

KWAME NKRUMAH UNIVERSITY OF SCIENCE AND TECHNOLOGY

COLLEGE OF HUMANITIES AND SOCIAL SCIENCES

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**EVALUATING EFFICIENT SUPPLY CHAIN MANAGEMENT ON SUSTAINABLE
SUPPLY CHAIN IN THE COCOA SECTOR: THE MODERATING EFFECT OF TOP
MANAGEMENT SUPPORT**

BY

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KNUST



DECLARATION

I hereby declare that this work is the result of my own original work and that to the best of my knowledge no part of it has been presented for another degree masters in this university or elsewhere except where due acknowledgment has been made in the text.

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DEDICATION

This thesis is dedicated to the Almighty God who has brought me this far, to my Boss, Mr. Emmanuel Osei Sarfo and to my parents for their love and support towards my education, without whose caring and support it would not have been possible.

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ABSTRACT

Efficient Supply Chain Management (SCM) has presently become a crucial strategy adopted by many firms and organisations to remain competitive within their respective sectors and as well to continue to be profitable and therefore has been identified as a significant phenomenal component of trade which is a crucial aspect of economic development and activities. With supply chain disruptions impeding the flow of products, hampering firms' abilities to produce their goods as well as adversely impacting on the performance of a supply chain, this study aims at examining the effect efficient supply chain management practices have on sustainable supply chain with a moderation effect of top management. The study with the adoption of a quantitative research method, employed a convenience sampling to selected 10 cocoa companies in the Kumasi metropolis of the Ashanti Region and then, a simple random sampling technique to arrive at surveying 167 staff members of the selected companies. Through the utilisation of SPSS, the study revealed that the cocoa companies adopted the following efficient supply chain practices in their operations; information technology, relationship management, and internal integration. Analysis revealed a significant and positive relationship between efficient supply chain practices and sustainable supply chain. Results further indicates that top management has a positive and significant moderation effect on the relationship between efficient supply chain practices and sustainable supply chain. Study revealed that some of the challenges affecting the adoption and implementation of supply chain practices are companies lack professional expertise, and lack frequent Supply Chain Management training among others. The study recommends that in light of the challenges identified, workshops and seminars should be organised for the workers to help enlightened them on the challenges and how they can be mitigated.

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CHAPTER ONE INTRODUCTION

1.1 Background of the Study

Supply chain management (SCM) signifies a remarkable transformation in the manner in which organizations perceive their own identity. It has observed the generation of worth through the amalgamation and synchronization of supply, demand, and relationships, in order to effectively and lucratively fulfil the requirements of customers, spanning across both the private and public sectors (Esper *et al.*, 2020). Companies worldwide implement supply chain management due to its proven outcomes, which include the reduction of delivery time, enhanced financial performance, increased customer satisfaction, establishment of trust with suppliers, and various other benefits (Mastos *et al.*, 2020). According to Gouda and Saranga (2018), companies often utilize supply chain practices as a means to enhance their operational proficiency. In recent times, Aid Agencies have displayed a growing inclination towards comprehending the influence of supply chain and its associated stakeholders on organizational strategy (Saeed and Kersten, 2019). The success of every corporation has therefore become imperative especially within the remit of globalisation. It has therefore become the case that one of the components for the realisation of organisational success is dependent on the efficiency of the supply chain system. Although there are different supply chain systems which differ from industry to industry, globalisation has led to a functional integration of activities not only between firms but also among industries (Pananond *et al.*, 2020). Thus, there had been tremendous initiatives to improve the applicability of supply chain management practices and consequently the sustainable supply chain because of its keen significance (Zaid *et al.*, 2018).

The achievement of effective SCM is widely considered to be heavily reliant on the imperative to dismantle obstacles, not solely within internal departments and business processes, but also among companies throughout the entire supply chain. Additionally, its triumph is linked to the demanding cultivation of a fresh culture grounded in empowerment, ongoing collaborative learning, and perpetual enhancement (Norrman and Naslund, 2019).

Cocoa has been for decades the backbone of the economy of Ghana and its major earner in terms of foreign exchange. It has therefore become the most important agricultural export product for the country as it accounts for about 10% of the country's GDP. The cocoa industry further serves as an employment hub employing well over a million people across the country (Alagidede *et al.*, 2018). In this contemporary era of innovation, organisations are keen on leveraging efficient techniques to enhance their business strategies. Supply chain management practices had become one of the most adopted techniques in terms of leveraging on organisational techniques to enhance business efficiency and profitability. The management of the supply chain systems within the cocoa industry has thus been considered one of the critical drivers of competitiveness in the industry as every organisation within the industry form part of the supply chain. More so as it has become a tool adopted by organisations to attain levels of high competitive advantages (Bai *et al.*, 2022).

As organizations are currently endeavouring to ascertain the means to assimilate decisions pertaining to supply chain functions, facilities dispersed across various geographical locations, and temporal considerations, the imperative of factually grounded supply chain management cannot be overstated. The crux of fact-based supply chain management lies in the amalgamation of planning and control, a construct characterized by three pivotal facets. The initial dimension

pertains to the functional amalgamation, encompassing determinations regarding procurement, production, and distribution operations within the organization, as well as between the organization and its suppliers and clientele. The subsequent dimension encompasses the geographical amalgamation of these functions across tangible establishments situated on one or multiple continents. Lastly, the third dimension encompasses the temporal amalgamation of strategic, tactical, and operational determinations within the supply chain (Jena and Ghadge, 2021). Global supply chains in the era of globalization are often defined by an increased reliance on transportation, which has clear ramifications for the environment. Additionally, these chains can foster behaviours that may not always align with social sustainability. For instance, the presence of inexpensive manpower may compel enterprises to delegate operations to emerging nations with restricted supervision of labour safety. These elements are prompting interested parties to contemplate the concept of durability owing to the escalating apprehension regarding domestic and international guidelines, as well as the increasing emphasis placed by ultimate consumers on the ramifications of durability (Malak-Rawlikowska *et al.*, 2019; Di Fazio and Modica, 2018).

1.2 Problem Statement

The efficiency and effectiveness of supply chain management have significant implications for an organization's capacity to fulfil customer demands, maintain its reputation, and achieve overall financial prosperity (Xu *et al.*, 2019). According to Arunachalam *et al.* (2018) and Papalexi *et al.* (2020), the inefficiency of supply chain management represents the most significant potential for operational inefficiencies within any given organization. Enterprises that engage in the global trade of goods such as cocoa face the challenging responsibility of both sustaining their supply sources and ensuring the continuous functionality of their supply chain operations. Any issue in

the distribution network can result in financial setbacks for the organization or governing body, particularly when the product in query holds significance at a national level. The COVID-19 pandemic has emphasized the significant importance of effective supply chain management in ensuring the triumph of a business. Furthermore, it is essential for the overall well-being of the global economy. The crisis caused by the pandemic had extensive consequences on a global scale, impacting every stage of the supply chain, ranging from the acquisition of raw materials to the production of finished goods. Consequently, numerous companies have been confronted with the imperative task of developing the necessary resilience to withstand such adversities, thereby presenting a critical challenge for supply chain management (Arunmozhi *et al.*, 2021).

While there had been significant development within the supply chain sector of the cocoa industry in Ghana, there had been increasing concerns with regards to environmental issues such as resource depletion, waste production, and emission generation among others which can be traced to activities as a result of SCM applications (Pyykkö *et al.*, 2021). The processes adopted by organisations within the supply chain industry had been questioned as their application of SCM practices have had direct environmental results through operations such as procurement, production, and distribution among others (Abdallah and Al-Ghwayeen, 2019).

Again, whereas literature is replete with studies on supply chain management practices and its impact on organisational performances (Hong *et al.*, 2018; Basheer *et al.*, 2019; Tarigan *et al.*, 2021), there are very few studies focusing on the efficiency of supply chain management and as well sustainable supply chain (Al-Sheyadi *et al.*, 2019; Cankaya and Sezen, 2018; Foo *et al.*, 2018). With some studies such as Zhu *et al.* (2013), Beske *et al.* 2014, and Nimeh *et al.* 2018, focusing on improving the efficiency of supply chain management practices within the context of

the research scope, findings of these studies have remained mixed and inconclusive. Whereas many of these studies on Ghana are focused on sectors such as the manufacturing sector (Afum *et al.*, 2020; Kusi-Sarpong *et al.*, 2019; Famiyeh and Kwarteng, 2018), banking sector (Omoregie *et al.*, 2019; Barber *et al.*, 2017) and SMEs cutting across all sectors (Kot, 2018; Hong *et al.*, 2018), little studies are found with a focus on the cocoa industry (Amoako *et al.*, 2021; GlaveeGeo *et al.*, 2020).

Once again, researchers have made numerous endeavours to examine the correlation between effective practices in supply chain management and sustainability. Nevertheless, the results have exhibited a diversity among various countries and industries (Suryanto *et al.*, 2018; Li *et al.*, 2021). Also, studies on the relationship in emerging countries are very limited. Another frequently observed and distinctive characteristic of a significant proportion of these investigations is their concentration on a limited quantity of enterprises. Thus, examination conducted by this study will therefore help breach the gap in literature.

1.3 Research Objectives

The main aim of this study is to examine the application of efficient supply chain management practices leading to the attainment of a sustainable supply chain system of the cocoa sector in Ghana. Thus the specific objectives of this study are;

- i. To determine the effect of efficient supply chain management on sustainable supply chain practices within the cocoa sector of Ghana.
- ii. To evaluate the moderating effect of top management on the relationship between supply chain management and sustainable supply chain.

1.4 Research Questions

This study is guided by the following research questions;

- i. What is the impact of efficient supply chain management on sustainable supply chain practices within the cocoa sector of Ghana?
- ii. What is the moderating effect of top management support on the relationship between efficient supply chain management and sustainable supply chain?

1.5 Significance of the Study

Cocoa has served as the fundamental pillar of Ghana's economy for a period exceeding sixty years, furnishing approximately one-third of all proceeds derived from exports. This accounts for a range of 25-30 percent of the overall earnings from exports and contributes approximately 10 percent to the Gross Domestic Product (GDP) (Vigneri and Kolavalli, 2017). In spite of the significant contribution of cocoa to the economic landscape of Ghana, it appears that the critical importance of supply chain integration and its successful implementation within the industry is being undervalued. With various policy initiatives undertaken by Government of Ghana and various stakeholder players within the sector, this study could serve as a policy guide to drive sectorial reforms that results in boosting the efficiency within the supply chain sector of the cocoa industry in Ghana and further creating sustainability of the supply chain.

Again, on the organizational level, the lack of advanced technological developments and ineffective dissemination of information throughout the cocoa supply chain has resulted in decreased levels of productivity and efficacy within the industry. It is against the backdrop of these challenges and their associated consequences that prompted the researchers to undertake this study, with the aim of investigating methods to overcome the obstacles to supply chain

sustainability, thereby enhancing cocoa production in Ghana. It is anticipated that this would facilitate the cocoa industry in surmounting the obstacles related to the integration of the supply chain, attaining a competitive edge, and making well-informed decisions to enhance the performance of their enterprises and subsequently enhance the economy of Ghana. In conclusion, the research will make a valuable contribution to the existing body of knowledge on effective and sustainable management of the supply chain and also provide a foundation for future investigations.

1.6 Limitation, Delimitation, and Scope of the Study

The study's limitations are demonstrated by the extent of data utilized, which is solely focused on the cocoa industry of Ghana. Furthermore, similar to all quantitative studies, the methodological approach represents a limitation in itself, as the inquiry into the reason behind the presence or absence of a relationship can never be definitively addressed. More broadly, the exceedingly restricted timeframe, which amounts to approximately two months, for the creation of this thesis, serves as a constraint in and of itself and consequently hindered the researcher from expanding the extent of the investigation, such as, for example, conducting a comparison between companies from two different countries or employing similar methodologies. It is thus imperative to acknowledge that this study is exclusively confined to the concepts of supply chain management practices and sustainable supply chain systems. Geographically, the study is specifically limited to cocoa industry of the Republic of Ghana. Contextually, the research focuses on issues bordering on supply chain management practices and sustainable supply chain systems.

1.7 Brief Methodology

The research design employed in order to achieve the objectives of the study was that of a Case Study approach, thus, enabling the researcher to attain an in-depth account of the variables employed in the study and to analyse intensively the diverse phenomena of all the variables. The targeted population for the study is experts individual sector players within the cocoa industry of Ghana.

The study adopted a quantitative research approach to collect the data which is common with case studies. Based on the projected purpose of the study, the study employed a primary data collection method thro Self-administrated questionnaires. Descriptive statistics in the form of frequencies, percentages, and central tendencies were therefore employed for the analysis of this study.

1.8 Organisation of the Study

This study is organised into five key chapters which to a larger extent are interconnected. The five key chapters comprise of chapter one focusing on the introduction of the study, the background, the problem statement, the research objective, the research questions, the significance of the study, the scope of the study, the study limitations as well as the organisation of the study. The second chapter which is dubbed chapter two focuses on the review of relevant journals, articles and related works of the study subject. The third chapter which is also dubbed chapter three focuses on the methodology of the study describing the approach and methods adopted during the study. The fourth chapter which is named chapter four focuses on the analysis and discussion of the data obtained. The last chapter which is dubbed chapter five presents the finding, conclusion and gives recommendations.

CHAPTER TWO LITERATURE REVIEW

2.1 Introduction

This chapter of the study intends to present the conceptual, theoretical, and empirical analysis of literature on Supply Chain, Supply Chain Management, and Sustainable Supply Chain Management Practices. It also discusses Supply Chain Performance, and Resource Capability, Challenges of SCM Practices and the conceptual framework of the study and finally summarises the literature discussed. This details were presented from reviewed existing material of reference books, journals, reports, online resources and other works by researchers in the same field.

2.2 Conceptual Review

2.2.1 Supply Chain

According to Min *et al.* (2019), a supply chain is a comprehensive framework encompassing individuals, resources, and organizations engaged in the procurement, production, and distribution of goods or services to meet customer demands. Accordingly, supply chain management pertains to the amalgamation of raw materials and their constituent elements into a finalized product or service, which is subsequently conveyed to the ultimate consumer (Dietrich *et al.*, 2021). Supply chain is an ever-changing, interconnected system. Supply chain has since witnessed a vast level of modernisation in the past 30 years. This clearly indicates that supply chains are dynamic entities that undergo transformation and modification in terms of their dimensions, structure, and arrangement, as well as in the manner in which they are organized, governed, and overseen. A multitude of factors can trigger the emergence of novel supply chains, such as the advent of technological advancements like flexible displays (Tsing, 2016; MacCarthy *et al.*, 2016), the rise of a product that is new or market segment, such as intelligent timepieces, cannot be overlooked (De Propriis and Bailey, 2021), or new geographical markets such as Africa

(El Baz *et al.*, 2018). Supply chains may also experience a decline or even vanish when the level of demand becomes inadequate to propel the entire chain forward. This phenomenon has indeed been observed in the case of disk storage technologies, which have been overshadowed by more adaptable forms of digital storage (Schniederjans *et al.*, 2020; Perboli *et al.*, 2018).

It is contended that underlying economic factors are ultimately the decisive factors of supply chain parameters, ascertaining configuration, magnitude, and the characteristic of transaction (MacCarthy *et al.*, 2016). However, there may exist additional factors that possess substantial impacts on the structure, functioning, and alignment of a supply chain during its temporal progression. It is not solely the economic and technological stimulants that exert their influence upon supply chains, but also the regulatory frameworks (Herczeg *et al.*, 2018), sustainability agendas (Wilhelm *et al.*, 2016), political factors (Mancheri *et al.*, 2019), and strategic choices (Kano *et al.*, 2020) affect the structure and configuration of supply chains. The configuration of supply networks has been greatly altered due to global sourcing strategies (Min *et al.*, 2019). Organizations have taken proactive measures to restructure their networks in order to pursue a manufacturing and/or marketing strategy that will more effectively cater to their target markets. As a result, a variety of economic, technological, environmental, and strategic factors have the potential to impact the participation of different entities within supply chains, the location of value adding activities, the coordination and management of these activities, as well as the overall development and growth of the supply chains (Gaudenzi *et al.*, 2021).

2.2.2 Supply Chain Management

Supply Chain Management (SCM) originated in the 1980s as a novel comprehensive ideology for overseeing the complete flow of merchandise from suppliers to the end user. The fundamental principle of this methodology resided in controlling a sequence of supply as if it were a unified entity, with the primary aim of rectifying the inefficient allocation of stock and resources (Pettit *et al.*, 2019). SCM, as stipulated by the Council of Supply Chain Management Professionals (CSCMP), encompasses the comprehensive planning and administration of all facets encompassed in sourcing and procurement, conversion, and the entirety of logistics management activities. The majority of alternate SCM definitions underscore the imperative integration of the interconnections that subsist among supply chain collaborators (Berthold, 2019). For instance, in the view of Zaid *et al.* (2018), The discipline of Supply Chain Management (SCM) encompasses the management of the interconnected relationships between organizations. These relationships are characterized by the upstream and downstream linkages between the various processes that contribute to the creation of value. This value is ultimately delivered to the end consumer in the form of products and services. SCM functions as an integrative mechanism, tasked with the crucial responsibility of connecting major business functions and processes within and across organizations. The ultimate aim is to establish a cohesive and high-performing business model. This model encompasses all activities related to logistics management and manufacturing operations (Wiedemann *et al.*, 2020).

Supply chain management (SCM) encompasses the coordination of interconnected commercial operations involved in delivering essential goods or services to final customers within supply chain activities (Giannakis *et al.*, 2019). The process encompasses all operations ranging from the acquisition of unprocessed materials to the execution of work in progress protocols, culminating

in the production of consumable goods or services that cater to the ultimate consumers. Supply Chain Management (SCM) constitutes a network of interconnected organizations that enhance the value of a convoluted flow of inputs, commencing from their origin and concluding with the delivery of final products or services demanded by the designated endcustomers (Haddouch *et al.*, 2019). Supply chain can be described as a series of interconnected procedures that work together to facilitate the exchange of value, information, and physical resources within and across different organizations (Barykin *et al.*, 2021). The “management philosophy” commences with the supplier’s provisions and descends towards the stream of end users (Arredondo and Alfaro Tanco, 2021). Supply Chain Management (SCM) demonstrates a robust association with the operational proficiencies of an organization in terms of cost reduction, promise fulfilment, logistic services, and product design (Lee, 2021). Through the implementation of supply chain integration, a company can attain customer priorities, gain a competitive advantage over rivals, and accommodate the preferences of suppliers (Haiyun *et al.*, 2021).

The idea of supply chain management is mainly focused on the harmonisation process that results in customer satisfaction (Mageto and Luke, 2020). This underscores the significance of integrated patterns in the course of production flux from primary resources to commodities reaching the possession of consumers. Operations that arise all through the course are imperative to guarantee that the flux remains unobstructed without barriers, thus facilitating the information mechanism to occur in a transparent manner without the diminution in any of the connections (Casino *et al.*, 2021). All supply chains fundamentally engage in competition for the acquisition of customers through the provision of various products or services. A pivotal aspect of ensuring efficient supply chain management, which effectively caters to the expanding market, involves integrating suppliers into the overarching strategy of the company. The execution of supply chain

management shall diminish the expenses related to operations that arise throughout the entire chain, guaranteeing the preservation of product excellence, which shall ultimately contribute to bestowing value upon consumers in relation to the accessibility of products and promptness of service. Consequently, supply chain management shall furnish a competitive edge both directly and indirectly, particularly in terms of product value (Dutta *et al.*, 2020).

2.2.4 Efficient Supply Chain Management

The efficient administration of an organization's supply chains has demonstrated efficacy in facilitating expedient and dependable provision of superior products and services at minimal expense (Zhu *et al.*, 2022). In order to accomplish this, it is of utmost significance to conduct an assessment of the overall supply chain. This entails utilizing the collective resources of the supply chain participants in the most optimal manner feasible, to deliver products and services that are both competitive and cost-effective. Nevertheless, the absence of suitable systems for measuring performance has proven to be a significant hindrance in effectively managing supply chains (Gružauskas *et al.*, 2018; Mangla *et al.*, 2018).

Over the course of the previous decade, numerous subjects and approaches pertaining to supply chain research have been identified and thoroughly examined (Tayur *et al.*, 1998). Criteria for optimization in supply chain models have encompassed factors such as cost (Lacomme *et al.*, 2018), inventory levels (Brunaud *et al.*, 2019), profit (Raj *et al.*, 2018), fill rate (Longo *et al.*, 2019), stock out probability (Vledder *et al.*, 2019), product demand variance (Dolgui *et al.*, 2020), and system capacity (Tiwari *et al.*, 2018). Most deterministic and stochastic models focus on individual components of the supply chain system, such as the supply-production, productiondistribution, or inventory-distribution systems. Certain models address strategic

concerns related to supply chains, including the optimal placement of plants and warehouses and the flow of goods. In contrast, other models address operational issues, such as determining order size, maintaining fill rate, and managing inventory levels (Tirkolaei *et al.*, 2022).

2.2.5.1 Information Technology

Information technology comprises both computers and digital communication tools that are capable of substantially decreasing the expenses related to communication and information procedures (Faheem *et al.*, 2018). The alignment of information technology-related requirements with the business context is crucial, as it facilitates the enhancement of supply chain performance through the congruence between these requirements and the capabilities of information technology (Huo *et al.*, 2015). In this investigation, in order to gain a more comprehensive understanding of the capital allocations made in the preliminary and subsequent stages, information technology has been classified into two distinct categories: one for suppliers and another for consumers.

Recent evidence has provided further validation of the notion that companies derive substantial advantages from the implementation of information technology. Profound productivity enhancements stemming from the seamless transmission and exchange of information have been uncovered (Baumann *et al.*, 2020). Other studies have presented compelling arguments suggesting that a sufficient amount of evidence has been accumulated regarding the beneficial outcomes of Information Technology (IT), thereby allowing for the classification of the productivity paradox as a historical fallacy (Mukhopadhyay *et al.*, 1997). There appears to exist a veracity that the investment in information systems does yield positive results at present, albeit the means by which it accomplishes this feat remains shrouded in enigma. Prior scholarly investigations have

acknowledged the negligence within IT value research regarding the interdependent impacts of IT in conjunction with other organizational facets, such as corporate strategies, customized production, and supply chain administration. Information software does not operate autonomously; it maintains a close collaborative association with other corporate assets (Andersen *et al.*, 2001). However, according to the studies conducted by Brooks and Davenport (2004) and Lou *et al.* (2004), it has been argued that technologies possess a considerable degree of uncertainty, which can be attributed to their fundamental characteristics such as autonomy (Jennings and Wooldridge, 1995), social ability (Moyaux and Chaib-draa, 2006), reactivity (Parunak, 1999), and pre-activeness (Moyaux and Chaib-draa, 2006). The assumption was made that the integration of information technology (IT) into the operations of the supply chain (SC) enhanced its ability to create value. IT possesses the capacity to oversee the movement of goods and services and to influence various aspects of the supply chain, including cost, quality, delivery, flexibility, and ultimately the financial gains of the organization (Baumann *et al.*, 2020).

Sanders *et al.* (2002) elucidated the explicit correlation between the utilization of technology in supply chain management. It was observed that organizations tend to utilize information technology more extensively than the standard practice in their respective industries, thereby attaining greater operational advantages, including cost reduction and cycle time optimization. Nevertheless, the efficacy of information technology employment in enhancing supplier network performance is contingent upon the industry's clock-speed (Guimaraes *et al.*, 2002). Narasimhan and Kim (2001) provided support for the notion that specific categories of information technology (IT) systems possess greater significance within the domain of supply chain management (SCM), as these systems aid organizations in enhancing their production and process control capabilities, efficiently managing pricing strategies, effectively addressing customer service concerns,

proficiently overseeing customer relations, optimizing inventory management, and streamlining warehouse operations. Material requirements planning (MRP) (C1) represents a production planning approach employed to facilitate the synchronization of material and resource availability with customer demand, thereby efficiently coordinating the fulfilment of orders (Koh, 2004).

The system could potentially yield more efficient resource allocation and decreased inventory levels by only issuing purchase and/or work orders when necessary. Enterprise resource planning (ERP) technologies have been specifically developed to tackle the issue of fragmented information within a business and promote integration with intra- and inter-enterprise data (Sharif *et al.*, 2005). Nonetheless, there exists a debate regarding the effectiveness of traditional ERP systems in facilitating real-time synchronization among partners within the supply chain, a crucial requirement for achieving efficient supply chain management (Karwowski *et al.*, 2007). The Advanced Planning System (APS) (C3) is designed to anticipate potential future consequences on the plan due to historical uncertainty patterns and potential future uncertainties. By utilizing this Information Systems (IS) practice effectively, it will lead to enhanced forecasting and more efficient resource planning, thereby improving operational efficiency (Lockhamy III and McCormack, 2004).

Chae *et al.*, (2005) demonstrated that the prevailing associations among the channel collaborators were subject to moderation due to the capacity of information technology to exert influence on inter-organizational collaboration. The capability of sharing information has a positive impact on the performance of the firm, particularly when there are elevated levels of both connectivity and willingness to share information (Fawcett *et al.*, 2008). Thus, the implementation of information

technology (IT) to enhance connectivity among supply chain (SC) partners necessitates a dedication to information exchange in order to achieve improved performance. An effectively integrated IT infrastructure has the capability to present a comprehensive overview of the supply chain's current status, including the inventory levels of the manufacturers or their suppliers, as well as the service capabilities of the logistic providers. IT enables suppliers to access the inventory details of their customers and adequately prepare for timely stock delivery (Ngai *et al.*, 2010). It is contended, however, that the indeterminate effect of information technology (IT) on various facets of supply chain management (SCM) and unsatisfactory results of IT investment constitute a significant obstacle to the crucial contribution of IT in a company's performance (Ye and Farley, 2006; Kim *et al.*, 2006). With the aid of information technology, organizations have the capability to monitor market demands and efficiently reallocate resources in a timely and adaptive manner (Ngai *et al.*, 2010). Thus, the current investigation amalgamates the supplier relationship management system (SRM) with the customer relationship management systems (CRM). (Bayraktar *et al.*, 2009).

2.2.5.2 Relationship Management

Supplier Relationship Management (SRM) refers to the strategic planning and effective management of all engagements with suppliers with the aim of optimizing its inherent worth (Singh *et al.*, 2017). The organization additionally endeavours to identify novel providers with the aim of diminishing expenses, prognosticating procurement at a higher frequency, and exchanging information, all in order to attain various advantages through engaging in discourse with said suppliers. Cha and Kim (2018) stated that Supplier Relationship Management (SRM) is a field that involves cooperative collaboration with essential suppliers in order to enhance the potential value of the organization. SRM revolves around cultivating mutually advantageous

relationships with strategic supply partners, which yield higher levels of innovation and competitive edge compared to independent operations.

Klobučar and Erjavec (2019) posited that SRM managers ought to assume the responsibility of overseeing no more than three supplier relationships, so as to allocate ample time to each. Personnel engaged in SRM endeavours shall possess a commendable amalgamation of commercial, technical, and interpersonal proficiencies. Commercial expertise, knowledge of the market, the ability to analyse, and proficiency in project management are all significant. However, the essential aspect of developing robust and trustworthy working relationships lies in the mastery of “softer” skills such as effective communication, attentive listening, persuasive influence, and adept change management. Managers responsible for supplier relationship management possess a comprehensive understanding of their suppliers’ business operations and strategic objectives, as well as the capability to perceive challenges from the supplier’s perspective. Concurrently, they skilfully balance these considerations with the requirements and priorities of their own organization.

Kumar *et al.* (2021) reached a consensus that Supplier Relationship Management (SRM) comprises both business methodologies and software applications, constituting a fundamental element within the information flow aspect of supply chain management (SCM). The implementation of SRM practices aims to establish a shared foundation to facilitate efficient communication between an organization and its suppliers, even in scenarios where these parties employ disparate business approaches and terminologies. SRM, consequently, enhances the efficacy of procedures linked with the procurement of commodities and services, the administration of inventory, and the manipulation of resources. According to Liang *et al.* (2018),

the utilization of SRM software has the potential to result in decreased production expenditures and an improved level of excellence, although it may lead to a reduction in the price of the final product.

The process of customer relationship entails the organization obtaining information regarding their business from the customers, which is then utilized as a mechanism to effectively address their needs, while simultaneously striving to attain a profound comprehension of their requirements (Ziggers and Hensler, 2016). Customer Relationship Management (CRM) is described as the complete array of undertakings governed via the administration of customer engagement, the establishment of enduring commercial associations, and the augmentation of customer experience. This is perpetuated through the provision of client service and the establishment of connections with consumers (Chen and Wu, 2016; Quynh and Huy, 2018). The primary objective is to augment customer loyalty and affiliations in order to enhance the operational efficacy of the organization and furnish an exhaustive comprehension of the distinct requirements of consumers. Through the perpetuation of a robust customer relationship, an enterprise can distinguish itself from its contenders, safeguard consumer engagement, and amplify the value propositions extended to the clientele (Banerjee and Mishra, 2017).

CRM is considered to possess efficiency when it is integrated with the practice of SCM and the stage of decision-making (Yadollahinia *et al.*, 2018). The establishment of connections with consumers is imperative for the long-term viability of a company, particularly in light of the transition towards a phase characterized by heightened individualization and tailored service offerings (Banerjee and Mishra, 2017). The readiness of an organization to satisfy consumer demands and, as a result, adopt novel technologies or methodologies empowers the organization

to attain superior performance within a designated timeframe (Gandhi *et al.*, 2017). The notion that the client possesses an intimate alliance is being regarded as a fundamental aptitude of the enterprise and has the potential to manifest as a strategic advantage. In actuality, it is infrequent and unattainable for competitors to forge a personal rapport with clientele, thereby necessitating the enterprise and its stakeholders to attain heightened efficacy (Okongwu *et al.*, 2015). CRM programs are typically implemented in organizations that possess an awareness of customer wants, needs, and brand devotion, while also evaluating the extent to which a product or service fulfills established criteria (Gawankar *et al.*, 2017). A business's capacity to accommodate consumer demands and ultimately innovate new products or processes empowers an organization to thrive in the long run (Hamister, 2012). In the presence of a customer relationship, the consumer will have access to the finest products and a wide selection of goods (Kaliani Sundram *et al.*, 2016). Thus, Customer Relationship Management (CRM) could potentially exert a substantial influence on the manner in which an organization manages its complete value chain (Gandhi *et al.*, 2017).

An efficient collaboration with suppliers and customers allows the entire supply chain to adapt to the dynamic market demands and respond appropriately. Simultaneously, personnel at different hierarchical levels within the producer and supplier organizations may offer diverse recommendations to continuously enhance and assess these relationships. Furthermore, they can obtain feedback and necessary information from customers and suppliers to facilitate decisionmaking. The findings of such investigations have showcased the imperative and indispensable nature of the association between individuals, collectives, and entities engaged in the supply chain in order to enhance its overall effectiveness and functionality (Alshurideh *et al.*, 2022).

2.2.5.3 Internal Integration

The term “integration” has been commonly referenced in previous research in regards to the notion of supply chain. More specifically, it has emerged as a novel perspective within the realm of business strategy linked to supply chain, aiming to establish a sustainable competitive advantage (Mani *et al.*, 2018). Other scholars have recognized that internal integration cohesion pertains to the degree to which an organization possesses the capability to transform its activities, trends, and behaviours into participatory, coordinated, and manageable processes in order to fulfil the demands of its consumers. This primarily encompasses cohesion in the information systems and data repositories. Furthermore, it establishes that diverse activities within an organization should not be approached individually, but rather as components of an integrated process (Khanuja and Jain, 2019).

The incorporation of information technology into corporate entities facilitates the achievement of internal unification, thereby yielding adaptability, transparency, accountability, and dependability (Tarigan *et al.*, 2021). Internal integration refers to the process of integrating the various departmental functions within an organization (Tarigan *et al.*, 2021). A company’s internal assimilation with the implementation of information technology is employed for the consolidation of data, the manipulation of information, and the exploitation of resources (Gu *et al.*, 2021). Internal integration has the capability to retrieve data and information from other departments collectively and instantaneously (Lv *et al.*, 2018). The acquisition of knowledge from information technology systems can facilitate the process of making informed choices. The internal integration refers to the harmonization amongst procurement, production, manufacturing, finance, marketing, and other operational departments (Zhang *et al.*, 2018). A company's information technology

department will develop a strategic plan to address modifications in the upstream supply chain and the strategic responsiveness in the downstream supply chain, thereby transforming it into a collective capability (Lv *et al.*, 2018). Internal integration is established within a single organization through the augmentation of the integration procedure. The process integration within the organization is executed through the implementation of collaborative planning and the cultivation of trust amongst the internal functions (Tarigan *et al.*, 2021). Measurement indicators employed for evaluating internal integration comprise efficient data integration between different departments, expedited coordination across departments in response to alterations, prompt validation of data changes for other functions, timely integration of data during a pandemic, and timely availability of company data to all departments, among various other factors (Gu *et al.*, 2021).

Internal integration refers to the incorporation of processes within various departments and functions as a manifestation of intra-organizational capabilities. In contrast to the conventional organizational structure characterized by fragmented and specialized departments, internal integration entails the dismantling of functional barriers and the cultivation of collaborative efforts and information exchange across all departments, with the ultimate objective of meeting customer demands. The exchange of information, the act of jointly formulating plans, regular communication and interaction, and the collective effort in reaching consensus are a collection of essential skills that enable organizations to cultivate a competitive edge. Furthermore, this collaborative endeavour also necessitates certain technological proficiencies in integrating information systems that are directly linked to operational effectiveness (Errassafi *et al.*, 2019).

In a cohesive supply chain, fostering a robust strategic alliance with suppliers will enable them to comprehend and foresee the needs of the manufacturer, thereby enhancing their ability to effectively fulfil its evolving demands (Flynn *et al.*, 2010). As an example of inter-organizational capabilities, the act of sharing information pertaining to products, processes, production schedules, and plans, in addition to collaborating with suppliers, aids in the synchronization of their respective production plans and the reduction of lead time. Through the establishment of a common comprehension of the manufacturer's operations and processes, suppliers attain a heightened level of customer service, subsequently assisting manufacturers in enhancing their own customer service (Flynn *et al.*, 2010).

2.2.4 Sustainable Supply Chain Management

The notion of Supply Chain and Sustainability Management (SSCM) has gained considerable attention among professionals and scholars alike. This is primarily attributed to a multitude of factors that contribute to its embrace and endorsement. These factors include the demands articulated by stakeholders, the elevated expectations of customers, the imposition of legislative measures by governments, the societal expectations regarding the corporate image and reputation, the competitive pressures exerted by rivals, the concerns pertaining to environmental pollution and the depletion of natural resources, among other considerations.

The term SSCM encompasses the incorporation of sustainability perspectives into the definition of supply chain management (SCM) and is extensively discussed in the literature under various labels such as green supply chain management (GSCM), ethical or responsible SCM, and corporate social responsibility (CSR), among others (Broman *et al.*, 2017; Köksal *et al.*, 2017). Gupta *et al.* (2019) provided a definition for SSCM which encompasses the strategic and

transparent alignment of an organization's social, environmental, and economic objectives. This alignment is achieved through the systematic coordination of crucial inter-organizational business processes, ultimately leading to the enhancement of the individual organization's long-term economic performance as well as that of its supply chains. The authors emphasize the necessity of inter-organizational coordination, with a primary focus on achieving sustainable long-term economic outcomes. According to Herrera *et al.* (2020), a genuinely sustainable supply chain is one that does not impart any negative impact upon the environment or society. Moreover, it is imperative that the non-economic aspects, such as the environmental and social dimensions, are in harmony with the economic dimension, and vice versa.

Organizations must undertake the task of reconfiguring their existing supply chains in order to integrate sustainability objectives throughout their operations, ranging from procurement to distribution, in order to attain sustainability (Allaoui *et al.*, 2019). Ben Abdelaziz *et al.* (2015) had determined the objectives of a Sustainable Supply Chain Management (SSCM), which include the optimization of value for all parties involved and the satisfaction of customer demands through the establishment of sustainable streams of goods, services, information, and financial resources. Moreover, it aims to facilitate collaboration among the various participants within the supply chain.

SSCM is widely regarded as the strategic and harmonized coordination and achievement of an organization's societal, environmental, and economic objectives through the systematic administration of fundamental inter-organizational market procedures, with the aim of augmenting the enduring economic prosperity of the specific corporation and its supply chains (Busse *et al.*, 2017). The process incorporates measures that are put into practice to enhance the

durability of the system over an extended period of time, encompassing the interconnectedness between the various elements and engagements within the network of product distribution. The shift from Supply Chain Management (SCM) to Sustainable Supply Chain Management (SSCM) places significant pressure on organizations to modify their existing supply chains in order to meet the requirements for sustainability (Schrettle *et al.*, 2014).

Organizations contribute to the advancement and enhancement of sustainable supply chain management (SSCM) through the provision of enduring advantages and a competitive edge for economically and socially advantageous endeavours throughout the entirety of the supply chain (Ahi and Searcy, 2013; Zhu and Sarkis, 2006). Control of the supply chain, however, entails a constantly dynamic task. (Ageron *et al.*, 2012). The execution of Supply Chain and Sustainable Management (SSCM) initiatives promotes enhanced substance and rigorous upkeep (Gunasekaran and Spalanzani, 2012), as well as originality, amplifies the financial fruition of enterprises (Wang and Sarkis, 2013), and establishes a brand reputation grounded in market-based principles (Zailani *et al.*, 2012). When addressing matters pertaining to environmental issues, enterprises and scholars employ the utilization of green supply chain management (SCM) or environmental sustainability frameworks with the objective of mitigating detrimental environmental impacts (Ben Brik *et al.*, 2013; Mathiyazhagan *et al.*, 2015), like as effectiveness of resource use, recycling and disposal, waste and carbon mitigation (Koberg and Longoni, 2019). The integration of environmental concerns into supply chain management has been identified as contingent upon effective collaboration and coordination among the various stakeholders involved (Zhu *et al.*, 2010).

2.2.7 Top Management

Top-level executive dedication in the management of supply chains has emerged as a pivotal factor due to its criticality in ensuring the triumphant execution of supply chain management. The highest echelons of management foster the facilitation of employee empowerment and heightened job contentment by means of astute guidance, ultimately aiming to accomplish the objective of customer contentment (Sajjad *et al.*, 2020). The upper echelons of leadership consistently endeavour to execute the Supply Chain Management (SCM) system within the organization through assuming accountability and jurisdiction over the implementation of an efficient SCM system. The company's top management guarantees that the formulation of policies and the establishment of objectives are tailored to both the internal and external circumstances of the company (Tien *et al.*, 2019).

The top management of the organization ensures the establishment of a harmonious relationship between the internal and external stakeholders. This integration is designed to facilitate a streamlined and highly productive flow of supply chain management activities. Additionally, the management of the company guarantees the availability of the requisite resources to effectively implement supply chain management in accordance with the specified criteria. The management engages in effective communication and fosters coordination and collaboration with the stakeholders participating in the establishment of the supply chain management system within the organization. The management must possess the ability to control the internal circumstances of the company to facilitate the involvement and empowerment of all elements within the organization, thereby contributing to the enhancement of company performance through the practical implementation of supply chain management principles (Fischer *et al.*, 2020; Prajogo, *et al.*, 2018).

2.2.8 Challenges Affecting Efficient Supply Chain Management

The obstacles encountered by Supply Chain Management (SCM) in both its theoretical and practical aspects arise from the complex interaction and lack of alignment between them (Golgeci and Gligor, 2017). One primary obstacle lies in questioning the notion of "managing" the supply chain. Another obstacle is to expand the range of involvement in supply chain management (SCM) – the "arc of integration". This can only be accomplished through more efficient utilization of the identified facilitators – the enhanced clarity of information and knowledge, the establishment of suitable relationships, and the creation and utilization of suitable metrics (Ali *et al.*, 2021).

The logistics function is merely one facet among numerous domains that exert influence on the efficacy of the supply chain within the cocoa industry. Integrated process management, information systems and the dissemination of information, reorganization of the organization, and cultural realignment are all equally significant. The necessity for seamless integration of processes spanning from the procurement of raw materials to the ultimate delivery of the finished product is vital to the triumph of a company. Merely possessing a high level of manufacturing efficiency no longer guarantees a competitive advantage (Amankwah-Amoah *et al.*, 2018). The utilization of integrated planning throughout the supply chain is not adequately implemented by the industry. The presence of this form of disunity within the supply chain may result in a rise in the expenses associated with the procurement of crude oil, consequently impacting the prices of gasoline for consumers (Bai *et al.*, 2022).

Due to the pervasive global reach of the petroleum industry's supply chain, the implementation of advanced information technology is of utmost importance in ensuring the seamless flow of information, given the intricate nature of the logistics network within this sector. The effectiveness

of companies' engagements within supply chain networks is intrinsically tied to the proficient utilization of information technology (Piya *et al.*, 2017). The enhancement of operational effectiveness within the petroleum sector necessitates the adoption of a novel conceptual framework for collaboration, even if this entails cooperating with industry rivals. The crucial alteration in mind-set must be directed towards fostering collaboration, exchanging information, and optimizing assets, as chemical manufacturers and Logistics Service Providers (LSPs) would be required to collaborate with both their competitors and other entities within the supply chain. While the acquisition of advanced information technology is indispensable, its effectiveness will be limited without the accompanying cultural transformation (Schultz *et al.*, 2021).

2.3 Theoretical Review

SCM practices hold significant importance for any organization due to their ability to enhance an organization's market leadership, profitability, and overall strategic positioning by effectively manipulating market variables such as price, cost, quality, delivery, and product innovation, among other factors (Arshad Ali *et al.*, 2020). Three theories provide an explanation for the concept of Supply Chain Management (SCM) practices: Systems theory, Contingency theory, and Resource-Based View Theory.

2.3.1 Systems Theory

Scholars specializing in systems theory assert that all issues in the fields of natural and social sciences possess an inherent systemic essence (Hutchins, 1996; Meadows, 2008; Wheatley, 2006). The application of systems theory involves a comprehensive explanation of problems, contrasting

with the conventional approach of Western science. Banathy (2006) contended that due to the phenomenon of specialization in science that emerged in the 17th century Scientific Revolution, numerous researchers have become confined within their own distinct domains (2006). Ever since Descartes, scientific dilemmas have been resolved by dissecting them into smaller components and continuously reducing their complexity. The crux of conventional scientific investigation lies in the utilization of the scientific method and the application of controlled settings to isolate and manipulate variables.

This particular theory posits that the perception of an occurrence is perceived in its entirety, rather than being contingent upon its constituent subsystems (Choi *et al.*, 2018). A system consists of subsystems that interact and rely on each other to achieve a state of balance within a larger system (Amagoh, 2016). The primary emphasis is placed on the interconnectedness of subsystems, enabling a more comprehensive comprehension of an entity's structure, operations, and outcomes. Additionally, this perspective recognizes that an organization's functioning is influenced by the external environment, involving a range of entities such as agents, shareholders, and other factors that lie beyond the organization's control (Sanderson *et al.*, 2015). Systems theory integrates multiple supply chain factors, which subsequently shape a more extensive network of supply chain systems. Furthermore, it aids in uncovering the degree of interdependence among the elements of the system, thus enhancing comprehension of the dynamics of the supply chain. Consequently, the planning, execution, and coordination of manufacturing company activities are improved (Jaradat *et al.*, 2017).

2.3.2 Contingency Theory

Contingency theory is a scholarly perspective employed to examine the behaviour of organizations. Within this framework, elucidations are provided regarding the impact of contingent factors, such as technology, culture, and the external environment, on the configuration and operation of organizations. The fundamental assumption that underlies contingency theory posits that no singular organizational structure possesses equal applicability to all organizations. In contrast, organizational effectiveness is contingent upon the congruity or concordance amidst the technology type, environmental volatility, organizational size, organizational structure characteristics, and its information system. The theories pertaining to contingency have been originated from the sociological functionalist theories of organizational structure, namely, the structural approaches to organizational studies as proposed by Reid and Smith (2000), Chenhall (2003), and Woods (2009). The aforementioned studies posited the conjecture that the establishment of an organizational structure was contingent upon contextual factors, including but not limited to technological advancements, dimensions of the task environment, and the size of the organization. In specific other scholarly works, the theory of contingency maintained its status as a prominent paradigm in the realm of management accounting research (Cadez and Guilding, 2008).

The theory posits that in various circumstances, disparate resolutions may demonstrate significance (Yu *et al.*, 2020). Instead of adhering to conventional management principles, the theory aims to illustrate that varying circumstances necessitate distinct organizational frameworks and infrastructure. Organizations encounter constraints stemming from various factors, such as the scale of the enterprise, the surrounding environment, and the utilization of information

technology. These contingencies are intended to cultivate the particular structures and operations of an organization (Morais and Barbieri, 2022).

Hanelt *et al.* (2021) postulated that in order to enhance the operational capability to generate revolutionary commodities, a corporation should modify its organizational attributes and structure its pivotal constituents to establish a resilient and adaptable supply chain (Bag *et al.*, 2021).

2.3.3 Resource Based View Theory

The resource-based viewpoint (RBV) posits that a company's enduring competitive edge is contingent upon its invaluable, uncommon, unreplaceable, and irreplaceable assets (Barney, 1991). The capacity of companies to generate or procure these assets influences their performance and competitiveness vis-à-vis their rivals. The resource-based perspective advocates for the importance of resources that are unique to a specific company, specifically those resources that maintain value within the company's markets and other resources that are difficult to replicate by other companies (Wernerfelt, 1984). These resources include managerial skill, customer relationships, brand reputation, and tacit knowledge related to specific manufacturing processes. Resources can be differentiated from competencies or capabilities. Conversely, a firm's ability to obtain resources and its capability to assemble and combine these resources in particular ways determine the firm's expertise in a specific product domain. When a firm acquires resources for a certain business, these resources may, to differing extents, be sufficiently adaptable for use in other product lines or markets (Teece, 1982).

This theory emphasizes the benefits that a company obtains through the possession of essential resources necessary for its sustenance. These resources can manifest in the form of financial

strength, physical facilities, human labour and dedication, technological progress, and other capacities. These resources and capacities distinguish a firm from others and constitute a fundamental aspect of its competitive advantage. The possession of products and services with distinct attributes or specific and detailed work procedures will exclude competition for the resources and capacities of the firm (Antoni and Akbar, 2019).

The ability of organizations to adjust to changes in the industrial and market landscape can also be viewed as a favorable circumstance to address the challenges posed by global competition. A well-managed supply chain plays a crucial role in establishing a competitive edge and generating value (Madhani, 2019). The nature of competition has evolved from being limited to individual companies to encompassing the competition between supply chains (Min *et al.*, 2019). The advantages of this theory, consequently, are directly gained by the enhancement of operational performance (Varadarajan, 2020).

2.4 Empirical Review

Hong *et al.* (2018) with the application of a Structural Equation modelling (SEM) analysed data from 209 manufacturing firms in China with the aim to investigate the effect of Sustainable Supply Chain Management (SSCM) practices on the dynamic capabilities of the supply chain and as well on enterprise performance. Results revealed a significant positive effect of SSCM on the dynamic capabilities of supply chain and the dimensions of performance. Results also revealed that the relationship between SSCM practices and enterprise performance was partially mediated by SC dynamic capabilities.

With a focus on sustainable supply chain and supply chain risk, Gouda and Saranga (2018) analysed data from six selected manufacturing sectors in 21 different countries. Through the

application of a Partial Least Squares Structural Equation Modelling (PLS-SEM), results revealed that risk mitigation strategies employed did not always result in the reduction of supply chain risk more specifically in emerging markets. Results further revealed that risk mitigation strategies were rather effective when utilised in conjunction with sustainable efforts although they fail to reduce supply chain risk on their own.

Isnaini *et al.* (2020) conducted a study to determine the relationship that exists between Sustainable Supply Chain Management and Sustainable Organisational Performance employing supply chain dynamic capabilities as a moderating factor. The study utilised a PLS Sequential Equation Modelling (SEM) method to analyse data obtained from 210 supply chain managers in Indonesia. Results revealed that there was a significant relationship between SSCM practices and the indicators of sustainable organisational performance. Results further indicated that there was a significant moderation of supply chain dynamic capabilities on the relationship between SSCM practices and the indicators of sustainable organisational performance.

Golicic and Smith (2013) through the application of a meta-analysis sought to determine the impact of Sustainable Supply Chain Management practices on firm performance. Through the review of research spanning 20 years, the findings have unveiled that there exists a constructive and noteworthy correlation between the implementation of environmental supply chain practices and the various forms of firm performance, namely market-based, operational-based, and accounting-based. With the application of firm size and time as moderating variables, results revealed significant influence on the relationship between sustainable supply chain management and firm performance environmentally.

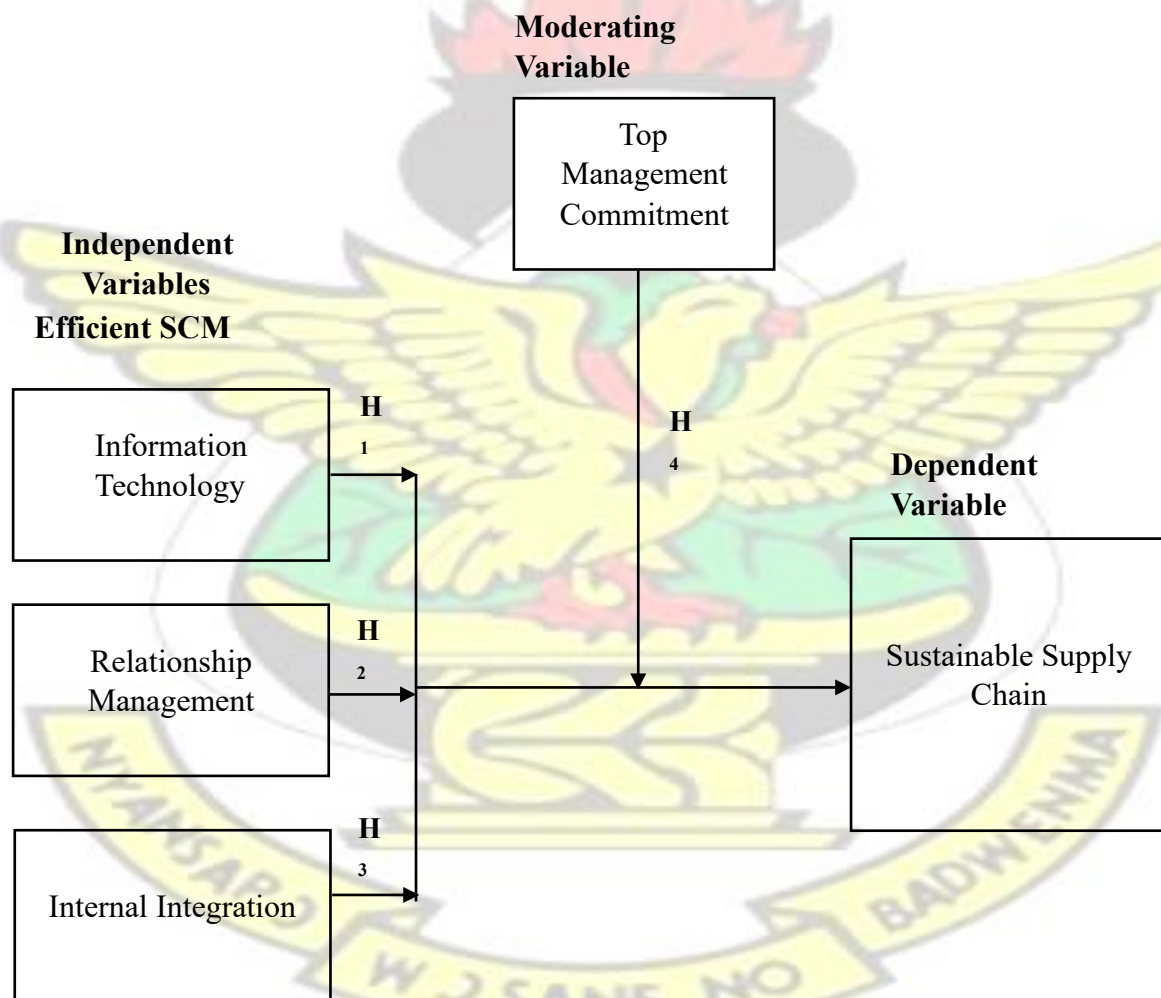
Reinartz *et al.* (2004) aimed to ascertain whether the integration of SRM procedures is positively correlated with organizational effectiveness. The results suggest that the incorporation of SRM procedures is connected with enhanced company performance in two phases. The most impactful outcome is observed in relationship preservation, followed by relationship initiation. The influence of relationship termination was either minimal or not statistically significant. Hence, it can be inferred that SRM yields some of the anticipated benefits that companies anticipate upon investing in it.

Shin *et al.* (2000) made an endeavour to scrutinize the impact of supply management on the operational efficacy of suppliers and the competitive priorities of buyers, specifically encompassing cost, quality, delivery, and flexibility. The findings of the investigation substantiate the assertion that an enhancement in supplier relationship management yields positive outcomes for both suppliers and buyers, thereby establishing a mutually beneficial scenario within the supply chain. Moreover, the impact of SRM on performance that is associated with delivery and quality surpasses its impact on cost or flexibility performance in terms of statistical significance. Indeed, when the competitive priorities of volume and process flexibility are of utmost importance, adopting a supply chain management approach may not yield the desired level of flexibility.

2.5 Conceptual Framework

Conceptual framework is the system of connected ideas that together gives a far reaching comprehension of an idea (Durso *et al.*, 2017). Algozzine and Hancock (2017) delineate a conceptual framework as a concise portrayal of the concept being studied, accompanied by a graphical or visual representation of the key elements of the investigation. It is an outline that demonstrates the connection between your independent factors and the dependent factors.

Figure 2.1: Conceptual Framework



Source: Adopted from Daneshvar *et al.* (2020).

The concept is divided into two sections, the efficient supply chain management practices which is the independent variable comprising of key practices such as information technology, customer

relation management which is divided into customer and supplier relationships, and internal integration. The dependent variable constitutes the sustainable supply chain.

In the sector dealing in a business of cocoa, efficient supply chain management practices can be a solution to many factors that might be facing such organizations including supplier and customer relationship management. Management will therefore need to examine some of the practices, strategies and assess the risk associated with the implementation of such policy. A comprehensive approach towards the implementation of information technology, relationship management as well as internal integration practices relative to supply chain sustainability can help answer questions pertaining the productivity or performance of the companies or organisations. Management of the organisations can choose a type of efficient supply chain management strategy they deem fit for the company. Information technology, relationship management, and internal integration practices aligns with questions seeking the key efficient supply chain strategies to be implemented.

The conceptual framework thus endeavours to elucidate the researchers' integration of the literature delineated in light of the research objectives and the research query.

2.5.1 Relationship Between Information Technology and Sustainable Supply Chain

ICT is widely recognized as a facilitator of increasingly sustainable supply chains (Oh *et al.*, 2019). Moreover, it serves as a catalyst that can potentially enhance sustainability through the stimulation of groundbreaking innovations (Melander and Pazirandeh, 2019). The achievement of economic sustainability is frequently attributed to the process of digitalization, which creates opportunities for the execution of projects centered around socio-environmental technology.

While the utilization of information and communication technology (ICT) and digitalization to enhance sustainability is still in its early stages (Thöni and Tjoa, 2017), the potential provided by ICT to advance sustainability in supply chains has been acknowledged (Govindan *et al.*, 2018). Collaboration among supply chain participants through the utilization of ICT applications might potentially play a crucial role in attaining sustainability objectives (Bag *et al.*, 2018). Additionally, the amalgamation of information and the exchange of data among organizations may facilitate the implementation of more environmentally-friendly cooperative methods within the logistics network (Beier *et al.*, 2018). Therefore, it is hypothesised that:

H₁: Information Technology have a positive significant impact on sustainable supply chain.

2.5.2 Relationship Between Relationship Management and Sustainable Supply Chain

Various research investigations have examined the ways in which sustainable methodologies can bolster connections with clientele. Chen *et al.* (2020) demonstrated through their investigation the influence of presumed sustainability measures on the level of consumer involvement in online shopping. Gil-Gomez *et al.* (2020) have acknowledged the potential of fostering consumer loyalty by making substantial investments in the customer relationship, which in turn contributes to the long-term viability of organizations. Mena *et al.* (2019) have demonstrated that companies employing a market-oriented strategy have a propensity to meet consumer needs through the provision of appropriate products and services at reasonable prices, resulting in enhanced business relationships and expeditious outcomes. Challenges associated with the sustainability of client relationships encompass the ability to cultivate customer loyalty by means of heightened allegiance, facilitated by the provision of amiable goods and services, as well as the positive regard and prestige associated with catering to environmentally conscious consumer behaviour (Wikhamn, 2019). Sundram *et al.* (2011) asserted that within the realm of supply chain

management, when consumer engagement is operationalized, the customer will receive products and services that meet their expectations in terms of quality and variety. Thus, hypothesis H₂ is stated as follows:

H₂: Relationship management have a positive significant impact on sustainable supply chain.

2.5.3 Relationship Between Internal Integration and Sustainable Supply Chain

Companies established internal integration to facilitate collaboration with both suppliers and customers. The integration within 539 Taiwanese third-party logistics (3PLs) has a positive effect on the integration with customers and the collaboration with logistics partners (Liu and Lee, 2018). The utilization of companies' information technology for the purpose of internal integration has a significant effect on the partnerships within the supply chain, particularly in terms of the flow of raw materials and the sharing of information (Gružauskas and Vilkas, 2017). The formation of internal integration within a company allows for the connection between the company itself and its suppliers, thereby fostering SC partnership (Tarigan *et al.*, 2020). The coordination and integration between manufacturing companies and suppliers to establish a purchasing strategy can be affected by the internal integration within these companies. This internal integration is achieved through the implementation of enterprise resource planning (ERP) as a unified database system (Tarigan *et al.*, 2020).

The capacity of the organization to adapt internal assets in order to swiftly address alterations significantly influences the enhancement of supply chain sustainability (Ambulkar *et al.*, 2015). Internal collaboration among the various departments within the organization, such as procurement, production, sales, and finance, consistently collaborates to establish corporate objectives with the aim of enhancing the sustainability of the supply chain (Piprani *et al.*, 2020).

Internal integration, as suggested in the collection of data, the processing of information, and its utilization, is connected to the sustainability of the supply chain (Gružasuskas and Vilkas, 2017). The quality of integration achieved within the supply chain for logistics services can potentially have a positive influence on the sustainability of the supply chain (Ju *et al.*, 2020). Sharing of information is a crucial element that businesses must prioritize in order to enhance the sustainability of their supply chains (Hohenstein *et al.*, 2015). Sharing information among company members, as a means of supporting strategy for enhanced management, has the potential to augment the sustainability of the supply chain (Karmaker and Ahmed, 2020; Hosseini *et al.*, 2019). Thus, it is hypothesised that:

H3: Internal Integration have a positive significant impact on sustainable supply chain.

2.5.4 Moderating Effect of Top Management Commitment

The presence of top-level executives plays a moderating role in the relationship between supply chain performance and the integration of internal processes, external processes, and internal processes with suppliers. The creation of social value contributes positively to the preservation of the environment (Li *et al.*, 2022). The community is expected to thrive under the China-Pakistan Economic Corridor (Aman *et al.*, 2022; Hussain *et al.*, 2019; Abbas *et al.*, 2020). Furthermore, it is imperative that individuals are dissuaded from engaging in tax evasion in order to enhance the viability of enterprises (Li *et al.*, 2022). It is imperative to acknowledge, participate in, and proficiently oversee these issues in order to maximize the vast capacity for accomplishment that is inherent in the amalgamation of numerous diverse aspects of sustainability. Following the adjustment for variables such as the scale of the organization, viewpoint on governmental regulations, financial constraints imposed by the organization, and prevailing practices within the industry at different tiers, Suryanto *et al.* (2018) ascertained that mutual associations of

organizational learning mechanisms, organizational support, and adoption of GSCM practices were found to be both positive and substantial. Thorough investigations have been undertaken to examine the repercussions and ramifications of ineffective logistics management. Sajjad *et al.* (2020) conducted an examination that showcased the instrumental and normative justifications for the utilization of SSCM. Thus, it is hypothesised that:

H4: Top management commitment moderates the relationship between efficient supply chain management and sustainable supply chain.

2.6 Summary

The literature review examined various domains that the researcher considered highly appropriate to the study's objectives. The concepts reviewed focused on supply chain, supply chain management, and sustainable supply chain management practices. The theories relevant to the study reviewed included the systems theory, contingency theory, and resource based view theory.

The Conceptual framework was developed with the elements of information technology, relationship management, and internal integration as independent variables and sustainable supply chain as the dependent variable. These discussions have contributed to the explanation of efficient practices in the management of the supply chain. This is due to the fact that supply chain management is a multifaceted concept, and there is no singular theory or set of theories that can fully capture and explain this concept.

CHAPTER THREE RESEARCH METHODOLOGY

3.1 Introduction

This particular segment of the investigation encompasses the methodologies and procedures that were utilized in the acquisition of the data. The research methodology delineates the overall approach of a meticulously crafted procedure employed for the compilation of dependable and precise information, with the intention of conducting an inquiry. It is a systematic series of gathering information from a cohort of individuals in order to gain insight into a specific circumstance or event within that cohort. It encompasses the research blueprint, the demographic of the study, the sample size, the research methodology and plan, the data sources and sampling methodology, the process for data collection and analysis, the ethical considerations, and the reliability of the instruments.

3.2 Research Design

Bryman (2017) outlines five distinct categories of research methodologies, encompassing experimental design, cross-sectional or survey design, longitudinal design, case study design, and comparative design. This research study is basically focused on a case study approach utilising staff members of manufacturing companies within the Ashanti Region of Ghana. The primary aim of employing a case study methodology is typically to generate a comprehensive examination of a particular case, followed by conducting a theoretical exploration of the subject matter (Bryman, 2017).

According to Creswell and Creswell (2017), a case study could be described as a type of research strategy adopted to investigate and ascertain a detailed analysis of a situation. This strategy enables the research study to focus on a subject matter that is of interest, which in this case is

students' perception, and then also affords the researcher the opportunity to examine more closely and into detail a specific group. According to Van Thiel (2014), this type of research strategy focuses on examining situations happening every day and in real life. In the views of Rashid *et al.* (2019), a case study is a systematic study conducted in small groups so as to present a better understanding and appreciation of a bigger group with comparable characteristics. This is to say that the case study approach concentrates solely on the situation as hand, in order to derive a comprehensive understanding from a distinctive circumstance or specific problem. Thus, the case study strategy is adopted for the purposes of this study to help examine the impact of efficient SCM practices on sustainable supply chain within the cocoa sector of Ghana.

3.3 Study Population

The population for a study is the total collection of elements on which some inferences is to be made about (Becker, 2017). In essence, the population is the large collection of subjects or elements from which a representative sample is drawn from (Etikan *et al.*, 2016). The targeted population for the study is all cocoa companies listed on the Ghana Stock Exchange (GSE) as at December, 2022. Notwithstanding, the study needed to reduce the population to a workable and manageable size due to limitations on time and finances with the use of appropriate sampling techniques discussed below.

3.4 Sampling Technique and Sampling Size

The necessity to engage in the process of sampling is one that is nearly always encountered in the realm of scholarly inquiry (Bryman, 2017). The size of the sample has been defined as the subset of the overall population that is deliberately chosen to serve as a representative sample (Neuman, 2014). The primary objective of sampling in research is to generate a representative sample that

accurately reproduces or reflects the pertinent characteristics found within a larger assemblage of instances known as the population (Creswell and Creswell, 2017). In the context of this particular investigation, the act of sampling entails the deliberate selection of certain elements within the target population, with the intention of utilizing the data gathered from these elements to gain a comprehensive understanding of the entire population.

First, a convenience sampling was employed in the selection of 5 cocoa companies within the Kumasi metropolis of the Ashanti Region that are in close proximity of the researcher and then, the researchers utilized the simple random sampling technique to determine the 200 staff members from the chosen companies. They believed that these individuals possess the necessary experience for the study and were able to allocate enough time and willingness to participate (Taherdoost, 2017). This technique, known as simple random sampling, entails gathering responses from willing participants within the sample frame who are also available for the study.

The simple random sampling technique which is one of the main types of probability sampling methods made up of people who are easy to reach, was also employed in the selection of respondents during the survey process, by this method; Senior staff members who were readily available were selected for answering of the questionnaires. The advantage this technique presents is that, it affords the respondents the luxury to decide on their own volition to participate in the survey and therefore will not be forcefully selected against their wish. This technique was also selected because of its ability to boost the participation or response rate of since workers in general are sceptical in participating in surveys they think could have impact on their employment status.

3.5 Method of Data Collection

The instruments used by the researcher in collecting primary data from the respondents for analysis was a self – administrated questionnaire with closed-ended questions. All respondents were given the same set of self-administered questionnaires. Bernard (2017) posits that the purpose of a questionnaire is to target a particular objective, research question, or hypothesis. In this particular study, a questionnaire was employed due to its capacity to swiftly gather a significant volume of information. The questionnaire was meticulously developed and organized to encompass all the variables relevant to the study, in order to fulfil the study's objectives.

3.6 Method of Data Analysis

Silverman (2018) provided a definition for data analysis, which involves the systematic organization, arrangement, and interpretation of a large volume of gathered information. The data gathered for the investigation possessed a quantitative nature. The examination of the data collected for this inquiry involved the utilization of descriptive and inferential statistics. According to the study conducted by Ho and Yu (2015), the application of descriptive statistics permits the researcher to depict the distribution of scores. Frost (2018) affirmed that inferential statistics is a method that identifies the variable that either predicts or offers the most comprehensive explanation for the portion of the total variance found within the scores of dependent constructs. By choosing this approach, the researcher was able to effectively portray the distribution of scores by employing statistical measures that are contingent upon the types of variables examined and the scale of measurement.

The data was gathered through the utilization of a self-administered survey. The data was subsequently arranged and encoded, with descriptive statistics encompassing frequencies and measures of central tendency, such as the mean and standard deviation, being employed to present

the data using the Statistical Package for Social Sciences (SPSS Version, 22). Additionally, inferential statistics were executed to ascertain the degree to which the research variables influence the dependent variable.

3.7 Reliability and Validity

Two fundamental principles in the measurement of social research quality are the concepts of validity and reliability (Mohajan, 2017). The qualitative research field exhibits greater flexibility in regards to reliability and validity when compared to quantitative research. The necessity of ensuring reliability and validity in the study arises from its objective to examine the significance of numerous informal relationships, while considering relevant information derived from individuals' perspectives, which is regarded as a means to establish the validity of the study. Moreover, this study employs the collection of information from multiple viewpoints as the central approach to attaining reliability and validity, thereby enabling comparisons to be made. A potential challenge regarding validity may arise due to the possibility that respondents may exhibit bias when presenting their perspectives. In order to uphold the reliability and validity of the study, the information obtained from transcriptions was provided to respondents for the purpose of verification and confirmation. Additionally, the researcher utilized Cronbach's Alpha in order to assess the reliability of the proposed constructs. Renowned for its stability and flexibility, Cronbach's alpha serves as a measure of internal consistency or interconnectedness among the items (Vaske *et al.*, 2017).

3.8 Ethical Consideration

It is necessary that considerations are given to issues of ethical standards especially in the design of a case study research approach since it mostly involve issues of confidentiality about an individual or an institution. According to Fleming and Zegwaard (2018), issues of ethical

considerations comprise of receiving informed consent, receiving approval from a review board, managing sensitive information, provision of stimuli and feedback retrieval. In line with this, ethics procedures, guidelines and conduct in relation to confidentiality, anonymity, voluntary participation and informed consent were adhered to. The researcher first sorts the permission from some of the Management of the selected companies with an introduction letter to undertake a study within working hours.

Kadam (2017) explicated the notion of informed consent as a collaborative process that transpires between the researcher and the participants of the sample, rather than being a solitary occurrence. Prior to engaging in the research, potential participants were thoroughly apprised of the procedures and potential risks associated with the study, after which they willingly provided their consent to partake. Over the course of the investigation, participants were consistently apprised of the research inquiries, purpose, and objectives, and were subsequently invited to participate on a voluntary basis and they were also made to be aware that the research was for academic purposes. To ensure confidentiality and anonymity, respondent's identity was cancelled throughout so that responses could not be linked to respondent in the case study organization.

CHAPTER FOUR DATA ANALYSIS AND PRESENTATION

4.1 Introduction

This chapter provides an exposition and depiction of the examination and findings of the data with regards to the objectives of the research. The scrutiny was conducted on the basis of the components in the survey in order to facilitate the study in arriving at substantial deductions while concurrently assisting in addressing the inquiries of the study. This segment is classified into four principal divisions, specifically; the demographic traits of the participants, the practices of supply

chain management, the capacity of resources, the performance of the supply chain, and the hurdles faced in supply chain management. In total, 200 questionnaires were administered but only 167 were retrieved resulting in a response rate of 83.5%.

4.2 Demographic Characteristics of Respondents

This section pertains to the fundamental data information of the individuals surveyed. In the pursuit of attaining a comprehensive comprehension of the inquiries emanating from the issue, it was imperative to obtain a bio-data of the respondents to effectively contextualize their diverse concerns. This includes age, gender, length of service, level of education, level of company experience, designation, and staff strength of organisations which are presented as follows;

Table 4.1 above reveals the age of respondents. Majority of the respondents fall within the age category of 31-40 years representing 52.1 percent signifying 87 of the total respondents. This is followed by 20-30 years representing 27.5% (46). The survey however recorded fewer participant within the age range of 41-50 years representing 12.6% (21), and above 50 years representing 7.8% (13). Results is in agreement with information from the Ghana Statistical Service which reveals that majority of the Ghanaian population who are engaged within the supply chain industry of Ghana are the youth between the ages of 20 and 40 years (GSS, 2021).

Table 4.1: Age of Respondents

Response	Frequency	Percentage (%)
20-30	46	27.5
31-40	87	52.1
41-50	21	12.6
Above 50	13	7.8
Total	167	100

Source: Fieldwork, 2023

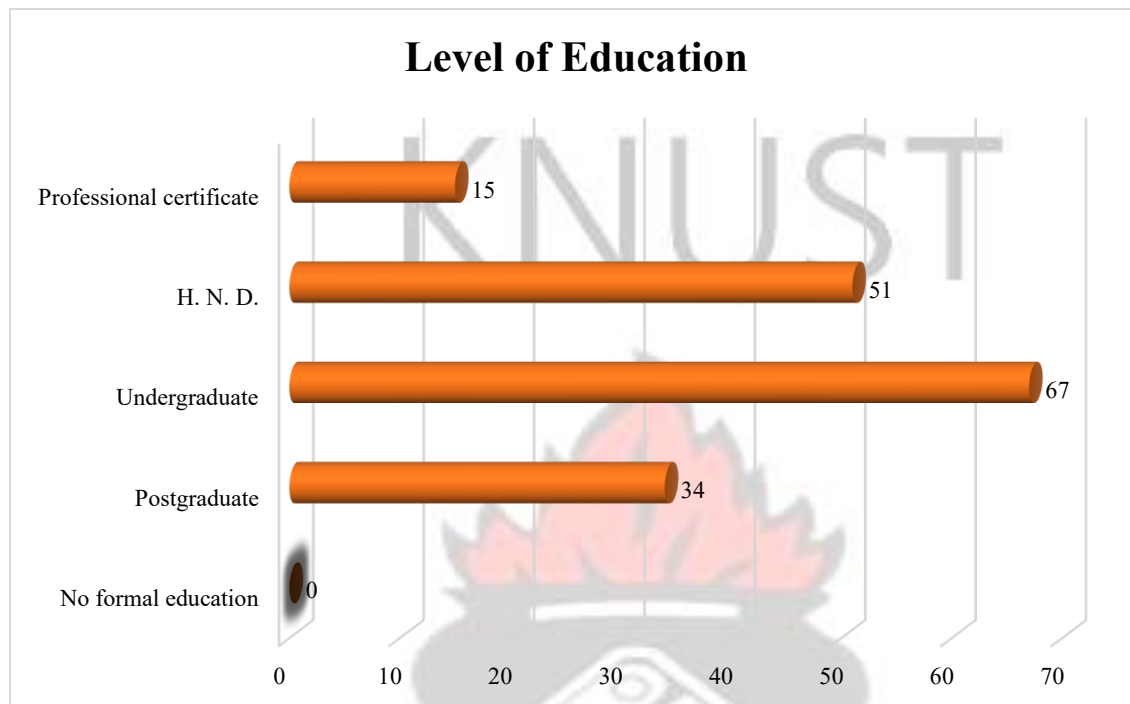
Table 4.2: Gender of Respondents

Response	Frequency	Percentage (%)
Male	106	63.5
Female	61	36.5
Total	167	100

Source: Fieldwork, 2023

Men and women possess a propensity to interpret matters through contrasting viewpoints, hence necessitating the identification of the gender of the participants. The male population, consisting of 106 individuals, constitutes the majority with a percentage of 63.5, whereas the female population, comprising 61 individuals, constitutes 36.5 percent. Explanation can be given to the large numbers of male respondents as a result of the companies being a manufacturing related ones hence majority of the 36.5 percent female can be deduced to be part of the respondents belonging to the management and supervisory roles of the company. This was in similarity to data provided by GSS (2021) that 0.2 percent of females as against 0.6 percent males are employed in the supply chain sector. The results again give the suggestion that fewer females are in management roles. The gender distribution of the respondents is presented in table 4.2 above.

Figure 4.2: Education Level of Respondents



Source: Fieldwork, 2023

Figure 4.1 above gives indications about the educational levels of the respondents revealing that majority of the respondents (67) representing 39.9 percent of the total respondents have undergraduate qualification as at the time of the survey. 51 and 34 respondents representing 30.5 percent and 20.6 percent respectively have a Higher National Diploma (H. N. D.) and postgraduate qualification. 15 respondents representing approximately 9% of the total surveyed respondents had a professional certificate. No respondent was recorded to have had no form of a formal education. These results affirm the assertions made by Hee and Jing (2018) stating that majority of the staff of the Ghanaian population working in the manufacturing sector have a tertiary level qualification.

Table 4.3: Length of Service

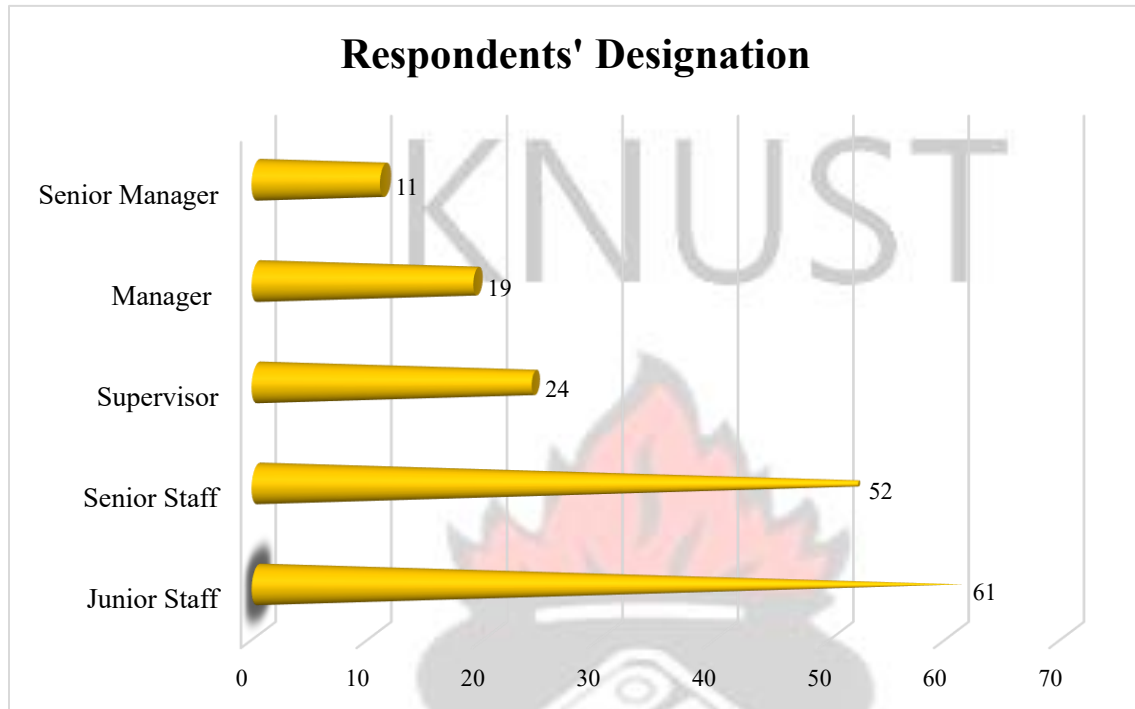
Response	Frequency	Percentage (%)
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Under 5 years	55	32.7
5 - 10 years	37	22.4
11 - 15 years	34	20.2
16 - 20 years	17	10.3
Over 20 years	24	14.3
Total	167	100

Source: Fieldwork, 2023

The table above (table 4.3) presents the length of service distribution of the respondents. The table reveals that majority of the respondents have been in service under 5 years representing 32.7% (55) of the total number of respondents. The second highest category of respondents belong to the group of between 5 to 10 years representing 22.4% (37) of the total respondents. The category of workers that falls within 11-15 years is represented by 20.2% (34) of the total number of respondents. 16-20 years' category is represented by 10.3% (17) of the total number of respondents. Workers who had over 20 years' length of service with their respective companies numbered 24 respondents representing 14.3%. This is in agreement with data from the Ghana Living Standard Survey which gives the indication that majority of the working population in Ghana are the youth and the young people between the age range of 15 and 35 representing a cumulative percentage of 61.9 (GLSS, 2021).

Figure 4.3: Designation of Respondents



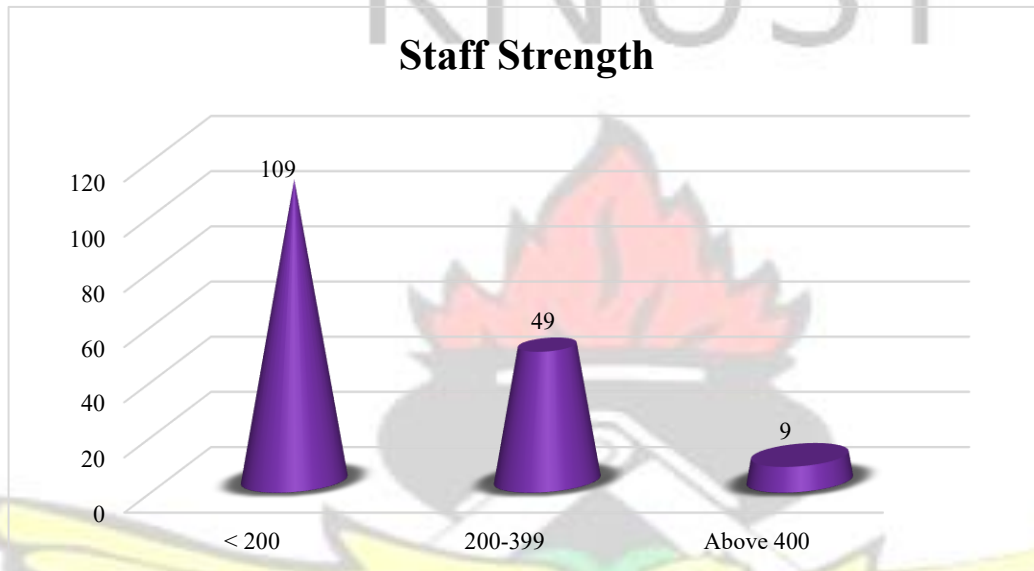
Source: Fieldwork, 2023

In terms of respondents' distributions relative to their designation, Figure 4.2 reveals that majority of the respondents surveyed numbering 61 were junior staff. This is followed by senior staff who numbered 52. Supervisors who were surveyed numbered 24, whereas managers and senior managers who were surveyed numbered 19 and 11 respectively.

As far as the staff strength of the respondents' institution is concerned, it is unevenly spread between the number of workers the various manufacturing companies have employed. Majority of the number of employees numbering less than 200 with the respondents' institutions is represented by 65.3 percent (109) of the total respondents whiles the number of staffs between

200 and 399 recorded 49 respondents representing 29.3 percent of the total respondents. The study recorded 9 respondents for the above 400 number of staffs of the respondents' institution representing 5.4 percent. These indications are presented in figure 4.3 below.

Figure 4.4: Staff Strength of Companies



Source: Fieldwork, 2023

4.3 Reliability Analysis

According to Sarantakos (2013), it is necessary to conduct a reliability test to ascertain whether a survey instrument is dependable to measure its intended measurement. The Cronbach alpha was then employed to measure the reliability for the items of the relevant variables. Cronbach alpha's reliability checks are conducted for the elements of the variables involved and are presented in table 4.4. With a value of 0.7 or above, the Cronbach alpha of a measurement item is considered adequate to measure its internal consistency. A value of 0.7 or higher is deemed acceptable when calculating an instrument's internal consistency. The reliabilities of these instruments are considered adequate as the values of Cronbach alpha falls above 0.7. Table 4.3 thus, provides the

overall internal reliability test for the survey instrument which shows that the reliability of the instrument is good.

Table 4.4: Results of Survey Instrument Reliability Test

Cronbach's Alpha	Cronbach's Alpha Based on Standardised Items	Number of Items
0.8211	0.8211	38

Source: Field Data, 2023.

Table 4.5: Variables Reliability

Reliability	Items	Cronbach Alpha
Information Technology	5	0.8331
Relationship Management (Supplier & Customer)	8	0.7654
Internal Integration	3	0.7675
Top Management	5	0.7698
Sustainable Supply Chain	8	0.7857
Supply Chain Challenges	9	0.9221

Source: Fieldwork, 2023

4.4 Adopted Efficient Supply Chain Management Practices

This section of the chapter discusses the efficient supply chain management practices which cocoa companies have embraced and introduced. This section therefore aimed at evaluating to what degree were the ESCM activities adopted by companies in the cocoa industry, based on the main objective of this study. The respondents were presented with a variety of questions and replied on a scale of 1 to 5, 1 representing very small proportions and the 5 showing very large proportions.

The mean and standard difference of variables used by the investigator shows in Table 4.6 to

Table 4.8 to show how far the respondents are pleased that the different ESCM practices have been implemented by their organizations. A 3-5 average suggests that the respondents'

organisation have taken the element in question to a large degree. The average 1-2 suggests that in a limited measure the organisation has acknowledged the factor in question.

The study examined the extent to which cocoa companies in Ghana have adopted information technology as an efficient tool in their supply chain management processes. Table 4.6 reveals that respondents agree to a large extent that their companies have a high level of information exchange with their major suppliers through the information network (mean = 3.72, SD = 1.11), and also have the foundation of a fast ordering system with main suppliers (mean = 3.59, SD = 1.08).

These responses were complimented by respondents' agreement to a large extent that their organisations have stable procurement through the network system with their main suppliers (mean = 3.51, SD = 1.18). The respondents also agreed to a large extent that their organisations have high level of linkage with major customers through their information network (mean = 4.04, SD = 0.55). Responses again was in agreement to a large extent that the companies have high level of computerization for major customers' orders (mean = 3.90, SD = 0.76). Results clearly indicates that the cocoa companies have adopted information technology as an ESCM practice. The results reveals that information technology has enabled the cocoa companies to successfully manage the distribution of their products via strategic partnership. This result is in agreement with findings of O'Dwyer and Gilmore (2018) which revealed that e-planning as a system offers beneficial outcomes as it facilitates the efficient and effective sharing of ideas between customers and suppliers.

Table 4.6: Extent of Adoption of Information Technology as an ESCM Practice

Information Technology	Mean	Std. dev
We have high level of information exchange with major suppliers	3.72	1.11

and through the information network

We have the foundation of a fast ordering system with main suppliers	3.59	1.08
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We have stable procurement through the network system with our main suppliers	3.51	1.18
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We have high level of linkage with major customers through the information network	4.04	0.55
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We have high level of computerization for major customers' orders	3.90	0.76
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Source: Fieldwork, 2023

Table 4.7 below reveals that the companies surveyed have adopted relationship management method as one of their ESCM practices. The study reveals that respondents agree to a large extent that their companies share a sense of fair play with their customers (mean = 3.01, SD = 1.34). Respondents also agree that their companies frequently interact with customers to set their reliability, responsiveness, and other standards (mean = 3.29, SD = 1.21). Responses also agree to a large extent that the companies frequent follow-up with their customers for quality/service feedback (mean = 3.34, SD = 1.35). Responses again indicate that respondents agree to a large extent that the companies frequently measure and evaluate their customer satisfaction (mean = 3.72, SD = 1.10).

Table 4.7: Extent of Adoption of Relationship Management as an ESCM Practice

Relationship Management	Mean	Std. dev
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Your organisation shares a sense of fair play with its customers	3.01	1.34
Your organisation frequently interacts with customers to set its reliability, responsiveness, and other standards	3.29	1.21
Your organisation has frequent follow-up with its customers for quality/service feedback	3.34	1.35
Your organisation frequently measures and evaluates customer satisfaction	3.72	1.10
Your organisation frequently determine future customer expectations	1.79	0.81
Your organisation facilitates customers' ability to seek assistance from it	3.63	1.19
Your organisation frequently evaluates the formal and informal complaints of its customers	3.72	1.12
Your organisation periodically evaluates the importance of its relationship with its customers	3.49	1.25

Source: Fieldwork, 2023.

Responses from table 4.7 however revealed a disagreement to a large extent that cocoa companies are able to frequently determine future customer expectations (mean = 1.79, SD = 0.81) but agreed to a very large extent that they facilitate customers' ability to seek assistance from it (mean = 3.63, SD = 1.19), thereby indicating that the companies frequently evaluate the formal and informal complaints of their customers (mean = 3.72, SD = 1.12). Results further revealed that respondents agree to a large extent that their organisations periodically evaluate the importance of their relationships with their customers (mean = 3.49, SD = 1.25). Results therefore reveal that the cocoa companies have an instituted relationship management policy that facilitates the ESCM process. This result is in agreement with the findings of Daugherty *et al.* (2018) which noted that relationship management is a key factor in the facilitation process within the SC systems.

Table 4.8: Extent of Adoption of Internal Integration as an ESCM Practice

Internal Integration	Mean	Std. dev
Effective organizational internal integration is a high priority for my organization	3.97	0.86
We have clearly established goals for inter-organizational integration	3.96	0.88
My organization recognizes the importance of working with other organizations to achieve its mission	3.93	0.91
My organization considers the interests of other organizations in its planning	3.96	0.83
My organization has committed adequate budget and resources to inter-organizational integration	3.89	0.81
My organization is willing to invest resources to accomplish interorganizational integration goals	3.91	0.76
My organization can quickly form or modify partnerships as requirements change	3.84	0.97
My organization is flexible in adapting its processes and procedures to better fit with other organizations	3.92	0.91
Our inter-organizational collaborations are effectively supported by collaborative planning tools and technologies	3.84	0.88
Our inter-organizational integration are supported by effective communications tools and technologies	3.94	0.95

Source: Fieldwork, 2023.

Table 4.8 reveals that respondents agree to a large extent that effective organizational internal integration is a high priority for my organization (mean =3.97, SD = 0.86), and they have clearly established goals for inter-organizational integration (mean =3.96, SD = 0.88). Respondents further agreed to a very large extent that their organizations recognise the importance of working with other organizations to achieve its mission (mean =3.93, SD = 0.91), and so they consider the

interests of other organizations in their planning (mean = 3.96, SD = 0.83). By recording a corresponding average score of 3.89, 3.91, 3.84, 3.92, 3.84 and 3.94, respondents widely agreed respectively that their organizations have committed adequate budget and resources to interorganisational integration, their organisations demonstrate a willingness to allocate resources in order to achieve their goals of integrating with other organisations. Their organisations possess the ability to swiftly establish or adjust partnerships as the need arises. Organisations exhibit flexibility in modifying their processes and procedures to align more effectively with other organisations. The success of their collaborations between organisations is enhanced by the utilization of collaborative planning tools and technologies. Additionally, their interorganisational collaborations benefit from the implementation of effective communication tools and technologies. These findings resonate with that of Asamoah *et al.* (2021) who noted that building the needed resource capabilities within an organisation is necessary and so organisational internal integration systems serve as a valuable information resource which creates ESCM capabilities.

4.5 Factors Influencing the Adoption of Efficient SCM Practices

This section of the study also aims at identifying various factors with enormous influence on the adoption of ESCM practices. Table 4.11 and table 4.13 presents some factors and the extent to which the companies surveyed utilize them to influence their adoption of ESCM practices.

In response to top management as an influence on the adoption of efficient supply chain management practice, table 4.9 reveals that respondents agree to a large extent that top management continuously emphasized that the company must adopt efficient supply chain practices (mean = 3.63, SD = 1.19).

Table 4.9: Extent of Adoption of Top Management as an ESCM Practice

Top Management	Mean	Std. dev
Top management continuously emphasized that the company must adopt efficient supply chain practices	3.63	1.19
Top management play an effective role in coordination between supply chain partners	3.72	1.12
Top management makes consultations before selecting supply chain partners	3.49	1.25
Top management plays an effective role in conflict management on supply chain	3.96	0.88
Top management supports coordination among supply chain partners is high	3.37	1.30

Source: Fieldwork, 2023.

The table 4.9 also revealed that respondents agree to a large extent that top management play an effective role in coordination between supply chain partners (mean = 3.72, SD = 1.12). Respondents further agreed to an extent that top management makes consultations before selecting supply chain partners (mean = 3.49, SD = 1.25). This is complimented by respondents' agreement to a large extent that top management plays an effective role in conflict management on supply chain (mean = 3.96, SD = 0.88). Respondents again agree to a large extent that top management supports coordination among supply chain partners is high (mean = 3.37, SD = 1.30). Results indicates that top management decisions had resulted in the adoption of various ESCM processes within the cocoa companies by significantly supporting various initiatives in harmonising the efficiency of the SC process. These findings were also noted by Kshetri (2018).

Table 4.10: Sustainable SC as a Factor Influencing ESCM Practices Adoption

Sustainable Supply Chain	Mean	Std. dev
Company policies has resulted in significant improvement in terms of sales and market share.	3.86	1.06
Company policies has resulted in significant reduction in terms of waste and its disposal costs.	3.70	1.21
Company policies has resulted in significant improvement in terms of resources management efficiency.	4.11	1.04
Company policies has resulted in to respond to and accommodate new products, new markets or new competitors	3.87	1.13
Company policies has resulted in significant improvement in its image in the eyes of its customers.	3.83	0.79
Company policies has resulted in significant improvement in relations with community stakeholders.	4.76	0.69
Company policies has resulted in significant reduction in consumption for hazardous/harmful/toxic materials.	3.92	1.42
Company policies has resulted in significant reduction in energy consumption.	3.79	1.25

Source: Fieldwork, 2023.

Table 4.10 shows that respondents agree to a large extent that supply chain flexibility of the various companies had been enhanced through their ability to respond to and accommodate demand variations, such as seasonality (mean = 3.86, SD = 1.06). Respondents also agreed to a large extent that their capacity to address and adapt to instances of poor production, such as mechanical malfunctions, had been enhanced (mean = 3.70, SD = 1.21) and that their capacity to address and adapt to instances of inadequate supplier output had likewise been enhanced (mean = 3.87, SD = 1.13). Results revealed that respondents agreed to a very high extent that their ability to respond to and accommodate the periods of poor supplier performance has been improved (mean = 4.11, SD = 1.04). Results clearly suggests that respondents agree to a large extent that the adopting of SCM practices has improved their ability to respond to and accommodate the

periods of poor delivery performance (mean = 3.87, SD = 1.13), and as well their ability to respond to and accommodate new products, new markets or new competitors has improved (mean = 3.83, SD = 0.79). Findings from the table above also indicates that respondents agree to a large extent that policies adopted by their companies had resulted in a significant improvement in their relations with community stakeholders (mean = 4.76, SD = 0.69). Again results revealed that respondents agree to a large extent that there is a significant reduction in the consumption of both hazardous/harmful/toxic materials (mean = 3.92, SD = 1.42), and energy (mean = 3.79, SD = 1.25) as a result of their company polities. Results were in consonance with findings from Yu *et al.* (2018) which noted that the adoption of SCM practices results in supply chain flexibility which allows the company to easily scale up to meet the demand of its customers. These findings are also not different from those of Delic and Eyers (2020).

4.6 The Impact of Efficient SCM Practices on Sustainable Supply Chain

According to Keith (2019), the regression analysis is an inferential statistical technique in which variables can be defined that either predict or explain the part of the total variance in the score of the dependent constructions. Table 4.11 above indicates the R² value of 0.601, which demonstrates that the SCM practices are capable of explaining approximately 60% of the variance of the SC performance of manufacturing companies. As such, roughly 40 percent of the heterogeneity of the performance of business supply chain processes are clarified by other global influences, for which this study does not account for. The table also indicates statistically relevant relationships between ESCM practices and the sustainable supply chain result (Beta= 0.224, 0.401, 0.864; T = 2.909, 1.959, 1.002; p < 0.004, 0.000, 0.043). This finding show that the extent to which efficient supply chain management practices were adopted and introduced by the cocoa supply chain companies can be measured in the degree of business sustainable supply chain

process within cocoa companies. These findings were based on a preceding study by Nawi *et al.* (2016) which concluded that the quality of goods and services and increased business process results would benefit from ESCM practices, such as internal integration of systems, relationship management (both supplier and customer), and information technology. Specifically, ESCM practices comprising of information technology, relationship management, and internal integration practice respectively had a positive and significant impact on sustainable supply chain.

Table 4.11: Model Estimation of Efficient SCM Practices and Sustainable Supply Chain

Independent variable: ESCM Practices	Dependent variable: Sustainable Supply Chain				
	Standardized Coefficients	T	Sig	Collinearity Statistics	
	Beta			Tol	VIF
Information Technology	0.224	2.909	0.004	0.673	1.584
Relationship Management	0.401	1.959	0.000	0.543	2.423
Internal Integration	0.864	1.002	0.043	0.636	1.573
Model summary: R= 0.775 Adjusted R2 = 0.601 F= 22.409 Tol=Tolerance VIF= Variance Inflation factor					

Source: Fieldwork, 2023.

Table 4.12: Model Estimation of Top Management

Independent variable: Top Management	Dependent variable: Sustainable Supply Chain				
	Standardized Coefficients	T	Sig	Collinearity Statistics	
	Beta			Tol	VIF
Top Management Commitments	0.365	6.483	0.001	0.715	1.679

Model summary:

R= 0.517 Adjusted R2 = 0.691 F=41.526
 Tol=Tolerance VIF= Variance Inflation factor

Source: Fieldwork, 2023.

Results from table 4.12 reveals that top management commitment had been established to have positively and significantly impacted the sustainable supply chain (Beta = 0.365; T= 6.483; $p = 0.001$). This illustrates strong prediction of sustainable supply chain by the top management commitment. Table 4.12 also reveals approximately 69% ($R^2 = 0.691$) variation with the sustainable supply chain. Results are consistent with findings of Hassan *et al.* (2017) which indicated that top management commitment are essential to the breadth and depth influence on sustainable supply chain among supply chain cocoa companies.

Results from table 4.13 reveals that top management moderating as a resource capability have been established to have positively and significantly impacted the relationship between ESCM practices and Sustainable SC thus, influencing the adoption and implementation of Efficient SCM practices (Beta = 0.472; T= 4.240; $p = 0.000$). This illustrates strong prediction of sustainable supply chain by the moderating factor. Table 4.13 also reveals approximately 72% ($R^2 = 0.724$) variation with the sustainable supply chain. Results are consistent with findings of Hassan *et al.* (2017) which indicated that the moderating factor of resource capability are essential to attaining a high level sustainable supply chain among supply chain companies.

Table 4.13: Model Estimation of the Moderating Factor of Top Management

Independent variable: Moderating Factors	Dependent variable: Sustainable Supply Chain				
	Standardized Coefficients	T	Sig	Collinearity Statistics	
	Beta			Tol	VIF
TM * SCMP	0.472	4.240	0.000	0.567	1.874

Model summary:

R= 0.79 Adjusted R2 = 0.724 F=12.763
Tol=Tolerance VIF= Variance Inflation factor

Source: Fieldwork, 2023.

4.7 Challenges Affecting the Adoption and Implementation of ESCM Practices

The study also sought to determine the challenges encountered by the respondents' companies in the adoption and implementation of efficient supply chain management practices. According to the results presented in table 4.14 below, respondents disagree to some extent that their companies lack professional expertise to implement ESCM practices (mean =2.36, SD = 1.17), respondents also disagree to some extent that their organisations lack frequent Efficient Supply Chain Management Practices training (mean=2.28, SD = 0.95). Results further show that respondents disagree to some extent that the cocoa companies had low level of cooperation among user departments (mean =2.92, SD =1.09). Again, respondents disagree to some extent that the companies had inadequate supplier relationship with their partners (mean =2.51, SD =1.07). Respondents further disagreed to some extent that their companies had poor information flow between them and their partners (mean =2.51, SD =1.15). Respondents disagree to some extent that their companies do not only concentrate on their core service (mean =2.31, SD = 1.23), respondents also disagree to some extent that their companies lack adequate storage capacities (mean=2.52, SD = 0.82). Results further show that respondents disagree to some extent that the cocoa companies lack adequate measures for monitoring and evaluation of ESCM practices to ensure Sustainable Supply Chain performance (mean =2.63, SD =0.67). Respondents however, agreed to some extent that rising logistics cost (Transportation, Material handling and procurement) was a challenge affecting the adoption of ESCM practices (mean =3.01, SD =1.21). These findings were not in agreement with the findings of Singh and Singh (2019) who noted that

there were a lot of challenges such as the lack of ESCM practice professionals to help various organisations to adopt and thereafter implement those practices. The findings of Singh and Singh were not different from those of Touboulie *et al.* (2020).

Table 4.14: Challenges Affecting the Adoption of Efficient SCM Practices

Statements	Mean	Std. dev
Our company lack professional expertise to implement ESCM practices	2.36	1.17
Our organization lacks frequent ESCM practices training	2.28	0.95
Our company has rising logistics cost (Transportation, Material handling and procurement)	3.01	1.21
The company has low level of cooperation among user departments	2.92	1.09
Inadequate Supplier relationship with our partners	2.51	1.07
Our company has poor Information flow between partners	2.51	1.15
We do not only concentrate on our core service	2.31	1.23
We lack adequate storage capacities	2.52	0.82
Inadequate measures for monitoring and evaluation of ESCM practices to ensure Sustainable Supply Chain Management	2.63	0.67

Source: Fieldwork, 2023.

CHAPTER FIVE SUMMARY, CONCLUSION AND RECOMMENDATION

5.1 Introduction

The purpose of this study was to investigate the effects of effective supply chain management practices on the viability of the supply chain in the long term. Additionally, it aimed to analyse the influence of top management on this relationship. The study comprised four primary goals: firstly, to scrutinize the diverse effective practices in supply chain management within cocoa

enterprises in Ghana; secondly, to ascertain the influence of efficient supply chain management practices on the durability of the supply chain; thirdly, to ascertain the extent of involvement by top management in the association between ESCM practices and sustainable SC, and to determine the challenges with supply chain management practices. This chapter, thus, presents the summary of the findings pertaining to the aforementioned four objectives. Additionally, it elucidates the conclusions drawn and the recommendations formulated based on these findings. Furthermore, it offers suggestions on areas that warrant further research in relation to this concept. The findings of the preceding chapter are summarized in this chapter.

5.2 Summary of Findings

The study found that Ghana's cocoa companies adopted different efficient supply chain management practices in order to boost the sustainability of their supply chains. It also emerged from the report that the cocoa companies in Ghana followed the three efficient supply chain management practices: information technology, relationship management, and internal integration. Results showed that top management as a moderating variable have had a positive moderating effect on the relationship between efficient supply chain management practices and sustainable supply chain.

It was also evident from the report that the three supply chain management practices have had a positive effect on the outcome of the sustainable supply chain process. However, strategic supplier partnership and information sharing have had the greatest effects. A study of the relationship between efficient supply chain management practices and the sustainable supply chain of the business process has shown that practices can directly influence the sustainability of the business process. The study also found that organizations had no issues with the complexities that could emerge from the introduction and implementation of efficient supply chain management practices

which included lack professional expertise, lacks of frequent Efficient Supply Chain Management training, low level of cooperation among user departments, poor information flow between partners, adequate storage capacities, and inadequate measures for monitoring and evaluation of ESCM practices to ensure sustainable supply chain. However, rising logistics cost (Transportation, Material handling and procurement) has been a challenge. Thus, the results of this research point to the value of efficient supply chain management practices in the attainment of a sustainable supply chain process for both businesses and their suppliers/customers.

5.3 Conclusion

The study concludes that different efficient supply chain management practices were implemented by the cocoa companies that were surveyed. Practices also helped the organisations to boost the sustainability and efficiency of their activities. This is reinforced by the findings of the research that have shown that there is a causal effect between efficient supply chain management practices and the sustainability of the supply chain process. The study concluded that efficient supply chain management practices are very critical for improving the efficiency and performance of organisations and, as is understood, today's competition within the business world is fast changing from a manual systems of organizations to more powerful and competitive modelled systems. The study further showed that the businesses were in a position to deal with almost all the problems associated with the adoption of these practices. More and more companies are implementing efficient supply chain management practices in the quest of reducing logistics and transportation costs and achieving sustainable competitive advantages.

5.4 Recommendation

The study has established that efficient supply chain management practices are very relevant in improving the sustainability of business processes for cocoa organisations. Both cocoa companies and other companies should adopt this idea because there are many advantages that will be gained. Organisations are encouraged to follow the methods that are followed by a very large degree because they can positively influence business process results and contribute to enhancement of the sustainability and efficiency in the company. Some of these activities include information technology, relationship management, and internal integration which have been considered effective within the cocoa industry. This study further suggests that in light of the challenges identified from literature which are likely to be encountered in the adoption and implementation of the efficient supply chain management practices, workshops and seminars should be organised for the workers to help enlighten them on the challenges and how they can be mitigated and also an oversight supervisory should be put in place to make sure that all measures for dealing with the challenges are carried out.

5.5 Suggestions for Further Research

It is a very diverse process so as the domain cannot be covered in only one research. Future research on efficient supply chain management practices implementations can be extended to include dimensions such as geographical proximity, cross functional collaboration, information system integration and dedicated supply chain integration that has been overlooked in this report. Future studies are suggested on the following aspects: the role of particular factors in developing supply chain systems and the consequences of such management practices for corporations and supply chain sustainability.

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RESEARCH QUESTIONNAIRE

My name is Mather Darkwa, a student of Kwame Nkrumah University of Science and Technology, conducting a research on the topic **“EVALUATING THE EFFECT OF EFFICIENT SUPPLY CHAIN MANAGEMENT ON SUSTAINABLE SUPPLY CHAIN:**

A MODERATING EFFECT OF TOP MANAGEMENT.” The purpose of the study is purely academic and all information provided will be treated with strict confidentiality.

SECTION A: DEMOGRAPHIC OF RESPONDENTS

Please understudy the demographic information and tick [✓] appropriately as applicable.

1) Please indicate the age bracket you fall in as below.

- a) 20-30 years []
- b) 31-40 years []
- c) 41-50 years []
- d) 51-60 years []
- e) Above 60 years []

2) Please indicate your gender

- a) Male []
- b) Female []

3) Your level of education

- a) Professional certificate []
- b) H. N. D []
- c) Undergraduate. []
- d) Postgraduate. []
- e) No formal education []

4) How long have you been working with the organisation?

- a) Under 5 years []

- b) 5 - 10 years []
- c) 11 - 15 years []
- d) 16 - 20 years []
- e) Over 20 years []

KNUST

5) What is your designation?

- a) Senior Manager []
- b) Manager []
- c) Supervisor []
- d) Senior staff []
- e) Junior staff []

6) Number of employees in your company is?

- a) Less than 50 []
- b) 50 - 100 []
- c) 101 - 250 []
- d) Above 250 []

SECTION B: EFFICIENT SUPPLY CHAIN MANAGEMENT

With regards to Efficient Supply Chain Management, please tick [✓] the appropriate number to indicate the extent to which you agree or disagree with each statement. The item scales are fivepoint Likert type scale with **1 = Strongly Disagree (SD)**, **2 = Disagree (D)**, **3 = Neutral (N)**, **4 = Agree (A)**, **5 = Strongly Agree (SA)**.

Efficient Supply Chain management Practices	SD	D	N	A	SA
	1	2	3	4	5
Information Technology					
We have high level of information exchange with major supplier through the information network					
We have the foundation of a fast ordering system with main supplier					
We have stable procurement through the network system with our main suppliers					
We have high level of linkage with major customers through the information network					
We have high level of computerization for major customers' orders					
Relationship Management (Supplier and Customer)					
Your organisation shares a sense of fair play with its customers					
Your organisation frequently interacts with customers to set its reliability, responsiveness, and other standards					
Your organisation has frequent follow-up with its customers for quality/service feedback					
Your organisation frequently measures and evaluates customer satisfaction					
Your organisation frequently determine future customer expectations					
Your organisation facilitates customers' ability to seek assistance from it					
Your organisation frequently evaluates the formal and informal complaints of its customers					
Your organisation periodically evaluates the importance of its relationship with its customers					

Internal Integration					
Effective organizational internal integration is a high priority for my organization					
We have clearly established goals for inter-organizational integration					
My organization recognizes the importance of working with other organizations to achieve its mission					
My organization considers the interests of other organizations in its planning					
My organization has committed adequate budget and resources to inter-organizational integration					
My organization is willing to invest resources to accomplish inter-organizational integration goals					
My organization can quickly form or modify partnerships as requirements change					
My organization is flexible in adapting its processes and procedures to better fit with other organizations					
Our inter-organizational collaborations are effectively supported by collaborative planning tools and technologies					
Our inter-organizational integration are supported by effective communications tools and technologies					

SECTION C: TOP MANAGEMENT

With regards to Top Management, please tick [√] appropriately the number that reflects your firm's present condition. The item scales are five-point Likert type scale with **1 = Strongly Disagree**, **2 = Disagree**, **3 = Neutral**, **4 = Agree**, **5 = Strongly Agree**.

Top Management	1	2	3	4	5
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Top management continuously emphasized that the company must adopt efficient supply chain practices					
Top management play an effective role in coordination between supply chain partners					
Top management makes consultations before selecting supply chain partners					
Top management plays an effective role in conflict management on supply chain					
Top management supports coordination among supply chain partners is high					

SECTION D: SUSTAINABLE SUPPLY CHAIN

With regards to Sustainable Supply Chain, please tick [✓] appropriately the number that reflects your firm's present condition. The item scales are five-point Likert type scale with **1 = Extremely Worse, 2 = Worse, 3 = Neutral, 4 = Better, 5 = Extremely Better.**

Sustainable Supply Chain	1	2	3	4	5
Company policies has resulted in significant improvement in terms of sales and market share.					
Company policies has resulted in significant reduction in terms of waste and its disposal costs.					
Company policies has resulted in significant improvement in terms of resources management efficiency.					
Company policies has resulted in to respond to and accommodate new products, new markets or new competitors					
Company policies has resulted in significant improvement in its image in the eyes of its customers.					
Company policies has resulted in significant improvement in relations with community stakeholders.					
Company policies has resulted in significant reduction in consumption for hazardous/harmful/toxic materials.					
Company policies has resulted in significant reduction in energy consumption.					

SECTION E: SUPPLY CHAIN CHALLENGES

Please indicate your opinions by rating the challenges of Supply Chain Management Practices within your organisation. The rating scale are a five point Likert scale, ranging from **1= not a problem, 2=slight problem, 3=frequent problem but can be managed, 4=major problem and 5= threat to the organization.**

Challenges of Supply Chain Management Practices	1	2	3	4	5
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Our company lack professional expertise to implement SMC					
Our organization lacks frequent Supply Chain Management training					
Our company has rising logistics cost (Transportation, Material handling and procurement)					
The company has low level of cooperation among user departments					
Inadequate Supplier relationship with our partners					
Our company has poor Information flow between partners					
We do not only concentrate on our core service					
We lack adequate storage capacities					
Inadequate measures for monitoring and evaluation of SCM practices to ensure supply chain performance					

- Please indicate measures that can help address the challenges and specify any additional comment or suggestions.

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Thank you very much for your time!

