

KWAME NKRUMAH UNIVERSITY OF SCIENCE AND TECHNOLOGY, KUMASI
COLLEGE OF HUMANITIES AND SOCIAL SCIENCES
SCHOOL OF BUSINESS

KNUST

TOPIC:

**THE INFLUENCE OF GREEN SUPPLIER DEVELOPMENT CAPABILITY ON
GSCM ADOPTION IN FOOD PROCESSING AND AGRI-BUSINESS FIRMS IN
GHANA: THE MODERATING ROLE OF TOP MANAGEMENT SUPPORT**

BY

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DECLARATION

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

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ABSTRACT

Underpinned by the information processing theory and the dynamic capability theories, this study develops and tests arguments that there is a relationship between green supplier development capability and green supply chain management adoption and that this relation is conditional upon levels of top management support. Accordingly, a quantitative research design was employed for the study. The population of the study consists of food processing firms and agri-businesses who are registered with the Association of Ghana Industries and the Registrar General's Department who are into green practices. Consequently, 154 firms who are into green practices for at least one year were considered. The projected relationship of the study was tested using a purposively selected 2 middle level procurement and supply chain management managers totalling 308 respondents within the companies' supply chain. 276 questionnaires were found useful and used for the analysis. The respondents are people who have adequate knowledge in green supplier development capability and green supply chain management practices and have implemented environmentally sustainable practices in their operations. Structured questionnaire was designed and used to elicit information from the respondents. The data was analysed using SPSS in Amos version 22 to estimate the regression analysis. Findings from the study indicate that green supplier development capability has a positive significant relationship with green supply chain management adoption. The study further found out that, the relationship between green supplier development capability and the adoption of green practices is weakened by higher level of top management support. The possible reason being that the procurement officers prefer to take initiatives on their own instead of being supported by management. A theoretical contribution from this study is the revelation that, green supplier development capability stimulates the adoption of green supply chain management practices and is more complicated than formerly thought and that higher level of top management support negatively affect green supplier development capability. The study thus recommends that, management of these food-processing firms must give much room for procurement officers to take initiatives concerning green activities on their own without much involvement and this will help the officers to be creative concerning issues of green. In addition, instead of providing support management of these institutions must explore other avenues which can increase green supplier development capability like creating of conducive atmosphere and regular sustainability education. This they can do by setting goals for their firms when it comes to issues of sustainability and do everything within their power to reach those goals. Employees should also be given the tools and incentives so they could take issues of sustainability seriously.

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LIST OF ABBREVIATIONS

ABBREVIATION

MEANING

GSCM

Green Supply Chain Management

GSDC

Green Supplier Development Capability

IM

Internal Management

CC

Customer-Cooperation

GP

Green Procurement

TM

Top-Management

SSDP

Supplier Development Practices



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DEDICATION

I dedicate this project work to my lovely wife, Gladys Esinu Abiew for her tremendous contributions and support for the successful completion of this programme.



CHAPTER ONE

INTRODUCTION

1.1 Background to the study

Green supply chain which involves the process of incorporating environmental factors into the whole production process to lead to a reduction in the emissions of waste gases and water (Michel et al., 2020) is gaining a lot of research attention from scholars in academia and industry lately (Jemsittipasert, Siriattakul & Wattanapongphasuk, 2019). This is due to the ever-increasing demand by stakeholders for the reduction of carbon footprints and greenhouse gas emission caused by firms (Bhardwaj, 2016). Subsequently, Green supply chain management is noted to play a key role in assisting firms to plan in responding to these environmental challenges (Kumat et al., 2012) and ensuring sustainability in their production and consumption processes (United Nations, 2019).

With the growing research interest on the concept, an overwhelming majority of studies have investigated into different aspect of the subject but predominant studies focused on drivers of the concept such as institutional and environmental drivers e.g stakeholders' pressure (Huang & Borazon, 2021). In addition is awareness of and pressure to engage in ecological modernization (Huang & Huang, 2021); green intellectual capital and green supply chain orientation (Maaz, Ahmad & Abad, 2021) as well as relational capital (Yu, Zhang & Huo, 2021).

Surprisingly, Africa and Ghana especially have not received enough research attention on Green Supply Chain Management (GSCM) even though many industrialized firms are encountering these green environmental challenges in their operations compared to the developed nations (Agyabeng-Mensah et al., 2020).

There has therefore been a call for future research in other regions to conduct further investigation on the concept and consider other variables that can be antecedents for adopting GSCM as well as moderating variables that can influence these drivers and GSCM (Huang, Borazon & Liu, 2020). This is because some reported cases shown that inspite of considerable institutional and environmental pressures, a number of firms were still unable to adopt green practices (Zhu et al., 2013). To some extent, some scholars heeded to the call and researched into firms' green capabilities to explain GSCM adoption (Nkrumah, Asamoah, Annan & Agyei-Owusu, 2020).

Nevertheless, these scholars have focused on the direct influence of these green capabilities on adoption of GSCM. However, studies are yet to investigate the mechanisms and boundary conditions between these variables. This necessitated the need to extend literature by looking at how a boundary condition like top-management support could influence this relationship in the food processing and agri-business industry in Ghana. Because literature suggested that the presence of top management support in firms will help them to improve their performance and capabilities of their suppliers (Lo et al., 2018). Moreover, when the support from top management is high, firms are likely to achieve better results from the implementation of GSCM practices (Choi & Hwang, 2015).

Investigating into these activities using the food processing industry is thus highly recommended because the contemporary diets of the ordinary Ghanaian are now shifting away from staples food as people relocate to cities and earn higher incomes (International Food Policy Research Institute, 2022). The shift to the consumption of processed foods is thus progressively becoming a norm; an indication of how relevant the industry has become.

Again, the sector in Ghana is made up of people with diverse cultural and religious background who bring some level of uniqueness to their operations.

Concentrating on this industry is thus highly relevant since the individual uniqueness within the various organizations will bring specific uniqueness to the results of the study.

Hence, the aim of this study is to examine how green supplier development capability can influence GSCM adoption and the potential moderating influence of top management support in this relationship based on theoretical assumptions.

1.2 Problem Statement

Food processing companies in Ghana plays a major role in Ghana's economy and this area is one of the fastest growing industry. Nevertheless globally, the industry has been noted to be a significant contributor of waste (Khedkar & Singh, 2018) of which the food processing industries and agri-businesses in Ghana are of no exception.

However, very little is known about green activities in Ghana especially the food processing industry. The few studies on green activities within the country focused on the manufacturing and extractive firms (eg. Nkrumah et al., 2020).

Accordingly, there is an increasing demand by stakeholders all over the world for the reduction of carbon footprints and greenhouse gas emission caused by firms (Bhardwaj, 2016). This demand has drove a number of research especially towards the drivers of green practices especially in the developed countries. In spite of this rising attention and contribution of studies on the drivers of Green Supply Chain Management (eg. Huang, Borazon & Liu, 2021; Huang & Huang, 2021; Maaz, Ahmad & Abad, 2021; Yu, Zhang & Huo, 2021), literature is yet to adequately explore the role of the four green capabilities (green supplier development, green marketing, green manufacturing, green packaging and environmental participation) as drivers of GSCM (Nkrumah, et al., 2020).

A single study identified in literature on the nexus between these green capabilities and GSCM adoption resulted in an inconclusive result that is, on the influence of each of the capabilities on the adoption of green practices (Nkrumah, et al., 2020).

Consequently, one of these firm level green capabilities identified as Green Supplier development (GSD) is noted to have the most positive significant effect on the adoption of GSCM among the other green capabilities (Nkrumah, et al., 2020). Because it is an important GSM activity which addresses environmental issues (Bai & Satir, 2020), strengthens relationship with suppliers, which in turn improves business efficiency (Xu & Peng, 2018). Concisely, it has become the focus of firms today because it assists business in carrying out environmentally friendly operations (Lo, et al., 2018)

Notwithstanding these essence of the phenomenon, green supplier development capability has been understudied ((Bai & Sakis, 2010) and very little is known about how it drives GSCM adoption (Shaharudnin et al., 2019). This research therefore desires to investigate more into this particular capability, which has been woefully underexplored.

Again, despite the essential influence of the concept on the adoption of GSCM practices knowledge is lacking on boundary conditions, which could influence this relationship (eg. Nkrumah et al., 2020). This Micheli et al. (2020) for instance posited that so far, there is too little agreement and lack of empirical evidence over the factors which could moderate the relationship between drivers of GSCM and GSCM practices.

These reasons necessitated the change in the adopted model from Nkrumah, et al., (2020) so that this study could empirically investigate how top management support could influence this relationship as a boundary condition.

Investigating into top management support as a potential significant moderator which could play a meaningful role in this relationship is thus highly relevant because knowledge is lacking of this role. Nonetheless, literature pointed out that with top management support firms will be able to improve their performance and capabilities of their suppliers (Lo et al, 2018) and this may result in the adoption of greener practices.

Literature again specified that even the single study which looked at how firm level green capabilities could drive GSCM adoption focused on manufacturing and extractive firms (eg Nkrumah, et al., 2020). Nkrumah et al. (2020) thus recommends future studies to consider other industries to find out how these capabilities could influence GSCM adoption in these industries. It is based on the above revelations that this study sought to address the identified problem and gaps with a focus on the food processing industry in Ghana, a Sub-Saharan African context. Because delving into how top management support could accelerate green supplier development capabilities to influence GSCM will provide an insight to practitioners in terms of an extensive knowledge on issues of green supplier development and GSCM adoption in this vital industry.

1.3 Objectives of the study

In line with the identified gaps the study was guided by the following specific objectives;

The main objective of this study is thus to examine the influence of green supplier development on the adoption of Green Supply Chain Management Practices: the moderating role of top management support.

Specifically, the study seeks;

- a. To find out the relationship between green supplier development capability and adoption of GSCM within the food processing and agri-business firms in Ghana.
- b. To examine the potential moderating influence of top management support on green supplier development capability and GSCM adoption relationship within the food processing and agri-business firms in Ghana.

1.4 Research Questions

The study also seeks to specifically answer these research questions;

- a. What is the relationship between green supplier development capability and the adoption of GSCM within the food processing and agri-business firms in Ghana?
- b. What is the moderating role of top management support in the relationship between green supplier development capability and GSCM adoption within the food processing and agri-business firms in Ghana?

1.5 Significance of Study

The relevance of the food processing industry in Ghana cannot be underestimated. This is because though Ghana's traditional diets are based on a variation of staple crops like maize, cassava, millet, plantain among others, the contemporary diets of the ordinary Ghanaian are now shifting away from the staples as people relocate to cities and earn higher incomes (International Food Policy Research Institute, 2022). The shift to the consumption of these processed foods is thus progressively becoming a norm; an indication of how relevant the industry has become.

However only a fifth of these products are processed locally by these industries. The constraint to a vibrant processing sector is thus due to the challenges they are incurring (Andam and Silver, 2016) and issues of green are of no exception. It is therefore imperative for academic researchers like us to probe into issues affecting these industries and provide appropriate recommendations to uplift the performance of this crucial industry. Findings of this study thus has critical policy implications for researchers, practitioners and other stakeholders as discussed below;

First, to the best of the researcher's knowledge, this study is the first to discuss the moderating role of top management support on the relationship between green supplier development capabilities and adoption of GSCM practices. The findings of the study will therefore provide preliminary evidence to management of food processing companies in Ghana on the significant condition of top management support for fully leveraging sustainability to improve the relationship between their supplier's development capabilities and green Supply Chain Management Practices.

Again, the data used for the empirical analysis would be collected from Ghanaian food processing companies and agri-business. This adds to research sources of green capabilities and GSCM practices in developing economies; a context, which has been underlined as lacking in such field of research. Furthermore, as Ghana has emerged as a key player in Africa, improved knowledge about Ghana will provide a number of managerial guidelines to businesses to survive and prosper in this volatile environment.

In addition, this thesis will enhance the researcher's knowledge in research work and will assist him to understand issues of green supply chain management.

Also, the findings of the study will represent the buying organizations standpoint hence future studies can delve into other mechanisms and other boundary conditions that could influence green capabilities to achieve GSCM practices because mechanisms and boundary conditions that could influence the three firm level green capabilities are woefully under- investigated in empirical studies.

Notwithstanding the above, other researcher who will be interested in the results of this work will use it as a stepping-stone to find out what is happening concerning green practices in other industries since the current study provides a new facet to research on green supplier development capability, management support and GSCM adoption.

1.6 Scope of the Study

This study specifically focused on examining the influence of green supplier development on the adoption of Green Supply Chain Management Practices: the moderating role of top management support. The study is limited to middle level procurement and supply chain managers who are responsible for green practices within the food processing and agri-business companies in Ghana.

1.7 Limitation of the Study

Since no study is flawless, this study also encountered a number of limitations during its conduct. Firstly is the difficulty in accessing some very good articles from highly ranked journals like Elsevier, Emerald Insight among others for the review of the study. Most of these articles were of sale and the school's subscription did not cover them. Again, some of the respondents were initially reluctant to answer the questionnaires for fear of being exposed though they were assured the study was purely for academic purpose. However, these limitations did not have any significant effect on the success and credibility of the study.

Again, the study was cross sectional in nature hence the conclusions of the study could be limited to only the target companies. Nevertheless, all these difficulties did not have any significant impact on the credibility of the study.

1.8 Research Methodology

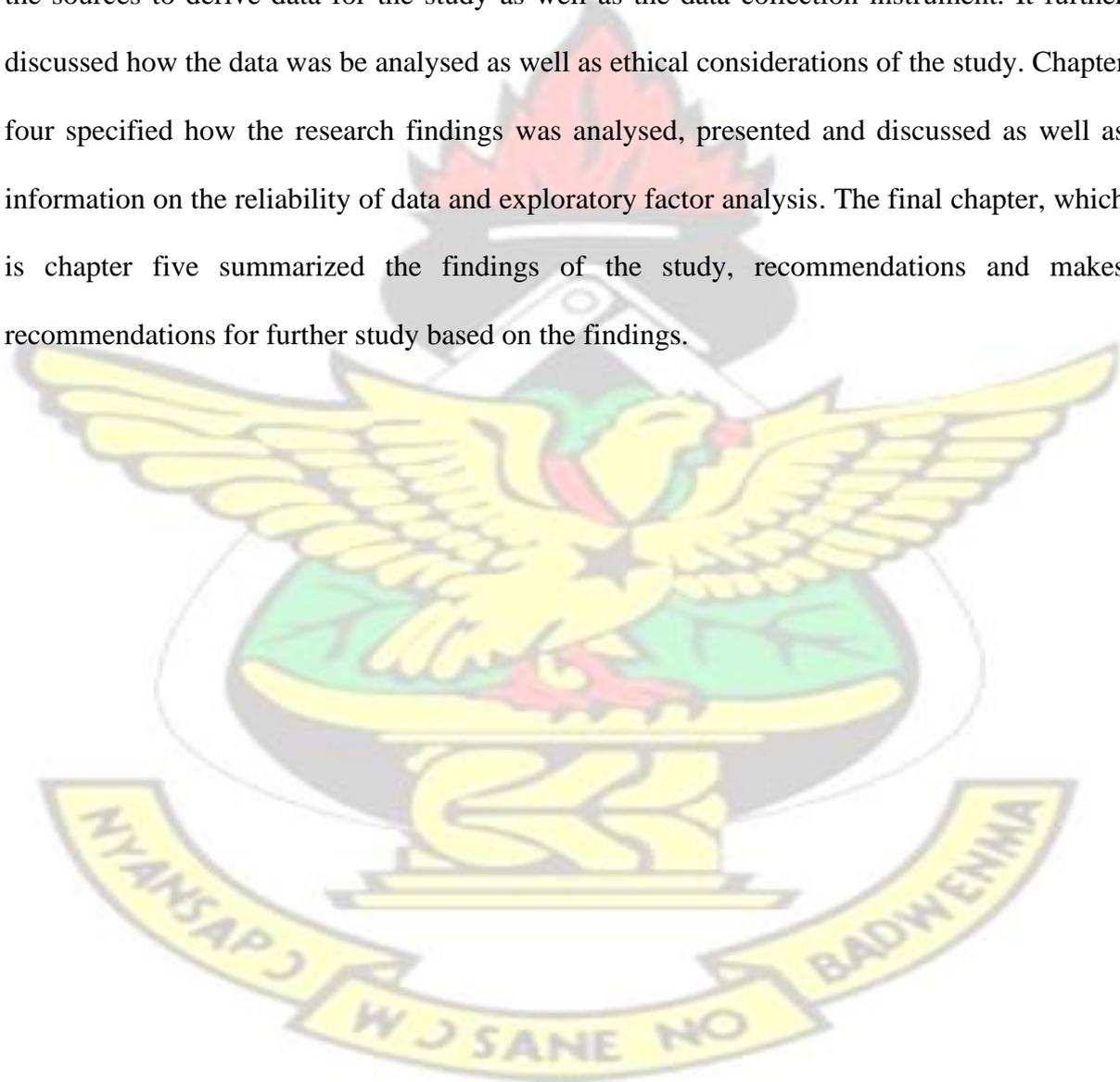
The study adopted the survey research design. The population of the study covers the list of active food-processing and agri-business firms in Ghana who are registered with the Association of Ghana Industries (AGI) and the Registrar General's Department who have embraced environmentally sustainable practices in their operation for at least a year totalling 154 firms. Specifically, two middle level managers were requested from each firm to be the respondents to the research questions. All the food processing and agri-business firms obtained from the two sources were considered for the study. Again, the purposive sampling technique was used in the selection of the firms' middle level managers.

Data was sourced from primary sources and the Scopus data was heavily relied on to retrieve relevant articles for the study. A questionnaire which entailed close-ended question was employed as a tool as for data collection from the target respondents. Hypotheses made in the study was tested with data obtained from the total population sample. The objectives one and two were analysed using SPSS Amos version 25 to perform correlation, simple regression and moderation regression analysis respectively.

1.9 Organization of the Thesis

The study is organized into five chapters. The first chapter introduces the study and entails the background of the study, problem statement, research objectives and questions, significance of the study, scope of the study, limitations and the organization of the study.

Chapter two covered the related literature to the concept of green supplier development, top management support and GSCM adoption. The chapter again looked at empirical findings on the objectives of the study as well as the theories, which underpins the relationship between the constructs in this study. The chapter two again looked at the hypothesis development based on previous empirical findings. The third chapter discussed the methodology of going about the entire thesis; it defined the population of the study, the sample size and sampling technique, the sources to derive data for the study as well as the data collection instrument. It further discussed how the data was be analysed as well as ethical considerations of the study. Chapter four specified how the research findings was analysed, presented and discussed as well as information on the reliability of data and exploratory factor analysis. The final chapter, which is chapter five summarized the findings of the study, recommendations and makes recommendations for further study based on the findings.



CHAPTER TWO

2.0 LITERATURE REVIEW

2.1 Introduction

This chapter entails the related literature on green supplier development capabilities and green supply chain management adoption, their theoretical background as well as a review of results from key findings on the moderating role of top management support. Specifically, literature was reviewed on the concept of green supply chain management practices, drivers of green supply chain management practices, green supplier development capabilities and green supply chain management adoption. The relationship between green supplier development capabilities, green supply chain management adoption, and the moderating influence of Top Management Support on the relationship. The RBV, dynamic capability and social exchange theories were used as the lenses through which the relationship between the constructs were explained.

2.2 Key concepts

2.2.1 The Concept of Green Supply Chain Management Practices

According to Cousins et al. (2019), the concept of green supply chain management is receiving a tremendous attention of scholars and stakeholders lately. However, there is a lack of consensus on the exact meaning and definition of the concept in literature (Srivastava, 2007). Some perceive the concept as the process of incorporating an environmental thinking in a supply chain from the point of designing products, obtaining the raw materials, processing the products, delivering them to customers and the ability to manage the product's end of life (Micheli et al., 2020).

Srivastava (2007) also provided similar definition by describing the concept as the process of incorporating an environmental mind-set into supply chain management including the design of product, material sourcing and selection, manufacturing processes and final product delivery to consumers and end-of-life management of the product after its useful life. Due to the lack of a unified definition and scope of GSCM, Nkrumah et al. (2020) noted that it is not surprising that its' practices as well have likewise not been clearly defined.

In spite of the inconsistencies in the definition of its practices, literature has been able to classify these GSCM practices into two broad categories that is; into internal category (i.e Internal Environmental Management; Eco Design) and external ones namely; Cooperation with customers; Green Purchasing and Investment Recovery (Micheli et al., 2020). Internal practices are practices which takes place within businesses while the external ones pertain to dealings within supply chain allies or partners (Zhu et al., 2013). Specifically, internal SGCM practices shows businesses decisions to behave in eco-friendly ways while the external practices classically reflect the co-operation of firms with other stakeholders who are environmentally concerned.

Literature has demonstrated that external practices such as green purchasing has been well explored (eg. Micheli, 2020; Zhu et al., 2007). Other prevalent GSCM practices studied include investment recovery which refers to firms step by step use of techniques such as recycling, redeployment, reselling to get the maximum value from their supplies and product (Zhu et al., 2008). Others according to Richey et al., (2005); Zhu et al. (2007) and Beamon, (1999) include; reverse logistics; an activity that entails taking back supplies and products with the aim of reusing them. Again, a well identified and studied GSCM practice in literature is Eco-design which focuses on environmental and user contemplation in the design and delivery of services and products (Beamon, 1999; Richey et al., 2005; Zhu et al., 2007).

Consequently, reviews by Reddy Maditati et al. (2018) reveals that there is a steady growth of contribution in the assessment of GSCM practices and performance (Tseng, et al., 2019) with a huge concentration on SMEs in developing economies (Mafini & Loury Okoumba, 2018).

2.2.1.1 Drivers of Green Supply Chain Management Adoption

Literature has identified a number of potential group of drivers influencing firms' adoption of internal or external GSCM practices and other environmental management practices (Zhu et al., 2005). This Brik (2013) further affirmed that a number of studies have investigated the factors which influence the adoption of GSCM practices. All the same, Micheli et al (2020) was quick to add that research in terms of which factors particularly permit the execution of certain practices does not seem to lead to a unique result. Notwithstanding, the researcher believes that the challenges in finding single results may be due to a number of factors influencing this relation between the drivers and practices majority which are yet to be explored in empirical literature.

But generally, empirical evidence shows that the antecedents of GSCM lead firms to the implementation of green practices which subsequently drives them towards sustainability. Some authors thus subsequently have found some drivers in their studies as the most effective antecedents of adopting GSCM practices.

Notable factors found by some of these authors includes; regulatory entities (eg. Luthra et al., 2016), reputation strategy, that is a strategy to advance green image of a firm (Testa & Iraldo, 2010). Brik et al. (2013) also explored how five possible drivers that is pressure from customers, competitive dynamics, regulatory framework, leadership and economic incentive could influence the adoption of GSCM.

Their study found out that competitive pressures and leadership highly projected the adoption of GSCM practices compared to firm size and regulations. Internal factors within the firm were also found to highly predict GSCM adoption and implementation (Chen et al., 2012) as well as members of the supply chain (Eg. Caniels et al., 2013).

A study by Lin and Ho (2011) also on the factors influencing the adoption of green practices in the logistic industry of China also indicated that compatibility, complexity, organizational support, compatibility, relative advantage, organizational support, quality of human resources, size of companies, government support and regulatory pressure were all factors that drives the adoption of green practices.

Current results from recent study by Wang et al. (2018) an international study across a number of companies also shows that cost drivers and customer drivers significantly influence the adoption of both internal and external GSCM practices. Huang and Huang (2022) who further examined the antecedents and consequences of sustainable green supply chain management from the perspective of ecological modernization in the electrical and electronics industry in Taiwan and China also found out that awareness of and pressure to engage in ecological modernization significantly positively affected SGSCM. Their study affirmed the findings of Brik et al. (2013) that pressure from stakeholders influences the implementation of GSCM practices.

Moreover, Maaz, et al. (2021) conducted a survey and examined how green supply chain orientation and green intellectual capital could act as an antecedents and consequences of green supply chain management practices. They concluded from their study that green supply chain orientation positively impacts the implementation of GSCM practices.

As a matter of fact, the review of these past studies has established that though several studies examined the drivers of GSC adoption they neglected how firm level green capabilities could drive GSCM adoption (Nkrumah et al., 2020). Moreover, no prior study has explored the likely role of potential mediators and moderators, which can significantly play a meaningful role on this firm level green capabilities-GSCM practices relationship.

This study thus assists to address this shortcoming by focusing on one of the essential firm level green capabilities (green supplier development). To find out how it could further affirm its positive and significant prediction effect on GSCM adoption as found by Nkrumah et al. (2020) with a focus on active food processing and agri-business firms in Ghana. Also, to explore the moderating influence of top-management support in this firms.

The reason for the focus on green supplier development capability is motivated by the fact that literature exposed it as a firm level capability which has the most positive significant effect on the adoption of GSCM among the other green capabilities (Nkrumah, et al., 2020). Thus, it has been identified as an important green supply chain management activity in addressing environmental issues (Bai & Satir, 2020). Notwithstanding, the concept has been understudied ((Bai & Sakis, 2010) and very little is known about how it drives GSCM adoption (Shaharudnin et al., 2019).

2.2.2 Green Supplier Development Capabilities

Green supplier development capability is operationalized in this study as the process of firms' ability to collaborate with their suppliers to decrease their negative environmental impact (Norheim-Hansen, 2023).

In other words, it is any initiative taken by the buying firms to improve their supplier sustainability capabilities to meet two or more elements of the triple bottom line (TBL) of multiple stakeholders along the supply chain (suppliers, buying firms, customers, etc.) (Bai & Satir, 2022). It is also perceived by other authors as the ability of a focal firm to identify and collaborate effectively with suppliers for greater green results (Shang et al., 2010; Blome et al., 2014). This ability to identify and work closely with suppliers for GSCM has been identified as a driver of GSCM in previous studies (Zhu & Sarkis, 2006).

Sustainable supplier development has thus attracted interest recently both in the academic and practical domains. Consequently, numerous papers that have been published in scholarly publications attest to this interest (Bai & Satir, 2022).

Despite the large number of published literature reviews on sustainable supplier management and supplier development (SD) (Glock et al., 2017; Zimmer et al., 2016), there are few reviews on sustainable supplier development. However, literature critiques including Zimmer et al. (2016) for instance did some work concerning the sustainable supplier development topic in their study. However, these are neither in-depth overviews nor do they provide a comprehensive analysis of sustainable supplier development.

Accordingly, sustainable supplier management changed from being a solely environmental approach to one that included corporate social responsibility and business ethics and finally to a holistic sustainability perspective in tandem with the rise of supply chain sustainability (Bai & Satir, 2022). Firms are assessing their overall sustainability performance in light of extensive environmental regulations and growing public concern about social responsibility during the past 20 years. Sustainable supply chain management (SSCM) have therefore become a key technique that these firms are focusing on (Mardani et al., 2020).

Sustainable supply chains (SSCs) can thus hardly function without supplier support and in turn, buyer support for the provider. In order to develop and deploy sustainable capabilities and applications, buying firms and suppliers must collaborate (Bai et al., 2019).

When functioning alone, suppliers may lack resources and capabilities required for sustainability (Bai and Satir, 2020). To accomplish sustainable goals, they require the assistance and collaboration of purchasing companies (Pourjavad & Shahin, 2020). For suppliers to increase their level of innovation, operational efficiency, and social sustainability, purchasing organizations must lead knowledge transfer initiatives. (Awan et al., 2020). In order to create wholesome sustainable supply chains, purchasing companies need to adopt more cooperative approaches to sustainability development through sustainable supplier development practices (SSDPs) (Bai & Sarkis, 2010; Bai et al., 2016)

2.2.3 Green Supply Chain Management Adoption and its Dimensions

Green supply chain management adoption on the other hand is the measure of the extent to which firms have adopted green practices in their supplier chain management activities and entails three sub-dimensions in this study (Zhu et al., 2013). Namely, Green purchasing, Customer Cooperation and Internal Management (Yang et al. 2021). These dimensions are reviewed in detail in the next section.

2.2.3.1 Green Purchasing

The number of studies undertaken on green purchasing has increased in recent years however, the majority of these studies have been conducted in affluent countries with relatively few in developing nations (Yang & Zang, 2012). With the growing global interest in sustainability consumers are now motivated to change the usage pattern from traditional products to environmentally friendly products or green purchases.

For organizations, green purchasing is the primary strategy of enterprises through which they can improve efficiency and reduce waste along with the possibility of enhancing competitiveness (Hazaea, et al. 2022).

Green purchasing as one of the dimensions of green practice examines the extent to which organizations integrate environmental conscious decisions into the procuring procurement process beginning from product and process design to product disposal (Yang et al. 2021).

Green purchasing is crucial to minimizing the harmful effects that production, consumption, and recycling activities have on the environment (Dubey, et al. 2013). Additionally, it lowers health care expenses, promotes environmental sustainability, and enhances community health through a clean atmosphere (Winds, 2007). Also, green purchasing improves operational and dynamic capacities and has a favourable impact on both economic and environmental performance (Yook, Choi & Suresh, 2018). This fulfils the goals of the global sustainable development (Al Amosh, & Khatib, 2021) and enhances the confidence of various stakeholders.

2.2.3.2 Customer Cooperation

Customer cooperation as the second identified dimension also refers to the extent to which organizations work closely with their customers to incorporate environmental considerations into the products and services of their organization as well as to institute recycling and product returns initiatives (Zhu et al., 2007; Vachon, 2007). Customer cooperation is essential to the development of a dependable sustainable compliance system in green supply chains (Lam & Van de Voorde, 2012).

Customer cooperation (CC) emphasizes the extent an exchange partner is willing to work and achieve sustainable outcomes (Sancha, Wong & Thomsen, 2016).

When exchange partners cooperate, trust develops and increases innovations in a relationship (Zhu, Sarkis, & Geng, 2005). Adoption of green practices by one of the partners enforces other partners to follow (Guoyou, et al. 2013). Such support towards sustainable practices between supply chain partners results in providing better levels of sustainable advantages (Burki & Dahlstrom, 2017). In a similar vein, fostering strong relationships with supply chain clients should support green supply chain innovations.

Partners in the supply chain are encouraged to embrace and apply green ideas and practices by close customer cooperation. This strategy would therefore aid in reducing the damaging impact that supply chain operations have on the environment. In all honesty, green supply chains adopt and apply green innovations that offer their clients greater value. Improved customer cooperation in supply chains presents a mutually beneficial opportunity to satisfy consumer requests and boost sustainability efficacy. Using green innovations enables companies to remain competitive over the long term. (Gerstberger, & Yaneva, 2013). In supply chains, sustainable competitiveness act as a competitive tool that provides the needed reputation required by customers and consumers (Govindan, Diabat, & Shankar, 2015).

2.2.3.3 Internal management

One of the most important components in the implementation of GSCM processes in commercial organizations is internal management. Prior studies on global supply chain management (GSCM) methods have mostly concentrated on organizational systems and management technology from a variety of angles including internal organizational activities, corporate social responsibility (CSR) promotion, and eco-design (Moktadir et al., 2018; Dai et al., 2021). These actions are part of the environmental management plan that is connected to businesses' low-carbon development strategies.

Internal management specifically refers to the extent to which management, employees and departments within the organization have embraced GSCM practices within their organization (Zhu & Sarkis, 2006; Zhu et al., 2007). The next section reviewed literature on the role of top management support in enhancing green supplier development capability.

2.3 Top Management Support of Green Supplier Development Capability

Research on top management in firms has become a pivotal feature in strategic management for instance because investigations on top management provides more insight into key firm outcomes. Studies on top management therefore pays attention to strategic decisions, which result in strategic choices and performance (Finkelstein, 2018) such as firms' adoption of GSCM.

Accordingly, top management has been given diverse but similar definitions by different scholars. For Finkelstein, Hambrick and Cannella (2009) top management team is the relatively small group of most influential executives at the apex of an organization usually the Chief Executive Officer and those who directly report to him or her. But for this study, top management is operationalized as a group of people who are in the top hierarchy of an organization and who are identified as supply chain thinkers, relationship managers, controllers and the organizers of the future of an organization. Nonetheless, little is known about the roles of these top management in supply chain management despite their often-stated importance (Sandberg & Abrahamsson, 2010).

The support of these group of people have however been proposed as a relevant factor that could accelerate green practices within firms (Choi & Hwang, 2015).

However, despite inconsistent findings on the relationship between the drivers of GSCM adoption and GSCM adoption itself, empirical studies are yet to investigate the moderating role of top management support in these relationships. For instance, some previous authors found positive results of the influence of some drivers such as institutional drivers and environmental force on GSCM adoption (Brik et al., 2013; Huang et al., 2012). Others also found a negative influence of these drivers on GSCM (Hoejmose et al. 2014; Lin & Sheu, 2012) while some found no influence at all of some green capabilities (eg. Nkrumah et., 2020). Yet, investigating into boundary conditions like top management support which could resolve these inconsistent findings in literature is woefully unexplored in literature in spite of its pivotal role on strategic decisions and firm outcomes as indicated by Finkelstein (2018).

Accordingly, Micheli et al. (2020) suggested that, one way of resolving this kind of inconsistency in the body of knowledge is to include mediators and moderators in frameworks so as to be able to explain the validity and its associated results. Consequently, top management support has been realized as one key moderator which could resolve these inconsistencies (Ilyas, Hu, Wiwattanakornwong, 2020).

2.4 Empirical Review on Green Supplier Development Capability and Sustainability

Outcomes

According to Norheim-Hansen, (2022), green supplier development capability is defined as the process of firms' ability to collaborate with their suppliers to decrease their negative environmental impact. Environmental factors are only now starting to be taken into account by supplier development experts; up until now, the majority of the peer-reviewed work has been qualitative and frequently descriptive. However, there is currently a dearth of extensive empirical data demonstrating the causes and advantages of environmental supplier development for a purchasing company (Ehrgott, et al. 2013).

Consequently, only few studies conducted vigorous quantitative study in investigating the relationship between green supplier development capability and other sustainability outcomes however, these studies found mixed results. That is, while some found positives results (Nkrumah et al. 2020; Egger & Hartmann (2021), others found negative consequences (Sancha et al. (2015). But, an organization's capacity to survive is said to be largely reliant on its relationships with its suppliers.

This idea gave rise to supplier development, which is the term used to describe the initiatives taken by purchasers to improve the performance of their suppliers. Supplier development initiatives have thus become crucial to companies and the supply chain's viability (Ağan, Acar & Neureuther, 2018).

In a study by Studies by Egger and Hartmann (2021), they found out that environmental purchasing and supplier management help to reduce greenhouse gas (GHG) emissions in the supply chain and, thereby, mitigate climate change. To put it another way, they discovered that a significant decrease in the GHG emission intensity of purchasing firms' supply chains is caused by an acceleration of environmental purchasing and supplier management, with this reduction being stronger for businesses operating in industries where emission management is more important.

Sustainability-oriented supplier development (SSD) broadens the scope of traditional supplier development (SD) by incorporating the objective of sustainability in addition to the improvement of suppliers' operational performance (Zhang & Yang, 2017). Subramaniam et al. (2019) also found out that SSD contributes to improving suppliers' social performance and subsequently to the buyers' social, economic, and operational performance.

Nevertheless, few studies have also documented detrimental effects from Sustainability-oriented supplier development. Sancha et al. (2015), for instance, found that while there was a good impact on supplier social performance, there was a negative impact on buyer economic performance as shown by sales. Thus, it is essential to further identify both valid and comparable measuring items in order to consolidate data across studies. These inconsistencies or contradictions may be explained by the use of different measurement items among studies hence the purpose of this study

In the current global climate when many organizations are spending more money on obtaining goods and services from external suppliers, effective supplier management is crucial (Rashidi & Saen, 2018). A lack of sustainability-oriented capabilities is one of the main causes of supplier violations (Fu, Zhu, & Sarkis, 2012). Nevertheless, one of the primary reasons for supplier violations is a lack of capacities focused on sustainability (Fu, Zhu, and Sarkis, 2012). There is thus an incentive for purchasing companies to manage and expand their supply base more proactively to accomplish sustainability goals (Liu et al. 2018) rather than forsaking poor performing suppliers altogether in order to achieve long-term strategic development goals (Reuter et al. 2010). The next section discusses the theories which form the basis of the study.

2.5 Theoretical Review

The current study is founded on three essential theories to explain the relationship between the variables in the study. Namely, the Resource Based View of the Firm, the Dynamic Capability Theory and the Social Exchange Theory. The next section reviews these theories in detail as well as their assumptions;

2.5.1 The Resource Based View

The theory of resource-based-view has gotten a very noticeable position in management and has become one of the pillars of the field (Greve, 2021). Specifically, it begins with the notion that, a firm's performance determinant is based on the resources available and the manner in which the resources are used will empower the firm to perform and subsequently create a competitive advantage for them ((Miller, 2019). The theory covers two critical assumptions; resources must be heterogeneous and immobile.

This position of the theory spans from the belief that, the expertise, abilities and other resources possessed by firms differ from organizations to organization and this enables them to employ divergent strategies to outperform their rivals.

Again, the theory's assumption that resources are immobile implies that resources do not move from firm to firm at least in the short-term and due to this, firms would not be able to replicate competitors' resources since their intangible resources, like knowledge, processes, and intellectual property are to a large extent immobile (Miller, 2019).

Arguing about the essence of firms' resources, Penrose (1959) concluded that resources are evolutionary and an aggregate process such that the more a business progress in learning the more it will expand and develop due to its exceeding earnings. In light of this, the RBV is used in this study as the basis for explaining the relationship between green supplier development capability and GSCM adoption. This theory is worthy of consideration for this study because it identifies green supplier development capability as a distinctive resource (Miller, 2019). An implication that a firms' package of resources, capabilities or practices generate values for them which are difficult to imitate or arrogate by business rivals leading to their competitive advantage This discussion is detailed in the hypothesis section. The next section reviewed literature on the theory of dynamic capability.

2.5.2 The Dynamic Capability Theory

Dynamic capability (DC) theory emerged as a substitute strategy to address certain shortcomings in RBV theory (Galvin, Rice & Liao, 2014). The path-dependent processes described by DC theory enable businesses to develop, integrate, and reconfigure their portfolio of resources and skills in order to quickly adapt to changing surroundings (Teece, Pisano & Shuen, 1997).

Derived from RBV theory, DC theory made up for the shortcomings of RBV theory in explaining superior performance in a dynamic environment and durable competitive advantage. It is evident that the RBV focuses on the presence or absence of imitable and rare resources while the dynamic capability theory on the other hand stressed on the ability of firms to nurture, grow and effectively deploy these resources under changing environmental conditions to achieve competitive advantage (Teece, Pisano & Shuen, 1997). Teece, Pisano and Shuen (1997) defined DCs as “the firm’s ability to integrate, build and reconfigure internal and external competencies to address rapidly changing environments” DCs are therefore defined as “the organizational and strategic routines that firms use to achieve new resource configurations as markets come into being, “split, evolve, and eventually die” (Eisenhardt & Martin, 2000).

Teece (2007) made a major input to DC theory by writing about the micro-foundations for each of the three subsequent dimensions: sensing (identification and assessment of an opportunity), seizing (mobilization of resources to address an opportunity and to capture value) and transforming (continued renewal “reconfiguring the business firm’s intangible and tangible assets”). The dynamic capability is used in this study as a complementary theory to the RBV to explain how green supplier development capability influences GSCM adoption in the section under hypothesis development.

2.5.3 The Social Exchange Theory

Social exchange theory is one of the most prominent conceptual perspectives in management, as well as related fields like sociology and social psychology. Scholars who apply social exchange theory are able to explain many social phenomena in *post hoc* manner but are severely limited in their ability to make useful *a priori* predictions regarding workplace behavior (Cropanzano, Anthony, Daniels & Hall, 2017).

In this study, the social exchange theory is also used to explain the moderating role of supplier top management support in the green supplier development-adoption of GSCM relationship, because the theory opined that firms will only be able to maximize their hope and gains when they are willing to interact and collaborate with other groups (Sancho et al., 2015).

2.6 Theoretical Background and Hypothesis Development

The current study draws on the RBV to explore the relationship between supplier development capability and GSCM adoption and on the social exchange theory to explain the moderating role of top management support on the relationship between supplier development capability and GSCM adoption. These theories are therefore the theoretical lenses used to develop a research model to explain the relationships between the identified variables in this study based on extant literature. Specifically, The Resource Based View of the firm and the Dynamic Capability theories are used to explain the relationship between green supplier development capability and GSCM adoption in hypothesis one. While the Social Exchange Theory is used to explain the moderating influence of top management support on the relationship between green supplier development capability and GSCM adoption in hypothesis two.

2.6.1 How the Resource Based View of the Firm and the Dynamic Capability Theories Influences the Hypothesized Relationship between Green Supplier Development Capabilities and GSCM Adoption

Supplier development capability in supply chain is noted as key factor to developing eco-friendly behaviour such as the engagement in best practices with partners (Gallear, Ghbadian & He, 2015). In this regard, scholars have pointed out that the existence of supplier development capabilities within firms enables them to get into a more committed relationship with their suppliers and to also increase the capabilities of their suppliers (Liu et al., 2018) to achieve needed outcomes.

This ability of firms to increase the capabilities of their suppliers to achieve greater operational performance subsequently results in the willingly formation of a continuous partnership between the focal firms and their suppliers; this continuous partnership subsequently results in the adoption of green practices (Sancha et al., 2015). Supplier development results in buyer-supplier partnership hence resources in the form of sourcing, product and service designs, production among others is willingly exchanged between these partners. This incentive drives businesses and suppliers to build green supply chain practices (Awasthi & Kannan, 2016). Extant literature has therefore proposed that green supplier development capability has the ability to drive GSCM practices due to its dynamic nature like green practices.

Consequently, research has established that this relationship could be explained by theoretical foundation and is possible due to the combined perspective of the theory of Resource Based View and Dynamic capability. The resource-based view covers two critical assumptions that resources must be heterogeneous and immobile to have a competitive advantage (Barney, 1991).

This position of the theory spans from the belief that the expertise, abilities and other resources possessed by firms differ from organizations to organizations. These resources are immobile from firms to firms especially in the short-term and due to this other competitor will not be able to replicate a firm's resources since their intangible resources like capabilities, knowledge, processes, and intellectual property are to a large extent immobile which helps to have competitive advantage (Miller, 2019). In summary, the RBV affirms that firms' outcomes are based on their scarce and imitable resources and the abilities they are able to control (Miller, 2019).

The dynamic capability theory on the other hand specifies that achieving competitive advantage is based on firms' ability to nurture, grow and effectively deploy these resources under changing environmental conditions (Teece, et al. 1997).

According to Teece, Pisano and Shuen (1997), the theory defines firms' capacity to incorporate, build and reconfigure their internal and external abilities to address rapidly changing environments.

The theory of dynamic capability thus emanated from the resource-based view belief to address some of the limitations of the resource-based view. It is therefore evident that the RBV focuses on the presence or absence of imitable, immobile and rare resources such as green supplier development capability which is immobile from firm to firm at least in the short-term (Miller, 2019). While the dynamic capability theory on the other hand stressed on the ability of firms to nurture, grow and effectively deploy these resources such as the green supplier development capability under changing environmental conditions to achieve competitive advantage (Teece, Pisano & Shuen, 1997).

In this study the combined perspective of the RBV and the dynamic capability theories are therefore employed as the basis for examining the relationship between green supplier development capability and GSCM adoption. Because the RBV's notion is that resources such as abilities which are not easily imitable are key to superior performance of firms and green supplier development capability is such a resource. In view of this, green supplier development capability has been identified as an intangible and scarce resource of firms since it captures firms' ability to collaborate with their suppliers to decrease their negative environmental impact (Norheim-Hansen, 2022).

Nevertheless, having a scarce resource, which are not easily replicable by competitors to achieve competitive advantage as proposed by the RBV theory (Barney, 1991) is not enough to achieve higher firm outcomes in the long run (Teece, Pisano & Shuen, 1997). This shortcoming of the theory is where the dynamic capability comes in to address the short-term limitation of the RBV theory.

The dynamic capability thus specifies that achieving competitive advantage is based on firms' ability to nurture, grow and effectively deploy imitable resources such as green supplier development capability under changing environmental conditions (Teece, et al. 1997).

This means that even though it is important for firms to have resources which are not easily replicable by competitors to achieve competitive advantage, firms need to continuously nurture, grow and effectively deploy these resources and also pay critical attention to their dynamic environment. It is only then that they can continuously reap the sustainability of outcomes like GSCM adoption as postulated by the dynamic capability theory.

The influence of green supplier development capability on GSCM adoption has therefore been basically understood through the RBV theory and the dynamic capability theory such that previous studies who identified green supplier development capability as an imitable resource and a capability that can be nurtured and deployed to influence firms' outcomes like GSCM found a significant positive relationship between green supplier development capability and GSCM adoption (eg. Nkrumah et al., 2020). That is firms who possess an imitable capability such as green supplier development capability i.e according to the RBV will be able to nurture deploy this capability which is dynamic as suggested by the dynamic capability theory to influence firms' outcomes like GSCM adoption. This is because the dynamic nature of this scarce capability enables them to devise best ways to work hand in hand with their suppliers to incorporate GSCM practices into their firm's operation (Vachon, 2007).

Kumar and Rahman (2016) thus re-emphasized that supplier development capability has become an essential enabler in sustainable supply chain research. Furthermore, Agi and Nishant (2017) noted that GSCM has necessitated firms to cooperate with other groups in order to create committed long term-relationship.

These relationships generate trust and enhance association between supply chain partners especially suppliers which enhance their commitment and investments to implementing GSCM practices. Kim et al., (2011) thus re-affirmed that the success of GSCM implementation is thus dependent on the closeness of the trust relation and how steadily product and risk information are shared. Because when long-lasting relation is formed members within the supply chain would willingly share their professional knowledge and co-operate more efficiently and flexibly towards the achievement of set goals (Sing et al., 2016).

Firms are now more than willing to incorporate supply chain partners into their green activities because they have realized the need for their operations to be environmentally friendly which will only be possible when they partner with those who supply them with their materials (Lo et al. 2018). This study therefore argues that the ability of firms to adopt and practice GSCM practice is dependent on their capacity to identify and protect their scarce resource like green supplier development capability, nurture it while paying critical attention to their dynamic sustainable environment and finally deploying this resource to achieve sustainable adoption of GSCM practices.

In support of the RBV theory, the dynamic capability theory and the reviewed literature, the study thus hypothesized that;

H1: Higher level of green supplier development capabilities lead to higher levels of GSCM Adoption.

2.6.2 How the Social Exchange Theory Explains the Moderating role of Top Management Support on the Relationship Between Green Supplier Development Capabilities and GSCM Adoption

Review of extant literature revealed that green supplier development capability has a positive and significant influence on the adoption of GSCM by firms (Nkrumah et al., 2020) however, previous studies failed to account for how boundary conditions could influence this relationship. This study thus suggests that the strength of this relationship could be influenced by a boundary condition known as top management support. The choice of top management support as a potential moderator in this study is based on the recommendations of Maaz et al. (2021) and the findings of Nkrumah et al. (2020) who recommends future studies to test additional constructs to strengthen their results.

Accordingly, previous studies have proposed that top management support is a potential essential driver of green supplier development (Blome, Hollos & Paulraj, 2014) and through it, green supplier development capabilities will be able to increase leading to higher adoption of green supply chain management practices (Ilyas, Hu & Wiwattanakornwong, 2020).

However, this moderating role of top management support on the green supplier development capability and GSCM adoption is yet to be empirically tested. Nonetheless, extensive literature review revealed that the social exchange theory is the theoretical lens through which the moderating role of top management support on the supplier development capability-GSCM adoption relation could be explained. That is the moderating effect of top management support is better explain by the social exchange theory because the theory established that the rational and hope of actors who wants to maximize their gains in social system is based on their willingness to interact (Sancha et al., 2015).

An implication that when top management of firms are willing to cooperate with environmental professionals in charge of developing the green capabilities of suppliers within their institutions the capabilities of these experts will be strengthened because top management will willingly make available more resources needed for their procurement experts to adopt these green practices and vice versa. Furthermore, Asamoah, Nuerthey, Agyei-Owusu, and Akyeh, (2021) also established that supply chain management practices will significantly enhance the ability of organizations to attract, satisfy and retain customers which includes suppliers.

The implication of this finding in relation to this study is that if top management is able to provide enough support to enhance their firms' green supplier development capability it will increase the firms' capacity to realize the adoption of GSCM practices.

The more the firms are able to adopt GSCM practices the more they will become the centre of attraction to a large number of prospective suppliers who may also be willing to establish a perpetual partnership with the supposed organization who practice sustainable procurement practices. This Rahman et al., (2014) further affirmed that when there is a good relationship between members within the supply chain it will help in the performance repercussions of the GSCM.

Asamoah, Agyei-Owusu and Andoh-Baidoo (2020) thus opined that higher levels of supply chain management capabilities if leveraged can drive higher levels of supply chain performance or outcomes. The implication for this study is that when supply chain capability such as green supplier development capability is leveraged upon through the support of top management achievement of better outcomes like GSCM adoption will be highly realized. The realization of this result will therefore be possible based on top management willingness to support green supplier development capabilities in their firms just as suggested by the social exchange theory.

Choi and Hwang (2015) concisely affirmed that when there is a high level of firm support firms are likely to achieve better results from the implementation of GSCM practices.

Based on this review and the social exchange theory, this study thus hypothesized that;

H2: Top management support will moderate the relationship between green supplier development and the adoption of Green Supply Chain Management Practices

2.7 Conceptual Framework

The research model of the study proposes that green supplier development capability will drive GSCM adoption and top-management support will moderate this relationship. Below is the conceptual framework summarizing the relationship between the variables in the study as explained earlier based on the RBV and theory of dynamic capability.

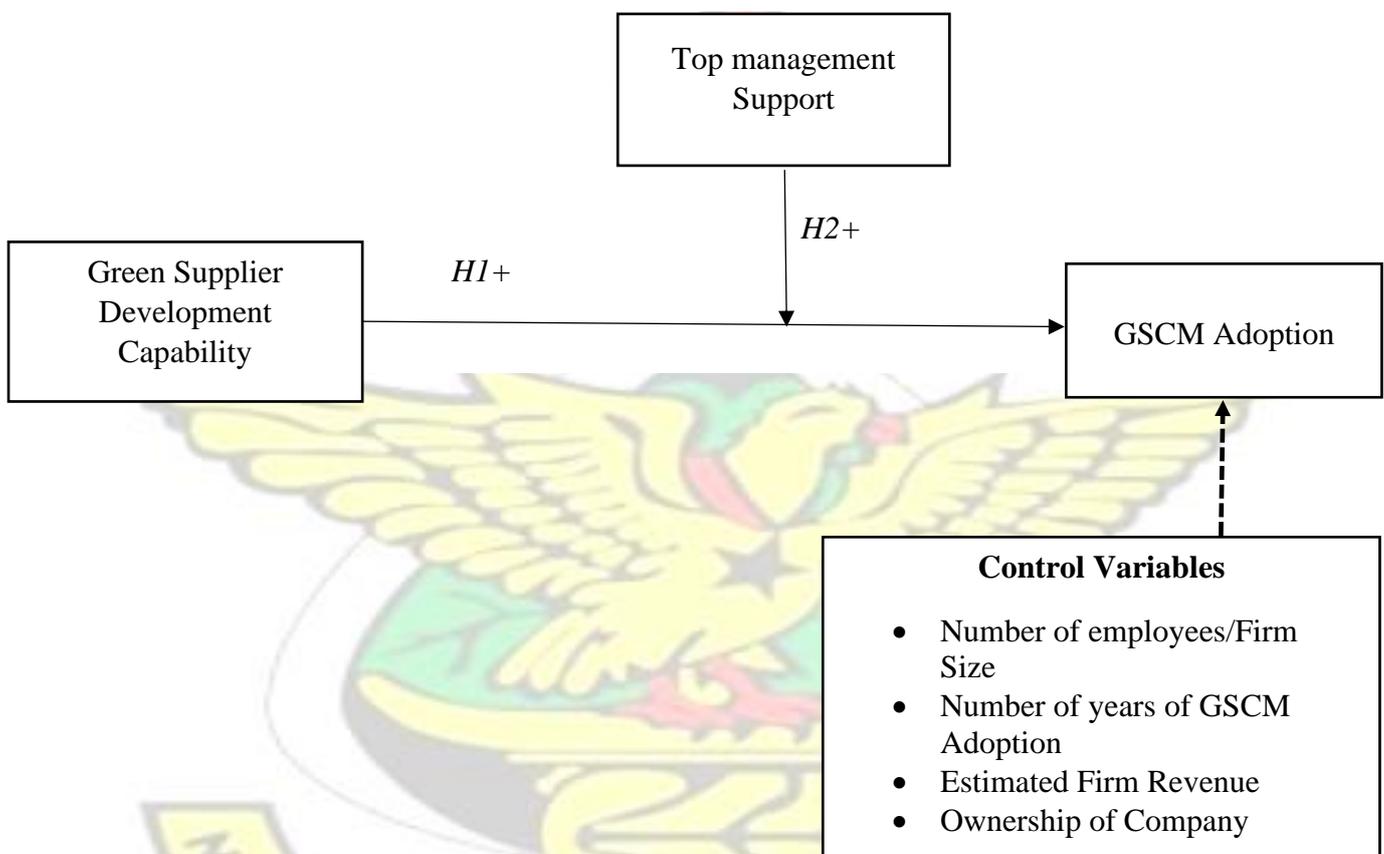


Figure 2.1: Adopted from Nkrumah et al. (2020)

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This section describes the research design, the procedures and methods employed to choose respondents of the study and how the data was analyzed. Specifically, it describes the research design, purpose of study, target population of the study, sample size and sampling technique. In addition, the chapter also includes sources of data, data collection instrument, data reliability, validity, analytical techniques and ethical considerations.

3.2 Research Design

In order to address research questions research has indicated that social science researchers need to devise a design which would be a general point of reference of how to undertake the research (Bryman, & Bell 2007). An effective research design therefore assists the researcher to explain the motive of employing a particular research strategy to undertake a study in an efficient and effective way (Saunders, 2003).

A research design is thus a procedure which assists researchers to examine the research issues that are of concern in a study. Consequently, there are a number of approaches used to design social science research. The selection of the right approach thus depends on the factors such as the purpose of the study, the type of research questions to be answered and the availability of resources (Ponto, 2015). Notable ones include experiments, survey, Case study among others.

For the purpose of this research, the survey research methodology is adopted for this study which is a specific type of field of study which allows for collection of data from elements drawn from a well-defined population through the use of questionnaire (Visser, Krosnick & Lavrakas, 2000). The survey type of research allows for a diverse method to recruit participants of a study, collect data and use various methods of instrumentation. It can therefore use quantitative research strategies i.e use of questionnaires with numbered rated items or qualitative research using open-ended questions or the mixed method.

In this study, the survey research using quantitative research strategy is employed in this research to explain the relationship between green supplier capability and the adoption of GSCM as well as the moderating role of top management support in this relationship. This is because information can be quickly obtained through this strategy. Moreover, the primary aim of this type of research is to get information describing the characteristics of a large sample of individuals of interest relatively quickly.

Concisely, the survey research using the quantitative research strategy is adopted in this study because it is a useful and legitimate approach to research which has clear advantage in assisting to describe and explore variables as well as constructs of interest such as green supplier development capability, GSCM adoption and top management support. Though the survey approach also has a potential for diverse source of error just as in other research approaches, a number of strategies exist to reduce these potential errors compared to other approaches (Ponto, 2015).

3.3 Research Purpose

Concurrently, various reasons account for the conduct of a research; such that research specifically seeks to explore, either describe or explain a phenomenon (Collis & Hussey, 2003).

According to Collis and Hussey (2003) exploratory research is done when one wants to research into an area where little or no previous studies have been done in which the researcher can refer to for information (Collis & Hussey, 2003). The descriptive one in contrast describes occurrences as they exist to depict exact picture of an event and the features of the relevant subject matter (Collis & Hussey, 2003). Thus, the descriptive method of research involves observing and describing the behavior of a subject without manipulating it in any way. Saunders et al. (2007) also explains that the explanatory research seeks to determine the causal connection between variables and such studies responds to questions of the reasons of how and why an event is occurring.

Specifically, the main aim of this study was to explain a phenomenon through the quantitative research method. The explanatory purpose was adopted for the reason being that the research was explanatory in nature and aimed at analyzing the relationship between green supplier capability and GSCM adoption while considering the moderating role of top management support

3.4 Research approach

Bryman and Bell (2007) identified three research strategies or approaches, which could be adopted by a researcher in a conduct of a research namely; quantitative research, qualitative research and the mixed method strategies. For the purpose of this study the quantitative research design is used and deals with how quantifiable data are collected and analysed mathematically. It thus assists researchers to competently generate statistics with the data that has been obtained and at the same time to derive facts that can be applied to a larger number of persons (Bryan & Bell, 2007).

3.5 Population of the Study

Population refers to the total number of individuals whom the research problem affects (Bryman & Bell, 2007). Population does not necessarily mean a number of people (Bernard, 2002) but also refers to the total number of things or cases, which are the subject of a research. In this regard, firms who are food processing and agri-business which operate in Ghana and have adopted sustainable environmentally sound practices in their operations and who are registered with the Association of Ghana Industry and Registrar General Department forms the population of this study. In other words, a list of active processing and agri-business companies who have been in business for more than a year was requested from the Association of Ghana Industries and the Registrar General's Department to serve as the population of the study.

Companies who have been in business for more than a year were considered because according to Zhu et al. (2007) GSCM spreads across supply chain and becomes well established across it with time. In all a total of 24 firms were obtained from the managers of the Association of Ghana Industry while 131 was obtained from the Registrar General's Department as active firms who have been effectively engaged in green activities for at least a year. In total 154 firms formed the population of this study and two respondents each were being requested from each of the firms to respond to the questionnaires.

3.6 Sample Size

Sampling is the process of selecting units (persons, institutions etc.) from a population of interest so that by studying a section one may comparatively generalize outcomes on the population from which the section was selected (Trochim, 2016). Sample size thus concerns the use of a small part of a population to make a conclusion about a whole population of a study (Saunders, Lewis & Thornhill, 2012).

Since the total active green food processing companies and agri-business companies registered with the Association of Ghana Industries (AGI) and the Registrar General's Department are feasible to study the researcher decided to study all the 154 firms without sampling from them. That is the study adopted the total population sampling method because the size of the population that has the set of characteristics that the researcher is interested is not too large to study. This action is supported by Fujimori et al (2014) who noted that the aim of sampling strategies in survey research is to get a sufficient sample that represent a population of interest and sampling is mostly done due to unfeasibility of studying an entire population of interest. An implication that if it is feasible to study an entire population of interest, then that will be the best thing to do.

3.7 Sampling Technique

Sampling technique provides an array of methods that allows for a reduction in the amount of data that needs to be collected restricting it to a subgroup. Sample techniques are categorized as random or probability sampling technique and non-random/non probability sampling technique (Lim & Ting, 2012). Random sampling technique (probability sampling technique) involves using a random selection so that every element in the population has a known chance of being chosen with the aim of maintaining a minimum sampling error (Lim & Ting, 2012).

For the purpose of this study the purposive sampling technique was used in the selection of the food processing firms as well as two middle level managers from each institution. For each selected firm a request was made to the institutions to provide two middle managers who are in charge of the green practices and have in-depth knowledge about green activities as such could provide the right information needed. In all a total of 308 respondents are expected from the 154 firms since two respondents each is being requested from each firm. Table 3.1 present the type of industries, the number of questionnaires issued out and the numbers obtained back from the 154 firms.

Table 3.1 Type of industry, number of questionnaires to issued out and total number retrieved

Source of Firm	No. of questionnaires issued to Food Processing Co.s	No. of questionnaires issued to Agri-businesses	No. of Questionnaires obtained back from both industry
1. Association of Ghana Industry	16 firms x 2 Respondent each = 32 respondents	8 firms x 2 resp. = 16 respondents	48
2 Registrar General Dept.	92 firms x 2 respondent = 184 respondents	38 firms x 2 resp. = 76 respondents	228
TOTAL	108 Food Processing Firms with 216 respondents	46 Agri-businesses with 92 respondents	
<i>Total number of firms=154</i>		<i>Expected Number of responses (154 x 2) =308</i>	

3.8 Measurement Instrument

The items to be used to measure the construct was developing from existing literature and wherever necessary wordings of some of the items were rephrased to assist respondents' comprehension. Respondents were asked to rate the extent to which each of the items correctly described their organizations green activities on a seven-point liker scale. Specifically, the study examined how green supplier development capability would predict the adoption of Green Supply Chain Management within food processing and agri-businesses with a focus on middle level procurement professionals who are in charge of green practices within these companies.

The research items used to measure the proposed construct were sourced from prior studies. Six items to measure green supplier development capability was adapted from Nkrumah et al. (2020).

Again, sixteen items on GSCM adoption were also adapted from Nkrumah et al. (2020) Finally, two items were adapted from Lippmann (1999); one from Handfield et al. (2005) and one from Johnson and Evans, (2005) to measure top management support. Experts in GSCM whose suggestion were used to refine the measurement to fit the context of the study assessed the items. Summary of the measurement are shown in table 3.2

Table 3.2 Measurement Construct

Construct	No. of Items	Source
Green Supplier Capability	6	Nkrumah et al. (2020)
GSCM Adoption	16	Nkrumah et al. (2020)
Top Management Support	4	Lippmann, (1999); Handfield et al. (2005); Johnson and Evans, (2005)

3.9 Data Collection

Data collection is the methodical approach to gathering and measuring information from diverse sources so as to obtain complete and correct picture of an area of interest (Bryman & Bell, 2007). The study specifically used primary data which was derived from a primary source as discussed in the next section.

3.9.1. Primary Sources of Data

The primary source from which data for the study was obtained for the study was from the middle level procurement and supply chain managers from the active food processing and agri-business firms. Information obtained entailed general background information of the responding firms and includes total number of employees, type of industry, estimated annual revenue, firm ownership, and how long the firms have adopted green practices.

3.10 Data Collection Instrument

The research employed carefully designed closed ended questionnaires to collect data from the responding firms. As such, the structured survey questionnaire was used as the primary instrument for the data collection and this allowed the middle level supply chain managers to be asked the same question on the variables. This in turn enabled the researcher to be sure that everybody in the sample answered precisely the same questions making it a very reliable method of research (Saunders et al., 2007).

The data in nutshell was collected through self-administered questionnaires; this guaranteed higher secrecy of responds and advanced degree of control over respondents.

3.10.1 Questionnaire Development

The research questionnaires were adapted and designed for the middle managers who are procurement staff. The questionnaire was divided into two parts. The first part obtained information on the background of the responding firms such as their firm size, their type of industry, their estimated annual revenue, ownership of company, and how long they have adopted green practices. The second part gathered information from the responding firms on the main variables of the study which they are required to choose the extent to which they agree or disagree with the statements under each variable.

3.11 Data Analysis

According to Saunders et al. (2007), data analysis is the capacity to break down data and to be able explain the nature of the parts and the relation between them. the data collected was thus edited, coded and analyse using SPSS in Amos version 25. The data analysis would be done using an entirely quantitative approach. Both descriptive and inferential statistics would be employed.

The demographic characteristics of the responding firms will be analyzed descriptively while objective one and two would be analyzed using simple and hierarchical moderated regression analysis respectively.

3.12 Ethical Considerations

Research ethics refers to the principles of behaviour that guide one's conduct in relation to the rights of those who become respondents of the study (Saunders, Lewis & Thornhill, 2012). Attempts were made to observe the appropriate ethical principles and statutory requirements in the collection of data from the members of the study population.

The same way, this study needed the consent and approval of the management of the manufacturing firms. Therefore, in seeking the consent of the participants, an official letter was obtained from the department of Procurement Science at the KNUST which introduced the researchers to the management of these institutions on the motive and relevance of the research work. This made the participants to understand their roles in the study. In a bid to clear anxieties, participants were advised that, they could withdraw anytime from the study even during the process when they no longer feel comfortable.

Hence, the participants were not forced to participate in the study. The confidentiality of the participants was therefore assured since their names were not taken as demographic characteristics of the study.

3.13 Unit of Analysis

The study was conducted at a firm level and so only five, four or three respondents were purposively chosen or given as experts who have in-depth knowledge on the subject.

3.14 Conclusion

This chapter discussed the study's preferred methodology and given reasons for the options selected to achieve the research aims and objectives. The chapter also described the research design including the strategic position of the research. The methods and techniques used in the sampling, data collection and analyses were also presented. The logical technique adopted for the study has also been explained. The next chapter presents a more extensive discussion of the results of the study.



CHAPTER FOUR

DATA PRESENTATION, ANALYSIS AND DISCUSSION

4.1 Introduction

The preceding chapter discussed the methodology used in the study. This current chapter also presents analysis and discussion of responses gathered through the administered questionnaires from the food processing firms and agri-businesses who have been into green for at least a year in Ghana. The first part presented results on the companies' profile. The subsequent section also presented data and analysis of the findings deduced from the objectives. The results are discussed in light of existing literature and relevant studies.

4.2 Data Collection and Response Rate

308 questionnaires were administered to two middle level managers each in 154 firms who were in charge of green practices within 108 food-processing firms and 46 agri-businesses. After the exercise, 276 fully answered questionnaires, which were found useful for the analysis, were obtained back representing 89.61% response rate. This rate is an acceptable level of response in the conduct of any research because research has established that a response rate of 60-70 per cent is considered acceptable; but the higher the response rate obtained, the better the accuracy of the analysis and results of the study would be (Bryman & Bell, 2007).

4.3 Profile of Organizations

This part presents a brief background information about the characteristics of the companies used in the study. The key information that the study included are industry type, total number of employees/firm size, revenue, ownership, and number of years of green adoption.

4.3.1 Type of Industry

Table 4.1 Type of Industry

Industry	Frequency	Percent (%)
Food Processing Companies	108	70.1%
Agri-business	46	29.9%
Total	154	100.0

Source: Field Study, 2022

Table 4.1 present results on the type of industries used in the study. From the table, the total number of registered food processing companies by the Association of Ghana Industry is 108(70.1%) while that of agri-business is 46(29.9%). An indication that the most dominant industry type among the food processing companies and agri-business is the food processing companies. This was not surprising because extant literature reveals that the food processing companies is one of the fastest growing industry (Khedkar & Singh, 2018).

4.3.2 Firm Size

This section presents discussion on the firm size of the two industries considered in the study.

Table 4.2 Firm Size

Firm Size	Frequency	Percent	
Valid	<6 years	21	7.6
	6-29	151	54.7
	30-59	69	25.0
	60-99	10	3.6
	100-500	23	8.3
	501-2000	2	.7
	Total	276	100.0

Source: Field Study, 2022

Table 4.2 present the findings on the firm size of the companies considered for the study. The firms ranged from those who had less than 6 employees up to those who has as many as 2000+ From the table it could be observed that majority of the responding firms had an employee size of 6 to 29(54.7% of responding firms). The next highest responding firms were 30-39(25%%responding firms), followed by 100-500 (8.3% responding firms), <6 years 7.6%) and 60-99 (3.6% responding firms) and 501-2000 (.7%) respectively. The reason for this result could be based on the fact that most of the companies registered with the Association of Ghana Industry are small and medium enterprises. It can thus be concluded that the food processing firms and agri-businesses registered with the Association of Ghana Industries are relatively small sized.

4.3.3 Estimated Firm Revenue (in Ghana Cedis)

This section presents discussion on the firm size of the two industries considered in the study.

Table 4.3 Estimated Firm Revenue (in Ghana Cedis)

Estimated Firm Revenue (in Ghana Cedis)	Frequency	Percent (%)
<40,000	15	5.4
40,000-80,000	61	22.1
80,001-200,000	73	26.4
200,001-1,000,000	73	26.4
1,000,001-5,000,000	54	19.6
5,000,000 above	-	-
Total	276	100.0

Source: Field Study, 2022

In terms of estimated firm revenue in Ghana cedis, table 4.3 reveals that a notable number of the firms reported an annual revenue level between 80,001-200,000(26.4%) and between 200,001-1,000,000(26.4%).

In other words, the annual revenue of majority of the responding firms is between 80,001 - 1,000,000 Ghana cedis representing 52.8% (i.e 26.4% + 26.4%) of the total responses. This result is an indication that majority of the firms who have implemented Green Supply Chain Management (GSCM) in the food processing company and agri-businesses falls under Small and Medium Scale Enterprises.

4.3.4 Firm Ownership

This section presents discussion on the ownership of the firms engaged in the study

Table 4.4 Firm Ownership

Firm Ownership	Frequency	Percent (%)
Solely Ghanaian Owned	272	98.6
Joint Venture	4	1.4
Total	276	100.0

Source: Field Study, 2022

In terms of firm ownership, table 4.4 reveals that 272 that is 98.6% of the responding firms are solely Ghanaian Owned Enterprises, while 4(1.4%) is a joint venture. The indication of these results is that foreign direct investment is low in the majority of the responding firms and this explained the low annual revenues of the firms as indicated earlier. Again, the implication of these results is that the Solely Owned Ghanaian Enterprises may lack the synergy in extracting the qualities of other companies since they are operating alone. At the same time their innovative ideas may be inadequate because joint ventures for instance helps in upgrading the production services with the assistance of technological advancement used by other companies. Accessibility to better resources like specialized staff, technology and raw materials is better increased in joint venture which these solely owned Ghanaian enterprises may lack.

4.3.5 Number of Years of Green Adoption

This section presents discussion on the number of years of the responding firms have adopted green practices in carrying out the activities.

Table 4.5 Number of Years of Green Adoption

Years of Green Adoption	Frequency	Percent	Valid Percent
4	13	4.7	4.7
5	15	5.4	5.4
6	18	6.5	6.5
7	12	4.3	4.3
8	64	23.2	23.2
9	9	3.3	3.3
10	12	4.3	4.3
12	21	7.6	7.6
13	12	4.3	4.3
15	28	10.1	10.1
16	12	4.3	4.3
17	6	2.2	2.2
18	12	4.3	4.3
20	16	5.8	5.8
24	14	5.1	5.1
27	12	4.3	4.3
Total	276	100.0	100.0

Source: Researchers' field study, 2022

In terms of the number of years the responding firms have been carrying out green practices, table 4.5 reveals that majority of the responding firms have been into green practices for at least 8 years now 64(23.2%). This implies that green supply chain practices is properly established across the majority of the responding firms supply chain. This finding is in support of the findings of Zhu et al. (2007) who noted that GSCM has been conceptualized to span across the supply chain and becomes well established across the supply chain with time.

4. 4 Validity and Reliability of Data

Validation is a generic word, but in general refers to the way of analysing if something meets a set standard; while reliability on the other hand also refers to the degree to which an evaluation tool produces stable and consistent results overtime (Bryman & Bell, 2007).

In ensuring validity of this research and the measurement items, the researcher ensured that all the adapted test items were validated items which were published in reputable journals. The research framework and hypotheses were derived from Scopus indexed-journal papers and from well-acknowledged sources. In ensuring reliability, a reliability test was performed. The reliability of the measures was done using the Cronbach alpha score. Consequently, an encouraging result was obtained with all measures exceeding recommended threshold of .78 (Bryman & Bell, 2007). The result is presented in table 4.6

Table 4.6: Reliability test

Constructs	Cronbach Alpha
<i>Independent Variable</i>	
Green Supplier Development	0.74
<i>Dependent Variable</i>	
Green Supply Chain Management Adoption	0.93
<i>Moderating Variable</i>	
Top Management Support	0.76

4.5 Exploratory Factor Analysis

To find out whether the questions posed on the questionnaire are the reflection of each latent variable, an Exploratory Factor Analysis was conducted for green supplier development capability, green supply chain management adoption and top management support. The exploratory factor analysis helps to check the uni-dimensionality among the measuring items for each construct (Watkins, 2018). To generate preliminary scales for future validation, exploratory factor analysis was conducted using the Kaiser-Meyer-Olkin Measure (KMO) and Bartlett's test of sphericity, principal component extraction, and varimax rotation to pick items that loaded on a factor. The KMO determine the sample adequacy for the study and perked at a minimum threshold of 0.7.

From the results, the exploratory factor analysis for green supplier development capability was 0.71 which is more than the minimum threshold of 0.7 and the results of the Bartlett's test of sphericity were statistically significant ($P < 0.001$). Again, that of adoption of green supply chain management was 0.86 which is also more than the minimum threshold of 0.7 and the results of the Bartlett's test of sphericity were statistically significant ($P < 0.001$). Finally, the KMO result for for top management support was also 0.73 which is also more than the minimum threshold of 0.60 and the results of the Bartlett's test of sphericity were statistically significant ($P < 0.001$). Items below the 0.5 loading were suppressed. The implication of these result for this study is that all the items reflect their respective factors and the test was significant for all the three major constructs because literature reveals that a result from 0.7 are considered desirable hence the researcher went ahead to run other analysis. Table 4.7 present the results for the Exploratory Factor Analysis

Table 4.7 Exploratory Factor Analysis (Principal Component Analysis)

Description of Items	Initial eigenvalue	Percentage of variance explained	Communalities extracted	Factor loading
GSD Capability	2.394	79.805		
GSDC1			.592	.669
GSDC2			.500	.674
GSDC3			.658	.802
GSDC4			.630	.777
GSDC5			.745	.831
GSDC6			.812	.895
GSCM Adoption	.433	14.431		
GSCMA1			.674	.749
GSCMA2			.550	.643
GSCMA3			.640	.635
GSCMA4			.687	.767
GSCMA5			.701	.813
GSCMA6			.696	.742
GSCMA7			.676	.630
GSCMA8			.725	.668
GSCMA9			.525	.710
GSCMA10			.500	.631
GSCMA11			.748	.535
GSCMA12			.642	.664
GSCMA13			.736	.744
GSCMA14			.652	.694
GSCMA15			.728	.738
GSCMA16				.598
Top Mgt Support	.173	5.763		
TM1			.642	.801
TM2			.563	.751
TM3			.629	.793
TM4			.535	.732
KMO and Bartlett's Test				
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.				.684
Bartlett's Test of Sphericity		Approx. Chi-Square		469.610
		Df		3
		Sig.		.000

4.6 Descriptive Statistics of the Construct in the Study

To know the shape of the data, the next section present results and descriptive analysis of the main construct in the study. This would be followed correlation, which is the starting point to estimate the degree of relationship between the variables

4.6.1 The Extent of Green Supplier Development Capability in the Responding Firms

This section present results and discussions on the extent to which the responding firms possess green supplier development capability using mean and standard deviation.

Table 4.8 Respondents level of agreement to the extent to which of Green Supplier Development Capability exist in their firm

Item	Mean	SD
GSDC1: We Conduct environmentally friendly practice	5.66	.88
GSDC2: We inspect suppliers ISO 14000 certification	5.71	.91
GSDC3: Our Suppliers are selected by environmental criteria	6.07	1.00
GSDC4: Our Suppliers are urged to take environmental actions	5.73	1.03
GSDC5: suppliers required to provide certification for green conformance	5.92	1.18
GSDC6: Our suppliers are provided with design specifications	5.92	1.17
Scale Mean	5.84	

Source: Researchers field work, 2022

Table 4.8 present result on the extent to which green supplier development capability exist in the responding firms. Respondents were asked to rate the extent to which they agreed that their firms possessed green supplier development capabilities using a seven-point Likert scales anchored on 1=Strongly disagree, 2=Moderately disagree, 3=Disagree, 4=Undecided, 5=Agree, 6=Moderately agree, 7=Strongly agree.

Examining the mean responses of the measures shows that the average level of green supplier development capabilities was higher than the mean point of 4. The average level of the green supplier development capability was 5.84. An indication that the responding firms agreed that their firms had developed green supplier development capability. In conclusion, the data suggests that food processing firms in Ghana are making a good effort and progress in developing green capabilities.



4.6.2 The Extent of Green Supply Chain Management Adoption in the Responding Firms

This construct measures the extent to which the respondent firms have adopted green supply chain management practices using mean and standard deviation.

Table 4.9 Respondents level of agreement to the extent to which Green Supply Chain Management Adoption exist in their firm

Item	Mean	SD
GSCMA1: We provide environmental design requirements to suppliers	6.09	1.20
GSCMA2: We Co-operate with suppliers to achieve environmental objs	6.19	1.01
GSCMA3: We conduct environmental audit for suppliers' inner mgt	6.14	1.11
GSCMA4: We Inquire of suppliers ISO 14000 before engaging them	6.09	1.06
GSCMA5: We evaluate sustainable friendly practice of 2 nd tiers suppliers	6.01	1.16
GSCMA6: We co-operate with our customers for eco-design	5.93	1.11
GSCMA7: We co-operate with our customers for cleaner production	6.12	.94
GSCMA8: We co-operate with customers for green packaging	6.14	1.03
GSCMA9: We co-operate with customers to use less energy during transp.	5.97	1.09
GSCMA10: there's commitment of GSCM from our senior managers	5.75	1.04
GSCMA11: there is support for GSCM from middle level managers	6.11	0.99
GSCMA12: Total quality environmental management exist in our firm	6.04	1.08
GSCMA13: There is environmental compliance in our company	6.10	1.13
GSCMA14: We have ISO 14000 certification	6.08	1.04
GSCMA15: Environmental management system exist in out company	5.99	1.17
GSCMA16: Eco-labelling of products exist in our company	6.09	1.01
Scale Mean	6.05	

Source: Researchers' field study, 2022

Table 4.9 present results on the extent to which the firms have adopted GSCM in the responding firms.

Respondents were asked to rate the extent to which they agreed that their firms have adopted green practices using a seven-point Likert scales anchored on 1=Strongly disagree, 2= Moderately disagree, 3= Disagree, 4=Undecided, 5=Agree, 6=Moderately agree, 7=Strongly agree. Examining the mean responses of the measures shows that the average level of green supplier development capabilities was higher than the mean point of 4. The average level of the green supplier development capability was 6.05. An indication that the responding firms moderately agree that their firms had adopted green supply chain management practices. In conclusion, the data suggests that food processing firms and agri-businesses in Ghana are making great effort by engaging in green supply chain management practices.

4.6.3 The Extent of Top Management Support for Green Practices in the Responding Firms

This construct measures the extent to which the respondent firms have adopted green supply chain management practices using mean and standard deviation.

Table 4.10 Respondents level of agreement to the extent to which Top Management Support for green practices exist in the firms

Item	Mean	SD
TM1: Top management (TM) value environmental professionals in our Firm	6.20	.83
TM2: TM support the efforts of environmental professionals in our firm	6.11	.86
TM3: TM recognizes the important. of environmental issues within our institutions' supply chain	6.26	.78
TM4: TM support assessment and take responsibility pertaining to environmental issues within our firm	6.14	1.07
Scale Mean	6.18	

Source: Researchers' field study, 2022

Table 4.10 present result on level of GSCM adoption in the responding firms. Respondents were asked to rate the extent to which they agreed that their firms have adopted green practices using a seven-point Likert scales anchored on 1=Strongly disagree, 2= Moderately disagree, 3= Disagree, 4=Undecided, 5=Agree, 6=Moderately agree, 7=Strongly agree. Examining the mean responses of the measures shows that the average level of green supplier development capabilities was higher than the mean point of 4. The average level of the green supplier development capability was 6.05. An indication that the responding firms moderately agree that their firms had adopted green supply chain management practices. In conclusion, the data suggests that food processing firms and agri-businesses in Ghana are making great effort by engaging in green supply chain management practices.

4.7 Correlation between the Variables in the Study

The link between the constructs that is the independent, moderator and dependent variables were examined using cross tabulation. The results in table 4.11 shows that green supplier development capability relates positively with the adoption of green supply chain management adoption ($r=0.59, p<.001$) and top management support ($r=0.81, p<.001$). Top management support also relates positively with the adoption of green supply chain management ($r=0.69, p<.001$). Table 4.11 shows the summary of the cross tabulation of the variable used in the study.

Table 4.11 Summary of the Cross Tabulation of the Variable Used in the Study.

Variables	1	2	3
Predictor Variable			
1. Green Supplier Development Capability	1		
Moderating Variable			
2. Top Management Support	0.81**	1	
Criterion Variable			
3. Adoption of Green Supply Chain Management	0.59**	0.69**	1

** $p < 0.001$

Source: Field Survey 2022

4.8 Regression Analysis of objective 1 and 2

The results of the two research models (direct effect, and moderation model) are reported in this section.

The statistical significance of model 1 and 2 was obtained by running a simple regression analysis and hierarchical moderated regression analysis respectively using 154 firms represented by 276 respondents. Green supplier development capability and GSCM adoption were included in the first model in addition to the control variables of firm size, total annual revenue, number of years of green adoption and type of industry. Top management support was included in the moderation model as the moderator. The results of simple regression model and the hierarchical moderated regression model are presented in tables 4.12a, 4.12b, 4.12c, and 4.13a, 4.13b, 4.13c respectively.

4.8.1 The Influence of Green Supplier Development Capability on GSCM Adoption

(Objective 1)

To determine how green supplier development capability influence green supplier chain management adoption within the responding firms, a regression model was run with green supplier development capability as the independent variable, GSCM Adoption as the dependent variable and years of green adoption, type of industry, number of employees, annual total revenue as the control variables. The result of the regression models are presented in tables 4.12a, 4.12b and 4.12c.



Table 4.12a Regression Model Summary for objective one

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.293 ^a	.086	.069	.71254
2	.820 ^b	.672	.664	.42792

- a. Predictors: (Constant), Years of green adoption, Type of Industry, Ownership of Company+, Number of Employees, Annual total revenue
- b. Predictors: (Constant), Years of green adoption, Type of Industry, Number of Employees, Ownership of Company+, Annual total revenue, Green_Supplier_Development_Capability
- c. Dependent Variable: GSCM Adoption

Source: Researcher's field work, 2022

The result in table 4.12a shows the relationship between green supplier development capability and GSCM adoption of the responding firms. According to Mwikali, and Stanley (2012) Coefficient of determination (r^2) clarifies the extent to which changes in a dependent variable can be explained by the changes in an independent variable or the percentage of variation in the dependent variable. In other words, it measures how well a statistical model predicts an outcome. As observed in table 4.12a, R value of 0.820 (82.0%) depict there exist a high positive relationship between the predictor and criterion variable. The result in table 4.12a again suggests that 67.2% (R-square value) of the variance of the model is explained by only the green supplier development capability. In other words, green supplier development capability accounted for (67.2%) of the variance in the criterion variable (GSCM adoption). The control variables included in the study together could also explain 8.6% variation of the model. This implies that 24.2% are the rest of contributing factors to GSCM adoption which the research did not study. It is therefore clear that green supplier development capability contributes highly to the responding firms' ability to adopt GSCM practices in this particular case study.

Table 4.12b ANOVA table for model fit for hypothesis one (objective one)

ANOVA ^a						
Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	12.912	5	2.582	5.087	.000 ^b
	Residual	137.081	270	.508		
	Total	149.993	275			
2	Regression	100.736	6	16.789	91.689	.000 ^c
	Residual	49.257	269	.183		
	Total	149.993	275			

a. Dependent Variable: GSCM_Adoption

b. Predictors: (Constant), Years of green adoption, Type of Industry, Ownership of Company+, Number of Employees, Annual total revenue

c. Predictors: (Constant), Years of green adoption, Type of Industry, Ownership of Company+, Number of Employees, Annual total revenue, Green_Supplier_Development_Capability

Source: Researchers' field study, 2022

In estimating the influence of green supplier development capability on GSCM adoption in food processing and agri-business firms in Ghana, the result displayed in table 4.12b shows (F=91.689, P, value=<.001. This implies that the model was significantly fit to be used in predicting the influence of green supplier development capability on GSCM adoption of the firms.

Table 4.12c Model Co-efficient for Hypothesis One (Objective One)

Model		Coefficients ^a			T	Sig.
		Unstandardized		Standardized		
		B	Std. Error	Beta		
<i>Control Variable</i>						
1	(Constant)	6.001	.233		25.812	.000
	Number of Employees	.236	.059	.329	4.424	.000
	Type of Industry	-.064	.100	-.040	-.639	.524
	Annual total revenue	-.116	.057	-.185	-2.023	.044
	Ownership of Company+	-.528	.194	-.083	-1.325	.186
	Years of green adoption	.016	.009	.130	1.654	.099
2	(Constant)	.868	.273		3.182	.002
	Number of Employees	.069	.033	.097	2.111	.036
	Type of Industry	.102	.061	.063	1.689	.092
	Annual total revenue	-.066	.034	-.106	-1.927	.055
	Ownership of Company+	-.110	.117	-.036	-.941	.348
	Years of green adoption	.001	.006	.012	.248	.805
	Green Supplier Development Capability	.890	.041	.809	21.900	.000

a. Dependent Variable: GSCM_Adoption

Source: Researchers' field study, 2022

Table 4.12c depict the regression results of the co-efficient of the regression analysis. This result is used to depict the strength and direction of the relationship between the independent variable (green supplier development capability) and the dependent variable (GSCM adoption).

Consequently, hypothesis one hypothesized a significant positive relationship between green supplier development capability and GSCM Adoption based on previous findings in literature review. Nevertheless, the standardized coefficients of green supplier development capability derived after the estimation is ($\beta=0.809$, with a statistically significant p-value of $p=0.000$ which is less than $p=0.05$ and t -value of 21.900). This result shows that green supplier development has a positive significant influence on GSCM adoption

4.8.2 The Moderating Role of Top Management Support on the Relationship between Green Supplier Development Capability and GSCM Adoption (Objective 2)

Table 4.13a Moderation Regression Model for objective two (hypothesis two)

Model Summary					
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change
1	.293 ^a	.086	.069	.71254	.086
2	.853 ^b	.728	.721	.38990	.642
3	.874 ^c	.763	.756	.36469	.035

a. Predictors: (Constant), Years of green adoption, Type of Industry, Number of Employees, Annual total revenue, Ownership of Company+

b. Predictors: (Constant), Years of green adoption, Type of Industry, Number of Employees, Annual total revenue, Ownership of Company+, Top_Mgt_Support, Green_Supplier_Development_Capability

c. Predictors: (Constant), Years of green adoption, Type of Industry, Number of Employees, Annual total revenue, Ownership of Company+ Top_Mgt_Support, Green_Supplier_Development_Capability, Interaction_Term

Source: Researchers' field study, 2022

The result in table 4.31a shows the moderating influence of top management support on the relationship between Green Supplier Development Capability and GSCM adoption.

The result in table 4.13a suggests that both green supplier development capability and top management support together could explain 76.3% (R-square value) of the variance in GSCM adoption. In other words, the interaction term (that is green supplier development capability and top management support) accounted for 76.3% of the variance in the criterion variable (i.e GSCM) which is an improvement over the second model of 72.8% when the interaction term was not considered.

This implies the remaining 23.7% variation in the model could be explained by other factors, which were not studied in the research. The change in R-square of the model three of 3.5% (0.035) shows that top management could have a 3.5% influencing role on the firm's green supplier development capability hence the responding firms needs to pay a critical attention to this variable or factor.



Table 4.13b ANOVA result for objective two

ANOVA ^a						
Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	12.912	5	2.582	5.087	.000 ^b
	Residual	137.081	270	.508		
	Total	149.993	275			
2	Regression	100.252	6	15.607	102.667	.000 ^c
	Residual	40.741	268	.152		
	Total	149.993	275			
3	Regression	114.482	8	14.310	107.594	.000 ^d
	Residual	35.512	267	.133		
	Total	149.993	275			

a. Dependent Variable: GSCM

b. Predictors: (Constant), Years of green adoption, Type of Industry, Ownership of Company+, Number of Employees, Annual total revenue,

c. Predictors: (Constant), Years of green adoption, Type of Industry, Number of Employees, Ownership of Company+, Annual total revenue, Top Management Support, Green Supplier Development Capability

d. Predictors: (Constant), Years of green adoption, Type of Industry, Number of Employees, Annual total revenue, Ownership of Company+, Top Management Support, Green Supplier Development Capability, Interaction_term

Source: Researchers' field study, 2022

In estimating the moderating influence of top management support on the relationship between green supplier development capability and top management on GSCM adoption in food processing and agri-business firms in Ghana; the result displayed in table 4.13b shows (F=107.594, P value=<.001). This implies that the model was fit to be used in predicting the moderating influence of top management support on the relation between green supplier development capability and GSCM adoption of the firms.

Table 4.13c Co-efficient result for objective two

Model		Coefficients ^a		Standardized Coefficients Beta	T	Sig.
		Unstandardized				
		B	Std. Error			
1	(Constant)	6.001	.233		25.812	.000
	Number of Employees	.236	.053	.329	4.424	.000
	Type of Industry	-.064	.100	-.040	-.639	.524
	Annual total revenue	-.116	.057	-.185	-2.023	.044
	Ownership of Company+	-.258	.194	-.083	-1.325	.186
	Years of green adoption	.016	.009	.130	1.654	.099
	2	(Constant)	-.078	.279		-.280
Number of Employees		.027	.030	.038	.903	.368
Type of Industry		.071	.055	.044	1.277	.203
Annual total revenue		-.035	.032	-.056	-1.099	.273
Ownership of Company+		-.039	.107	-.013	-.361	.718
Years of green adoption		.001	.005	.008	.187	.852
Green capability Top Management Support		.703 .326	.045 .044	.638 .301	15.707 7.484	.000 .000
3	(Constant)	.421	.273		1.545	.123
	Number of Employees	.033	.029	.046	1.157	.248
	Type of Industry	.051	.052	.032	.980	.328
	Annual total revenue	-.044	.030	-.071	-1.498	.135
	Ownership of Company+	-.042	.100	-.014	-.424	.672
	Years of green adoption	.002	.005	.014	.345	.730
	Green capability Top Management Support	.633 .327	.043 .041	.575 .301	14.632 8.010	.000 .000
	Interaction_term	-.216	.034	-.197	-6.271	.000
	a. Dependent Variable: Green Adoption					

Source: Researchers' field study, 2022

The study again argued in hypothesis 2 that the direct effect of green supplier development capability on the adoption of green supply chain management is conditional upon the levels of top management support.

To estimate this path the researcher used hierarchical moderated regression analysis and the Ordinary Least Square Estimation Method to test the conceptual models in SPSS 25.0. Hierarchical regression attempts to improve standard regression estimates by adding a second-stage "prior" regression to an ordinary model. Following established practice, the researcher computed averages for each multi-item construct to generate single indicants. The dependent variable for the study is GSCM Adoption; while green supplier development is the predictor and green leadership support is the moderator.

To be able to estimate the moderation effect the researcher created the interaction terms between green supplier development capability and green leadership support ($GSDC \times GLS$). This was done after Mean centering the green supplier development capability (IV) and green leadership support (Moderator).

In estimating the models, a systematic procedure was followed. The Independent variable (GSCM Adoption) as well as the control variables (Years of green adoption, Type of Industry, Ownership of Company, Number of Employees, Annual total revenue) were entered in the first step. The independent variable (Green supplier development capability) and the Moderator (green leadership support) were entered in the second step (the direct effect of green supplier development capability on GSCM Adoption, which was hypothesis 2, was established in this second step). The final model which is model 3 estimated the second hypothesis where the interaction term of (Green supplier development capability) and the Moderator (top management support) ($GSDC \times GLS$) were entered (these were Mean Centred before the estimation).

The interaction term was determined using the mean centering approach in order to minimize errors or issues of multicollinearity, which may interfere with the moderation analysis.

From the table 4.13c, it could be deduced that top management support negatively moderates the relationship between green supplier development capability and GSCM adoption ($\beta=-.197$; $P < 0.05$). That is ($\beta= -.197$), with a statistically significant p-value of $p=0.000$ which is less than $p=0.05$ and t-value of -6.271). This result shows that higher levels of top management support weaken the relationship between green supplier development capability and GSCM adoption.

4.9 Discussion of Findings

This study investigated and hypothesized a positive relationship between green supplier development capability and the adoption of GSCM and the moderating role of top management support in the relationship between green supplier development capability and GSCM adoption within the food processing and agri-business firms in Ghana. To test these hypotheses in the study, simple regression was performed for objective one and hierarchical moderated regression analysis was also performed objective two. The discussion of the findings of the two-hypothesis formulated in the study are discussed in the next section.

4.9.1 Objective 1: The Influence of Green Supplier Development Capability on GSCM Adoption

Based on the literature review, it was hypothesized that;

Hypothesis 1: Higher levels of green supplier development capabilities will lead t higher level of GSCM adoption

Specifically, hypothesis one hypothesized a positive relationship between green supplier development capability and GSCM adoption based on the findings of previous researchers who indicated the two concepts are related (Vachon, 2007; Nkrumah et al., 2020).

This hypothesis was tested using simple regression analysis and the result of the strength and direction of the relationship between the two concepts is presented on table 4.12c.

The results on table 4.12c shows that, green supplier development capability related positively and significantly with GSCM adoption. This was evidence where the result revealed; $\beta=0.809$, with a statistically significant p -value of $p=0.000$ which is less than $p=0.05$ and t -value of 21.900 after controlling for years of green adoption, type of industry, number of employees and annual total revenue. The regression model for the study also revealed and implied that a percentage or a unit increase in green supplier development will result in 80.9% unit change in the responding firms' GSCM adoption.

This finding therefore provides further support to the findings of previous authors like Nkrumah et. al (2020) that green supplier development capabilities had positive and significant effects on GSCM adoption and that the package of resources, capabilities or practices of firms generate values for them which are difficult to imitate or arrogate by business rivals, leading to their competitive advantage. Nevertheless, the relationship between the green supplier development capability and GSCM adoption was possible due to the combined assumption of the RBV and dynamic capability theory. That is if imitable resources are nurtured, grown and effectively deployed these imitable resources such as green supplier development capability under changing environmental conditions (Teece, et al. 1997) can lead to a favourable outcome like GSCM adoption.

Consequently, scholars have pointed out that the existence of supplier development capabilities within firms enables them to get into a more committed relationship with their suppliers and to also increase the capabilities of their suppliers (Liu et al., 2018) to achieve needed outcomes.

This ability of firms to increase the capabilities of their suppliers to achieve greater operational performance subsequently results in the willingly formation of a continuous partnership between the focal firms and their suppliers; this continuous partnership subsequently results in the adoption of green practices (Sancha et al., 2015).

The positive significant relationship between green supplier development and GSCM adoption therefore means that hypothesis one (1) is supported in this study.

This finding validates the findings of Nkrumah et al. (2020) who found a positive and significant effect of green supplier development capability on GSCM adoption and that higher levels of green supplier development capabilities will result in higher GSCM adoption. This study further affirmed the findings of Vachon (2007) who also detected that firms who are able to work hand in hand with their suppliers are always in a better position to incorporate GSCM practices in their firms' operations to enhance environmental sustainability.

However, though the findings of this study are similar to the findings of Nkrumah et al. (2020) and that of Vachon (2007), the regression result of the study reveals a far higher significant effect of green supplier development capability on GSCM especially when compared with the study of Nkrumah et al. (2020). Their study revealed ($b=0.378$, $t=3.991$, $p<0.001$) while this study revealed a result of ($\beta=0.809$, $t = 21.900$, $p < 0.000$).

This result could be due to the fact that the food processing firms and agri-businesses who are into green practices in Ghana are making a good and better effort as well as progress in developing their green capabilities as indicated by the respondents' agreement by a mean value of 5.84. In other words, the firms are putting better sustainable measures required of them in place by conducting second-tier supplier environmentally friendly practice evaluation in their companies, ensuring that their supplier have ISO 14000 certification before engaging them.

Again, they are selecting suppliers based on environmentally friendly criteria as well as urging and pressuring their suppliers to take environmentally friendly actions in purchasing. It can also be deduced from the result of the study that the food processing and agri-businesses who are into green practices in Ghana are regularly and consistently requiring their suppliers to provide certification for testing green product conformance before engaging in a business with them. All these activities enabled and enhanced their ability to adopt and inculcate sustainable supply chain management practices in their activities, which is currently a global desire from firms.

4.9.2 Objective 2: The Moderating Role of Top Management Support on the Relationship between Green Supplier Development Capability and GSCM Adoption

Based on the literature review, the study further hypothesized that;

***Hypothesis 2:** Top management support will moderate the relationship between green supplier development and the adoption of Green Supply Chain Management Practices.*

Hypothesis two hypothesized that top management support will moderate the relationship between green supplier development and the adoption of Green Supply Chain Management practices.

This is based on the findings of previous authors (eg. Blome, Hollos & Paulraj, 2014; Iiyas, Hu & Wiwattanakornwong, 2020). This hypothesis was tested using hierarchical moderated regression analysis. However, from the table 4.13c, it could be deduced that top management support negatively moderates the relationship between green supplier development capability and GSCM adoption ($\beta = -.197$; $P < 0.05$). That is ($\beta = -.197$), with a statistically significant p-value of $p = 0.000$ which is less than $p = 0.05$ and t -value of -6.271 was deduced).

This result shows that higher levels of top management support weaken the relationship between green supplier development capability and GSCM adoption. In other words, at higher levels of top management support, the relationship between green supplier development capability and GSCM adoption will be weakened. This result is evident from the standardized Beta value of model three, which is negative, which implies that higher levels of top management support will weaken the positive effect of green supplier development capability on GSCM adoption.

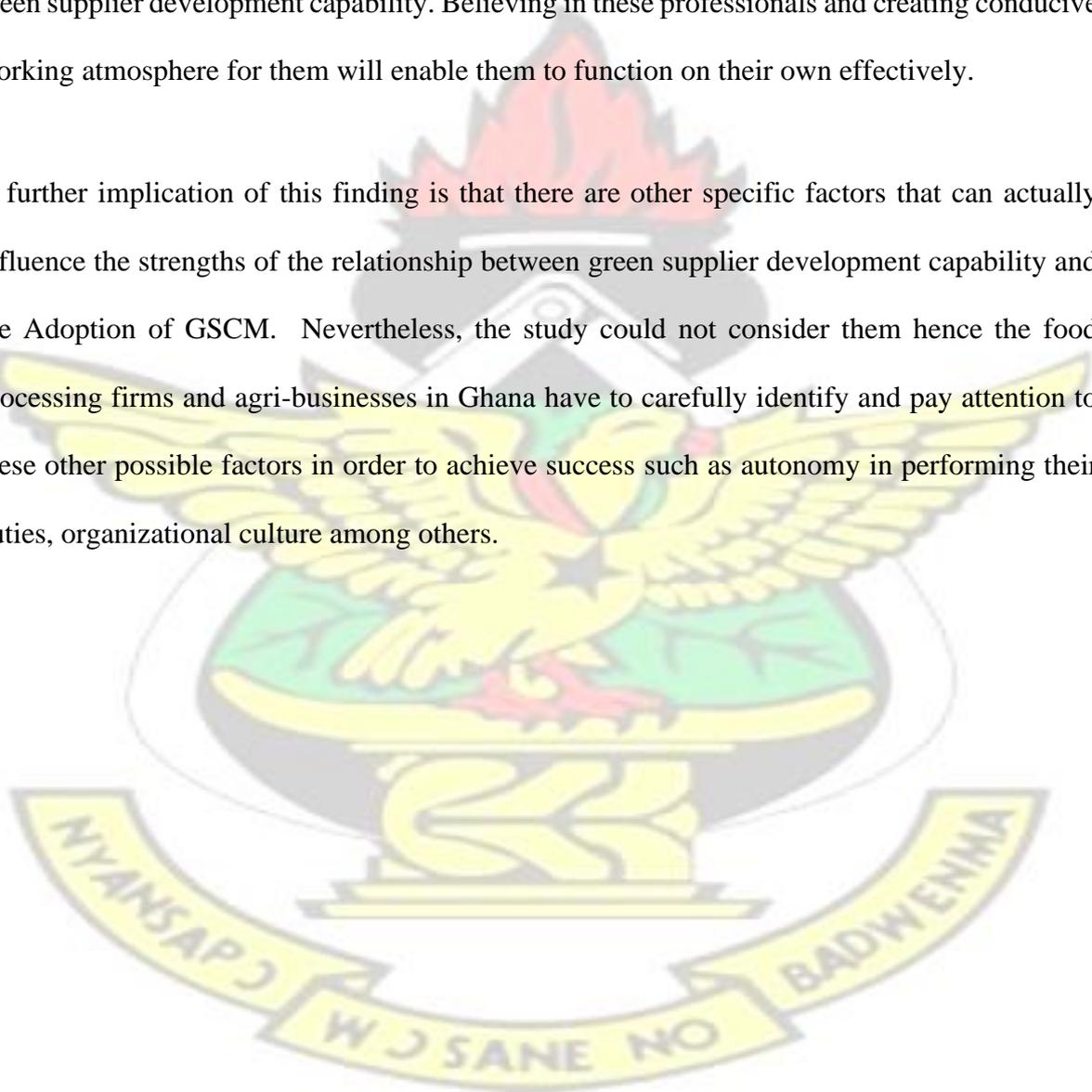
The negative moderating effect of top management support in the relationship between green supplier development capability and GSCM adoption therefore means that hypothesis one (2) is not supported in this study.

That is though top management support was able to moderate the relationship between the variables, the moderation effect was a negative one. This finding is therefore indifferent from the expectation of the hypothesis and findings of previous studies who proposed that top management support is a potential essential driver of green supplier development (Blome, Hollos & Paulraj, 2014). That is, through top management support the relationship between green supplier development capability and GSCM adoption would be strengthened (Ilyas, Hu & Wiwattanakornwong, 2020).

Nevertheless, the possible reason why higher top management support weakened this relationship in this study is that, it is obvious the middle level procurement professionals who are in charge of green activities within their respective food processing companies and agribusinesses in Ghana prefers to develop their green supplier development capabilities on their own which could help them expand their resources to result in favourable outcomes. Hence higher levels of support from their top management kills their initiatives of engaging in green supplier development activities.

The implication is that lower levels of top management support will rather arouse individual creativity in them thereby improving on their abilities to collaborate with these suppliers. Kohlbacher (2013) therefore affirmed that firms need to develop varied dynamic capabilities that helps them to create, expand or modify their resource bases to leverage the benefits of innovative ideas supports this assertion. This signifies that in the competitive marketplace, firms need to give room to professionals who are in charge of specific jobs like developing green supplier development capability. Believing in these professionals and creating conducive working atmosphere for them will enable them to function on their own effectively.

A further implication of this finding is that there are other specific factors that can actually influence the strengths of the relationship between green supplier development capability and the Adoption of GSCM. Nevertheless, the study could not consider them hence the food processing firms and agri-businesses in Ghana have to carefully identify and pay attention to these other possible factors in order to achieve success such as autonomy in performing their duties, organizational culture among others.



CHAPTER FIVE

SUMMARY OF FINDINGS, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

Having presented and discussed extensively the results obtained from the study in the previous chapter, the current chapter presents the summary, conclusion, recommendation and directions for future study based on the findings of the study.

5.2 Summary of the Findings

Green Supplier development capability is an essential element of procurement activities but generally, its role has not gotten much attention in our parts of the world as well as the moderating role of top management support in relation to the concept. Hence, these gaps motivated this current study. The next section discussed the summary of the major findings of each of the objectives of the study;

5.2.1 Objective 1: The relationship between Green Supplier development capability and adoption of GSCM

Objective one sought to investigate the relationship between Green Supplier development capability and adoption of GSCM. This result of the study shows that green supplier development has a positive significant influence on GSCM adoption of food processing companies and agri-businesses in Ghana. This finding validates the findings of Vachon (2007) who indicated that firms who are able to work hand in hand with their suppliers are always in a better position to incorporate GSCM practices in their firm's operation.

5.2.2 Objective 2: The moderating role of top management support in the relationship between Green Supplier development and adoption of GSCM

Objective two also sought to find out the moderating role of top management support in the relationship between Green Supplier development and adoption of GSCM. The result revealed that higher levels of top management support weaken the relationship between green supplier development capability and GSCM adoption.

5.3 Conclusion

In conclusion, the study contributes to literature by providing knowledge on the level of GSCM adoption in this study. Both the levels of GSCM adoption and the presence of green supplier development within the food processing and agri-businesses in Ghana were found to be on average.

Consequently, the findings of the specific objectives revealed that the study has significant theoretical, managerial and policy making implications and these are discussed below;

With the theoretical contributions, the primary purpose of the study is to contribute to theory development on the relationship between green supplier development capability and GSCM adoption from the RBV and dynamic capability perspectives. Accordingly, the finding of this study support these theoretical assumptions where green supplier development was found to be a strong driver of GSCM adoption.

The study thus contributes to literature by theoretically establishing the relevance of green supplier development capability in driving GSCM, a subject that has been underexplored theoretically. From the RBV perspective green supplier development capability was identified in this study as a distinctive resource (Miller, 2019).

An implication that the package of resources, capabilities or practices of the firms considered in this study generate values for them which are difficult to imitate or arrogate by business rivals leading to their competitive advantage. Nevertheless, the relationship between the green supplier development capability and GSCM adoption was possible due to the combined assumption of the RBV and dynamic capability theory. An implication that the study is the first to establish this relationship based on the combined assumption of these theories and that achieving competitive advantage is not only based on firms' ability to possess immobile resources as propounded by previous studies but its rather based on their ability to nurture, grow and effectively deploy these imitable resources such as green supplier development capability under changing environmental conditions (Teece, et al. 1997).

This means that even though it is important for firms to have resources which are not easily replicable by competitors to achieve competitive advantage, firms need to continuously nurture, grow and effectively deploy these resources and also pay critical attention to their dynamic environment. It is only then that they can continuously reap the sustainability of outcomes like GSCM adoption as postulated by the dynamic capability theory.

The managerial implication of this study is that, since green supplier development has been identified as a significant driver of GSCM adoption in food processing and agribusinesses in Ghana, managers need to understand that investment in green supplier development capability is a first step towards the adoption of GSCM.

Green supplier development capability would be beneficial to sustainability practices and hence managers of these institutions must put all necessary efforts in place by providing adequate resources especially financial resources to enhance the capabilities of those in charge of green supplier development. Doing this would motivate the officers in charge to do their best to enhance this capability in order to obtain the maximum benefit from its effects.

Again, managers need to understand that seeing green supplier development capability as their essential resource green may not in themselves lead to the adoption of GSCM rather attention should be devoted to how to nurture, grow and effectively deploy this resource in order to obtain its maximum benefits.

The policy implication of this study is that stakeholders in charge of green supplier development must consistently meet with suppliers, consider implementing cost reduction teams, establish and strengthen supplier quality requirements and use supplier performance audit systems so as to achieve the stability of this green supplier development capability in businesses.

5.4 Recommendations

Based on the above revelations from the study, the following recommendations were made:

From the findings, this study thus recommends that managers and policy makers of food processing companies can achieve higher levels in the adoption of GSCM when they improve upon their green supplier development capabilities.

Also, government and other bodies who wants to see higher levels of environmental improvement performance must start enforcing strict environmental laws to ensure enhancements in green practices.

Again, the study revealed that average level of green supplier development capability and GSCM Adoption exist within the food processing companies in Ghana. The study therefore recommends that the food processing companies and agri-businesses in Ghana should put appropriate measures in place by providing a serene atmosphere to strengthen the relationship between their organizations and that of their green suppliers. If done this will accelerate their green supplier development capability to result in an increment of their GSCM Adoption.

5.5 Recommendations for Further Study

This study has some limitations which are worthy of mention. To begin with, the sample was drawn from 154 food processing and agri-businesses who have been into green practices for at least one year in Ghana. Therefore, generalizability of the findings may be limited due to the singly country dataset.

Again, given that different cultural differences may influence the institutions perception of green supplier development capability and GSCM Adoption, it would be laudable for future researchers to replicate this study by using samples from different jurisdiction.

Furthermore, the researcher's findings were based on cross-sectional were based on cross-sectional data and this kind of research design may not in totality test the causal relation between green supplier development capability and GSCM Adoption.

Future studies should thus adopt the longitudinal design, which may provide more evidence on the causal relationship between green supplier development capability and GSCM Adoption.

Again, this study recommends future studies to consider other possible moderating variables which could moderate the relationship between green supplier development capability and GSCM Adoption like sustainability education, employee commitment to green since top management support was not able to strengthen the relationship between green supplier development capability and GSCM Adoption.

It is the earnest believe of the researcher that, this research and its findings will enhance future development of green supply chain management adoption in literature.



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**KWAME NKURUMAH UNIVERSITY OF SCIENCE AND TECHNOLOGY
DEPARTMENT OF SUPPLY CHAIN AND INFORMATION SYSTEM**



SURVEY QUESTIONNAIRE

My name is Innocent Wornaglo. I am a post-graduate student at the Kwame Nkrumah University of Science and Technology School of Business, Department of Information Systems and Decision Sciences. This survey instrument has been designed to enable me carry out a research on *The Influence of Green Supplier Development Capability on Green Supply Chain Management (GSCM) Adoption in Ghana*. The purpose of the research is to provide an understanding of how green supplier development capability could influence the adoption of Green Supply Chain Management, and *to further examine how Top Management Support Could Influence The Relationship Between Green Supplier Development Capability and the Adoption Of Green Supply Chain Management* using data from Ghana. Any information provided will ONLY be used for general information, and it will be treated as HIGHLY CONFIDENTIAL.

INSTRUCTIONS: Please kindly write/tick in ink in the box which corresponds to the statement, which in your opinion is the most appropriate answer to the related question. For the following questions, kindly select by checking (✓) all that apply.

1. Number of Employees <input type="checkbox"/> <6; <input type="checkbox"/> 6-29; <input type="checkbox"/> 30-59; <input type="checkbox"/> 60-99; <input type="checkbox"/> 100-500 ; <input type="checkbox"/> 501-2000	
2. Please place a check in your company's corresponding Industry	<input type="checkbox"/> Food processing and Beverages <input type="checkbox"/> Agri-business
3. Please indicate the Revenue of your Company in New Ghana Cedis	<input type="checkbox"/> <40,000; <input type="checkbox"/> 40,000-80,000; <input type="checkbox"/> 80,001-200,000; <input type="checkbox"/> 200,001-1,000,000; <input type="checkbox"/> 1,000,001-5,00,000; <input type="checkbox"/> 5,000,001-20,000,000
4. Please how long has your company Adopted Green Practices? _____ years	
5. Ownership of company <input type="checkbox"/> Solely Ghanaian Owned <input type="checkbox"/> Foreign Owned <input type="checkbox"/> Joint Venture <input type="checkbox"/> Others (Specify)	

Instructions: Please indicate your opinion for the following statement by placing a checkmark (✓) in the right column under the 7-point Likert Scale.							
	7-point Likert Scale						
	Strongly Disagree	Moderately Disagree	Disagree	Neutral	Agree	Moderately Agree	Strongly Agree
GD1: We conduct Second-tier supplier (a company that supplies to an organization's suppliers)environmentally friendly practice evaluation in our company							
GD2: Our Suppliers' have ISO 14000 certification							
GD3: We select our suppliers based om environmental criteria							
GD4: We urge and pressure our suppliers to take environmentally friendly actions							
GD5: In purchasing, our company requires suppliers to provide certification for testing green product conformance							
GD6: We provide our suppliers with design specifications that include environmental requirements for purchasing items							
GSCM ADOPTION	Strongly Disagree	Moderately Disagree	Disagree	Neutral	Agree	Moderately Agree	Strongly Agree
AD1: Our company provides environmental design requirements to our suppliers							
AD2: We co-operate with suppliers to achieve environmental Objectives							
AD3: Our company conduct environmental audit for suppliers' inner Management							
AD4: We inquire of suppliers ISO 14000 certification before engaging Them							
AD5: We evaluate environmentally friendly practice of second-tiers Suppliers							
AD6: We co-operate with our customers for eco-design							

Instructions: Please indicate your opinion for the following statement by placing a checkmark (✓) in the right column under the 7-point Likert Scale.							
GSCM ADOPTION	Strongly Disagree	Moderately Disagree	Disagree	Neither Agree nor Disagree	Agree	Moderately Agree	Strongly Agree
AD7: We co-operate with our customers for cleaner production							
AD8: We co-operate with customers for green packaging							
AD9: We co-operate with customers to use less energy during product Transportation							
AD10: There is commitment of Green Supply Chain Management from senior managers in our company							
AD11: There is a support for Green Supply Chain Management from middle level managers in our company							
AD12: Total quality environmental management exist in our company							
AD13: There is environmental compliance and auditing programs in our company							
AD14: Our company has ISO 14000 certification							
AD15: Environmental management system exists in our company							
AD16: Eco-labelling of products exist in our company							
TOP MANAGEMENT SUPPORT	Strongly Disagree	Moderately Disagree	Disagree	Neutral	Agree	Moderately Agree	Strongly Agree
TM1: Top management in our organization value environmental professionals in our institution							
TM2: Top management support the efforts of environmental professionals in our institution							
TM3: Top management recognizes the importance of environmental issues within our institutions' supply chain							
TM4: Senior management support assessment and take responsibility pertaining to environmental issues in our institution							