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BY
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**THE IMPACT OF GREEN SUPPLY CHAIN MANAGEMENT PRACTICES
ON MANUFACTURING SMEs PERFORMANCE IN THE TAMALE
METROPOLIS. MODERATING ROLE OF SUPPLY CHAIN
COLLABORATION**

A Thesis Submitted to the Institute of Distance Learning, Kwame Nkrumah
University of Science and Technology in partial fulfillment of the requirements for
the degree of Master of Science in Logistics and Supply Chain Management

NOVEMBER, 2023

DECLARATION

‘I hereby declare that this submission is my own work towards the “**Master of Science** in Logistics and Supply Chain Management” Degree and that, to the best of my knowledge and belief, it contains no material previously published by another person nor material which has been accepted for the award of any other degree of the University, except where due acknowledgement has been made in the text’.

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ABSTRACT

The study focused on the impact of green supply chain management practices on manufacturing SMEs performance in the Tamale Metropolis. moderating role of supply chain collaboration. The study adopted a descriptive research design and non-probability sampling was used and the study sampled two hundred and eleven (211) respondents. Questionnaires were used mainly for data collection. The study used quantitative approach in analyzing the data. The study found out that the manufacturing SMEs do not design products to ensure that they have reusable and recyclable contents, neither do they use life-cycle assessment to evaluate the environmental load of products. Meanwhile the firms reduce power consumption in products during manufacturing and transportation and they employ eco-technological equipment and process during manufacturing. The study established that Also, the SMEs collaborate with suppliers to set up environmental goals and work with their suppliers to seamlessly integrate their inter-firm processes. Also, challenges that the manufacturing SMEs face were lack of government support, lack of alternate technology and fear of success and pressure of lower prices. The study concludes that, GSCM not only assist them to perform directly economically, but also help them to perform socially and environmentally, which raises both their own and the community in which they operate the quality of life. GSCM procedures therefore have an effect on the manufacturing SMEs performance. The study recommends that policymakers, in particular the government and other environmental regulatory bodies, should give the necessary impetus to enforce already-existing regulations and further develop specific national regulations that will support and exert pressure on Ghanaian manufacturing SMEs to adopt GSCM practices in the manufacturing sector.

DEDICATION

This dissertation is dedicated to my husband Mr. Alhassan ziad for his support and encouragement during the course of the study.

KNUST



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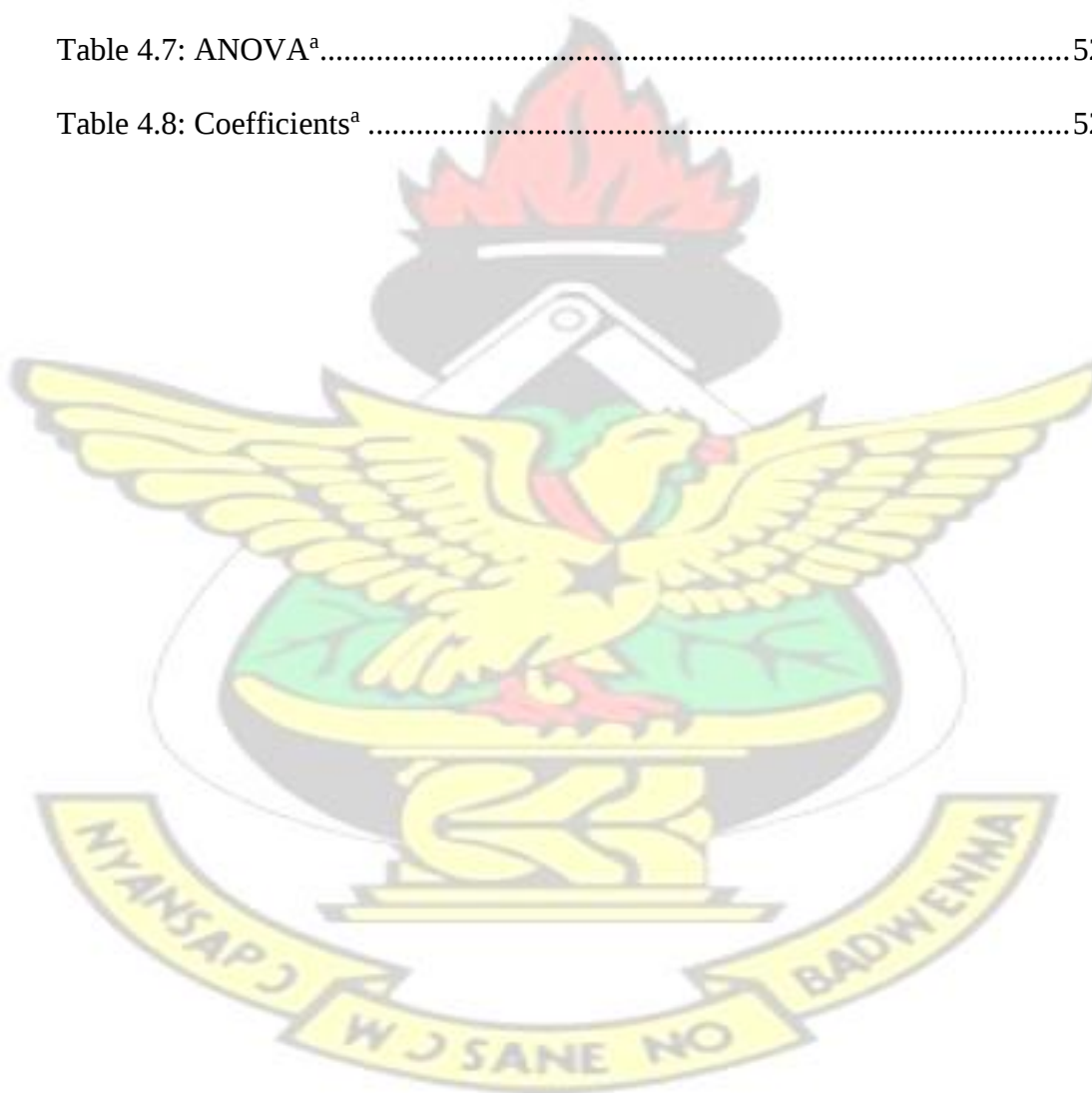
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CHAPTER ONE

INTRODUCTION

1.1 Background to the Study

Green supply chain management (GSCM), primarily in industrialized countries but also in developing ones, has grown in popularity over the past few decades (Gunasekaran, Subramanian and Rahman, 2015). The attempts of organizations and governments to prevent or reduce the devastating effects of industry-related activities on the environment are what have sparked this interest in GSCM (Wong, Wong and Boonitt, 2015). As a result, numerous organizations throughout the world have started to demonstrate a strong level of dedication to GSCM by putting into practice environmental strategies that are meant to stop or at least slow down environmental deterioration (Tiwari, Chang and Choudhary, 2015). By enhancing environmentally friendly goods and services over their entire lifecycles, practicing of GSCM expands the value of supply chain management (Ahi and Searcy, 2015; Gunasekaran, Subramanian and Rahman, 2015; Rostamzadeh et al., 2015). Green practices are included into organizational strategy to improve the effectiveness of the company (Srivastava, 2017).

The effect of green supply chain management practices (GSCM) on performance has lately gained significant recognition in the world of SMEs. As a result, SMEs that previously primarily prioritized financial gains are gradually realizing the need of preserving the surroundings through the adoption of continuous supply chain management (SSCM) initiatives (Chin et al., 2015). The idea of green supply chain management practices (GSCM practices) has been one-off the main SSCM efforts that

has arisen on the agenda of scholars, strategists, ethicists, and practitioners (Ghosh, 2017).

GSCM practices in SMEs are defined as the adoption of SMEs practices with no adverse environmental effects. They entail the deliberate coordination of environmental management drive throughout the stages of a product and address crucial SMEs concerns like the creation of green products with re-use and recycling components, pollution control, environmental protection, adherence to surroundings regulations, and waste management, (Rehman et al., 2016). GSCM procedures are based on the premise that SMEs produce hazardous substances in their efforts to meet customer needs; as a result, it is in their best interests to be aware of the impact of this pollution on natural resources, stakeholders, and the environment as a whole (Maruthi and Rashmi, 2015).

It is impossible to overstate how important the small- and medium-sized business (SMEs) sector has contributed to the success of a country. Asare (2014) claims that 85% of jobs in Ghana are provided by SMEs. However, despite this large contribution, the outlook for Ghana's SMEs in terms of the sector's environmental impact is bleak. The SMEs sector's gross domestic product (GDP) contribution from 2008 to 2011 was about 1.7%, but the sector's environmental costs were roughly 10% of GDP (UNEP, 2013). The manufacturing sector in Ghana contributes the most greenhouse gases, according to a report by the United Nations Environment Program (UNEP) (UNEP, 2013). The onus is therefore on Ghanaian SMEs to think about going "green" by adopting GSCM techniques in order to make up a greater proportion of this surrounding cost while also enhancing environmental, social, and economic performance. However, absent of the cooperation of crucial upstream supply chain colleagues (such as supplier collaboration) and downstream supply chain partners (such as GSCM practices),

businesses' decisions to adopt green initiatives may produce the results (customer collaboration). For instance, by working with suppliers, businesses can request or purchase eco-inputs or raw materials to increase the efficiency of SMEs (Kaliani-Sundram et al., 2018). Additionally, SMEs can use client feedback and suggestions through customer participation to produce eco-friendly products.

Ghanaian SMEs have not given environmental management practices the necessary attention. This backs up Jamian et al. (2012) asserted that, in contrast to major businesses, most SMEs in developing nations rarely embrace GSCM procedures because of ambiguity around the idea. As a result, most managers of SMEs in developing nations view GSCM techniques as ambiguous and rather challenging to implement (Zhan et al., 2018). There have been very few studies that have sought to connect GSCM practices to sustainable performance (Zhan et al., 2018; Rehman et al., 2016; Abdul-Rashid et al., 2017). GSCM has gained popularity in many nations, but there are still several areas that need more study, especially given that sustainable supply chain management has recognized greening the supply chain as a critical problem. (Green et al. 2012; Large and Thomsen, 2011). Research on GSCM still must be extended to small to medium enterprises (SMEs) as most studies conducted have been confined to large organisations (Ahi and Searcy, 2013). This study therefore seeks to assess the effect of green supply chain management practices on firm performance with a moderating role of supply chain collaboration.

1.2 Problem Statement

In relation to SMEs, their awareness of GSCM best practices is likewise greatly lacking, as is their care for the environment. Industries heavily contribute to environmental pollution, both consciously and unknowingly. The difficulties facing the SMEs sector are heightened by the rising concern over environmental sustainability (Urban and Naidoo, 2012). According to Rettie, Burchell, and Riley (2012) ecology still has an impact on business strategy in the twenty-first century, and the idea of GSCM practices seems to be ingrained with operational abilities that SMEs lack. Despite major government efforts to support the viability of SMEs, failure rates are still high (Fatoki, 2014). According to estimates, 71% of SMEs fail to continue operations for more than a year (Peyper and Liesl, 2013). Considering the context of SMEs failing more frequently, Urban and Naidoo (2012) claim that GSCM is essential to improving business performance in SMEs.

According to Chin et al. (2012), many SMEs lack the formalized organizational structures needed to conduct GSCM action programs and are financially unable to implement GSCM projects. GSCM is a long-term successful approach because of cost savings and product differentiation. (Mohanty and Prakash, 2014). Only few studies have been carried out in Western nations and world SMEs centres like China, India, and Malaysia despite the advantages and lack of awareness about GSCM methods. This creates a research void in the African environment, where industry is booming but the greening notion is still in its infancy. For the most part of researcher's knowledge, no study has been done on the impact of green supply chain management on firm performance using SMEs in the Tamale Metropolis. Also on the basis of average values for the components of the economic, social, and environmental spheres, as well as the

idea of sustainability, this study evaluates Green Supply Chain Collaboration as a moderating variable.

1.3 Objectives of the Study

The general objective of this study is to assess the impact of green supply chain management practices on manufacturing SMEs performance in the Tamale Metropolis. moderating role of supply chain collaboration.

1.3.1 Specific Objectives

Specifically, this study seeks:

- i. To evaluate the green supply chain management practice among manufacturing SMEs in the Tamale Metropolis.
- ii. To determine the supply chain collaboration efforts among manufacturing SMEs in the Tamale Metropolis.
- iii. To examine the impact of supply chain collaboration on performance of manufacturing SMEs in the Tamale Metropolis.
- iv. To identify the difficulties of applying GSCM practices in the Tamale Metropolis.

1.4 Research Questions

The study was guided by the following research questions:

- i. What are the green supply chain management practice among manufacturing SMEs in the Tamale Metropolis?
- ii. What are the supply chain collaboration efforts among manufacturing SMEs in the Tamale Metropolis?
- iii. What are the impact of supply chain collaboration on SMEs' performance in the Tamale Metropolis?

- iv. What are the difficulties of applying GSCM practices in the Tamale Metropolis?

1.5 Significance of the Study

This study aims to contribute to and address the gap in GSCM practices of SMEs firm performance in Ghana. The importance of a study describes the potential social implications of the research's findings as well as any potential contributions it might make to the field of study's theoretical underpinnings. The results of this study would be relevant to SMEs, the government, and potential researchers in terms of theory and the economy. The study will assist SMEs, not just those in Ghana, in learning more about GSCM practices and identifying potential coping mechanisms. The study will also help the federal government to better understand the issue SMEs are having with their GSCM practices and to create policies to improve SMEs' ability to work together on projects. This study will be useful as a reference for other scholars researching a relevant topic and will improve their work. Other researchers will use it as a source of literature.

1.6 Scope of the Study

The effectiveness of green supply chain management strategies is evaluated based on this study's findings. Moderating role of supply chain collaboration. The study area for this research is SMEs, although the researcher didn't employ all SMEs; instead, they were restricted to SMEs in the Tamale Metropolis. The study examined the subject matter and produced findings. To get comprehensive data on the topic under study, the researcher focused on SMEs that have been in business for a sizable number of years.

1.7 Summary of Methodology

The research design used for the study was descriptive. The non-probability sampling was employed to determine the sample size. Two hundred and eleven (211)

manufacturing SMEs were sampled for the study. The study used both quantitative research approaches. Only closed-ended questions were used as instrument for data collection. The study used Statistical Package for Service Science (SPSS) to analyse the data obtained and the results were interpreted in line with the study's objectives.

1.8 Limitations of the Study

The scope of the research's data coverage was restricted to SMEs in the Tamale Metropolis. As a result, the researcher's ability to generalize the results for other SMEs in Ghana is limited. Due to the time constraints for conducting this research study, the researcher also only used a sample of the SMEs in the Tamale Metropolis. Again, there are funding limitations, hence cross-sectional data collecting was used for this investigation. Maybe the results of a longitudinal study would have been different.

1.9 Organisation of the Study

The study was divided into five chapters. Chapter 1 involved the background of the study and the problem statement. It also included the research objectives, the research questions, significance of the study, scope of the study, limitation of the study, brief methodology and organization of the study. Chapter 2 was devoted to the analysis of related literature that was deemed pertinent to the study. In Chapter 3, which dealt with the study's research methodology, the study's research design, sampling techniques, data tools and procedures, data analysis, presentation techniques, and study area were all covered. Chapter four offered the data analysis and results of the investigation. Chapter 5 concluded with a summary of the study's findings, conclusions, and recommendations.

CHAPTER TWO

LITERATURE REVIEW

2.0 Introduction

The volume of research on the impact of green supply chain management methods on business performance and supply chain collaboration is reviewed in this chapter. The chapter therefore provides a broad discussion of conceptual literature review, theoretical literature review, empirical literature review by prior researchers and conceptual framework for the study.

2.1 Conceptual Literature Review

2.1.1 Overview of Green Supply Chain Management Practices

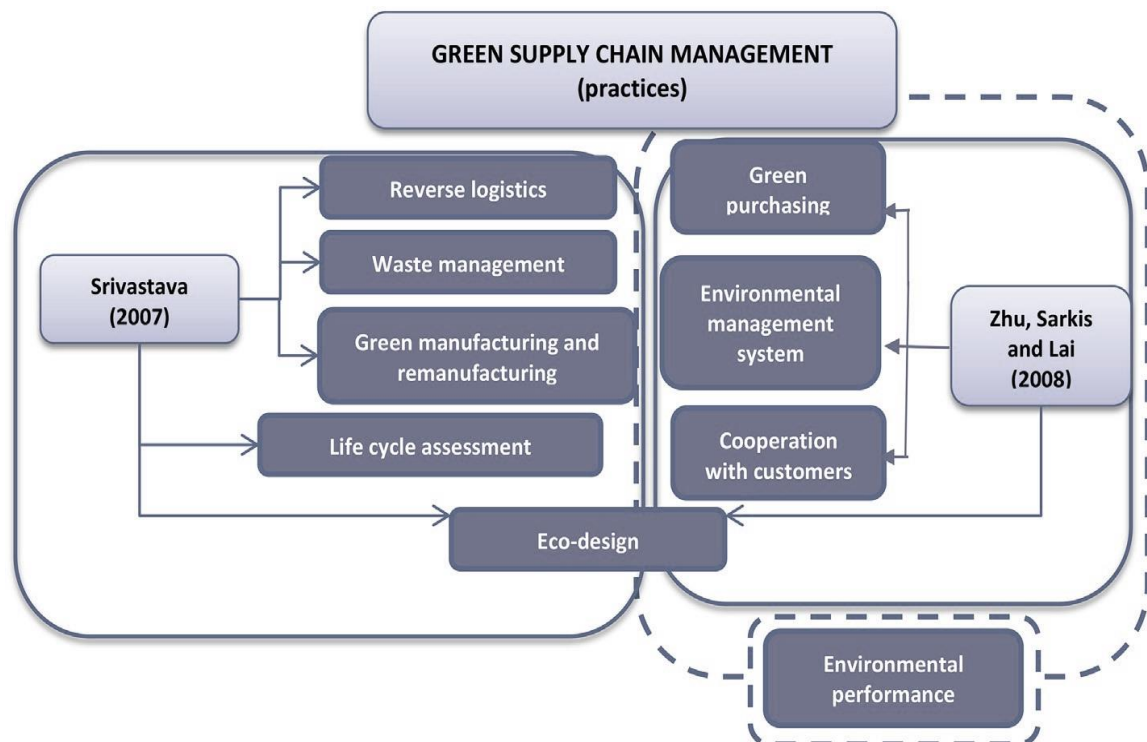
Supply chains have changed over the past 50 years from being dyadic relationships between customers and suppliers to strategic alliances among supply chain participants. In the last ten years, the attention has shifted to environmental challenges that affect not just individual enterprises but also entire supply chains (Centobelli, Cerchione and Esposito, 2018). The term "green supply chain management" refers to a collection of procedures that includes actions like idea generation, green product design, purchasing, logistics, manufacturing, and waste management of all kinds (Mathivathanan, Kannan and Haq, 2018). Another way to describe GSCM is as a collaboration and monitoring-based set of practices for accomplishing financial and environmental goals. (Chu, Yang, Lee and Park, 2017). All organizational departments, together with all partners in the upstream and downstream supply chains, must work together in order to achieve these goals (Zhu et al., 2013) These series of techniques have also been applied in other studies from other parts of the world ((Jabbour and Jabbour, 2016); Vanalle et al, 2017).

For an organizational improve performance, Ahi and Searcy (2013) describe GSCM as an inter-organizational coordination of value chain activities that incorporates economic, societal and environmental, issues. A strategic competency known as "green supply chain management" among other things are strategies, methods, and regulations that are focused on minimizing the surrounding impact of supply chain operations (Rauer and Kaufmann, 2015). This may also apply to the application of ecological principles to the supply chain management process, which includes product design, material sourcing and selection, production, delivery of the finished product to customers, and management of a product's end stage beyond its useful stage (Srivastava, 2017). These definitions emphasize the financial rewards of environmental stewardship while also implicitly incorporating an ecosystem philosophy of reducing outwardness (waste and pollution) and materials recovery (Griggs et al., 2013). GSCM has developed from a compliance point of view to a combined inter-organizational approach intended to improve organizational performance and environmental well-being (Zhu et al., 2013).

Operational and interpersonal effectiveness, financial performance, environmental sustainability, and improved business image are all advantages of GSCM (Lee et al., 2012; Wisner, Tan and Leong, 2012). According to Zhu et al. (2013), GSCM improves operational capability through cost-cutting, higher standard products, and shorter lead times for production. By fostering open communication, increased trust, and reciprocal cooperation among value chain participants, GSCM improves supply chain collaboration (Zacharia et al., 2009). According to Chin et al. (2015), the overall advantages of GSCM also include financial performance and environmental sustainability. In addition, according to Urban and Naidoo (2012), the primary benefits of GSCM adoption for SMEs are reduced manufacturing costs, shortened ordering

cycles and lead times, increased capital, high-quality products, and positive brand perception. As a result, GSCM has developed into a crucial technique that helps organizations in a variety of ways.

The functional aspects of supply chain management, such as purchasing and supply management, got a lot of attention in GSCM research (Mollenkopf et al., 2010). Sarkis (2012) asserts, however, that over the past few decades, the integration of environmental concerns with supply chain management has grown into a vibrant topic. Improved reputation, better efficacy, efficiency, differentiation, and revenue growth are all potential advantages of GSCM (Golicic and Smith, 2013; Wu and Pagell, 2011). Additionally, from an economic standpoint, going "green" is crucial since the absence of natural resources, both business and the consumption of goods are seriously constrained (Bell, Mollenkopf and Stolze, 2013). According to Golicic and Smith (2013), GSCM methods have demonstrable benefits for the economy and the environment. GSCM techniques can also be categorized as eco-design (ED), green purchasing, reverse logistics (RL), and law and regulation, according to Lamming and Hampson (1996). (LR). The execution of these procedures affects how companies run their operations all along the supply chain. Figure 2.1 shows the practices of supply chain management.



2.1.2 Overview of Firm Performance

According to previous research, a firm's success intersects with its economic, surrounding, and social performance (Shrivastava, and Shrivastava, 2016).

2.1.2.1 Economic Performance

Another way of measuring the respondent's perception of growth in sales, business volume, market share, and the firm's ability to earn required profits, economic performance measures a firm's capacity to reduce costs at different stages of consumption, such as the buying of resources, power consumption, right waste management, and fines incurred because of environmental accidents (Chowdhury, 2014; Green et al., 2012).

2.1.2.2 Environmental Performance

A company's environmental performance is evaluated based on its capacity to reduce waste management issues, water, air, and soil pollution, as well as its use of potentially harmful substances. It is also evaluated for improvements made in reducing the frequency of environmental accidents and achieving energy savings. (Chowdhury, 2014; Zhu et al., 2013).

2.1.2.3 Social Performance

Measuring social performance requires assessing how company behaviour affects society (Chowdhury, 2014). According to labour law, whether workers are receiving at least the least pay and other work perks, such as clean water, a safe workplace, and annual leave, and if they are subjected to mistreatment, harassment, or abuse at work, are considered indicators of social performance (Chowdhury, 2014).

2.1.3 Types of GSCM Practices

GSCM practices come in two flavours: internal practices and external practices. Whereas external practices require some collaboration from outside parties like suppliers and buys, internal practices are what can be established, planned, and carry out within the company (Zhu et al., 2013).

2.1.3.1 Internal GSCM Practices

2.1.3.1.1 Internal Environmental Management (IEM)

IEM is a technique for integrating GSCM into a company's overall strategy and showcasing their commitment through top management vision, middle management involvement, and spreading throughout all employees by forming cross-functional teams (Zhu et al., 2013). Companies that are proactive concentrate on the IEM as the core of the entire GSCM reform process.

2.1.3.1.2 Eco-Design (ECO)

Eco-design makes sure compliance with pollution prevention at an initial point in the product lifecycle and takes a dynamic approach to dealing with environmental atrophy. Additionally, it aids in reducing potential future cost for repairing damages (Zailani et al., 2012). This method takes the environment into account from the creation of ideas through the design of goods that use less resources, less energy, and emit fewer hazardous gases, which can have a good sign on both environmental and economic performance (Green et al., 2012).

2.1.3.2 External GSCM Practices

2.1.3.2.1 Green Purchasing (GP)

The goal of green buying is to work with suppliers to provide items that are environmentally friendly (Zhu et al., 2013). Another definition of GP is strategically planned purchasing that considers environmental standards including waste reduction and the potential for product reuse and recycling (Jabbour and Jabbour, 2016).

2.1.3.2.2 Cooperation with Customers (CC)

Businesses should adapt to the current climate and recognize buyers as important parties in joint efforts in dealing with environmental challenges. Starting with eco-design through covering packaging, distribution, and the practice of returning the products, CC involves them (Bouzon, Govindan and Rodriguez, 2018). A long-term, trust-based connection is required for the interchange of real-time information and the efficient execution of all procedures (Saeed et al., 2018).

2.1.3.2.3 Investment Recovery (IR)

A green approach called investment recovery is recovering profits from existing assets that were previously viewed as waste (Green et al., 2012). The sale of surplus goods, scrap and used materials, and capital equipment is seen as a strategic decision by IR to

make the most of its resources (Zhu et al., 2013).

2.1.4 Impact of GSCM Practices on Firm Performance

A company that is mentally prepared and knowledgeable about the requirements of green practices gives more effectively to the shift from SCM to GSCM (De Giovanni and Vinzi, 2012). A company can assess its wealth needs, particularly those for certain basic material and individual element, to improve its eco-design processes and make products and their parts recyclable and reusable (Lai, Wong and Lam, 2016). According to the principle of resource dependence, no organization can thrive in together to access all resources in order to compete (Wolf et al., 2014). According to Resource Dependence Theory, the main result of a prolong relationship for the offering of essential resources to successfully execute eco-design techniques (Sarkis, Zhu and Lai, 2011). Like this, under the Resource dependence theory scenario, a concentration on IEM practice to reduce reliance on the outside world can be a way of balancing the power-dependence ratio.

The effect of internal GSCM techniques on performance has been the topic of much research (Jabbour and Jabbour, 2016). According to Yang et al. (2013) internal duties have a considerable right impact on both green performance and overall company competitiveness. Jabbour and Jabbour (2016) determined that the most pertinent GSCM strategies in Brazil for enhancing environmental performance were IEM and ECO by using a case study method. Although eco-design has been shown to improve surrounding performance, it is found to have a detrimental impact on economic success by (Green et al., 2012). In the continuum, a meta-analysis of impact on performance by green practices indicated that intra-organizational environmental practices had more impact on economic performance recorded in prior research while the ECO practice

had the higher influence on environmental performance (Geng, Mansouri and Aktas, 2017).

2.1.5 GSCM practices and Green Supply Chain Collaboration

Customers are seen to be at the end of a continuum that starts with suppliers. SMEs depend on suppliers for raw their input and other important resources from the upstream supply chain. These raw resources are transformed into final goods and given to clients. The strategic partnerships between a company and its suppliers in the value chain partners have become crucial to achieving company objectives considering the expanding nature of sustainability concerns (Abdullah et al., 2014). Thus, in the context of rising environmental concerns, the contribution of actors in the supply chain (particularly, consumers and suppliers) to the operations of a manufacturing industries cannot be overlooked. Companies must understand that this will be difficult to lead the way to becoming environmentally responsible through the modification of lasting initiatives like GSCM practices minus effectively engaging with important supply chain actors, as succinctly put by Yu et al. (2014). In effect, it is urgently important for companies to work together with their main supply chain actors (customers and suppliers) in order to fulfil their continual goals.

To successfully accomplish their greening objectives and activities, some businesses have begun to take use of supply chain collaboration potential. For instance, large corporations like Coca-Cola have successfully launched a program to ensure that the organisation collaborates with bottling actors to manufacture machine for bottles (biodegradable rubber bottles made in part from plants) (Reuters, 2011). According to some, supply chain partners' participation and cooperation are critical for the execution of successful green operation (Abdullah et al., 2014). Green practices, like GSCM, must

thus be complemented by effective participation of all major supply chain actors because they are critical strategic variables that influence a firm's supply chain (Chithambaranathan et al., 2015). Specifically, a company's supply chain turns green as and when suppliers support its environmental standards (Singh et al., 2019). Important supply chain partners must be involved since green practices have become an eco-oriented approach which do not only enhances environmental performance and a firm's whole supply chain (Govindan et al., 2016).

Using earlier literature (Kang et al., 2018; Setyadi, 2019; Omara et al., 2019). The Green Supply Chain Collaboration (GSCC) has three dimensions:

- i. green internal
- ii. green customer and
- iii. green supplier collaboration

SMEs can help give suppliers with background ideas for eco-inputs and collaboratively define environmental goals via green supplier collaboration (SMEs' strategic background relationships with upstream supply chain partners). Some businesses also use collaborative operations like teaching suppliers on environmental issues, information sharing, and common environmental research with suppliers (Laosirihongthong et al., 2013). From a greening standpoint, green customer collaboration is attributed to regular surrounding information allocation between a business and its key clients. Collaboration with green customers enables a business to pinpoint the precise environmental needs of its clients, who are then gratified in line with those needs. Wu (2013) asserts that customer collaboration is an efficient way to reduce production's negative environmental effects, produce more cleanly, and develop solutions to environmental problems.

2.1.6 Factors Affecting Green Supply Chain Management

As stated by James, Isaac, and Kwabena (2016) analysis of the problems influencing green supply chain management in Ghana, the following elements are important: Lack of political will, learning capacity to appraise green supply chain, lack of knowledge and expertise pertaining to green supply chain and its related activities, lack of knowledge and expertise pertaining to green management costs, lack of knowledge and expertise pertaining to green supply chain and its other activities, lack of knowledge of the potential economic benefits of purchasing from green supplier chains, and unprofitable waste reuse and recycling all have an impact on the green supply chain and purchasing, Lack of supplier conservative, a lack of managerial dedication, a lack of statistical tools, a lack of corporate environmental qualities or interjecting programs, and an inadequate disciplinary system for environmental offenders all have an effect on the green supply chain and purchasing.

Prior to making the decision to- put an environmental plan into action, organizations in a competitive market decide. According to Chang, Kenzhekhanuly, and Park (2013), surrounding planning is a crucial duty for businesses because doing so may result in future expenses as well as advantages. By putting environmental efforts into practice, businesses can receive advantages like a better reputation, increased market share, and increased productivity, or they might lose out due to expenses like those associated with complying with regulations and carrying out the environmental strategy. However, the process of putting the environmental strategy into action involves more than just cost and benefit-related concerns. There are also pressure groups that urge businesses to adopt environmental policies. According to Liu et al. (2012), regardless of the constraints an organization encounters, it is less likely to implement environmental actions if it has the essential learning capacity. According to this, internal pressures

outweigh all outside pressures. The ability of an organization to learn is essential to its success because GSCM methods may be implemented with ease thanks to the advantages of teamwork, employee involvement, shared expertise, and unique corporate structures that cannot be shared by other organizations.

2.1.7 Difficulties of Implementing GSCM Practices and Collaboration

Many SMEs encounter several problems that keep them from partaking in GSCM. Insufficient funds and personnel, a restricted capacity for creativity, and a limited understanding of operational issues are a few of these difficulties (Abbasi and Nilsson, 2012; Wang, 2016). According to Chin et al. (2012), many SMEs lack the formalized organizational structures needed to conduct GSCM action programs and are financially unable to implement GSCM projects. According to a prior study by Preuss (2011), some SMEs have confidence that an officialised corporate design restricts decision-making freedom. Additionally, GSCM implementation calls for cutting-edge technological talents in the sector of green design, managerial abilities in supplier assessment, and confidence abilities, all of which are fundamentally rare in most SMEs (Mohanty and Prakash, 2014). To establish the green corporate habit necessary to implement and keep GSCM practices, it also necessitates training and development of the workforce (Diabat and Govindan, 2011). However, GSCM remains a feasible way in the long run due to cost savings and product differentiation, despite the possibility that these difficulties will be overpowering (Mohanty and Prakash, 2014).

2.1.8 Benefits of Green Supply Chain Management

Several writers conducted research on the benefits of economic and environmental performance. In consonance with study done by Lefebvre et al. (2000) on SMEs in Canada, adopting green grand design can increase company innovativeness, which includes enhancing managerial, product, and process innovation as well as

organizational competitiveness (cost reduction, liability control, and export effectiveness). According to Zhu et al. (2013), GSCM and other environmental management systems have a favourable effect on a company's financial performance. Sangwan (2011) divided the advantages into two categories: quantitative benefits and qualitative benefits. The quantifiable benefits are as follows:

Quantitative Benefits: reduced waste handling cost savings from waste treatment less expensive garbage storage and waste disposal

Quantitative Benefits: cheaper manufacturing costs, lower maintenance costs, lower packaging costs, lower transportation costs, and lower overall organization costs

2.2 Theoretical Review

Resource Dependence Theory (RDT) and Theory of Institutional Theory were both taken into consideration in this study.

2.2.2 Resource Dependence Theory (RDT)

The focus of resource dependence theory (RDT) is on wealth that are accessible beyond the focal firm's control and in the possession of other businesses (Hollos, Blome and Foerstl, 2012). Companies that manage those wealth work to keep them under control to retain their power and supremacy, while others that depend on them look for alternative resources or new sources to reduce their reliance (Sheu, 2014). RDT may offer corporate management advice on how to lessen their reliance on the most crucial and limited resources, especially those related to environmentally friendly production throughout the board. (Wolf et al., 2014). As well as managing physical resources like raw materials, labor, or money, the most important resources to manage are customers and suppliers (Lai, Wong and Lam, 2016). RDT lens can be utilized to comprehend and clarify GSCM methods and their adaptation for reliance on outside resources and the

stakeholder's direct or indirect influence on the focus organization (Sarkis, Zhu, and Lai, 2011).

To safeguard the environment, for instance, governments or regulatory organizations may impose a prohibition on the use of specific raw resources (Wolf et al., 2014). Alternatively, suppliers may reduce deliveries of in-demand products or raise their prices. Customers with high demands may request mandatory certifications or stringent adherence to environmental regulations. When specific suppliers or clients are not adhering to environmental norms, pressure organizations, such as strong media or NGOs, could incidentally push a central firm to do stand doing business with such suppliers or customer, as in the cases of Greenpeace and Nestle (Wolf et al., 2014). Each organization along a supply chain is dependent on others to varying degrees. RDT can assist businesses in balancing their position in a situation of electricity dependence with environmental responsibilities (Sarkis, Zhu and Lai, 2011). In these situations, RDT is helpful for organizing and putting into effect external GSCM procedures by creating connections with teamwork on company performance.

2.2.1 Institutional Theory

Traditional institutional theory has focused on the different groups and companies can more effectively protect their state and lawfulness by adhering to the laws and standards of the institutional environment (Meyer and Meyer, 2017; Scott, 2007). The term "institution" means the formal rule sets (North, 1990), ex ante arrangements (Bonchek and Shepsle, 1996), informal shared interaction sequences (Jepperson, 1991), and taken-for-granted assumptions (Meyer and Meyer, 2017) that companies and persons are expected to adhere to. Also having production-related systems, organizations are a part of a social system with a unique culture and set of values. Decisions by

organization are based on a prearranged way of cultural values, conventions, and behaviours which is influenced by the environment outside the organization (Gualandris, 2014). When businesses in the same sector use the same kind of institutionalized procedures and decision-making techniques, it shows that they are trying to establish their legitimacy (Williams, Lueg, Taylor, and Cook, 2009). Institutional theory is used to understand the different external influences that cause any organization to begin or embrace a new practice (De Grosbois, 2016). Three different isomorphic pressures are highlighted by institutional theory, where coercive forces are a set of official or informal demands from strong organizations on which the focus firm is dependent due to resources, legal compliance, or even societal standards (Dimaggio and Powell, 1983).

This burden may come as a result of offers from manufacturing organizations to join them to receive benefits or a cause of worry about being stopped or penalized for breaking certain rules or regulations of the government (Yang, 2019). Normative pressures emerge from certain standards and norms that the environment has established because of cultural expectations for that environment (Khalifa and Davison, 2006). Various groups, including educationalist that instil cognitive behavior, experts from business groups and associations, nongovernmental organizations (NGO) with an interest in a particular industry, and the public, can be the source of normative pressures (Dimaggio and Powell, 1983). Another essential element of these pressures is the interaction between suppliers and customers (Zhu, Sarkis and Lai, 2013; Chu, Yang, Lee and Park, 2017). Mimetic pressures play a part in pushing businesses to mimic other successful institutions' structures or procedures to reduce uncertainty and risk (Dimaggio and Powell, 1983).

When there is a significant shift in the external environment that threatens their continued existence, organizations look for role models who they believe were successful in overcoming such challenges to attempt and transform themselves in accordance with those model organizations. (Williams, Lueg, Taylor, and Cook, 2009). Globally, a lot of pressure is being placed on the SMEs sector to adopt and use GSCM concepts (Chu, Yang, Lee and Park, 2017). SME's are currently under pressure from the aforementioned stakeholders to develop GSCM procedures in order to prove their authenticity (Gualandris, 2014). This study's use of institutional theory to examine the impact of green supply chain management techniques and collaboration on business performance has proven to be particularly beneficial.

2.3 Empirical Review

In their 2010 study on green implementation in the electronics industry, Ninlawan et al. suggested practices for a green supply chain management. He discovered that the entire supply chain was green, from green purchasing to green production to green distribution, all the way to product recycling and trash management.

In a study by Vlosky et al. (1999) the researchers looked at consumer willingness to pay (WTP) for ecologically friendly products in the wood and agriculture sectors. The findings indicate that there is no appreciable impact on kitchen waste bag purchasers.

According to a study by Zailani et al. (2015), there is a link between environmentally conscious purchasing and improved corporate performance. They discovered that buying sustainably had a real, beneficial impact on business performance. Green purchasing has a huge impact on business success as well as protecting the environment from poisonous and dangerous goods.

In their 2018 article, Wagner and Thakur analyzed supply chain collaboration and examined the reasons why some of these networks operate dysfunctionally in connection to the usage of humanitarian aid. They noted that a variety of elements contribute to the dysfunctions in collaborations in humanitarian operations, which result in information disorder among humanitarian players. Collaborations that result in information distortions are influenced by a number of factors, including the unusually high time demands placed on fieldworkers, the environment's extreme dynamism and unpredictability, the lack of adequate infrastructure, the use of various performance metrics, and the extremely diverse educational backgrounds and professional histories of the staff members tasked with managing and operating in the field.

In order to pinpoint SCM problems, Kovacs and Spens (2006) examined the case study of Ghana, focusing on various disaster kinds, disaster phases, and different types of humanitarian organizations. Some of the issues they identified included the participation of numerous organizations in the response, customs clearance procedures, a lack of accessibility to training, a lack of standards and indicators, the absence of clear mandates and legislation, the low recognition of logistics, and inadequate infrastructure. They came to the conclusion that the biggest difficulty is a lack of coordination.

2.4 Conceptual Framework

According to theoretical and empirical research, businesses that embrace and use green supply chain methods tend to improve their sustainability performance (Hami et al., 2015; Rehman et al., 2016; Abdul-Rashid et al., 2017). Collaboration on environmental issues between companies and their supply chain partners is essential for the successful application of GSCM principles (Abdullah et al., 2014). According to the research

paradigm in Figure 2.2, enterprises' economic performance, environmental performance, and social performance will all improve as they involve their supply chain partners in the implementation of GSCM policies. Thus, GSCM practices affect firm performance. The dependent variable is Firm performance (Economic performance, Environmental performance, Social performance). The independent variable is GSCM practices and the moderation variable is collaboration.

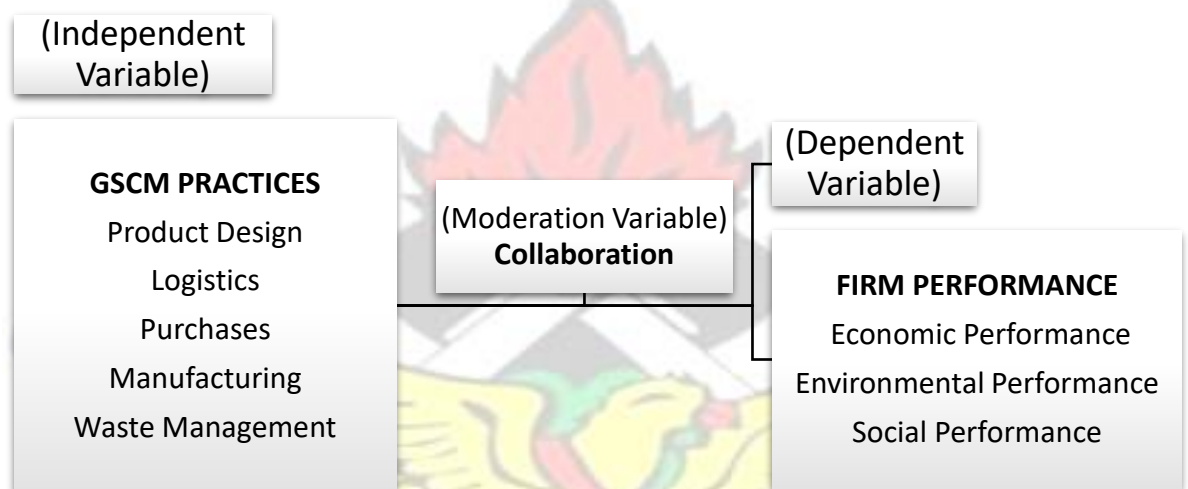


Figure 2.2 Conceptual Framework

Source: Researcher's Construct (2022)

Recently, SMEs businesses have come to understand that GMPs have advantages beyond just long-term cost savings. They also act as a significant prelude to improving environmental, social, and economic performances. Economic performance is refer to as a firm's capacity to maximize its financial results. Financial performance measures like profitability, sales growth, return on asset, return on equity, and return on investment were used to assess the economy (Agyabeng et al., 2020). As opposed to this, environmental performance is defined as a company's capacity to reduce pollution and solid waste as well as the usage of hazardous materials and the frequency of

environmental distraction (Abdul-Rashid et al., 2017; Singh et al., 2019). Additionally, social performance is gauged by factors like worker health and safety, an increase in community good of life, career development for local residents, and staff training, etc (Abdul-Rashid et al., 2017).

Although Dubey et al. (2015) asserted that manufacturing SMEs that embrace green practices frequently see increasing investor interests, other research Yang et al (2013), Manufacturing SMEs who successfully use GSCM methods see increased earnings and improved economic performance, according to Laari et al. (2016), Roy and Khastagir (2016). Sezen and Cankaya (2013) found that GSCM techniques have a favourable and significant impact on both social and environmental performance from the perspectives of environmental performance and social performance. Improved environmental and social performance show how a company treats its stakeholders ethically, and these two types of performance are often attained by using environmentally conscious strategies like GSCM. The adoption of GSCM techniques by SMEs enterprises increases the likelihood of a win-win situation, which typically results in enhanced environmental, social, and business performance (Zhan et al., 2018). The quality of eco-friendly products, the development of green processes and products, and the integration of environmental sustainability issues into a company's operations can all affect how well it performs in terms of the environment (Singh et al., 2020). In practice, models for green supply chain management can be used to increase environmental performance and leverage the effects of environmental problems (El-Kassar and Singh, 2019). There is evidence to support the studies mentioned above that GSCM procedures have a favorable impact on firm performance.

CHAPTER THREE

RESEARCH METHODOLOGY AND PROFILE OF ORGANIZATION

3.0 Introduction

The methodology describes the many methods used to collect the study's data as well as how the data was analysed. The chapter discusses the study's demographic, sampling strategies, sample size, data gathering procedures, data processing, ethical issues, and study area.

3.1 Research Design

Descriptive research design was adopted with the help of cross-sectional survey method of study. Research design, according to Myer (2009), is a roadmap for studies that addresses at least four issues: what questions to investigate, what data to gather, what data to collect, and how to interpret the findings. According to Potter (2003), the objectives of a descriptive research design include providing an accurate profile of a phenomenon, a verbal and numerical picture, information to stimulate new explanations, basic background information, and documentary information that challenges or confirms a subject's preconceived notions. The best design therefore depends on the tools and orientation of the researcher. The study design is mainly a descriptive survey, as it sought to assess and to explain an existing phenomenon such as green supply management. The cross-sectional survey method which factors in various aspects of population was considered due to the variety of SMEs in terms of business characteristics such as age, income level, size of employees, education of business owner, gender, political affiliation, to know some of the specific issues, have an idea and to locate individuals and groups under consideration. The descriptive design makes it easier to collect data through the use of self-administered questionnaire

(Babbie, 2007). In essence, what this research wants to find out is how the numbers of a population distribute themselves on one or more variables (green supply chain management practices and collaboration on firm performance).

3.2 Research Population

Population is a group of people or persons, objects, things from that samples are taken for mensuration (Babbie, 2007). The study identified and concentrated on four hundred and sixty-three (463) medium businesses in the Tamale Metropolis as the accessible study population from which a sample size was drawn.

3.3 Sampling Techniques and Sample Size

According to Bhattacharjee (2012), sampling is a statistical technique that selects a subset of an interest population (referred to as a "Sample") for the purpose of making observations and drawing conclusions about the population using mathematics. In this study, non-probability sampling was used. The use of the non-probability sampling technique was to ensure that each category of the respondents was represented in the sample (Palys, 2008). Also, non-probability sampling is less strict and makes no claim for representativeness (Sarantakos, 2004). Therefore, the purposive and snowball sampling technique was adopted for the procedure. Purposive sampling, also referred to as judgement, selective, or subjective sampling, is a sampling technique in which researchers use their judgment when selecting members of the population to participate in the study. One example of this is snowball sampling, in which current participants recruit new subjects from among their acquaintances (Saunders et al., 2007). The sample size was derived using Nassiuma's (2000) formula.

$$n = \frac{NC^2}{C^2 + (N - 1)e^2}$$

Where:

n = sample size

N = population size

C = coefficient of variation which is 50%

e = error margin which is 0.05.

Substituting these values in the equation, estimated sample size (n) was:

$$n = \frac{463(0.5)^2}{0.52 + (463 - 1) 0.052}$$

$$n = \underline{211}$$

3.4 Data Collection Methods

The researcher relied on gathering primary data. Surveys provided the main sources of data. The main data offers specific information that depicts the real circumstances or reactions discovered during the field study. Saunders et al. (2007) state that. The benefit of using primary data is that they are more trustworthy because they are gathered specifically for the study and are taken from the original sources. Textbooks, periodicals, internet references, published and unpublished research, and reports served as the other information sources.

3.4.1 Instrument of Data Collection

Tools used to acquire information for an investigation are called research instruments. The sort of information required for the study and its goals will determine the best study tool, according to Kothari (2004). The researcher's main technique for gathering data for the study was a questionnaire. The questionnaire provided the researcher with a sizable percentage of the information she collected from the respondents. When the questionnaire is used properly and understood, it benefits by simplifying the data analysis stage. This is because analytical tools are built on top of well-organized

information. The objectives of the study guided the design of the full set of questions. The questionnaire's first component asked about the respondents' characteristics or personal information, and the following sections focused on the study's specific objectives. The survey form also included open-ended questions. The responders had a choice between direct inquiries and definite answers.

3.5 Data Analysis

The data analysis is where fresh data gathered from a case study is translated into information for the purpose of decision making (Emory and Cooper, 1991). The data was organized along the study objectives and in logical component sections and sub-sections. A statistical analysis tool known as the Statistical Product for Social Science (SPSS) version 26 was used to analyse the data. It was then presented using frequency distribution tables. Quantitative analytical method was employed for data analysis for easy interpretation and clarification of the study outcome.

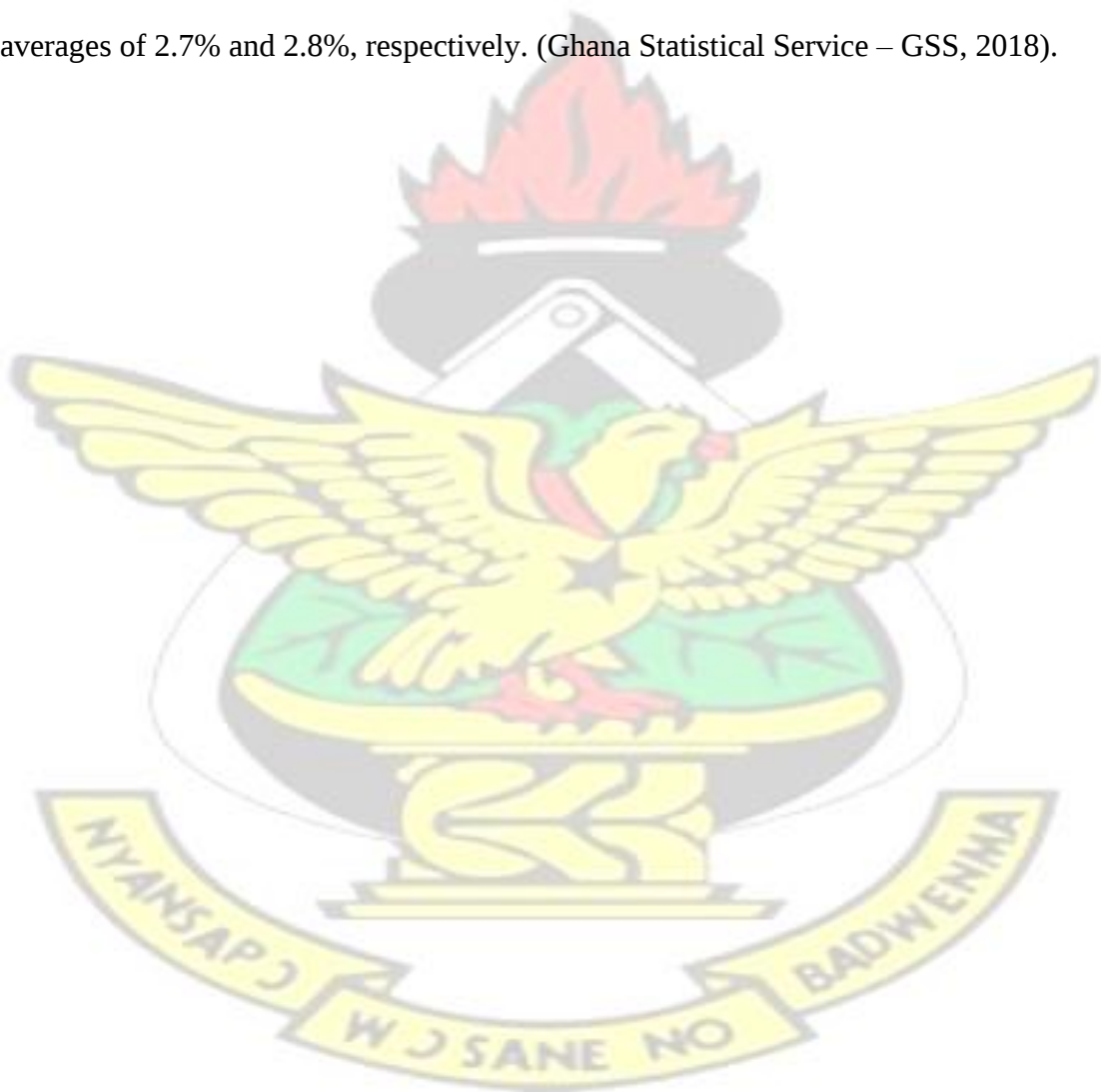
3.6 Ethical Consideration

Both the literature evaluation and the empirical study were conducted by the researcher in accordance with ethical research standards. The right to secrecy, voluntary participation, anonymity, and privacy are the main ethical rights of a study responder, according to Walters (2009). The researcher in the first place took permission to gather data from the SMEs. The study ensured voluntary participation of respondents. Respondents were informed that they were free to leave the study at any time. The study's findings will only be utilized for academic purposes; the respondents were told. Both during and after the data collection, a high level of confidentiality was observed. To maintain confidentiality in the submitted answers, respondents were asked to conceal their names.

3.7 Profile of the Organization

There are 26 metropolitan assemblies, municipalities, and districts in the Northern Region, including the Tamale Metropolitan Assembly (TaMA). The Metropolis is located in the middle of the Northern Region and is bordered to the north by Sagnarigu and Savelugu/Nanton Districts/Municipality, to the east by Mion District Assembly, to the east by Tolon, to the west by Central Gonja, and to the south west by East Gonja. Tamale Metropolitan Assembly (TaMA), one of the 26 Metropolitan/Municipal/Districts in the Northern Region, is located here. The Metropolis is located in the heart of the Northern Region, bordered by the Sagnarigu and Savelugu/Nanton Districts/Municipalities to the north, Mion District Assembly to the east, Tolon to the west, Central Gonja to the south west, and East Gonja to the south. South. Additionally, it is estimated that the Metropolis's entire land area is 550 km², which is around 12% of the Region's total land area. About 180 meters above sea level, the Metropolis is surrounded by a few solitary hills. It has only one rainy season (May to October) per year, and from November to February, it has dry Harmattan winds. Maximum and minimum temperatures are 40 and 25 degrees Celsius, respectively. Only a few bodies of water exist in the Metropolis. The Savannah Woodland Region of the nation includes The Metropolis. The primary soil types are sandstone, gravel, mudstone, and shale, which have weathered into distinct soil grades. Sand, clay, and loamy soil types come from seasonal erosion as a result of this process. Dagombas make up the majority in the Metropolis, which is a multicultural region. Gonjas, Mamprusis, Akan, Dagaabas, and tribes from the Upper East Region are some further minority ethnic groups. The region is home to deeply ingrained cultural customs like festivals, naming, and marriage ceremonies.

About 42% of the working class in the Metropolis is engaged in agricultural pursuits. In the Metropolis, 58% of the workforce is employed in sales, services, transportation, and production. This is a result of the Metropolis's growing non-governmental, banking, and marketing sectors. According to the 2014 Population Census, there were 371,351 people living in the Tamale Metropolis. 185,995 men and 185,356 women make up this group. With a growth rate of 3.5%, this number reflects a 75% increase over the 167,778 population in 1984. This rate exceeds the regional and national averages of 2.7% and 2.8%, respectively. (Ghana Statistical Service – GSS, 2018).



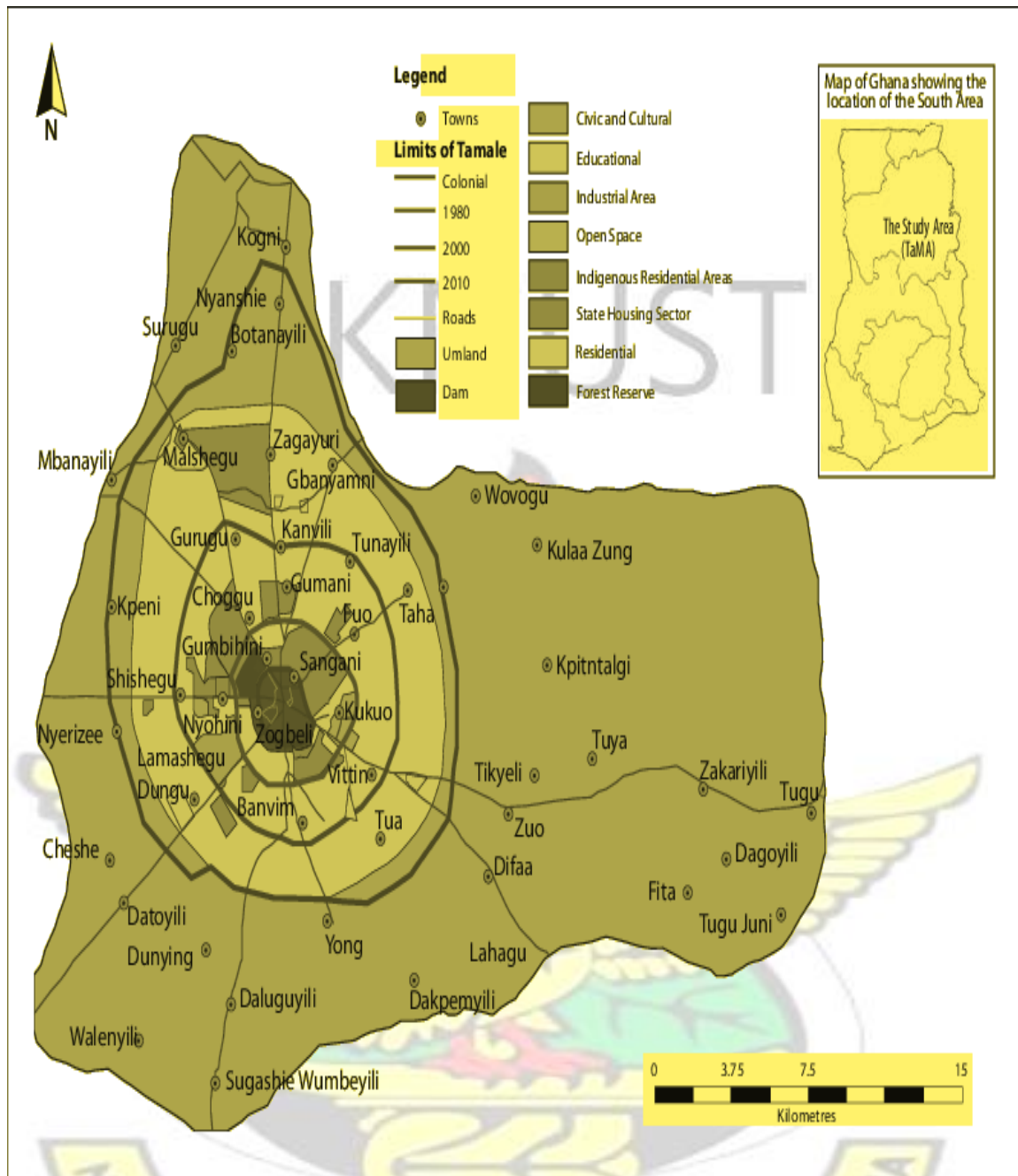


Figure 3.1: Map of Tamale Metropolitan Area (TaMA)

CHAPTER FOUR

RESULTS AND DISCUSSIONS

4.0 Introduction

These findings and pertinent dialogue are given out in this chapter. After the surveys were complete, the data was computed, and the variables were allocated serial numbers to aid in their identification. To demonstrate the frequency, percentages, lower and higher values, mean values, and standard deviation for each answer category, the data were assembled and displayed in tabular formats using SPSS. The findings were interpreted using the standards that determined the study's objectives.

4.1 Responds Rate

211 questionnaires in all were distributed. 204 people responded to the survey, filled it out, and sent it in. 7 questionnaires were therefore not returned. This represented a 97% response rate, which was adequate to draw findings for the study.

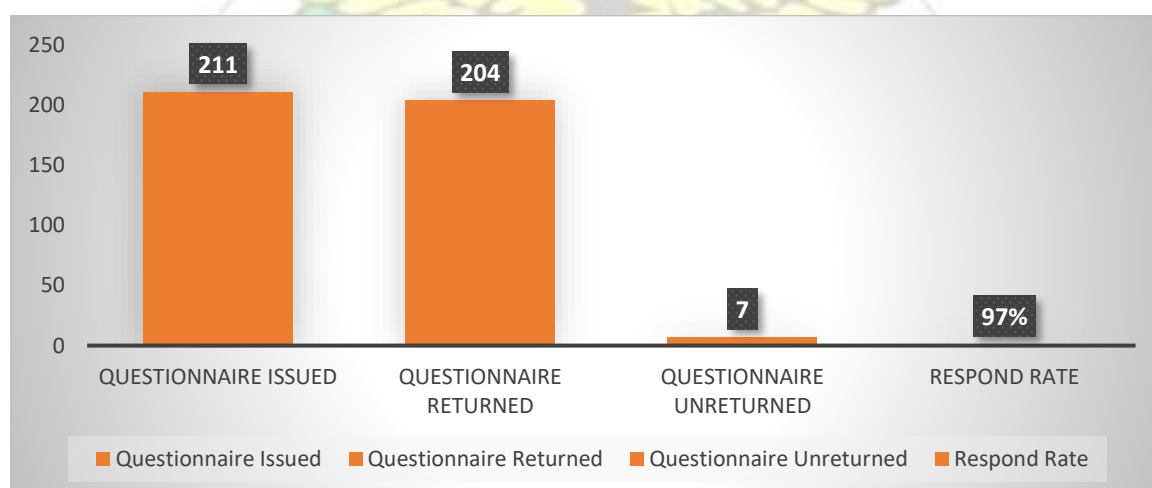


Figure 4.1: Respond Rate

Source: Field survey (2023)

4.2 Demographic Characteristics of Respondents

The respondents' gender, age, and educational attainment were just a few of their demographic traits. Table 4.2 below presents the results.

Table 4.1: Demographic Characteristics of Respondents

		Frequency	Percent	Valid Percent	Cumulative Percent
Gender	Female	72	35.3	35.3	35.3
	Male	132	64.7	64.7	100.0
Age	18 – 25	9	4.4	4.4	4.4
	26 – 35	71	34.8	34.8	39.2
	36 – 45	97	47.5	47.5	86.8
	46 – 55	18	8.8	8.8	95.6
	56 +	9	4.4	4.4	100.0
Education	JHS/SHS	27	13.2	13.2	13.2
	No education	9	4.4	4.4	17.6
	Primary	9	4.4	4.4	22.1
	Tertiary	159	77.9	77.9	100.0
Position	Manager	88	43.1	43.1	43.1
	Owner	116	56.9	56.9	100.0
Nature of business	Medium	44	21.6	21.6	21.6
	Small	160	78.4	78.4	100.0
Form of business	Company	26	12.7	12.7	12.7
	Partnership	18	8.8	8.8	21.6
	Sole proprietorship	160	78.4	78.4	100.0
Business existence	1 – 5 years	107	52.5	52.5	52.5
	11 – 15 years	9	4.4	4.4	56.9
	6 – 10 years	61	29.9	29.9	86.8
	Above 15 years	27	13.2	13.2	100.0
Total		204	100.0	100.0	

Source: Field survey (2023)

Per the Table 4.1, a major part of 132 (64.7%) men and 72 (35.3%) women of the 204 respondents who were SME owners or managers. This indicates that, despite a relatively encouraging percentage of female owners and managers, men made up most SME owners and managers in the Tamale Metropolis. This may be described by the

fact that women business owners and managers prefer to move their business around rather than station them in one location.

According to age distribution data, 97 (47.5%) of the respondents were between the ages of 36 and 45 years, 71 (34.8%) were between the ages of 26 and 35 years, and 9 (4.4%) were between the ages of 56 and above. Additionally, 18 (8.8%) of the respondents were between the ages of 46 and 55 years, and 9 (4.4%) were between the ages of 56 and above. According to the data, the majority of responders were aged 26 to 45. This suggests that Tamale Metropolis has a higher proportion of younger generation business owners and managers.

According to the analysis, 27 (13.2%) of the respondents held a JHS/SHS certificate. Tertiary holders made up 159 (77.9%), while 9 (4.4%) had no formal education. Primary holders made up 9 (4.4%) and those with primary certificates were 45 (21.4%). This demonstrates that many respondents had some form of education.

Additionally, Table 4.1 shows that 88 respondents (43.1%) and 116 respondents (56.9%) respectively, identified themselves as managers and owners of their respective businesses. The findings show that most respondents are business owners.

Small and medium-sized SMEs make up many businesses, and of the 204 respondents, 160 (78.4%) were small businesses and 44 (21.6%) were medium-sized businesses. Therefore, there are more small businesses than medium-sized SMEs in the Tamale Metropolis.

Many respondents (160, or 78.4%) were sole proprietors in terms of the forms of businesses they were involved in. Additionally, 18 (8.8%) of the total were in partnerships, and the least number were in companies, totaling 26 (12.7%). According

to this analysis, the majority of respondents in Tamale Metropolis operate as sole proprietors.

107 (52.5%) of the respondents indicated that their business had existed for between one and five years, 61 (29.9%) of the respondents indicated that their business had existed for between six and ten years, 9 (4.4%) indicated that their business had existed between eleven and fifteen years, and 27 (13.2%) of the respondents had their business for sixteen years or more, according to the last sociodemographic characteristic of the respondents. This shows that a significant portion of the responses, albeit not the majority, have not been in operation for very long.

4.2.1 Category of Manufacturing SMEs

The respondents' responses to the question about which firm category they belong to are shown in figure 4.2.

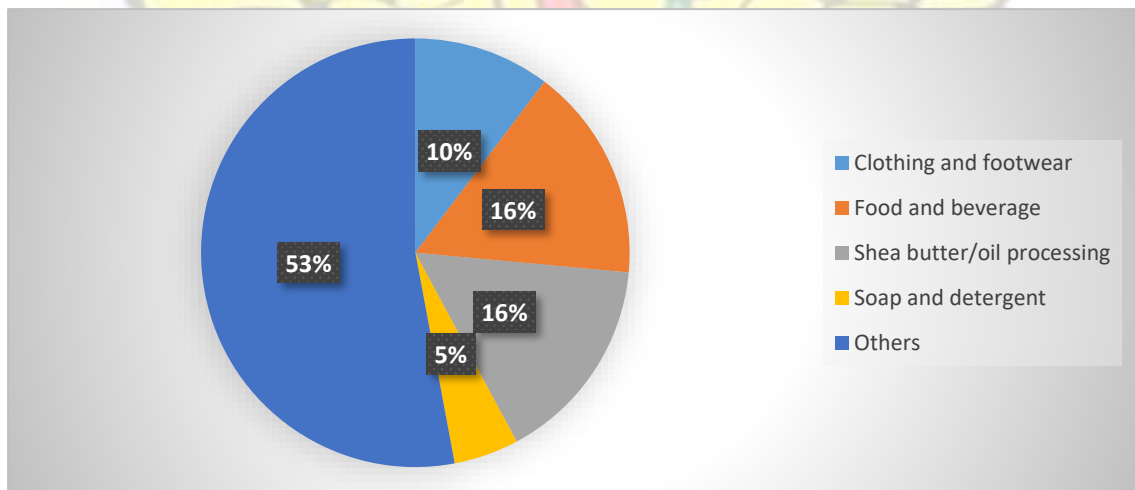


Figure 4.2: Category of Manufacturing SMEs

Source: Field survey, (2023)

In terms of category of manufacturing SMEs, 16% belonged to Shea butter/oil processing, 16% belonged to Food and beverage and 10% belonged to Clothing and footwear, 5% belonged to Soap and detergent and majority of 53% belonged to other manufacturing sectors. According to the respondents' respective groups, they belonged

to the manufacturing sector and could be relied upon to give accurate information regarding the study.

4.3 Green Supply Chain Management Practice

The study's initial goal is covered in this section. Assessing green supply chain management practices among manufacturing SMEs in the Tamale Metropolis was the goal of this mission. The descriptive statistics, which are represented by the values of the associated means and standard deviations, of the analysis, which used a 5-point rating scale, are shown in Table 4.2.

Table 4.2: Green Supply Chain Management Practice

S/N		Descriptive Statistics				
		N	Min	Max	Mean	Std.
GP1	Products are created with recyclable and reusable materials in mind.	77	1	4	2.61	1.126
GP2	life-cycle analysis is used to examine the environmental impact of items.	77	1	4	2.86	1.073
GP3	reduces the amount of energy used to manufacture and deliver things.	75	2	4	3.15	.940
GP4	utilizes eco-friendly tools and manufacturing techniques	77	2	5	3.34	.940
GP5	produces goods with lower material and energy requirements during use	77	2	5	3.30	.961
GP6	produces goods devoid of potentially harmful elements like lead, mercury, and chromium	77	2	5	3.77	.944
GP7	produces goods from recycled and repurposed materials, such as recycled plastics	75	2	5	3.77	.746
	Valid N (listwise)	73				

Source: Field survey, (2023)

From Table 4.2, most of the respondents disagreed that they design goods to ensure that they have reusable and recyclable contents, this represented a [mean score = 2.61, standard deviation = 1.126]. Rehman et al. (2016) contend that GSCM practices in manufacturing address important manufacturing issues like the design of green products with reusable and recyclable content, pollution control and environmental protection, environmental regulatory compliance, and waste management, to name a few. This finding is in contrast to their findings. To improve its eco-design processes and make goods and their parts recyclable and reusable, a company might evaluate its resource needs, particularly those for specific raw materials and individual components (Lai, Wong and Lam, 2016). Large corporations, such as Coca-Cola, have successfully started a program to make sure they work with bottlers to produce plant-based bottles (biodegradable plastic bottles manufactured partially from plants) (Reuters, 2011).

Most of the respondents disagreed that that they use life-cycle assessment to evaluate the environmental load of products [mean score = 2.28, standard deviation = 1.073]. Bowen (2001) stated that the life cycle viewpoint expands the number and scope of purchasing criteria and necessitates that they cover many stages of a product life cycle, which makes green procurement more difficult than when considering only one requirement.

Most of the respondents agreed that they reduce energy consumption in products during production and transportation [mean score = 3.15, standard deviation = .940]. This finding suggests that in addition to gauging the respondent's perception of growth in sales, business quantises, business wealth, and the firm's capacity to generate the necessary profits, economic performance measures a company's capacity to reduce costs at all points of consumption, such as the sourcing of resources, energy use, proper

waste management, and fines associated with environmental accidents (Chowdhury, 2014; Green et al., 2012; Zhu et al., 2013).

Most of the respondents agreed that they employ eco-technological equipment and process during manufacturing [mean score = 3.34, standard deviation = .940]. This practice, according to Sarkis, Gonzalez-Torre, and Adenso-Diaz (2010) and Green et al. (2012), considers the environment from the conception of ideas to the design of products that use less energy, fewer materials, and minimize toxic emissions, which can positively impact both environmental and economic performance.

Most of the respondents indicated that they produce goods that reduce the consumption of materials and power during use [mean score = 3.30, standard deviation = .961]. Being "green" is good from an economic point of view over the long run, according to Bell, Mollenkopf, and Stolze (2013), who disagree with this conclusion since without natural resources; both business and the consumption of commodities are severely hampered. Similar to this, environmental performance is described as a organisation's ability to cut pollution, solid waste, as well as the utilization of hazardous products and the likelihood of environmental incidents (Abdul-Rashid et al., 2017; Singh et al., 2019).

Most of the respondents agreed that they produce goods that are free from hazardous substances such as lead, mercury, and chromium [mean score = 3.77, standard deviation = .944]. Like this, Zailani et al. (2015)'s study discovered that green purchasing significantly affects business profitability and safeguards the environment from harmful and hazardous products.

Most of the respondents agreed that they produce products with reused and recycled contents such as recycled plastics [mean score = 3.77, standard deviation = .746]. Similar to this, Lai, Wong, and Lam (2016) pointed out that an organization might

evaluate its resource needs, including specific raw materials and part components, to enhance its eco-design strategies. This would promote the reuse and recycling of goods and their components. Kwabena (2016) came to the contrary conclusion that green supply chains and purchasing are impacted by rubbish reuse at a loss.

4.4 Supply Chain Collaboration Efforts

The second study goal is covered in this section. The reason for this objective was to determine the supply chain collaboration efforts among manufacturing SMEs in the Tamale Metropolis. The descriptive statistics, which are represented by the values of the associated means and standard deviations, of the analysis, which used a 5-point rating scale, are shown in Table 4.3.

Table 4.3: Supply Chain Collaboration Efforts

S/N		Descriptive Statistics				
		N	Min	Max	Mean	Std.
CE1	collaborating with customers and preparing forward to achieve environmental goals	77	1	5	3.29	1.179
CE2	partnering with the customer to carry out more ecologically responsible production, packaging, or other environmental activities	75	2	4	3.49	.795
CE3	Customers actively contribute to the development of new items.	75	1	5	3.36	1.022
CE4	supplying suppliers with environmental design standards for design requirements and more environmentally friendly production techniques	75	2	5	3.79	.874
CE5	creating environmental goals in partnership with suppliers	75	2	5	3.51	.978
CE6	We work with our vendors to smoothly integrate our internal business procedures.	75	1	5	3.36	1.123
	Valid N (listwise)	73				

Source: Field survey, (2023)

From the Table 4.3, most of the respondents agreed that they achieve environmental goals through joint planning with customers [mean score = 3.29, standard deviation = 1.179]. In light of this finding, Setyadi (2019) looked into how green supplier and customer behavior affected the sustainability of Indonesian oil and gas companies' businesses. However, businesses' decisions to implement green initiatives like GSCM practices may yield the least results without the collusion of analytical upstream supply chain partners (such as supplier collaboration) and downstream supply chain partners (such as consumer collaboration) (Kaliani-Sundram et al., 2018).

Most of the respondents agreed that they cooperate with client for good production, greensward packaging or other surrounding activities [mean score = 3.49, standard deviation = .795]. Similar to this discovery, Sundram et al. (2018) showed how manufacturing businesses could leverage customer collaboration to rely on client input and suggestions while developing eco-friendly products. To address environmental concerns, companies should adhere to the present surrounding and see clients as strategic parties. (Saeed et al, 2018).

Most of the respondents agreed that their clients actively participate in their new goods development stages [mean score = 3.36, standard deviation = 1.022]. According to Wu (2013), consistent environmental information exchange between a firm and its main clients is what is meant by "green customer collaboration" in accordance with this conclusion. Wu (2013). (2013). (2013). With "green customer collaboration," a company can identify the precise environmental requirements of its customers and cater to those requirements (Laosirihongthong et al., 2013).

Most of the respondents strongly agreed that they provide suppliers with environmental design requirements related to design specifications and cleaner production technology

[mean score =3.79, standard deviation = .874]. According to Wu (2013), consistent environmental information exchange between a firm and its main clients is what is meant by "green customer collaboration" in accordance with this conclusion. Wu (2013). (2013). (2013). With "green customer collaboration," a company can identify the precise environmental requirements of its customers and cater to those requirements (Laosirihongthong et al., 2013).

Most of the respondents indicated that they collaborate with suppliers to set up environmental goals [mean score = 3.51, standard deviation = .978]. Similar to this discovery, suppliers who follow a company's environmental requirements assist the supply chain in becoming more environmentally friendly (Singh et al., 2019). Laosirihongthong et al. (2013) claim that through green supplier collaboration (SMEs' strategic environmental ties with upstream supply chain partners), production enterprises can give suppliers with surrounding designs for eco-inputs and together define surrounding goals. Additionally, some companies employ collaboration-based activities to educate their suppliers about the environment, give them environmental information, and work with them on environmental research.

Most of the respondents agreed that they work with their suppliers to logically radge their inter-firm processes [mean score = 3.36, standard deviation = 1.123]. Like how Ahi and Searcy (2013) define GSCM, they state that it is the inter-organizational harmonize of value chain operations that takes into account economic, environmental, and societal challenges with the aim of improving organizational performance. From a compliance standpoint, GSCM has evolved into an integrated inter-organizational strategy meant to boost corporate performance and environmental well-being (Zhu, Tian and Sarkis, 2012).

4.5 Impact of Supply Chain Collaboration on Performance

This part discusses the third goal of the study. The motive of this goal was to examine the impact of supply chain collaboration on shot of manufacturing SMEs in the Tamale Metropolis. This part consists of the economic, environmental, and social performance. The descriptive statistics, which are represented by the values of the associated means and standard deviations, of the analysis, which used a 5-point rating system, are shown in Table 4.4.

Table 4.4: Impact of Supply Chain Collaboration on Performance

S/N		Descriptive Statistics				
		N	Min	Max	Mean	Std.
Economic Performance						
EP1	Given the state of the economy, our profit has increased.	77	2	5	3.25	.962
EP2	Given the state of the economy, our market share has increased.	77	1	5	3.45	1.165
EP3	Given the state of the economy, our sales growth is higher.	77	2	5	3.75	1.053
EP4	Compared to competitors, the return on assets and investments has improved.	77	2	5	3.70	.875
Environmental Performance						
EnP1	When manufacturing volume is considered, energy usage has dropped.	77	2	5	3.52	.968
EnP2	When production volume is considered, consumption of hazardous materials has dropped.	77	1	5	3.57	1.093
EnP3	regularly conduct environmental audits	77	1	5	3.05	1.134
EnP4	reduces the effects of its actions on the environment.	77	2	5	3.84	.828
EnP5	The company significantly reduces the number of environmental accidents.	73	2	5	3.40	1.051
EnP6	"Reduction of odor/odour emissions and solid waste"	77	2	5	3.40	1.115
Social Performance						
SP1	greater workplace safety	77	2	5	3.66	.954

SP2	Better living conditions in the neighborhood	75	1	5	3.23	1.122
SP3	improved working conditions	77	2	5	3.58	1.030
SP4	strengthened ties to the community and stakeholders	75	1	5	3.27	1.018
Valid N (listwise)		73				

Source: Field survey, (2022)

In terms of economic performance, most of the respondents agreed that considering the economic situation, their profit has increased" [mean score =3.25, standard deviation = .962]. Similar to this, researchers such as Chowdhury (2014) Green et al. (2012) Zhu, Sarkis, and Lai (2008) Assert that in addition to measuring the respondent's perception of growth in sales, business volume, market share, and the firm's capacity for innovation, economic performance also measures a firm's ability to reduce costs at different points of consumption, such as the procurement of resources, energy consumption, proper waste management, and fines associated with environmental accidents.

Most of the respondents agreed that per the economic position, our market share has increased [mean score = 3.45, standard deviation = 1.165]. Like this, GSCM proponents Liu et al. (2012), Rettie et al. (2012), Ahi and Searcy (2013), and Ahi and Searcy (2012) are of the opinion that adopting and putting into practice GSCM strategies results in useful paybacks, such as improved operational effectiveness, increased market share, improved financial performance, reduced costs, improved corporate image, and environmental sustainability, among others. The key advantages of GSCM adoption for SMEs, according to Urban and Naidoo (2012), include decreased manufacturing costs, faster order cycles and lead times, increased market share, high-quality products, and better brand perception.

Further, the respondents agreed that considering the economic situation, their sales growth are higher [mean score = 3.75, standard deviation = 1.053]. The similar claim was made by Agyabeng et al. (2020), who claimed that economic performance is evaluated using financial indicators such as earnings, sales growth, and return on asset, return on equity, and return on investment.

Again, most of the respondents agreed that the return on assets and investment has increased, relative to competitors [mean score = 3.70, standard deviation = .875]. According to Rettie et al. (2012), the adoption and execution of GSCM strategies have good effects on operational effectiveness, market share, financial performance, costs, corporate image, and environmental sustainability, among other things.

In terms of environmental performance, most of the respondents agreed that the power consumption per the volume of production has reduce [mean score = 3.52, standard deviation = .968]. According to Rettie et al. (2012), the acquisition and execution of GSCM policies have good effects on operational effectiveness, market share, financial performance, costs, corporate image, and environmental sustainability, among other things.

Most of the respondents agreed that the use of harmful materials per the volume of production has reduce [mean score = 3.57, standard deviation = 1.093]. According to Zailani et al. (2015), green purchasing has a major impact on corporate performance and protects the environment from dangerous and poisonous goods, which is consistent with this finding. Manufacturing SMEs create hazardous compounds in an effort to meet client demands; therefore, it is important for them to understand how this pollution affects stakeholders, the environment, and natural resources. This tenet serves as the basis for GSCM practices (Maruthi and Rashmi, 2015).

Most of the respondents disagreed that they conduct regular environmental audits [mean score = 3.05, standard deviation = 1.134]. One of the challenges Ghana's green supply chain management faces is the absence of corporate-wide environmental standards or auditing procedures, according to Kwabena (2016). The 2013 study by Chang, Kenzhekhanuly, and Park supports these acknowledged norms.

Most of the respondents agreed that they minimize the environmental impact of its activities [mean score = 3.84, standard deviation = .828]. Asare's (2014) claim that 85% of Ghana's manufacturing workforce is made up of SMEs lends credence to this estimate. Even with such a significant contribution, the manufacturing industry in Ghana is still thought to be harmful to the environment. Wu (2013) asserts that customer collaboration may successfully lessen the negative environmental effects of manufacturing, encourage cleaner production, and aid in getting solutions to surrounding problems.

Most of the respondents agreed that the company applicable decreases the rate of surrounding accident [mean score = 3.40, standard deviation = 1.051]. Indicators of a firm's environmental performance, according to this study, include its capacity to reduce pollution, solid waste, the usage of hazardous chemicals, and the frequency of environmental accidents (Abdul-Rashid et al., 2017; Singh et al., 2019).

Most of the respondents agreed that there is decrease of smell/odour discharges and solid waste [mean score = 3.40, standard deviation = 1.115]. The capacity of a business to reduce pollution, solid waste, the use of hazardous chemicals, and the event of environmental mishaps is what Abdul-Rashid et al. (2017) and Singh et al. (2019) define as environmental performance.

When it comes to social performance, most of the respondents agreed that there is improvement in work safety [mean score = 3.66, standard deviation = .954]. In the same way, social performance is gauged by factors like worker health and safety, an improvement in community quality of life, job training for locals, and staff training, etc (Abdul-Rashid et al., 2017).

Most of the respondents agreed that there is upgraded living quality of surrounding community [mean score = 3.23, standard deviation = 1.122]. In the same vein, social performance is gauged by factors like worker health and safety, an improvement in community quality of life, job training for locals, and staff training, etc (Abdul-Rashid et al., 2017).

Most of the respondents agreed that there is improved work environment [mean score = 3.58, standard deviation = 1.030]. In the same vein, social performance typically gauges an employee's wellbeing by determining whether they are receiving at least the minimum wage and other employee benefits, that is health insurance, paid time off, portable drinking water, a secured workplace, etc., as required by labour law, and whether they are experiencing mistreatment, prosecution, or excuse at the workplace (Bansal, 2005; Chowdhury, 2014).

Lastly, most of the respondents agreed that there is improved relationship with the community and stakeholders [mean score = 3.27, standard deviation = 1.018]. In respect to the research, manufacturing SMEs who use GSCM procedures are likely to experience a win-win situation, which typically results in enhanced environmental, social, and financial performance (Zhan et al., 2018).

4.6 Difficulties of Applying GSCM Practices

This part discusses the fourth goal of the study. The motive of this goal was to link the difficulties of applying GSCM practices in the Tamale Metropolis. The descriptive statistics, which are represented by the values of the associated means and standard deviations, of the analysis, which used a 5-point rating system, are shown in Table 4.5.

Table 4.5: Difficulties of Applying GSCM Practices

		Descriptive Statistics				
S/N		N	Min	Max	Mean	Std.
D1	High Costs	77	1	5	3.39	1.090
D2	Lack of Information	77	1	5	3.42	1.030
D3	Lack of Human Resource	75	1	5	3.35	1.279
D4	No/Weak Legal Structure	75	1	5	3.47	1.082
D5	Slow Rate of Return	77	1	5	3.62	1.193
D6	Lack of Performance Measures	77	1	5	3.68	1.219
D7	Lack of Government Support	77	1	5	3.77	1.062
D8	Lack of Alternate Technology	77	1	5	3.62	1.181
D9	Fear of Success	77	1	5	3.66	1.083
D10	Pressure of Lower Prices"	77	1	5	3.49	1.314
Valid N (listwise)		73				

Source: Field survey, (2022)

From Table 4.5, most of the respondents agreed that there are high costs in implementing GSCM practices on business sustainability [mean score = 3.39, standard deviation = 1.090]. Kwabena (2016) came to the general conclusion that high

environmental program expenses and green management costs influence acquiring green suppliers and managing green supply chains.

Most of the respondents agreed that there is lack of information on implementing GSCM practices on business sustainability [mean score = 3.42, standard deviation = 1.030]. Similar to this, Handfield et al. (2002) stated that one of the difficulties in evaluating GSCM is the absence of resources or knowledge for potential corroboration and research of the life cycle-oriented data.

Most of the respondents agreed that there is lack of human resource [mean score = 3.35, standard deviation = 1.279]. Lack of capital and human resources, a constrained capacity for innovation, and a lack of operational competence are all problems that SMEs deal with (Abbasi and Nilsson 2012). Issues with GSCM is attributed to the fact that personnel and funding, inventiveness, and operating experience (Abbasi and Nilsson, 2012; Wang, 2016).

Again, the respondents agreed that there is no/weak legal structure [mean score = 3.47, standard deviation = 1.082]. Chin et al. (2012) observed that the majority of businesses lack the structured organizational structures required to carry out GSCM action programs and are unable to do so due to cost constraints in relation to this conclusion. For instance, Preuss (2011) pointed out that some companies feel that a structured organizational structure limits the flexibility of decision-making.

Most of the respondents agreed that there are is slow rate of return [mean score = 3.62, standard deviation = 1.193]. However, Agyabeng et al. (2020) said economic performance was measured using financial indicators such earnings, sales growth, return on asset, equity, and investment.

The respondents agreed that there is lack of performance measures [mean score = 3.68, standard deviation = 1.219]. Like this finding, performance evaluates an organization's ability to decrease waste, effectively manage waste, avoid using hazardous or toxic items, use them less frequently, reduce the occurrence of environmental mishaps, and save energy (Chowdhury, 2014; Rao, 2002; Zhu, Sarkis, and Lai, 2008; Zhu, Sarkis, and Lai, 2012).

Most of the respondents strongly agreed that there is lack of government support [mean score = 3.77, standard deviation = 1.062]. However, what is igniting this interest in GSCM are efforts by governments and other organizations to either prevent or lessen the detrimental consequences of industry-related activities on the environment (Wong, Wong and Boonitt 2015). Despite considerable government initiatives to enhance the profitability of manufacturing SMEs, failure rates remain high (Fatoki 2014). (Fatoki 2014).

Most of the respondents agreed that there is lack of alternate technology [mean score = 3.62, standard deviation = 1.181]. Similar to the adoption of GSCM, the majority of manufacturing SMEs lack the managerial knowledge necessary for supplier evaluation, innovative technological skills in the area of green design, and negotiation ability (Mohanty and Prakash, 2014).

The respondents strongly agreed that there is fear of success [mean score = 3.66, standard deviation = 1.083]. This finding suggests that pressures may manifest as requests from commercial groups to join them in exchange for rewards or as concerns about being prohibited or punished for disobeying laws or regulations (Yang, 2019; Sarkis, Gonzalez-Torre and Adenso-Diaz, 2010).

Lastly, most of the respondents strongly agreed that another challenge is pressure of lower prices [mean score = 3.49, standard deviation = 1.314]. Similar to this, Wolf et al. (2014) discovered that providers might decrease the supply of highly desired commodities or increase their prices, or that governmental or regulatory organizations could outright forbid the use of particular raw materials in order to safeguard the environment.

4.7 Regression Analysis on GSCM Practices and Supply Chain Collaboration

Table 4.6: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.549 ^a	.301	.292	.942

a. Predictors: (Constant), Supply Chain Collaboration

Table 4.6 displays the regression study's model summary. It provides both the R² (coefficient of determination) value and the adjusted R². The R² value of 0.549 and the modified R-square value of 301 show a strong connection. The value indicates a level of prediction. The modified R² value shows how much of the fluctuations in the dependent variable can be explained by the independent (supply chain collaboration). It is clear from this that 54.9% of the data can be explained. Thus, supply chain collaboration influences a SMS's long-term viability.

Table 4.7: ANOVA^a

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	28.324	1	28.324	31.939	.000 ^b
	Residual	65.624	74	.887		
	Total	93.947	75			

a. GSCM Practices

b. Predictors: (Constant), Supply Chain Collaboration

The ANOVA of regression is shown in Table 4.7. How well the independent factor significantly predicts the result variable is shown by the ANOVA. The regression row's Sig. (p-value) value of 0.00, which is less than the significant level of 0.05, shows that the model used is statistically adequate for predicting the outcome variable (GSCM Practices).

Table 4.8: Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sign.
		B	Std. Error	Beta		
1	(Constant)	1.247	.333		3.747	.000
	GSCM Practices	.550	.097	.549	5.651	.000

a. Dependent Variable: GSCM Practices

The regression model predicts that Supply Chain Collaboration have a sizable good impact on GSCM Practices based on the coefficients in Table 4.8. The findings of the regression coefficient corroborate this conclusion.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.0 Introduction

The findings from the analysis based on the study's goals are summarized in this chapter. This chapter offered the findings and recommendations required to enhance Green Supply Chain Management (GSCM) practices on the performance of manufacturing SMEs. The chapter offered suggestions for additional research.

5.1 Summary of Findings

This part summarized the main findings of the study. These findings have been presented under the respective objective subheadings as described below.

5.1.1 Green Supply Chain Management Practice

According to the survey, manufacturing SMEs do not design goods to contain recyclable and reusable components, nor do they employ life-cycle assessments to determine how much of an environmental burden a product imposes. In the meantime, SMEs use eco-technological machinery and processes when producing, reducing the amount of energy used in the products during manufacturing and transportation. According to the report, small and medium-sized enterprises (SMEs) make goods that conserve resources and energy during usage, are devoid of hazardous compounds like lead, mercury, and chromium, and use repurposed and recycled materials like recycled plastic.

5.1.2 Supply Chain Collaboration Efforts

According to the study, manufacturing SMEs achieve their environmental objectives by working closely with their clients to plan events, work together to develop eco-friendly packaging or other environmental initiatives and involve clients directly in the

creation of new products. Additional research revealed that the SMEs give suppliers environmental design guidelines for design needs and cleaner production techniques. Additionally, the SMEs work with their suppliers to seamlessly integrate their inter-firm operations and set environmental targets together.

5.1.3 Impact of Supply Chain Collaboration on Performance

The research discovered that in relations to economic performance, the manufacturing SMEs considering the economic situation, their profit has increased, our market share has increased, their returns are higher and their return on assets and investment has increased, relative to their competitors. The study found that, in terms of environmental performance, energy consumption and consumption of hazardous materials have both decreased when production volume is considered, but that manufacturing SMEs do not routinely conduct environmental audits. The findings showed that the SMEs minimize the environmental impact of its activities, relevantly decreases the frequency of environmental accident, and reduce smell/odour discharge and solid waste. Relating to social performance, the study revealed that there is improvement in work safety, improvement in living conditions of surrounding community, work environment and connection with the community and stakeholders.

5.1.4 Difficulties of Applying GSCM Practices

The study discovered that there are high costs in implementing GSCM practices on business sustainability as well as lack of information on implementing GSCM practices. The study showed that lack of human resource, no/weak legal structure, slow rate of return and lack of performance measures are some challenges comforting the manufacturing SMEs. Further results indicated that other challenges that the manufacturing SMEs face were lack of government support, alternate technology and fear of success and pressure of lower prices.

5.2 Conclusion

In conclusion, GSCM practices benefit manufacturing SMEs in more ways than one. GSCM not only assist them to perform directly economically, but also help them to perform socially and environmentally, which raises both their own and the community in which they operate the quality of life. GSCM procedures therefore influence the manufacturing SMEs performance. Manufacturing SMEs in the Tamale area and other regions with a comparable environment can understand how critical it is for them to take GSCM practices into account as a strategic endeavour to improve their performance. Relationship between GSCM procedures and business performance, supply chain collaboration plays a supporting function. Collaboration among manufacturing SMEs enables them to collectively set environmental objectives and supply environmentally conscious manufacturers of eco-inputs. Considering the findings, Manufacturing SMEs will receive increased encouragement to invest in GSCM practices and forge strong ties with environmentally conscious supply chain partners to achieve their goals for sustainable performance. To implement GSCM procedures and spread awareness of the concept, government financing is needed. It is important to actively publicize the developed countries' implementation of GSCM success stories. Practitioners are most likely to be informed about the effects of green supply chains on the environment and more inclined to employ them when education and training are closely related to environmental rules and policy.

5.3 Recommendations

The research suggests policymakers, in particular the government and other environmental regulatory bodies, must give required motivation to enforce existing regulations and also develop require national regulations which would support and

exert pressure on Ghanaian SMEs in the manufacturing industry should use GSCM techniques.

The research recommends that establishing strong relationships between eco-conscious supply chain parties by talking about the best ways to design green products throughout the preliminary stages of research and development is important for Ghanaian businesses investing in GSCM processes.

Customers could inform businesses of the environmental characteristics of the goods they would prefer to purchase, and suppliers should utilize higher environmental sensitivity packaging and raw materials to address surrounding issues and satisfy manufacturers' demands in this area.

Manufacturing SMEs ought to work together for the long term with eco-conscious supply chain partners. A long-term collaborative project will ensure that all stakeholders (businesses and supply chain partners) comprehend one another, that the initial costs incurred during the collaboration process are recovered, and that joint operational management is exercised.

The manufacturing sectors should first increase their knowledge of sustainable supply chain management and adopt strategies that are suitable with how their manufacturing firm operates its supply chain. should host collaborative seminars and workshops to educate suppliers and staff about the advantages of green buying and the importance of adopting it. When suppliers and employees are informed about the advantages of green purchasing, the green supply chain's implementation process is simplified.

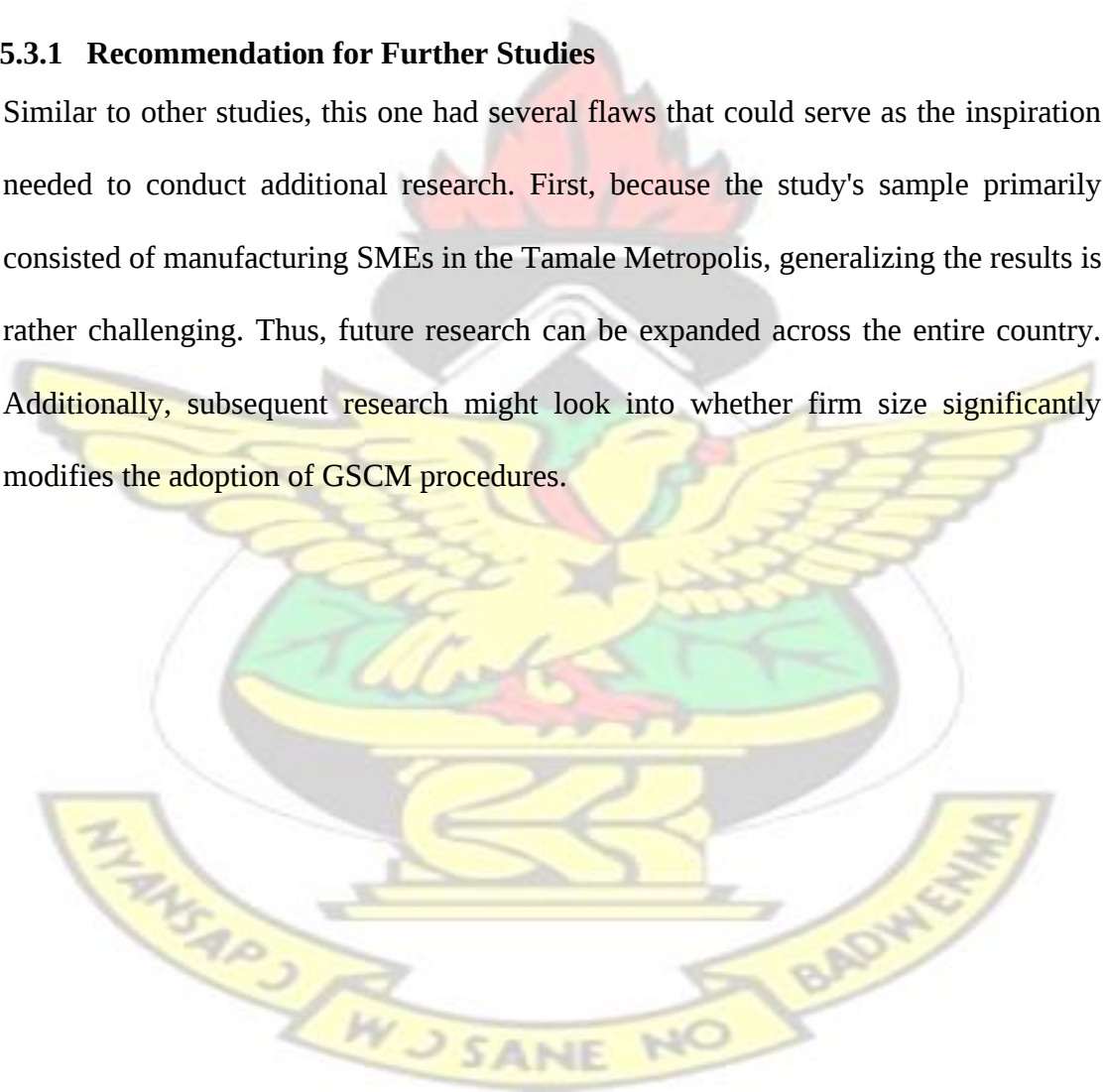
The manufacturing sectors should collaborate to train their supply/logistics/procurement professionals on the subject of supply chain

sustainability. This will increase practitioners' and staff's understanding of and familiarity with green supply chain/procurement practices among those working in the manufacturing industries.

The manufacturing firm should understand the importance of environmental issues and how they affect local communities. It should also involve and instil this culture in its staff, who will carry out the firm's green strategy.

5.3.1 Recommendation for Further Studies

Similar to other studies, this one had several flaws that could serve as the inspiration needed to conduct additional research. First, because the study's sample primarily consisted of manufacturing SMEs in the Tamale Metropolis, generalizing the results is rather challenging. Thus, future research can be expanded across the entire country. Additionally, subsequent research might look into whether firm size significantly modifies the adoption of GSCM procedures.



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APPENDIX

ACADEMIC RESEARCH QUESTIONNAIRE

KWAME NKRUMAH UNIVERSITY OF SCIENCE AND TECHNOLOGY



QUESTIONNAIRE FOR SMES IN THE TAMALE METROPOLIS

Dear respondent,

My name is Rashida Adam and as part of the requirement for the award of Master of Science in logistics and supply chain management, I am conducting a research on the topic “The Impact of Green Supply Chain Management Practices On Firm Performance. Moderating Role of Supply Chain Collaboration. A Case Study of SMEs in the Tamale Metropolis”

The information you provide will therefore be used for academic purposes only and will be treated with confidentiality. Please tick (✓) where appropriate and provide details where necessary. Thank you.

SECTION A:

Demographic Characteristics

This section intends to get information on the respondents' demographic background.

Please mark “√” in the appropriate box.

1. Gender: Male { } Female { }
2. Age: 18 – 25 { } 26 - 35 { } 36 – 45 { } 46 – 55 { } 56 + { }
3. Highest level of education: No education { } Primary { } JHS/SHS { } Tertiary { } Others { }
4. Position of respondent: Owner of the enterprise { } Manager { }
5. Nature of business: Small { } Medium { }
6. Form of business: Sole proprietorship { } Partnership { } Company { }
7. For how long has this business been in existence?
1 – 5 years { } 6 – 10 years { } 11 – 15 years { } Above 15 years { }
8. Category of Manufacturing SMEs
 - Furniture { }
 - Shea butter/oil processing { }
 - Clothing and footwear { }
 - Soap and detergent { }
 - Chemicals { }
 - Food and beverage { }
 - Others { }

SECTION B:

Green Supply Chain Management Practice

The statements below are prepared in Likert-scale form with five (5) point scales. Rank the extent to which you agree or disagree with the following statements. (5= strongly agree, 4= Agree, 3= Neutral, 2= Disagree, 1= strongly disagree)

S/N	Statement	5	4	3	2	1
GP1	Designs products to ensure that they have reusable and recyclable contents					
GP2	Uses life-cycle assessment to evaluate the environmental load of products					
GP3	Reduces power consumption in products during manufacturing and transportation					
GP4	Employs eco-technological equipment and process during manufacturing					
GP5	Produces products that reduce the consumption of materials and energy during use					
GP6	Produces products that are free from hazardous substances such as lead, mercury and chromium					
GP7	Produces products with reused and recycled contents such as recycled plastics					

SECTION C:

Supply Chain Collaboration Efforts

The statements below are prepared in Likert-scale form with five (5) point scales. Rank the extent to which you agree or disagree with the following statements. (5= strongly agree, 4= Agree, 3= Neutral, 2= Disagree, 1= strongly disagree)

S/N	Statement	5	4	3	2	1
CE1	Achieving environmental goals through joint planning with customers					
CE2	Cooperating with customers for cleaner production, green packaging or other environmental activities					
CE3	Customers are actively involved in our new product development process					
CE4	Providing suppliers with environmental design requirements related to design specifications and cleaner production technology					
CE5	Collaborating with suppliers to set up environmental goals					
CE6	We work with our suppliers to seamlessly integrate our inter-firm processes					

SECTION D:

Impact of Supply Chain Collaboration On Performance

The statements below are prepared in Likert-scale form with five (5) point scales. Rank the extent to which you agree or disagree with the following statements. (5= strongly agree, 4= Agree, 3= Neutral, 2= Disagree, 1= strongly disagree)

S/N	Statement	5	4	3	2	1
	Economic Performance					
EP1	Considering the economic situation, our profit has increased					
EP2	Considering the economic situation, our market share has increased					
EP3	Considering the economic situation, our sales growth are higher					
EP4	The return on investment has increased					
EP5	The return assets have been higher, relative to competitor					
	Environmental Performance					
EnP1	Energy consumption considering the volume of production has decreased					
EnP2	Consumption for hazardous materials considering the volume of production has decreased					
EnP3	Conduct regular environmental audits					
EnP4	Minimizes the environmental impact of its activities					
EnP5	The firm relevantly decreases the frequency of environmental accident					
EnP6	Reduction of smell/odour emissions and solid waste					
	Social Performance					
SP1	Improved work safety					
SP2	Improved living quality of surrounding community					
SP3	Improved work environment					
SP4	Improved relationship with the community and stakeholders					

SECTION E:

Difficulties of Applying GSCM Practices

The statements below are prepared in Likert-scale form with five (5) point scales. Rank the extent to which you agree or disagree with the following statements. (5= strongly agree, 4= Agree, 3= Neutral, 2= Disagree, 1= strongly disagree)

S/N	Statements	5	4	3	2	1
D1	High Costs					
D2	Lack of Information					
D3	Lack of Human Resource					
D4	No/Weak Legal Structure					
D5	Slow Rate of Return					
D6	Lack of Performance Measures					
D7	Lack of Government Support					
D8	Lack of Alternate Technology					
D9	Fear of Success					
D10	Pressure of Lower Prices					

THANK YOU