collectively recognize environmentally oriented reverse logistics practices as crucial intangible assets for firms. These practices have the potential to enhance performance through various means, such as improving the firm's image, increasing efficiency and effectiveness in managing returned

materials, reducing costs associated with regulatory compliance, and generating new revenue streams through the sale or recycling of reclaimed products. In this context, various indicators are employed to assess environmentally friendly practices within the supply chain. These indicators include the implementation of eco-labeling on products, reduction of packaging, recycling, and reusing waste materials, and establishing collaborative relationships with suppliers to promote eco-design.

Lai et al., (2010), Gold et al., (2010), and Sarkis et al., (2010) delve into the realm of green procurement practices, encompassing factors like preferences for recycled products, supplier base environmental audits, ISO 14001 compliance as vendor selection criteria, inclination towards resource-efficient products, and collaboration with suppliers for environmental issue resolution. These researchers view these practices as distinctive resources held by firms, capable of fostering cost-effectiveness and providing an environmental edge to an enterprise.

In the sphere of environmentally conscious reverse logistics within greening supply chains, the examination extends to how internal organizational resources function as mediators in the relationship with external forces (Sarkis, Gonzalez, & Adenso, 2010). For instance, internal capabilities like training, which is a significant investment, are challenging to substitute and replicate. According to Lai et al. (2010), these competences empower organizations to efficiently tackle a range of supply chain demands. On the other hand, the lack of these capabilities and resources presents challenges in implementing ecologically focused reverse logistics practices (Sarkis et al., 2010; González-Torre et al., 2009). According to González-Torre et al., (2009), the resources mentioned are not easily obtainable, making them valuable for companies that have implemented GSCM practices.

2.7 Empirical Reviews

In their study, Choi, and Hwang (2015) investigated the moderating effect of collaborative skill on the association between GSCM practices and business performance in the specific setting of South Korea. The central objective of this study was to investigate the impact of collaborative capabilities on the relationship between GSCM practices and business performance. This study utilized hierarchical regression analysis to examine data obtained from a survey conducted with a sample of 230 manufacturers based in South Korea. The analysis findings indicate that implementing GSCM practices has the capacity to improve the firm's environmental and financial performance. Furthermore, the results highlight the need of corporations engaging their partners in the adoption of GSCM to produce a synergistic effect, which in turn can lead to improved financial performance.

In a study undertaken by Feng, Yu, Wang, Wong, Xu, and Xiao (2017), an assessment was carried out to examine the mediating effects of environmental and operational performance on the relationship between GSCM and financial performance. The postulated associations were examined by analysing survey data collected from a cohort of 126 automotive firms in China. The outcomes indicate that GSCM, as an essential strategy within the supply chain, exhibited a significant and positive association with both environmental and operational performance, ultimately resulting in an indirect enhancement of financial performance.

Saad and Siddiqui (2019) examined how GSCM affects the performance of manufacturing industries in Karachi, Pakistan. This research investigated the progress in identifying which performance factors influence the implementation of Green Supply Chain Management practices within firms. A survey questionnaire was employed to gather data, distributed

among 200 employees from various organizations in Karachi engaged in supply chain management activities. Structural Equation Modeling was utilized to analyze the data. The findings revealed that the environmental and financial performance of organizations had no statistically significant connection with green supply chain management. On the other hand, organizational performance displayed a positive and significant influence.

The study conducted by Novitasari and Agustia (2021) examined the mediating function of green innovation in the relationship between GSCM and business performance in the context of Indonesia. The present study utilised data obtained from companies that were listed on the PROPER programme and registered on the Indonesia Stock Exchange, covering the time frame from 2010 to 2018. Researchers used a purposive selection strategy to select 488 businesses for their sample. Several noteworthy results emerged from the investigation. To begin, it was found that GSCM promoted eco-friendly development. Second, eco-friendly innovation was found to boost productivity within businesses. Third, GSCM was found to not have any causal impact on business performance. Finally, the role of green innovation as a mediator between GSCM and business performance was established.

The impact of green supply chain practises on company sustainability performance in Pakistan was studied by Sarwar, Zafar, Hamza, and Qadir (2021). The purpose of this research was to examine how different GSCM factors affect financial, ecological, and social outcomes. This study looked at five different aspects of being green: production and refurbishment processes, procurement practises, environmental management inside the company, environmental education, and the return on investment. The researchers devised a questionnaire that probed respondents' knowledge of both environmental best practises

and key performance indicators. The maximum likelihood approach of factor analysis was used to analyse the survey data collected from businesses in Pakistan. The results demonstrate the positive impact GSCM has on environmental, economic, and social outcomes. This study serves as evidence that organizations are cognizant of the potential to enhance their performance by adopting green supply chain practices.

2.8 Hypothesis Development

2.8.1 Green supply chain management and Environmental Performance

Congruent with the principles of ecological modernization theory (EMT), which aims to guide firms in environmentally conscious planning and the reconfiguration of production processes to mitigate the environmental impact of major manufacturers, this dimension pertains to the influence of environmental factors on firm activities. Previous research has consistently indicated a perceived positive correlation between green supply chain management practices and environmental performance (Beamon, 1999). The introduction of green practices has been instrumental in diminishing environmental incidents such as material waste production and liquid waste, leading to enhanced organizational performance and public health benefits (Das, 2018). In this regard, firms must proactively identify environmental concerns across various domains including procurement, manufacturing, and transportation (Azevedo et al., 2011). By strategically minimizing resource usage and preventing environmental contamination through the proper management of hazardous waste in soil, air, and water, companies can contribute to the reduction of environmental pollution. Consequently, a firm's commitment to environmental performance signifies its capacity to curtail hazardous substances, pollution,

environmental mishaps, and the generation of solid waste (Esfahbodi, Zhang, & Watson, 2016).

H1: There is a significant positive relationship between Green Supply Chain Management Practices and Environmental Performance.

2.8.2 Green supply chain management and Economic Performance

Economic performance centers on a firm's capacity to curtail costs associated with materials, water treatment, energy consumption, waste disposal, and minimize instances of environmental mishaps (Micheli et al., 2020). Within this dimension, the focus extends to aspects like sales and profitability. According to (Mutingi et al., 2014), the adoption of green practices led to an improvement in the economic performance of organizations. However, differing opinions have emerged, suggesting that the impact of GSCM practices on an organization's sales and profitability performance may not be positive in the short term. There is a contention that the implementation of practices such as green procurement could potentially result in an increase in product costs, which in turn may have a detrimental impact on the financial performance of a company (Cousins et al., 2019). However, the NRBV argues that incorporating environmentally friendly practices into an organization can result in economic advantages through the reduction of energy costs, waste reduction, and enhancement of business reputation and consumer loyalty. Consequently, this approach enables the firm to attract a broader customer base, thereby enhancing financial performance outcomes. It is therefore hypothesized that:

H2: There is a significant positive relationship between GSCM Practices and Economic Performance.

2.8.3 GSCM practices and Operational Performance

Laari (2016) asserts that various characteristics of a firm can influence its operational performance, while Green Supply Chain Management (GSCM) practices significantly affect the operational performance of organizations. Furthermore, Song et al., (2017) have highlighted that different dimensions of GSCM influence a firm's operational performance. Mafini and Loury-Okoumba (2018) hold the view that aspects like green manufacturing, reverse logistics, green purchasing, and environmental collaboration have a robust correlation with operational performance. In the realm of research, Laari (2016) conducted a study with the objective of delving into the implications of green supply chain management practices. The outcomes of this research underscored a positive connection between firm performance and the adoption of green supply chain management. The findings distinctly indicated that while various characteristics of a firm can influence operational performance, the integration of green supply chain management practices significantly influences the operational performance of an organization.

H3: There is a significant positive relationship between GSCM Practices and Operational Performance.

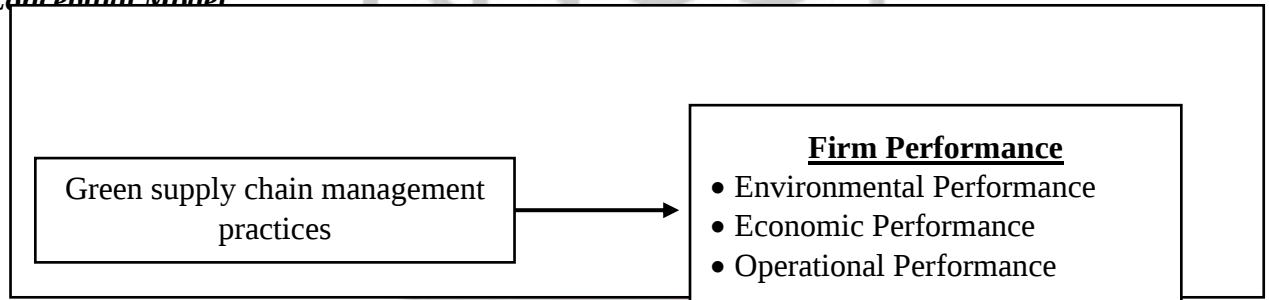
2.9 Conceptual Framework

According to Hennink, Hutter, and Bailey (2020), a conceptual framework is a fundamental structure that encompasses the concepts incorporated in a research study. It can be visually represented through a diagram consisting of interconnected boxes, with arrows denoting potential relationships between the concepts that the researcher intends to investigate in greater depth. An effective conceptual framework facilitates the comprehension of the various components pertaining to the study subject at hand, as well as their

interrelationships. The study developed and presented a model depicting the effect of GSCM practices on firm performance (Environmental, Financial and Operation performance) in Ghana. The model is presented in Figure 1.

Figure 1

Conceptual Model



Source: Author, 2022.



CHAPTER THREE

METHODOLOGY

3.0 Introduction

This section defines the basic research tactics employed to answer the study's research questions such as the description of the research design, population, sampling procedure and sample size, data collection, data analysis, validity and reliability and ethical considerations.

3.1 Research Design

There are three (3) basic approaches to research, according to Kothari (2004) namely quantitative, qualitative, and mixed method approaches. The current study employed a quantitative method with cross-sectional survey design to investigate the effect of green supply chain management practices on the performance of firms in Ghana. Kumar (2011) asserts that quantitative study designs possess attributes of precision, structural coherence, established validity and dependability, as well as the capacity for accurate description and recognition. The utilization of the quantitative technique was motivated by two distinct factors. Firstly, it ensures objectivity by removing the effect of the researchers' ideas on respondents' responses. Secondly, because of its structured methods. A research design, according to Creswell (2003), is the system, framework, or plan that is used to provide responses to research questions. According to Kothari (2004), a research design refers to the systematic arrangement of conditions for the collection and analysis of data, with the aim of balancing the study's relevance to its objective and efficiency in procedures. Kothari (2004) posits that the research design serves as the overarching framework that guides the

execution of research, encompassing the strategies for data collecting, measurement, and analysis. The present study employed a cross-sectional descriptive research approach to investigate the impact of GSCM practices on company performance in the context of Ghana. The primary goal of descriptive research is to describe the situation as it currently exists. The primary characteristic of this approach is the absence of researcher control on variables, limiting their role to reporting on observed or ongoing phenomena (Kothari, 2004). Descriptive research design also enabled the study to gather data from large number of respondents using survey methods.

3.2 Population of the Study

Kreuger and Neuman (2006) define a population as a large, encompassing group consisting of numerous cases, from which a sample is selected. According to Kumar (2011), target population refers to the total set of people or things from which researchers want to infer their findings. The target population of this study was made up of all firms operating in Greater Accra, Ghana.

3.3 Sampling procedure and Sample size

Sampling refers to the systematic procedure of selecting a subset, or sample, from a larger population with the purpose of estimating or predicting the prevalence of an unknown variable, situation, or result within the larger population (Kumar, 2011). The study engaged a non-probability sampling technique to draw the study respondents from the target population. Specifically, the study utilized purposive sampling technique. Managers of firms operating in Ghana who are willing and readily available to provide pertinent information as requested by the study will be chosen using the convenience sampling technique. Many quantitative investigations, according to Delice (2010) and Altunışık et

al., (2004), require a sample size of 30 to 500 at a 5% confidence level. As a result, the study's sample size was made up of 150 managers of firms operating in Accra.

3.4 Data Collection

3.4.1 Types and Sources of Data

There are two types of data sources, according to Kumar (2011): primary and secondary data sources. In this study, data was collected from a primary source only (i.e., managers of firms operating in Ghana).

3.4.2 Methods of Data Collection

According to Kothari (2004), data collection begins once a research problem has been identified and a study design/plan has been established. E-questionnaires were utilized to collect data from study participants in this investigation. This indicates that the survey was performed via a Google form link distributed across social media networks, namely WhatsApp, Facebook and Telegram. However, data gathering spanned a three (3) weeks period after which sorting, coding, and data analysis commenced.

3.4.3 Instrument for Data Collection

A structured (closed-ended) questionnaire was deployed as the main data gathering tool for this study. The questionnaire was adapted from other authors as well as literature review (Bu, Dang, Wang, Liu, & Health, 2020; Das, 2018; Choi & Hwang, 2015). The final questionnaire was arranged into three (3) main sections as follows:

Section A: GSCM practices used by firms in Ghana were assessed in this section. The predictor variable green supply chain management (GSCM) practices were measured by the green practices identified in Bu, Dang, Wang, Liu, and Health (2020) and Das (2018).

Twenty-five (25) items measured this variable, and the items were scored on a seven-point Likert scale from the end points of 1 – Strongly disagree to 7 – Strongly agree.

Section B: This section measured the performance of firms in Ghana based on three proxies (environmental, economic, and operational). The criterion variable (firm performance) was measured by the scales identified in Choi and Hwang (2015). Fifteen (15) items measured this variable, and the items were scored on a seven-point Likert scale from the end points of 1 – Strongly disagree to 7 – Strongly agree.

Section C: This section assessed the background of the sampled firms such as the industry the firms belong to, number of years the firm existed and the number of employees in the firms.

Section D: The demographic characteristics of the respondents such as gender, age, educational attainment and job tenure were assessed in this section.

3.5 Data Analysis

The data that was gathered was analyzed in accordance with the research aims and questions outlined in the introduction section of the study. The study employed both descriptive and inferential statistics to establish its findings. The demographic data of respondents was assessed using descriptive statistics, specifically frequency distribution. In this study, mean scores and standard deviation were utilized to represent the implementation of GSCM practices and the variables related to business performance. Furthermore, a regression analysis was performed to determine the direct impact of GSCM practices on the firm performance of companies operating in Ghana. The data analysis techniques employed in this study were IBM SPSS 26 and SmartPLS 3 software.

3.6 Validity and Reliability

According to LoBiondo-Wood and Haber (2013), validity refers to the extent to which a measurement instrument accurately captures the attribute of a given notion. The construct validity of a research instrument refers to its capacity to accurately measure the intended construct (Cooper & Schindler, 2001). When a measurement instrument is deemed legitimate, it effectively and properly represents the concept or construct that is being measured. Reliability and validity are two distinct properties of a measure; therefore it is possible for a measure to exhibit reliability without demonstrating validity. Consequently, the presence of validity does not necessarily guarantee good reliability of the instrument. A valid instrument, on the other hand, is reliable (LoBiondo-Wood & Haber, 2013). Previous research has proven the validity of both the green practices and firm performance scales (Bu, Dang, Wang, Liu, & Health, 2020; Das, 2018; Choi & Hwang, 2015). Following the resolution of validity concerns, it is imperative to inquire about the reliability of the instrument. The consistency, accuracy, precision, stability, equivalence, and homogeneity of a research instrument are characterized by the amount to which the instrument provides the same results on repeated measures (LoBiondo-Wood & Haber, 2013). The internal consistency and validity of the two scales (green practices and firm performance) were verified using a confirmatory factor analysis (CFA).

3.7 Ethical Considerations

According to Kumar (2011), research ethics can be divided into two categories: ethics between researchers and respondents and ethics between researchers and other researchers. The ethical principles of beneficence, fairness, justice, and respect for study participants were appropriately adhered to. To address the ethical concern of plagiarism among

researchers, the study implemented deliberate measures to appropriately attribute any external ideas, sentences, thought patterns, expressions, data, figures, charts, or methodologies in accordance with the citation guidelines outlined in the 7th edition of the American Psychology Association.



CHAPTER FOUR

DATA ANALYSIS, PRESENTATION AND DISCUSSION

4.0 Introduction

This chapter presents the analysis of results and discussions of finding relative to prior literature. As proposed by Kumar (2011) and Morris, Fitz-Gibbon, and Freeman (1987), the study findings were structured and presented according to the research inquiries stated in the first chapter of this study.

4.1 Response Rate

Mugenda and Mugenda (2003) noted that in quantitative studies, a response rate of 50% is adequate for analysis and reporting; a rate of 60% is good and a response rate of 70% and over is excellent. The current study targeted 150 managers of firms in Ghana with e-questionnaires. Ninety-four (94) responses were duly received, indicating an excellent response rate of 62.6%.

4.2 Demographic Characteristics

4.2.1 Firm Background

The outcomes explained in Table 1 distributes the business profile of the all the firms that participated in the study. As evident from Table 1, majority of the firms are into manufacturing (44.7%), followed by agricultural/agribusinesses (30.9%) and firms offering services (19.1%). The minority 5.3% were dealing in food, drink, cosmetics and clothing. Majority of the businesses (94.6%) have also been in existence for 1-30 years whereas the rest 5.4% were over 40 years old with majority of the firms (67%) having between 6-99 employees.

Table 1: Firm Background

Profile	Frequency (N)	Percent (%)
<i>Business type (MR):</i>		
Manufacturing	42	44.7
Agricultural/Agribusiness	29	30.9
Service	18	19.1
Others	5	5.3
<i>Business age:</i>		
1 – 10 years	50	53.2
11 – 20 years	17	18.1
21 – 30 years	22	23.4
41 – 50 years	1	1.1
50 years and above	4	4.3
<i>Number of employees:</i>		
1 – 5 employees	12	12.8
6 – 29 employees	35	37.2
30 – 99 employees	28	29.8
100 and above employees	19	20.2
Total	94	100.0

Source: Survey Data, 2022.

4.2.2 Respondent's Background

The demographic characteristics of the respondents explored in the study includes gender, age, educational level, years of working experience and managerial level. Out of a total of 94 managers who participated in the study, 60% were males and the rest 40% were females. Further, exhibited in Table 2 is the age distribution of the respondents. The respondents' age distribution was a vital feature in the process of understanding green supply chain management practices and firm performance. This was so because different age groups were expected to comprehend the study variables differently yet considered vital to the study. The results in Table 2 illustrates that majority of the managers ($N = 42$) representing a percentage of 45% were between the age range of 40 – 49 years, followed by 32% of the

who were between 30 – 39 years and 21% who reported age limits of 50 years or more. The minority 2% of the respondents were within the age range of 20-29.

In relation to the educational level, all the study participants (managers) hold various tertiary certificates such as diploma/HND (14%), 1st degree (47%) and 2nd degree or more (39%).

Also, as espoused in Table 2, majority of the respondents, represented by 48% had between 2-5 years working experience whilst 36% had been serving at their various firms between 6-10 years. Also, 15% had been in active service for more than 10 years and the minority 1% had below 2 years of working experience.

The final demographic characteristic assessed in the study was the managerial level of the managers. As evident from Table 2, majority are middle level managers, represented by 62%, followed by top level managers, represented with 32% and the minority 6% were supervisors in their respective firms. These outcomes are displayed in Table 2.

Table 2: Respondent's Background

Demographics	Frequency	Percent
<i>Gender:</i>		
Female	38	40.0
Male	56	60.0
<i>Age limits:</i>		
20-29	2	2.0
30-39	30	32.0
40-49	42	45.0
50 or more	20	21.0
<i>Education level:</i>		
Diploma/HND	13	14.0
1st Degree	44	47.0
2nd Degree or more	37	39.0
<i>Years of working experience:</i>		
Less than 2 years	1	1.0

2-5 years	45	48.0
6-10 years	34	36.0
More than 10 years	14	15.0
Managerial level:		
Supervisor	6	6.0
Middle level	58	62.0
Top level	30	32.0
Total	94	100.0

Source: Survey Data, 2022.

4.3 Validity and Reliability of Scales

The analysis commenced with an assessment of the 41-item measurement scale (Hair, Risher, Sarstedt, & Ringle, 2019). Cronbach's alpha (CA) greater than 0.7, composite reliability (CR) greater than 0.60 were used to assess scale reliability whereas convergent validity was evaluated through CFA using the average variance extracted (AVE) > 0.5 (Asiamah, Mensah, & Danquah, 2018). The scale assessment process eliminated 10 items which reported outer loading less than 0.7 (Henseler, Ringle, & Sinkovics, 2009). As shown in Table 3, the 31 remaining scale items reported loadings above 0.7 and the construct reliabilities have values above 0.7. The AVE > 0.5 benchmark for all the constructs were also met. Hence, we can surmise that both the reliability and convergent validity of the constructs have been confirmed.

Table 3: Reliability and Convergent Validity

Construct	Items	Loading	CA	CR	AVE
Green Purchasing (GP)	GP1	0.879	0.959	0.968	0.859
	GP2	0.913			
	GP3	0.946			
	GP4	0.953			
	GP5	0.940			
Green Manufacturing (GM)	GM2	0.734	0.849	0.892	0.624
	GM3	0.852			
	GM4	0.799			
	GM5	0.801			

	GM6	0.758			
Internal Environment (IE)	IE1	0.856	0.840	0.903	0.756
	IE2	0.911			
	IE3	0.840			
Environmental Education (EE)	EE1	0.828	0.788	0.862	0.611
	EE2	0.750			
	EE3	0.803			
	EE4	0.741			
Investment Recovery (IR)	IR3	0.918	0.923	0.951	0.866
	IR4	0.940			
	IR5	0.934			
Environmental Performance (ENV)	ENV1	0.976	0.947	0.974	0.950
	ENV2	0.973			
Economic Performance (ECO)	ECO1	0.774	0.759	0.846	0.579
	ECO2	0.773			
	ECO3	0.764			
	ECO5	0.732			
Operational Performance (OP)	OP2	0.788	0.866	0.903	0.653
	OP3	0.865			
	OP4	0.883			
	OP5	0.733			
	OP6	0.761			

Source: Survey Data, 2022.

4.3.1 Fornell-Larcker Criterion

The study also assessed the discriminant validity by examining the square roots of the average variance extracted (AVE) for each construct and comparing them with the correlations between other constructs. This analysis aimed to establish whether each latent variable exhibited a stronger association with its own measurement variables or with variables from other constructs (Fornell & Larcker, 1981). The presence of a correlation between components that surpasses the square roots of their average variance extracted (AVE) suggests that these constructs may lack sufficient discriminant validity. The study observed that the absolute correlations for each construct did not surpass the square roots of the average variance extracted (AVEs). Consequently, the study concluded that the constructs exhibited satisfactory discriminant validity.

Table 4: Correlation among Constructs

Variables	ECO	ENV	EE	GP	GM	IE	IR	OP
ECO	0.761							
ENV	0.302	0.974						
EE	0.545	0.366	0.782					
GP	0.271	0.671	0.361	0.927				
GM	0.615	0.311	0.498	0.273	0.790			
IE	0.631	0.390	0.577	0.393	0.408	0.870		
IR	0.234	0.608	0.342	0.681	0.230	0.378	0.931	
OP	0.435	0.359	0.643	0.361	0.400	0.515	0.348	0.808

Source: Survey Data, 2022.

4.4 The GSCM practices utilized by firms in Ghana.

The first research question of the study sought to assess the GSCM practices utilized by firms Ghana. The study participants were asked to indicate their level of agreement to statement relating to green practices used by their respective firms. As evident from Table 5, the respondents identified green manufacturing, and remanufacturing ($M = 5.55$, $S.D. = 1.27$) and internal environmental management ($M = 5.61$, $S.D. = 1.37$) as the main supply chain management practices utilized by their organizations. Also, the organization fairly engages in green purchasing ($M = 5.46$, $S.D. = 1.48$), environmental education ($M = 5.37$, $S.D. = 1.17$) and investment recovery ($M = 5.49$, $S.D. = 1.50$). Thus, we can deduce that the GSCM practices mainly utilized by firms Ghana are green manufacturing and remanufacturing and internal environmental management.

Table 5: Green Supply Chain Management Practices

S/N	Statements	Mean	Std. Dev.
Green Purchasing:			
1.	Providing design specification to suppliers which include an environmental requirement for purchase items	5.5000	1.54328
2.	Ensure that the purchased product does not contain environmentally unacceptable substances such as lead and other harmful or hazardous materials.	5.4574	1.50029

3. Consideration of suppliers having ISO 14001 certification	5.5000	1.44244
4. Environmental assessment for the supplier's internal management.	5.3830	1.45990
5. Suppliers are required to utilize environmental packaging: i.e., degradable and non-hazardous.	5.4681	1.43461
Total	5.4617	1.47610
<i>Green Manufacturing and Remanufacturing:</i>		
6. Reduce noise pollution during the manufacturing process.	5.7340	1.22848
7. Controlling hazardous substances in the manufacturing process and exploitation of the available resources.	5.4362	1.23182
8. Process design focuses on minimizing the consumption of energy and natural resources in operations.	5.5745	1.21363
9. Recycling and reuse/recover valuable materials and components in the field of product design after the end of theirs.	5.2340	1.29868
10. Emphasizes the proactive and preventative maintenance to increase the operational efficiency of the equipment	5.7553	1.39651
Total	5.5468	1.27382
<i>Internal Environmental Management:</i>		
11. The commitment of GSCM from senior managers	5.3936	1.48265
12. Support from mid-level managers for GSCM	5.5532	1.30851
13. Cross-functional collaboration to attain environmental improvements	5.8936	1.30728
Total	5.6135	1.36615
<i>Environmental Education:</i>		
14. Environmental awareness seminar for suppliers	4.9894	1.24861
15. Natural environmental seminars for executives/top management	4.9255	1.24641
16. Environmental training and education programs for managers and employees	5.6170	1.21908
17. Participation in government-subsidized natural environmental programs	5.9468	.96572
Total	5.3697	1.16996
<i>Investment Recovery:</i>		
18. Sales of scrap and used materials.	5.5000	1.54328
19. Sales of excess capital equipment.	5.4574	1.50029

20. Collecting and recycling end of life products and materials	5.5000	1.44244
Total	5.4858	1.49534

Source: Survey Data, 2022.

4.5 The performance level of firms in Ghana

The second objective of the study aimed to evaluate the performance level of firms in Ghana Limited. The study participants were asked to indicate their level of agreement to statement relating to the level of performance of their respective firms, relative to three performance measures (environmental, economic and operational performance). As explained in Table 6, the economic performance level ($M = 5.53$, $S.D. = 1.30$) of the firms was high. However, the firms performed averagely in terms of environmental performance ($M = 5.43$, $S.D. = 1.45$) and operational performance ($M = 5.21$, $S.D. = 1.24$). In a nutshell, the overall performance of firms in Ghana is average.

Table 6: Performance level of firms in Ghana

S/N	Statements	Mean	Std. Dev.
<i>Environmental Performance:</i>			
1.	Reduction in the discharge of noxious chemicals into the air and water	5.3830	1.45990
2.	Reduction in wastage and recycling of materials in the manufacturing process	5.4681	1.43461
Total		5.4256	1.44726
<i>Economic Performance:</i>			
3.	Reduction in the cost of purchase materials	5.5745	1.21363
4.	Reduction in water and energy consumption cost	5.2340	1.29868
5.	Reduction in treatment and waste expulsion costs	5.7553	1.39651
6.	Reduction of waste disposal costs	5.5532	1.30851
Total		5.5293	1.30433
<i>Operational Performance:</i>			
7.	The capability to make rapid product mix changes	5.5213	1.21575
8.	An outstanding on-time delivery record to our customer	5.0106	1.29095
9.	The lead time for fulfilling customers' orders is short	4.9894	1.24861

10. Provide a high level of customer service	4.9255	1.24641
11. Reduce waste in production processes	5.6170	1.21908
Total	5.2128	1.24416

Source: Survey Data, 2022.

4.6 The effect of GSCM practices on the Environmental Performance

The study engaged a simple linear regression analysis to determine the effect of GSCM practices on the environmental performance of firms Ghana. As evident in Table 7, the value of R-squared was 0.695. This implies that there was a variation of 69.5% in the environmental performance of firms in Ghana due to changes in GSCM practices. Also, the ANOVA illustrates the significance of the model by the value of the F-statistics, $F(1, 92) = 209.634, p < 0.05$. This implies that the model is fit to predict the effect of GSCM practices on the environmental performance of firms Ghana.

The findings in Table 7 further demonstrates that the coefficient of GSCM practices ($\beta = 0.266$) was positive. This indicates that GSCM practices were positively related to environmental performance. Hence, a unit increase in GSCM practices would lead to an increase in environmental performance by 0.266.

Additionally, based on the significance of the coefficient, GSCM practices ($\beta = 0.266, p < 0.05$) was statistically significant in predicting a change in the environmental performance of firms in Ghana at a significance level of 5%. Thus, we can surmise that there is a significant positive effect of green supply chain management practices on the environmental performance of firms in Ghana.

Table 7: Effect of GSCM practices on Environmental Performance

Environmental Performance	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	-1.219	.331		-3.685	.000

Green Supply Chain Practices	.266	.018	.834	14.479	.000
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R-Squared = .695 (Adj. R-Square = .692)

F (1, 92) = 209.634

Prob > F = 0.000

Source: Survey Data, 2022.

4.7 The effect of GSCM practices on the Economic Performance

The study employed a simple linear regression analysis to determine the effect of GSCM practices on the economic performance of firms in Ghana. As evident in Table 8, the value of R-squared was 0.386. This suggests that there was a variation of 38.6% in the economic performance of firms in Ghana due to changes in green supply chain management practices. Also, the ANOVA illustrates the significance of the model by the value of the F-statistics, $F(1, 92) = 57.918$, $p < 0.05$. This implies that the model is at best fit to predict the effect of green supply chain management practices on the economic performance of firms in Ghana.

The findings in Table 8 further establishes that the coefficient of GSCM practices ($\beta = 0.140$) was positive. This indicates that GSCM practices were positively related to economic performance. Hence, a unit increase in GSCM practices would lead to an increase in economic performance by 0.140.

Likewise, based on the significance of its coefficient, GSCM practices ($\beta = 0.140$, $p < 0.05$) was statistically significant in predicting a change in the economic performance of firms in Ghana at a significance level of 5%. Thus, we can infer that there is a significant positive effect of green supply chain management practices on the economic performance of firms in Ghana.

Table 8: Effect of GSCM practices on Economic Performance

Economic Performance	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	1.091	.330		3.301	.001
Green Supply Chain Practices	.140	.018	.622	7.610	.000
R-Squared = .386 (Adj. R-Square = .380)					
F (1, 92) = 57.918					
Prob > F = 0.000					

Source: Survey Data, 2022.

4.8 The effect of GSCM practices on the Operational Performance

The study again utilized a simple linear regression analysis to determine the effect of GSCM practices on the operational performance of firms in Ghana. As exhibited in Table 9, the value of R-squared was 0.406. This suggests that there was a variation of 40.6% in the operational performance of firms in Ghana due to changes in GSCM practices. Also, the ANOVA exemplifies the significance of the model by the value of the F-statistics, $F(1, 92) = 62.960$, $p < 0.05$. This implies that the model is fit to predict the effect of green supply chain management practices on the operational performance of firms in Ghana.

The findings in Table 9 further clarifies that the coefficient of GSCM practices ($\beta = 0.145$) was positive. This indicates that green supply chain management practices were positively related to operational performance. Hence, a unit increase in GSCM practices would lead to an increase in operational performance by 0.145.

Similarly, based on the significance of the coefficient, GSCM practices ($\beta = 0.145$, $p < 0.05$) was statistically significant in predicting a change in the operational performance of firms in Ghana at a significance level of 5%. Thus, we can infer that there is a significant

positive effect of green supply chain management practices on the operational performance of firms in Ghana.

Table 9: Effect of green supply chain management practices on Operational Performance

Operational Performance	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	.684	.329		2.080	.040
Green Supply Chain Practices	.145	.018	.637	7.935	.000

R-Squared = .406 (Adj. R-Square = .400)
F (1, 92) = 62.960
Prob > F = 0.000

Source: Survey Data, 2022.

4.9 Discussion of Results

The study explored the effect of the effect of GSCM practices on the firm performance in Ghana. The study was directed by three research inquiries. The first research inquiry of the study assessed the green supply chain management practices utilized by firms in Ghana. The study's findings revealed that the green supply chain management practices mainly utilized by firms in Ghana are green manufacturing and remanufacturing and internal environmental management.

The second research question of the study measured the level of performance of firms in Ghana relative to three performance measures (environmental, economic, and operational performance). The study found that whilst the economic performance of firms in Ghana was high, the environmental performance and operational performance were average.

The study's third objective established the effect of GSCM practices on the performance of firms in Ghana based on three hypotheses.

H1: There is a significant positive relationship between Green Supply Chain Management Practices and Environmental Performance

The first hypothesis of the study proposed that, there is a significant positive relationship between green supply chain management practices and environmental performance of firms in Ghana. From the third research objective, the study found that GSCM practices had a significant positive effect on the environmental performance of firms in Ghana. Hence, we accept the null hypothesis.

The findings of this study support the assertions made by Choi and Hwang (2015) regarding the moderating influence of collaborative competence on the relationship between GSCM practices and business performance in the context of South Korea. The study conducted shown that the use GSCM practices has the potential to improve both the environmental and financial performance of the organization. The results of this investigation are consistent with the findings of Feng et al., (2017). The researchers conducted a study to investigate the relationship between GSCM, environmental performance, operational performance, and financial performance. They revealed that GSCM, when embraced as a fundamental component of the supply chain strategy, exhibited a significant and positive correlation with environmental performance. This positive association indirectly contributed to the improvement of financial performance.

H2: There is a significant positive relationship between Green Supply Chain Management Practices and Economic Performance.

The second hypothesis of the study proposed that, there is a significant positive relationship between green supply chain management practices and economic performance of firms in

Ghana. From the third research objective, the study found that GSCM practices had a significant positive effect on the economic performance of firms in Ghana. Hence, we fail to reject the null hypothesis.

This finding aligns with the result presented by Sarwar et al. (2021), who conducted a study examining the influence of green supply chain practices on firm sustainability performance in Pakistan. Their research indicated that the adoption of GSCM practices positively affects various aspects of environmental, economic, and social performance.

H3: There is a significant positive relationship between Green Supply Chain Management Practices and Operational Performance.

The third hypothesis of the study proposed that, there is a significant positive relationship between green supply chain management practices and operational performance of firms in Ghana. From the third research objective, the study found that GSCM practices had a significant positive effect on the operational performance of firms in Ghana. Hence, we accept the null hypothesis.

The results of the study further corroborate the conclusions reached by Feng et al. (2017). In their research, the scholars investigated how environmental and operational performance serve as mediators in the connection between GSCM and financial performance. Their findings revealed that GSCM, functioning as an essential component of the supply chain strategy, exhibited a significant and positive correlation with operational performance. This positive association, in turn, contributed indirectly to the enhancement of financial performance.

CHAPTER FIVE

SUMMARY OF FINDINGS, CONCLUSION AND RECOMMENDATIONS

5.0 Introduction

This chapter presents the summary of the findings as presented in chapter four. It also concludes the study and further provides recommendations based on the study's findings.

5.1 Summary of Findings

The current study basically examined the effect of green supply chain management practices on firm performance in Ghana. Three (3) research questions guided the research. A quantitative research approach and a cross-sectional descriptive research design were used to investigate the relationship and effect of green supply chain management practices on the firm performance in Ghana.

5.1.1 The GSCM practices utilized by firms in Ghana.

The first objective of the study assessed the GSCM practices utilized by firms in Ghana. Using descriptive statistics, the study's findings revealed that green manufacturing and remanufacturing and internal environmental management are the main SCM practices utilized by firms in Ghana. Also, the organizations fairly engaged in green purchasing practices, environmental education, and investment recovery.

5.1.2 The performance level of firms in Ghana

The second research question of the study evaluated the performance level of firms in Ghana relative to three performance measures (environmental, economic, and operational performance). Using descriptive statistics, the study discovered that the economic performance of firms in Ghana was high whilst the environmental performance and

operational performance measures of the businesses were average. In a nutshell, the overall performance of firms in Ghana is average.

5.1.3 GSCM practices and firm performance

The third objective of the current study ascertained the effect of GSCM practices on the performance of firms in Ghana. Using regression analysis, the study found that green supply chain management practices have significant positive effect on firm performance (environmental, economic, and operational performance).

5.2 Conclusions

The current study explored the effect of GSCM practices on the performance of firms in Ghana. Even though the firms' main supply chain management practices are green manufacturing and remanufacturing, as well as internal environmental management, and that the company performed averagely in terms of environmental and operational performance measures, green supply chain management practices were found to predict a significant positive change in the performance of the sampled firms in Ghana. Thus, investing in GSCM practices can be beneficial to both the firms and the economy as whole.

5.3 Recommendations

The following recommendations for GSCM practices and firm performance have been tendered to the firms in Ghana based on the findings of this study.

Firstly, the study found that from the five main GSCM practices explored in the study, only green manufacturing and remanufacturing and internal environmental management were highly utilized by the firms in Ghana. It is therefore recommended that the management of the various firms invest in the other GSCM practices to reduce environmental pollution and further boost the performance of their various firms.

Secondly, the firms in Ghana performed averagely in terms of environmental and operational performance. Hence, it is advisable that these organizations prioritize the adoption of environmentally sustainable practices through the implementation of natural environmental seminars targeting executives and top management, as well as the establishment of environmental training and education programmes for managers and staff.



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APPENDIX

KNUST School of Business Department of Supply Chain and Information Systems A Survey on Green Supply Chain Management Practices and Firm Performance in Ghana

We researchers from the Kwame Nkrumah University of Science and Technology (KNUST) researching into green supply chain management practices and their influence on firm performance in Ghana. We believe responses from experienced managers like yourself would prove very useful for achieving our research objective.

Please note that this is academic research and the data provided for the study would be used only to address the above-stated objective. The study results will be generated using aggregated data from several companies, and the research report would not reveal the identity of any company or participant. That notwithstanding, and for confidentiality reasons, kindly do not indicate your name or your organization's name in the questionnaire. Only reflect on your personal experience as a Senior Manager in your company to respond to the statements/questions in the questionnaire. We can assure you that your responses will be anonymized and used only for statistical purposes. Again, your responses should be about the state of affairs in your company rather than what you expect to be happening in your company or its industry.

You are not obliged to participate in the study or respond to all the items in the questionnaire. The questionnaire has specific instructions to follow and scales to use to indicate your responses. Every statement/question included in the questionnaire is relevant, and although some appear quite similar, they are also unique in many ways, so kindly do

well to respond to each if you want to. The questionnaire will take about 10 minutes to complete. All questions and concerns about the research can be directed to MS Deborah Oforiwaa Arthur (0557628244/05748282906), a postgraduate student leading the research.

Thank you in advance for participating; your co-operation is much appreciated.

By continuing, you are consenting to participate.

Yours sincerely,

Dr. Emmanuel K. Anin

Project Supervisor

SECTION A: GREEN SUPPLY CHAIN MANAGEMENT PRACTICES

Kindly use the following scale to evaluate the statements in the subsequent tables (**1-Strongly disagree, 2-Disagree, 3-Somewhat disagree 4-Neutral, 5-Somewhat agree, 6-Agree, 7-Strongly agree**).

Choose the appropriate number as applicable

S/N	Green Supply Chain Management Practices	1	2	3	4	5
Green Purchasing						
1	Providing design specification to suppliers which include an environmental requirement for purchase items					
2	Ensure that the purchased product does not contain environmentally unacceptable substances such as lead and other harmful or hazardous materials.					
3	Consideration of suppliers having ISO 14001 certification					
4	Environmental assessment for the supplier's internal management.					
5	Suppliers are required to utilize environmental packaging: i.e., degradable and non-hazardous.					
Green manufacturing and remanufacturing						
6	Monitor and control environmental pollution such as drain emission					
7	Reduce noise pollution during the manufacturing process.					
8	Controlling hazardous substances in the manufacturing process and exploitation of the available resources.					
9	Process design focuses on minimizing the consumption of energy and natural resources in operations.					

10	Recycling and reuse/recover valuable materials and components in the field of product design after the end of theirs.					
11	Emphasizes the proactive and preventative maintenance to increase the operational efficiency of the equipment					
Internal environmental management						
12	The commitment of GSCM from senior managers					
13	Support from mid-level managers for GSCM					
14	Cross-functional collaboration to attain environmental improvements					
15	Conduct a seminar for awareness of the environment.					
16	Creation of environmental reports for internal assessment.					
Environmental education						
17	Environmental awareness seminar for suppliers					
18	Natural environmental seminars for executives/top management					
19	Environmental training and education programs for managers and employees					
20	Participation in government-subsidized natural environmental programs					
Investment Recovery						
21	Investment recovery (sale) of excess inventories/materials.					
22	Establishing a recycling system for used and defective products.					
23	Sales of scrap and used materials.					
24	Sales of excess capital equipment.					
25	Collecting and recycling end of life products and materials					

SECTION B: FIRM PERORMANCE

What is your level of agreement with the following statements that relate to your firm performance using a seven-point Likert scale? **(1-Strongly disagree, 2-Disagree, 3-Somewhat disagree 4-Neutral, 5-Somewhat agree, 6-Agree, 7-Strongly agree).**

S/N	Firm Performance Measures	1	2	3	4	5
Environmental Performance						
1.	Reduction in the discharge of noxious chemicals into the air and water					
2.	Reduction in wastage and recycling of materials in the manufacturing process					
3.	Enhancement of company's environmental position					
4.	Decrease in the frequency of environmental accidents/mishaps					
5.	Decreased consumption of harmful/toxic/hazardous material.					
Economic Performance						
6.	Reduction in the cost of purchase materials					
7.	Reduction in water and energy consumption cost					
8.	Reduction in treatment and waste expulsion costs					
9.	Reduction of penalty for violating environmental laws					
10.	Reduction of waste disposal costs					
Operational Performance						
11.	Quickly respond to changes in market demand					
12.	The capability to make rapid product mix changes					
13.	An outstanding on-time delivery record to our customer					
14.	The lead time for fulfilling customers' orders is short					
15.	Provide a high level of customer service					
16.	Reduce waste in production processes					

SECTION C: FIRM BACKGROUND

1. Which of the following best describe your firm-industry?

☐ Service ☐ Mining/Extraction ☐ Agricultural/Agribusiness ☐ Manufacturing ☐

Other.....

2. On average, how long has your firm existed.....Years
3. On average, how many employees does your firm have? Employees

SECTION D: RESPONDENT'S BACKGROUND

Kindly tell me about yourself in terms of

1. Gender ☐ Male ☐ Female
2. Age (years) ☐ 20 to 29 ☐ 30 to 40 ☐ 40 to 49 ☐ 50 or more
3. Education level ☐ Secondary school or related Certificate ☐ diploma/HND
☐ 1st Degree ☐ 2nd Degree or more
4. Number of years working in this firmYears
5. Managerial level ☐ Supervisor ☐ Middle (manager, e.g., head of department)
☐ Top (e.g. CEO, managing director)