

**KWAME NKURUMAH UNIVERSITY OF SCIENCE AND TECHNOLOGY,**

**KUMASI**

**SCHOOL OF BUSINESS**

**KNUST**

**The Mediating Role of Logistics Collaboration in the link between Supply Chain  
Relationship and Logistics Performance**

**BY**

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**A DISSERTATION SUBMITTED TO THE DEPARTMENT OF SUPPLY  
CHAIN AND INFORMATION SYSTEMS, KWAME NKURUMAH UNIVERSITY  
OF SCIENCE AND TECHNOLOGY. IN PARTIAL FULFILLMENT OF THE  
REQUIREMENTS FOR THE AWARD OF  
MASTER OF SCIENCE IN  
LOGISTICS AND SUPPLY CHAIN MANAGEMENT IN**

**SEPTEMBER, 2023**

## DECLARATION

I hereby declare that the information contained in the project report is the result of my own efforts and due citation have been made. I further declare that it contains no material previously published by another person nor material which has been accepted for the award of any other degree or diploma in the University, or elsewhere except where due acknowledgement has been made.

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## DEDICATION

I hereby dedicate this project to my lovely parents for their kindness and sacrifices made throughout our journey in school. It is by their prayers and commitment that is why I have come this far. I say God bless them abundantly.

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## ACKNOWLEDGEMENT

I am very grateful to the Lord Most High who has graciously seen me throughout my studies at Kwame Nkrumah University of Science and Technology. He has protected me through thin and thick. A special appreciation goes to my able Supervisor, Dr. Emmanuel Quansah for his guidance and commitment. I say God bless him abundantly for always been there for me. I am also highly indebted to the management of Kwame Nkrumah University of Science and Technology and the lecturers, particularly those in the Supply Chain and Information systems Department for nurturing and giving me the enlightenment and the scholastic aptitude, I need to face the business world. My overt and covert aspiration is to make you proud. Last but not the least, I would like to thank my family and friends for their incessant support and approval.



## ABSTRACT

This study investigates the mediating role of logistics collaboration in the connection between supply chain management and logistics performance. The primary objective was to examine how the quality of supply chain relationships influences logistics performance and whether logistics collaboration plays a mediating role in this relationship. A cross-sectional research design was employed, utilizing a quantitative approach through a closed-ended questionnaire survey. The study focused on management personnel in various manufacturing companies within the Kumasi Metropolitan Assembly as the target population. Purposive sampling was used to select participants, given the specific characteristics required for the study. Five manufacturing companies were randomly selected, and questionnaires were administered face-to-face during working days to ensure clarity in responses. The collected data were analyzed using descriptive statistics, regression analysis, and the Hayes Process Macro in SPSS version 26. The findings crucially unveils a significant mediating role of logistics collaboration in the relationship between supply chain relationship and logistics performance. Thus, organizations that cultivate strong supply chain relationships can influence overall logistics collaboration, which, in turn, contributes to higher levels of logistics performance. The study therefore recommended that strengthening supply chain relationships and promoting collaborative logistics practices can be vital strategies for organizations aiming to boost their logistics performance. Further research is encouraged to explore additional factors and nuances in the dynamics of supply chain relationships, logistics collaboration, and logistics performance to inform more effective strategies for organizations.

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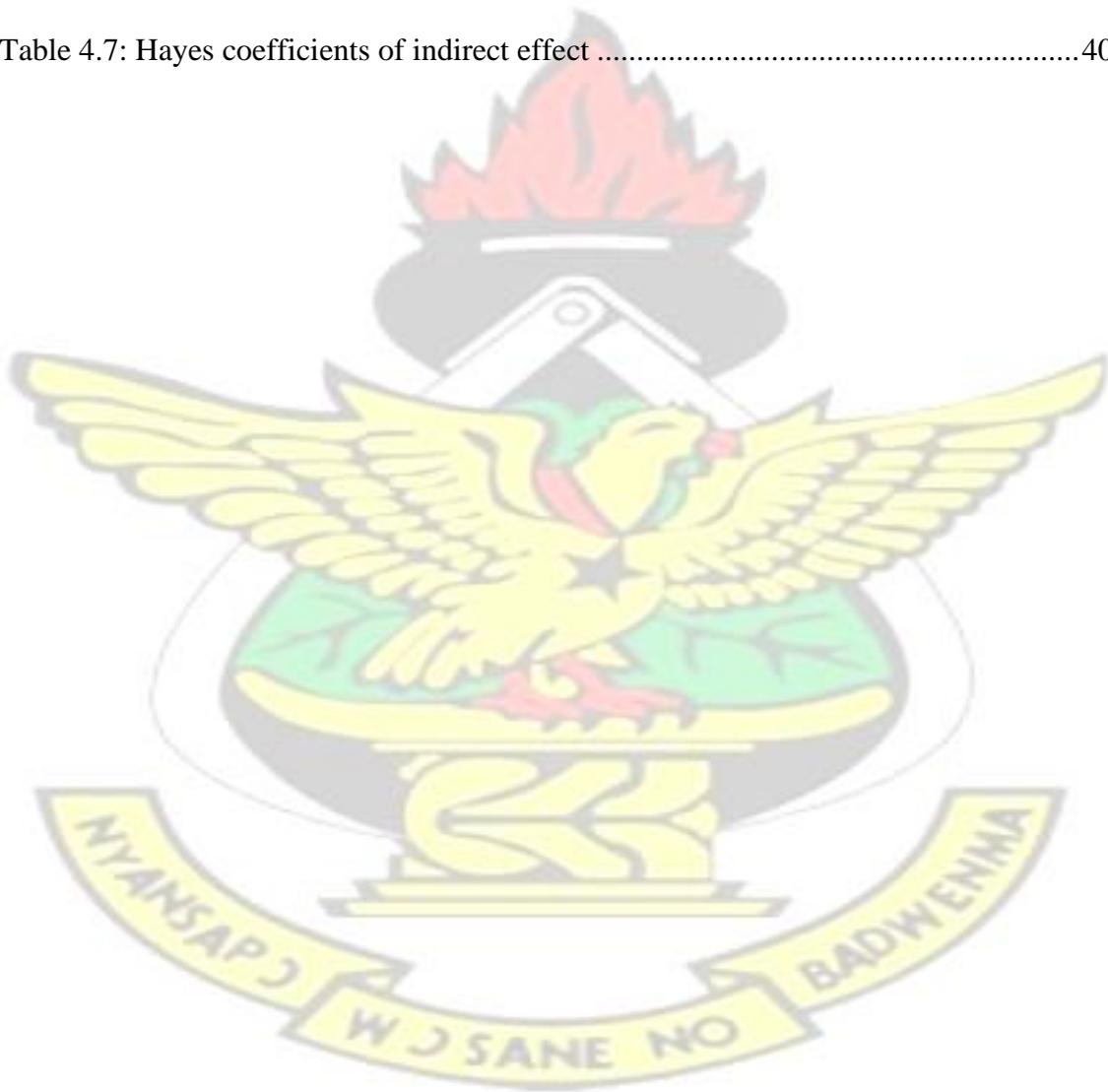
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## CHAPTER ONE

### INTRODUCTION

#### 1.1 Background of the study

Nowadays, organizations are forming traditional and web-based partnership with the aim to lower the transportation cost along with reducing inventories and thereby raising the existing levels of customer service (Lofti et al., 2013). According to Sukati et al. (2012), supply chain consists of set of values that connect enterprise's suppliers and its customers. However, managing the supply chain determines how to maximize the overall value of the firm by better using and deployment of resources across the whole of the organization. Therefore, to obtain maximum benefits, supply chain players have started forming and practicing collaborative partnerships across all of planning, production, forecasting and replenishment (Ramanathan & Muyltermans, 2010). According to Fawcett et al. (2008), collaboration is an effective and efficient strategy which facilitates benefits such as innovation, resource sharing and access to economies of scale. Fawcett et al. (2012) further indicated that for companies to create added value in the supply chain, they must build collaborative channels with partners.

Currently, the competition in the global market does not occur between companies but between supply chains, and flexibility is becoming one of the crucial needs of production systems in which the product or service is often produced with contribution of multiple companies (Pires et al., 2012). This has sent a directive signal to shippers, carriers, and logistics service providers, who choose long-term logistics partners to promote performance improvements. According to Alharonovitz et al. (2018), logistics partnership can reduce costs and improve performance through joint activities and information sharing. This means that building strong logistics collaborations in the supply chain will contribute to the performance measure of organizations thereby

increasing organizational competent of running smooth operations to satisfy its customers.

Furthermore, having an appropriate supplier selection process, frequent meetings and a satisfactory relationship history between buyers and suppliers can improve collaborative practices and thereby performance by eliminating redundancies and necessary rework in logistics partner's routine. Raue and Wieland (2015) pointed out that, governance mechanisms in horizontal cooperation among logistics service providers improve the efficiency of transportation networks, information sharing, and speed of the cooperation process thereby enhancing firm performance and increasing market success. From the shipper's point of view, collaborative relationships can reduce inventories and increase effectiveness among trading partners, thereby reducing managerial costs, expediting deliveries, and producing higher service levels for the end client (Aharonovitz et al., 2017).

According to Grant et al. (2017), the impact of globalization on logistics and supply chain has been relevant over the past decades. Logistics performance is a critical element for trading and economic development, as well as ensuring the sustainability of the environment. Pertaining to this logistics performance especially in Asian countries, logistics is serving as the road to create economic cooperation corridors among Asia, Europe and African countries (Liu et al., 2018). According to Kirono et al. (2019), logistics conditions are closely related to performance of each company, especially companies that engage in logistics and supply chain. Logistics performance reflects the performance of the organization associated with the ability to deliver goods and services in the quantity and time corresponding with customer demands (Wu et al., 2014). According to Othman et al. (2016), improving logistics performance appears to

be a necessity to improve productivity and performance of organization to be more competitive both locally and internationally.

Several studies have been conducted on logistics perspectives and its mode of building strong relationships in the supply chain. A study conducted by Kocoglu et al. (2011) revealed that there is an influence of collaboration towards supply chain performance. This shows that supply chain collaboration has a positive effect on performance of an organization. Moldabekova et al. (2021) assessed the effect of digitalization on logistics performance. Wang (2017) studied the impact of supply chain uncertainty and risk on the logistics performance. Alam et al. (2014) also studied the mediating effect of logistics integration on supply chain performance. Veronica and Forslund (2014) studied the logistics performance management in textiles supply chains. Piriyaikul and Kerdpitak (2011) also examined the mediating effects of logistics performance on collaboration and firm performance.

However, many of the studies into supplier relationship phenomenon concluded that logistical concerns are driving factors behind the success of many manufacturing companies across the globe. Therefore, the focus of this study is on the spectrum of supply chain relationship, logistics collaboration and logistics performance. The study will provide a benchmark for both suppliers' and buyers' organizations, assessing the need to build collaborative relationships to reduce logistics cost and improve logistics performance.

## **1.2 Problem statement**

Logistics management has become the backbone of global economy nowadays due to the increasing global market competition. According to Thomas et al. (2015),

understanding the history of the relationship between buyers and suppliers over time helps to measure the relationship's long-term impact. Prajogo and Olhager (2012) indicated that long term relationships have strong influence on logistics performance. A study by Forslund (2011) on performance management in supply chains from logistics service provider's perspective showed that, increasing supplier's relationships with its buyers increases the logistics performance of an organization.

However, despite the significant impacts of supplier relationship on logistics performance, few studies have been conducted to address the issue. As result, most of the organizations are unable to compete well in the current global market due to the inability to access adequate information on the relevance of maintaining positive relationships between buyers and suppliers (Alam et al., 2014). In addition, there has not been any study that seeks to look at logistics collaboration mediating between supplier relationship and logistics performance in the Ghanaian context. Managers may talk about collaboration and its potential benefits as if it were part of their organizational structure, yet it seems that few companies are actually involved in the level of integration that collaboration suggest (Fawcett and Magnan, 2004). A study by Sabath and Fontanella (2002) pointed out that collaboration arguably has the most disappointing track record of the various supply chain management strategies introduced to date.

It is obvious that the effectiveness of logistics represents one of the main drivers for the economic development of countries and regions (Philip et al., 2020). On the other hand, the examination of the contemporary fruitful prerequisites for the development of transport and logistics is relatively untacked. In this regard, and due to the fact that logistics has an important crosscutting function for organization, it is worthwhile to

study the influence of collaborations on the effectiveness of logistics performance in the supply chain in order to promote economic growth. In response to this, the study in the further scientific discourse allows to examine the role of logistics collaboration in the relationship between supply chain relation and logistics performance.

### **1.3 Research Objectives**

The main objective of the study is to examine the mediation role of logistic collaboration in the relationship between supply chain management and logistics performance.

#### **1.3.1 Specific objectives**

- To examine the impact of Supply Chain Relationship on Logistics Performance.
- To identify the impact of Supply Chain Relationship on Logistic Collaboration.
- To determine the relationship between Logistics Collaboration and Logistics Performance.
- To examine the mediating effect of Logistics Collaboration on the link between Supply Chain Relationship and Logistics Performance.

#### **1.4 Research Questions**

- What is the relationship between Supply Chain Relationship and Logistics Performance?
- What is the relationship between Supply Chain Relationship and Logistics Collaboration?
- Is there a significance relationship between Logistics Collaboration and Logistics Performance?

- Does logistics collaboration mediate the relationship between supply chain relationship and Logistics Performance?

### **1.5 Significance of the study**

The primary goal of the study is to provide meaningful information about the relationship between supply chain and logistics performance. The study holds practical significance for manufacturing companies in Kumasi. The findings offer actionable insights for enhancing logistics performance through improved supply chain relationships and collaboration. By identifying and addressing gaps in collaboration, companies can streamline operations, reduce costs, and gain a competitive edge. The study's practical implications extend to operational improvement, cost reduction, and the strategic positioning of companies within the market.

The study contributes to policymaking by providing a foundation for the development of strategies that encourage logistics collaboration within manufacturing companies. Policymakers can leverage the findings to formulate policies supporting economic growth in the Kumasi Metropolitan Assembly. The study's insights are particularly relevant for shaping policies that foster a conducive environment for the manufacturing sector, contributing to trade and industry development. Policymakers can use this research to create frameworks that promote healthy supply chain relationships, ultimately benefiting the broader economic landscape.

In terms of literature, this study makes valuable contributions by advancing theoretical understanding and offering empirical evidence. The introduction of the mediating role of logistics collaboration in the context of supply chain relationships and logistics performance adds a novel perspective to existing theories. The case study approach

contributes real-world examples specific to the manufacturing landscape in Kumasi, filling a potential gap in the literature. By exploring the dynamics between supply chain relationships and logistics performance, the study not only provides practical insights but also sets the stage for future research endeavors, contributing to the ongoing scholarly discourse in supply chain management.

### **1.6 Scope of the study**

This study seeks to examine the mediating role of logistics collaboration in the link between supply chain relationship and logistics performance with a special focus in the Kumasi Metropolis. The study will take place in manufacturing companies located within the Kumasi Metropolis.

### **1.7 Limitations of the study**

Since time and financial constraints were a challenge while conducting this study, this study was limited to manufacturing companies within the Kumasi Metropolitan Assembly. As a result, there was lack of sufficient data to make broader generalization was done. The study was designed to include only the managements in the selected manufacturing companies within the Kumasi Metropolis.

### **1.8 Organization of the study**

This study is organized into five main chapters. Chapter one presents the introductory part which among others includes; background of the study, statement of problem, objectives, scope, significance and organization of the study. Chapter two presents the review of literatures underlying the subject understudy. Chapter three provides the ideas which describe the methodology that was used to carry out this study. It includes

specification of model, the research design, target population, sample and sampling techniques, data collection methods, validity and reliability, data analysis and ethical consideration. Chapter four focuses on the data analysis, interpretation and discussion and chapter five lastly deals with summary of the study findings, conclusion and suggested recommendations.

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## **CHAPTER TWO**

### **LITERATURE REVIEW**

#### **2.0 Introduction**

The chapter entails the literature of other scholars on the variables stated and how it affects firms. The bottom line of the study is to enrich the already existing work and its attainable through critical consideration of other scholars' works. The researcher attempted to critique the findings and establish a knowledge gap with a view to enhancing the mediating role of logistics collaboration in the link between supply chain relationships and logistics performance.

#### **2.1 Conceptual Review**

##### **2.1.1 Supply Chain Relationship**

The effect of SC linkages on operational and business execution has been the subject of an assortment of experimental examinations. These examinations have incorporated a scope of SC definitions, execution measures, and procedures. For instance, Carter and Ell Ram (1994) found that supplier inclusion in item style envelops a positive effect on item quality utilizing a contextual investigation plan. Narasimhan and Jay Aram (1998) analyzed the connection between sourcing choices, creating objectives, customer responsiveness, and delivering execution exploitation auxiliary condition demonstrating. They found that gathering activity SC exercises includes situating sourcing choices to acknowledge delivering objectives regarding irresponsibleness, flexibility, cost, and quality. In like manner, Car and Pearson (1999) found that deliberately oversaw long-term associations with key providers will positively affect financial (particularly from assembling) execution.

Kaynak and Pagan (2003) exploitation of irregular outskirts displaying, found that qualities inside the firm like high administration responsibility for purchasing and give the executives had a positive effect on gainful efficiency. In like manner, Central American Nation et al. (2001) found that once shoppers and providers follow up on issues related to material flows and quality, there are significant transient effects as far as speed and conveyance timing extra as of late, Tan et al. (2002) built up a complete arrangement of SC apply and SC execution measurements and found that though a few practices had a positive effect on execution, others had a partner degree of unfriendly effect. The nonstop topic by and large of those examinations is the job of SC executives in rising SC execution. Be that as it may, the basic elements of SC relationship quality have gotten confined treatment in these examinations.

#### **2.1.1.1 Trust**

Trust is among the chief generally referred to measurements of SC connections inside the writing and has been sketched out as "the company's conviction that another organization will perform activities which will end in positive activities for the firm, comparatively as not take unexpected activities that may end in negative results for the firm" (Anderson and Narus, 1990,). There additionally are varying sorts of trust: contractual trust (desires that certifications are kept), competency (trust in a very business accomplice's fitness to hold out a chosen assignment), and altruism trust (the specific inclination that exchanging accomplices have a moral duty to keep up an exchanging relationship). with regards to Sako (1992), altruism believes that is crucial to a genuine association sort of relationship. In spite of the fact that most empirical studies have treated trust in terms of the technique for anyway connections are set up, kept up, and disintegrated, the fortification effect posits that in partner degree existing

relationship, trust, correspondence, responsibility, and co-activity would all be able to be high or low (Monczka et al., 1995). This suggests these measurements could likewise be markers of some higher request development (Ander-child and Narus, 1990). In their image to carry trust into the TCA structure, understudies have contended that trust has the essential effect of bringing down gathering activity costs. Trust is frequently sketched out as a disposition to require a chance.

### **2.1.1.2 Adaptation**

Adaption adjusts to the prerequisites of an explicitly important client which clients adjust to the capabilities of explicit providers. Such adjustment regularly occurs by methods of interest in managing explicit resources like item/process innovation and HR (Hakanssons, 1982). Adaptation is vital for the assortment of details. Right off the bat, they'll speak to considerable investments by one or every gathering. Furthermore, they may be of critical importance for the lead of business. Thirdly, the ventures frequently cannot be moved to various SC relationships. Fourthly, the expansions may have significant consequences since quite a while ago run forcefulness of firms: adjusting to in any event one relationship may enhance the capabilities and appeal of a particular supplier/client. In Williamson's (1981) assessment, in addition to particularity is that the hugest component of managing is because once partner speculation has been made, vendee and advertiser are adequately in activity in an extremely reciprocal trade connection for a considerable sum thenceforth. Adaptation alludes to the degree to which the client and advertiser fabricate significant ventures inside the relationship (Ford and Hakansson, 2006), and in this way, the trading of explicit ventures is the adjustment of every gathering. Adjustment is another introduction since quite a while ago run relationship, since beginning, adjustment of gatherings demonstrates one

gathering or every gathering has contributed with explicit advantages for making a relationship.

### **2.1.1.3 Commitment**

Commitment alludes to the disposition of corporate greed accomplices to apply exertion for the benefit of the association and proposes a future direction inside which partnerships orchestrate to manufacture a relationship that will be continued inside the essence of all of a sudden issue (Gundlach et al., 1995). There's in this way a fleeting measurement of duty identified with the period or age of the association. Submitted gatherings are eager to take a situation in exchange for explicit resources, exhibiting that they will be dependent. Such ventures encourage settling affiliations and mitigate the vulnerability of consistently looking for and growing new trade connections. Mohr and Sparkman (1994) found an immediate connection among's dedication and organizational achievement. This investigation gets the develop of responsibility from Morgan partner degreed Hunt (1994) WHO delineated duty as "a trade accomplice essential intellectual procedure that an in-progress connection dispatch with another is hence imperative on warrant most endeavors at looking after it; that's, the dedicated party accepts the association suffers inconclusively," and duty is key to all or any of the relative trades between the firm and its fluctuated accomplices. Shifted works utilizing a comparable definition are investigated (Aranya & Ferris 1983; Aven et al. 1993; Rogers, 1993; Bhuian et al. 1996; Colbert and Kwon 2000; Curry et al. 1986; Steers, 1977; Zeffane 1994).

#### **2.1.1.4 Communication**

Communication is regularly laid out as Viable correspondence is subsequently basic for effective coordinated effort (Monck et al., 1995). There are 3 parts of correspondence conduct that are essential to seeing someone (Mohr and Sparkman, 1994). Right off the bat, the standard of correspondence includes aspects like precision, practicality, ampleness, and believability. Furthermore, the state of information sharing or the degree to that significant, and ordinarily restrictive, data is changed. Thirdly, investment, or the degree to that every gathering is set up together has a connection with planning and objective settings. the standard of correspondence, data sharing, and interest are extremely relevant indicators of effective SC connections (Mohr and Sparkman, 1994). Communication challenges are known as a noteworthy reason for problems among relationship parties (Lages et al., 2005). Anderson and Narus (1990) defined correspondence as "the formal still as casual sharing of deliberate and timely information between firms". Correspondence among organizations includes correspondence and comprehension of shared objectives and conflict goals. Wasteful correspondence may cause clashing practices owing to common misjudging and discontent. Despite what might be expected, convenient and visit correspondence can resolve questions and correct the view of agreeable behaviors. In the investigation of relationship quality between the middle class and businesspeople, Large (2005) proposed that conservative correspondence has a constructive effect on a fruitful give chain the board. Along these lines, successful relationships are bolstered by prudent correspondence, and correspondence is absolutely essential for giving chain accomplices to develop relationships (Luc, 2006).

### 2.1.1.5 Co-operations

Co-operations allude to things inside which organizations work to acknowledge shared objectives (Anderson and Nares, 1990). because clashing practices will exist together rapidly with employable activities, co-activity isn't simply the nonattendance of contention (Fraziers & Rodys, 1991s). example, every gathering will have in-progress questions concerning objectives anyway still co-work because the connection end costs are unreasonably high for each gathering. Thus, coactivity isn't equal to quiet submission meanwhile the past is active and furthermore the last responsive (Morgans and Hunts, 1994s). Co-activity in trading data on generation plans, new items/procedures, and worth examination will each downsize item price and takeover item/processes developments (Landers and Monck, 1989). In outline, we tend to fight that measurement like trust, adjustment, correspondence, co-activity, correspondence, and responsibility supplement and fortify each other in the wording of enhance connections.

The exact commitments of Mohrs and Sparkmans (1994s), Moncks et al. (1995s), Saco (1992s), and Ram and Krause (1994) bolster our contention that in a current relationship, those measurements are totally related. we tend to propose in this way, that these measurements are solid markers of the following request build that we are going to see as giving chain relationship quality (SCRQ). We tend to diagram SCRQ in light of the fact that the degree to that every gathering during a relationship is occupied with a lively since quite a while ago run working relationship and operationalize the development exploitation markers of correspondence, trust, adjustment, duty, correspondence, and co-activity company, then that resource cannot offer a competitive benefit over the competitors. Resource immobility explains the complexity of accomplishing a resource via competition due to the fact the cost of attainment,

improvement, acquisition, or use of that resource is too immoderate. Because of this, the sustainable competitive benefit depends on these assumptions via imparting a framework for figuring out whether or not a technique or technology provides a real gain over the marketplace. The RBV shows that a company's human capital management, technology control, and innovation, in addition to R&D practices, can make a contribution appreciably to maintaining competitive gain and are hard to imitate (Afuah, 2000; Mata et al., 1995). Therefore, the advent of resource diversity (intellectual human capital and skills) and resource immobility (complicated method of constructing/attainment), fosters sustainable competitive advantage creation and improvement.

In a supply chain relationship, even as numerous resources are owned or managed through opposite numbers, there can be a more complicated supply chain relational function, than that of direct coordination relationship concerning interdependency context (Touboulic & Walker, 2015). The RBV means that the reason for the introduction of acceptance as genuine with based absolutely collaborative value makes the ground of assets pooling shape supply chain relations. Immobility, inimitability, and sustainability are a few traits of resources that emphasize value creation and thereby assist in the improvement of supply chain alliances. Das and Teng (2000) said structural possibilities in terms of key four kinds of supply chain alliances (equity joint ventures, minority equity alliances, bilateral contract-based alliances, and unilateral contract-based alliances) can be determined by using the useful resource profiles of partnering corporations. Consistent with Ahuja (2000) the resources that could offer advantages have three specific characteristics. First, resources can create value, i.e. they help to either lessen the cost of inputs which influences the overall cost of manufacturing, or benefit more value of outputs. Second, they may be often organization

specific in nature and are both unavailable outside the developing company or undergo an attenuation of their cost if separated from the true company. Third, resources are probably to be asset-based whose advent calls for accumulation of inputs through the years i.e. cannot be at once developed.

### **2.1.2 Logistics Collaboration**

Logistics collaboration has emerged as strategy individuals and organizations apply to gain benefits that they can hardly achieve when working individually. In particular, logistics collaboration helps to mitigate most inefficiencies managers encounter in their daily undertakings. Such inefficiencies include poor capacity utilization, empty backhaul, high transport costs, low-profit margins, and harsh environmental impacts (Kayikci et al., 2014). Equally, according to Wang and Kopfer (2014), logistics collaboration helps small- and medium-sized companies to reduce costs while increasing operational efficiency. In spite of these benefits, logistics collaboration encounters many challenges including partner search and selection, as well as trust management.

Academia and practitioners had acknowledged that a lack of trust hinders collaboration. Coincidentally, Pomponi (2015) and Baalsrud et al. (2014) asserted that lack of trust is a potential barrier to logistics collaboration. Graham (2011) observed that a lack of trust makes collaboration a difficult proposition for many companies. In logistics collaboration, behavioral uncertainties contribute to the lack of trust. This difficulty makes an action to trust and decision-making harder but also uncertain. Whereas information availability is limited, the difficulty in predicting trustee– party’s actions and interactions increases. As a result, the trustor–party gets exposed to unconfident trusting decisions. Thus, building on these arguments, it is claimed that the level of

trust can be increased by minimizing behavioral uncertainties. This claim is concordant with Cao and Zhang (2013) who argued that logistics collaboration needs trust-based rationalism that employs behavioral assumptions of trustworthiness, fair play, and responsibility. Together, these works contribute to the requirements of functional supply chain and logistics collaboration. Beyond these requirements, trust difficulties resulting from uncertain behavioral aspects remain rarely investigated. Nevertheless, trust reviews (Tejpal et al., 2013; Adama et al., 2010) have emphasized on trust context and models, leaving out behavioral aspects. In essence, building trust in logistics collaboration may involve identifying behavioral factors and their influential mechanisms. Motivated by this need, this review establishes behavioral factors influencing partner trust in the operational phase of logistics collaboration.

### **2.1.3 Logistics Performance**

Logistics is one of the key elements of trade (Martí et al., 2014), and logistics performance significantly affects the volume of bilateral trade. It increases the competitiveness not only for companies but also for countries, who are increasingly recognizing the importance of logistics in worldwide trade (Hausman et al., 2013). This created the need to develop a specific measurement system for logistics performance and strategies for advancing country performance.

Logistics Performance Index (LPI) is a survey-based index prepared by the World Bank since 2007, which is extensively accepted worldwide (160 countries involved in the 2018 version). LPI is a powerful tool for countries to benchmark and assess their logistics performance in a global platform, and to understand the logistics challenges as well as the areas for improvement (Gogoneata, 2008). This helps countries to

understand their current position and develop strategies and policies to improve their performance in worldwide trade.

Addressing this theoretical motivation, the aim of this study is to develop a methodological framework that (i) improves the understanding of the actions, policies, strategies, and investments behind LPI scores of the countries with recently increased rankings, or have been consistently leading performers for the last ten years, and (ii) enables other countries, particularly, the emerging economies, to benchmark their performance and build strategies or policies to improve their worldwide logistics performance under given budget constraints. From a practical perspective, this study makes a significant contribution to the logistics development of countries. The methodological framework followed in this study proposes LPI as a means for policymakers to take a broader perspective in the analysis of the competitiveness and benchmarking factors of logistics systems for improving a country's logistics performance.

The recent wave of global change consists of complex interactions between people, firms, and organizations. Supply chains encompass nations and regions, and trade has become a 24/7 commercial enterprise. Performance in trade requires connectivity not only through road, rail, and sea routes but also in telecommunications, monetary markets, and information processing (Ojala et al., 2014). Inefficient systems of transportation, logistics, and trade-related infrastructure can severely obstruct a country's potential to compete on an international scale, while a competitive advantage in terms of logistics performance increases its international trade, allows expansion toward new markets, and encourages businesses (Ekici et al., 2016).

The above-mentioned evolution introduces LPI as a critical tool for countries to observe their performance over time, assess their relative position with respect to other countries, and outline areas for improvement to achieve higher levels of logistics performance in worldwide trade. An understanding of logistics performance needs starting from the national level will allow better evaluation of the existing position, and more precise targeting of trade and transport policies to be implemented across countries.

### **2.3 Theoretical Review**

This study underpins the Inter-Organizational Relationship Theory and Strategic Choice Theory.

#### **2.3.1 Inter-Organizational Relationship Theory**

The Inter-Organizational Relationship Theory (IOR) is a theoretical framework that explores the dynamics and outcomes of relationships between organizations. It emphasizes the collaborative interactions, exchanges, and shared goals that exist between organizations within a supply chain network. The central premise is that the quality of these inter-organizational relationships significantly influences operational outcomes, particularly in the context of logistics performance.

Alam et al. (2014) underscore the fundamental importance of positive and collaborative ties between organizations in achieving superior operational outcomes. According to IOR, the nature of relationships shapes cooperative behaviors, a sentiment echoed by Jayaram et al. (2011), who note that the strength of supplier integration correlates with enhanced quality performance. This reflects the IOR perspective that collaborative efforts within a supply chain positively impact specific performance metrics.

The theory contends that organizations should prioritize building and maintaining strong relationships, a sentiment reinforced by Swink et al. (2007) and Min et al. (2005). These scholars emphasize the strategic nature of these relationships, which extend beyond transactional exchanges. The interconnectedness between organizations, characterized by shared values and mutual understanding, aligns with the IOR emphasis on fostering positive, enduring relationships.

Furthermore, Bagchi et al. (2005) stress that these relationships contribute directly to overall efficiency. The IOR theory supports this, asserting that collaborative endeavors among organizations lead to enhanced operational efficiency. This resonates with the findings of Seo et al. (2014), who highlight the positive impact of strong relationships on logistical outcomes.

In terms of logistics performance, the IOR theory posits that collaborative ties between organizations positively influence the efficiency and effectiveness of logistical operations. Green et al. (2008) emphasize that supply chain management (SCM) strategies positively influence logistics performance within the manufacturing sector, aligning with the IOR perspective on the instrumental role of relationships in SCM.

### **2.3.2 Strategic Choice Theory**

Strategic Choice Theory (SCT) is a theoretical framework that delves into the intentional decision-making processes within organizations. It posits that organizations make deliberate and purposeful choices in developing strategies to achieve optimal outcomes. This theory is particularly relevant in understanding how companies navigate the complexities of the business environment, emphasizing the interconnected nature of strategic decision-making and organizational performance.

The foundational premise of SCT is highlighted by Huo et al. (2014), who emphasize that organizations make strategic choices in response to environmental factors. This aligns with the theory's core idea that organizations consciously select strategies based on their assessment of internal and external influences. Strategic choices, as per SCT, are not arbitrary but rather intentional decisions made to align with organizational goals.

Mustra (2011) contributes to SCT by discussing how the quality of logistic services is a strategic choice that organizations make. Inefficient logistics, as outlined in the study, results in higher costs and adversely affects turnover. This underscores the SCT perspective that strategic decisions regarding logistics directly impact overall organizational performance.

Hee-Yong Lee's (2015) examination of the moderating effects of supply chain dynamism on the association between supply chain integration and logistics performance is in harmony with SCT. The study suggests that the effects of supply chain integration on logistics performance vary based on the level of supply chain dynamism, indicating the strategic nature of these choices in the face of dynamic environments.

Aharonovitz et al. (2018) offer insights into the effects of logistics collaboration, meetings, relationship history, and supplier selection on logistics performance. This study aligns with SCT by highlighting that supplier selection is a strategic choice with the strongest effect on logistics collaboration.

Vieira et al. (2015) assessed the effect of supplier-retailer collaboration on logistic performance and transaction costs. Their findings support SCT by illustrating that collaboration significantly contributes to improving logistics performance, emphasizing that organizations strategically choose collaborative initiatives to enhance performance.

In SCT, organizations are viewed as rational decision-makers, actively choosing strategies that align with their goals. The deliberate nature of these choices is evident in the study by Thomas et al. (2013), emphasizing that long-term partnerships are likely to experience performance improvements. SCT aligns with this perspective, positing that organizations strategically choose to engage in long-term relationships for sustained success.

#### **2.4 Empirical Review**

Aharonovitz et al. (2018) evaluated the effect of logistics collaboration, meetings, relationship history, and supplier selection on logistics performance. Primary data were obtained through a survey of 199 managers of Brazilian companies in the retail sector. The study employed a structural equation model to analyze the proposed model. The findings stated that supplier selection has the strongest effect on logistics collaboration, and relationship history has the strongest effect on logistics performance. Rather than meetings and operational features, the elements of interpersonal skills, organizational culture, and communication appear to be the most important contributors to logistics performance achievements; relationship history leads to better performance.

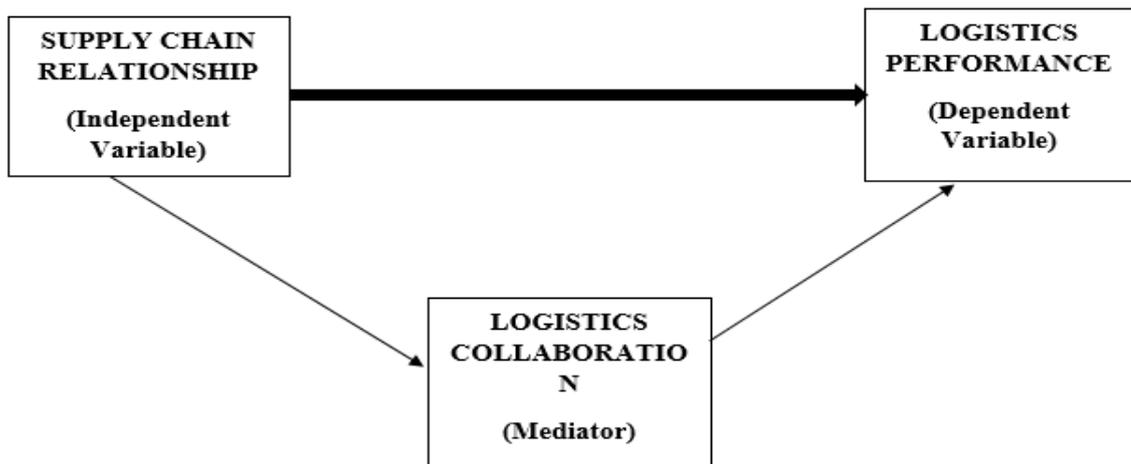
Vieira et al., (2015) assessed the effect of supplier-retailer collaboration on logistic performance and transaction costs. The study made use of primary data which was obtained from 125 representatives of 90 manufacturers. Multiple logistics regression

was employed to test the hypothesized model. The findings of the study revealed that collaboration significantly contributes to the improvement in logistics performance related to urgent deliveries and deliveries that occur during periods of high demand.

Hee-Yong Lee (2015) expanded knowledge of supply chain management (SCM) by empirically testing the moderating effects of supply chain dynamism (SCD) on the association between supply chain integration (SCI) and logistics performance. The findings suggest that SCI can enhance logistics performance when the level of SCD is high, but the effects of SCI on logistics performance are blurred at low levels of SCD. Another study by Mustra (2011) revealed that the quality of the logistic services, the stronger the effect of transporting goods between countries. In contrast, inefficient logistics results in higher costs in terms of time and money which adversely affects companies' turnover.

## **2.5 Conceptual Framework**

The conceptual framework below illustrates the relationship between the independent variables on one hand and the dependent variable on the other. Supply Chain Relationship was conceptualized as the independent variable while logistics performance was conceptualized as the dependent variable with a mediating factor of logistics collaboration. Supply chain relationship has the potential of bringing the following benefits: trust, commitment, adaptation, and so on. These benefits are likely to affect logistics performance. There are other factors however that may intervene and determine the level of performance. This intervening variable is logistics collaboration.



**Figure 1: Conceptual Framework**

## 2.6 Hypothesis Formulation

### 2.6.1 Supply Chain Relationships and Logistics Performance

Many studies empirically corroborate the positive effect of SCI on performance (Alam et al., 2014; Seo et al., 2014; Li et al., 2009; Fabbe-Costes and Jahre, 2008; Swink et al., 2007; Min et al., 2005; Bagchi et al., 2005). Iyer et al. (2009) note that the impact of SCI on performance drops in the case of product turbulence but increases in the case of demand unpredictability. Jayaram et al. (2011) note an association between supplier integration and quality performance, finding that customer integration and flexibility performance is negatively moderated by firm size, whilst the relationship between supplier integration and flexibility performance is positively moderated by clock speed. Gimenez et al. (2012) note that integration in buyer-supplier relationships is only effective in yielding a higher level of performance under high supply complexity, which measures the complexity of the process in which buyers' orders are switched into the suppliers' manufacturing orders. Huo et al.'s (2014) examination of the moderating role of competitive strategy on the association between SCI and firm performance noted that competitive strategy had no moderating effect. In terms of

logistics performance, Boon-itt and Wong (2011) find that technological and demand uncertainties moderate the relationships between SCI and customer delivery performance. Stank et al. (2001) empirically examine the impact of internal and external collaboration on logistical service performance. Similarly, Green et al. (2008) discover that SCM strategies positively influence logistics performance within the manufacturing sector.

SCR assists firms in re-shape their resources and capabilities internally and externally to optimize their supply chain, which can raise logistics performance (Huo et al., 2014). A highly integrated supply chain allows the supply chain partners to reduce the net costs of conducting business and total delivered costs to customers by obtaining, sharing, and consolidating information and knowledge with supply chain partners outside the immediate organization (Quesada et al., 2008). Internal integration can lower functional barriers and stimulates collaboration between cross-functional teams or departments for fulfilling customers' requirement rather than operating within functional silos (Flynn et al., 2010). It builds a closer link between manufacturing and distribution processes to provide products and services in a timely and effective manner, which may enhance logistics performance.

External integration catalyzes communicating, learning, transferring, and applying knowledge that has been acquired within the firm or from suppliers and customers, to the supply chain partners (Das et al., 2006). For example, external integration through collaborative planning, forecasting and replenishment, enterprise resource planning, vendor-managed inventory, and continuous replenishment (CR) considerably facilitates the production, procurement, logistics, and distribution plans by easily sharing necessary information, which can improve logistics performance. Supplier integration

enables firms and supply chain partners to reduce production costs through economies of scale and scope (Das et al., 2006). Also, it enables the focal firm and supplier to share information, diminishing information asymmetry and the potential for opportunism (Rosenzweig et al., 2003). Customer integration promotes openness of communication and a problem-sharing attitude, so manufacturers can receive feedback on quality, logistics, and delivery performance (Danese and Romano, 2011). This creates opportunities to leverage the intelligence embedded in both focal firms and customers when seeking solutions to solve customer problems (Swink et al., 2007). Based on the above review, this study hypothesized that:

**H1: There is a positive relationship between the supply chain relationship and logistics performance.**

### **2.6.2 Supply Chain Relationship and Logistics Collaboration**

Relationship history and logistics collaboration. Relationship history is essential for strengthening logistics collaboration because it indicates that partners fulfill each other's needs and expectations and that mutual benefits maintain these dynamics. Lu (2003,) explained that “the higher the shipper's level of satisfaction, the more likely the shipper will continue to maintain a shipper-carrier partnering relationship.” Relationship history reinforces strategic collaboration in which a buyer and a supplier are strategically aligned and focus on mutual objectives, which contributes to the long-term relationship (Prajogo & Olhager, 2012). This relationship history creates expectations regarding negotiation in buyer-supplier relationships (Thomas et al., 2015). In this regard, this study hypothesized that:

**H2: Supply chain relationship has a significant effect on logistics collaboration**

### **2.6.3 Logistics Collaboration and Logistics Performance**

Logistics collaboration and logistics performance. Strategic, tactical, and interpersonal collaboration plays a central role in achieving logistics performance. Daugherty et al. (2006,) claimed, “formalization of strategic collaboration can lead to an enhanced performance by eliminating ambiguity and clarifying priorities.” Once companies are strategically aligned, they often share the same goals and priorities and thereby enhance the mutual benefits obtained from the relationship. In terms of tactical collaboration, information sharing, and technology can facilitate real-time exchanges of forecasting and operations scheduling data (Prajogo and Olhager, 2012), such as order cycles, delivery schedules, routes, and vehicle availability. Moreover, a successful collaboration is possible only when companies are interdependent, committed, and trustworthy. Nyaga et al. (2010) argued that trust and commitment lead to performance improvements; companies rely on each other to exchange confidential information about strategic alignment and share operational data joint actions, and joint planning.

Overall, engaging in buyer-supplier collaboration increases service, flexibility, and information sharing, and it improves visibility, inventory management, and resource use (Daugherty et al., 2006). Collaboration also reduces costs and has positive effects on logistics performance with regard to the fill rate, order cycle, and lead time (Whipple et al., 2010; Fawcett et al., 2012). Relationship history and logistics performance. Several authors argue that long-term partnerships are likely to experience performance improvements (e.g. Krause et al., 2007; Leuschner et al., 2013). Additionally, a satisfactory relationship history precedes a long-term relationship (Thomas et al., 2013). Relationship history practices lead to performance improvements by fostering joint actions and information sharing, which positively impact delivery performance (Whipple et al., 2010; Prajogo and Olhager, 2012; Vieira et al., 2015).

Vieira et al. (2015) identified psychosocial aspects as essential to the buyer-supplier relationship; such aspects influence communication openness and partners' capacities to solve logistics problems and contingencies. Companies can work in collaborative activities over time to develop effective logistics performance indicators to meet their clients' needs. Based on the above discussion, the study hypothesized that:

**H3: Logistics collaboration positively influences logistics performance.**

### **2.7 Summary and Research Gaps**

Supply chain relationship constitutes a very important information technology managerial tool that has the potential of improving and integrating various functions across the organization. This internal integration can enhance the current performance of an organization as well as improve the future performance of the organization. The literature reviewed has indicated that there are no studies that have been carried out on the effects of supply chain relationships on the logistics performance of organizations in the Kumasi Metropolis, Ghana with an intervening factor. Studies Supply chain relationships are also few since the concept has not been adopted in most organizations. There is a need therefore to conduct a study to establish the effects of supply chain relationships on logistics performance with the role of role of logistics collaboration as an intervening factor.

## **CHAPTER THREE**

### **RESEARCH METHODOLOGY**

#### **3.1 Research Design**

This research made use of a cross-sectional design since is a one-time study done within a short period. The quantitative method would be used in this study. Quantitative method as indicated by Burns and Groove (2012) provides systematic procedures in which numerical data are used to gain knowledge. The method also provides a means to examine the causes that influence an outcome, test ideas and also provide numerical measures of observation (Rahi, 2017). Since the study seeks to examine the relationship between supply chain relationship and logistics performance, quantitative method was suitable. This method also provides an avenue of using closed type of questionnaire in which options will be given to the respondents to choose from. Primary data through delivery of questionnaire would be used to obtain the views of the respondents.

#### **3.2 Population of the study**

According to Polger and Thomas (2011), population refers to the complete set of individuals having common characteristics in which the researcher is interested. The population of the study include managements in the various manufacturing companies within the Kumasi Metropolitan Assembly. It is of the believed that managements are much involve in logistics processes in the organization.

#### **3.3 Sample and Sampling Technique**

Sampling is a process of selecting objects to represent a large population in a systematic manner (Katwalo & Asienga, 2015). There are different types of sampling techniques, but for the purpose of this study, purposive sampling technique was used.

Purposive sampling is a deliberate non-random sampling which aims at selecting a sample of people, setting or events with predetermined characteristics (Casker, 2019). Reason for using non-probability sampling is because it is less costly, in relation to time and finance, easier to carry out, and convenient (Ahmad, 2019). The method was suitable for the study since the managers were purposely selected. However, determination of an effective sample size was limitation for this study. Some of the companies otherwise would have been part of the sample declined to provide research information, citing corporate policy as the reason. The final sample is however representative of the population of this study. The study made use of simple random sampling technique in selecting the manufacturing companies that participated in the study. In all, five (5) manufacturing companies were selected to participate in the study.

### **3.4 Data Collection Tools/Procedures**

Data collection is a process of gathering, measuring and analyzing accurate data from a variety of relevant sources to find answers to research problem. This study made use of primary data which was obtained from ten (10) randomly selected banks within Kumasi Metropolitan. To exploit the study well, the study made use of closed-ended well-structured questionnaires which were very simple and easy to understand. According to Kothari (2004), a questionnaire is a document consisting of a number of questions typed and printed in a systematic order on a form. Sutin et al., (2016) indicated that questionnaires are dependable and reliable since they cover all aspects of topics. Questionnaires have a lot of advantages like being cost effective since it is the most affordable way of gathering information without any additional cost (Kivuva, 2018). The questionnaires were delivered to the selected participants face-to-face during active

working days. This made it possible to provide guidelines to the respondents in case of misunderstanding of a question.

### **3.5 Data Analysis and Presentation**

The obtained data was captured in excel which was then transferred into Statistical Package for Social Sciences (SPSS) version 26 for the analysis. According to Achonjo (2014), SPSS aids in organizing and summarizing data by the use of descriptive statistics and other statistical methods. This study made use regression analysis and Haye's Process Macro in achieving the objectives of the study. Before that, descriptive statistics of the respondent's demographic characteristics was performed using frequencies and percentages. Sloman (2010) stated that descriptive analysis provides a means to gather baseline rates of problem behaviour and also useful in developing operational definition.

The relationship between the dependent variable and one or more independent variables is investigated using regression analysis. It is very useful in investigating the effect of an independent variable on a dependent variable. In this case, the relationship between supply chain relationship (independent) and logistics performance (dependent) would be examined using the regression analysis. The regression analysis would establish whether there is a significant relationship between the variables.

The Haye's Process Macro is a statistical tool used to examine the effect of one or more mediating moderating variables on the relationship between dependent variable and independent variables (Rizwan et al., 2017). It computes the direct, indirect and total effects of X on Y, where X is the independent variable and Y is the dependent variable, as well as unstandardized and standardized regression, standard errors and other

statistics including p-values and t-values. In this study, supply chain relationships which include information sharing, decision synchronization and incentive alignment are the independent variables, logistics performance is the dependent variable and logistics collaboration is the mediating variable. The Hayes Process Macro provides a statistical test to see whether the relationship between supply chain and logistics performance is mediated by logistics collaboration.

### **3.6 Ethical Consideration**

Research work, like many subject areas, was surrounded by ethical issues, and it was important that researchers developed an approach to address these issues. Since research involved collecting data and views about people and institutions, researchers needed to protect their participants, develop trust, guard against misconduct and impropriety, and preserve the integrity of the research (Israel and Hay, 2006), suggesting that ethical issues applied in the different types of research and to every stage of the work. Just before the research was conducted, the researchers gathered consent from participants by stating the goal of the study to be exclusively for educational work and reassuring them of their anonymity. In addition to this, the researcher addressed the planned collection of data with the managers of the chosen entities before the questionnaire was given. The responders were told that all information submitted was kept with the greatest confidentiality and used exclusively for the stated academic work. To achieve the above-listed objectives, the researcher in this current study sought the approval of the above-listed institutions, participants, and other indirectly related institutions. Also, under no pressure did a participant partake in the study. The researcher assured the participants of the confidentiality of any information and non-disclosure of identity at will. Again, the researcher had to the

greatest extent acknowledged the contribution of previous authors whose works had been referenced in this current study.

### **3.7 Organizational Profile of Manufacturing Firms in Ghana**

In 2003, manufacturing firms in Ghana exhibited a diverse organizational landscape reflective of the country's evolving industrial sector. The sector encompassed a wide array of industries, including agro-processing, textiles, chemicals, and electronics. Small and medium enterprises (SMEs) played a significant role, contributing to the sector's dynamism. Many manufacturing firms were characterized by a mix of traditional and modern production methods, showcasing the coexistence of conventional craftsmanship and emerging technological advancements. Challenges such as inadequate infrastructure, fluctuating energy supply, and limited access to financing were prevalent, impacting the operational efficiency of these firms. Despite these hurdles, manufacturing firms in Ghana demonstrated resilience, adapting to market demands and international trade dynamics. The government played a pivotal role in supporting the sector through policies aimed at promoting industrialization, job creation, and economic growth. Collaborative efforts between the public and private sectors were visible, fostering partnerships to address common challenges and capitalize on emerging opportunities. The organizational profile of manufacturing firms in Ghana in 2003 reflected a sector in transition, balancing traditional practices with modernization efforts amid a dynamic economic landscape.

## CHAPTER FOUR

### RESULTS AND DISCUSSION

#### 4.0 Introduction

This chapter presents and discusses findings that were captured during the study. In order to provide answers to the research questions raised and to meet the research objectives, relevant data was obtained and analyzed to bring forward the underlying points for this research. These have been outlined below:

#### 4.1 Demographic Characteristics of Respondents

In order to explore the subject under study, the researcher first of all inquired about the demographic properties of the respondents which have been analyzed and presented below (Table 4.1). Throughout the study, 200 questionnaires were deployed but 197 employees responded to the questionnaires which shows a very high response rate of 98.5%. The gender distribution of participants shows that 129 participants (65.5%) identified as male, while 68 participants (34.5%) identified as female. Regarding the age distribution, the participants were categorized into different age groups. Among them, 51 participants (25.9%) were up to 24 years old, 66 participants (33.5%) fell within the age range of 24-34 years, 44 participants (22.3%) were aged 35-44 years, 21 participants (10.7%) were aged 45-54 years, and 15 participants (7.6%) were above 54 years old.

Participants' educational level were categorized into different levels. The distribution indicates that 44 participants (22.3%) had completed high school (SHS), 72 participants (36.5%) held an HND/Diploma, 63 participants (32.0%) had a degree, 15 participants (7.6%) had a Master's degree, and 3 participants had a Ph.D. The working years of participants were divided into different ranges. The data shows that 102 participants

(51.8%) had less than 2 years of work experience, 126 participants (33.0%) had 2-5 years of experience, 72 participants (8.1%) had 6-9 years of experience, and a smaller proportion, 7.1%, had 10 years and above of experience.

Participants' roles within their organizations were categorized into different levels. Among them, 48 participants (24.4%) held top-level managerial positions, 56 participants (28.4%) were in middle-level managerial roles, and 93 participants (47.2%) were in low-level managerial positions. Which implies that the majority of the respondents were?

**Table 4.1: Demographic statistics**

Variable	Category	Frequency	Percentage (%)
<b>Gender</b>	Male	129	65.5
	Female	68	34.5
<b>Age</b>	Up to 24 years	51	25.9
	24-34 years	66	33.5
	35-44 years	44	22.3
	45-54years	21	10.7
	Above 54years	15	7.6
<b>Educational Level</b>	SHS	44	22.3
	HND/Diploma	72	36.5
	Degree	63	32.0
	Master	15	7.6
	Ph.D.	3	
<b>Working Years</b>	Less than 2 years	102	51.8
	2-5 years	126	33.0
	6-9 years	72	8.1
	10 years and above		7.1
<b>Role in the org.</b>	Top level manager	48	24.8
	Middle level manager	56	28.4
	Low level manager	93	47.2

## 4.2 Reliability Analysis

Table 4.2 presents reliability coefficients, specifically Cronbach's alpha, for various variables related to this study. Cronbach's alpha is a statistical measure used to assess the internal consistency or reliability of a set of items within a scale or questionnaire. It indicates how well the items in each variable collectively measure the same underlying construct. The Cronbach's alpha values in this table indicate that the items within each variable are fairly consistent in measuring the underlying constructs since all variables has their Cronbach's alpha above 0.7. These results suggest that the questionnaire used to assess the various variables used in the study meet satisfactory level of internal reliability, increasing the confidence in the validity of the data collected through it.

**Table 4.2: Reliability Coefficients**

<b>VARIABLE</b>	<b>CRONBACH'S ALPHA</b>
Logistic Performance (LP)	0.708
Logistic Collaboration (LC)	0.710
Supply chain Relationship (SCR)	0.832

## 4.3 Correlation (r) Analysis

Table 4.3 presents mean, standard deviation (SD) of each variable and Pearson's correlation coefficients between variables under study. Pearson's correlation coefficient measures the strength and direction of a linear relationship between two variables. It is observed from Table 4.3 below that, all the variables had mean greater than 3.00 which suggest that the respondents are highly executed by each of the variables. It is also observed that, there is a strong positive relationship among all the variables. This implies that the variables are positively correlated with each other, suggesting that

improvements or changes in one variable may lead to corresponding changes in the other.

**Table 4.3: Pearson’s Correlation coefficients**

r	MEAN	SD	LP	LC	SCR
LP	3.535	0.646	1		
LC	3.410	0.657	0.407**	1	
SCR	3.225	0.667	0.353**	0.480**	1

#### **4.4 Mediation Analysis (Hayes Process Macro)**

Here the researcher sought to investigate the impact of Supply Chain Relationship (Independent Variable) on the Logistic Performance (Dependent Variable), exploring the moderating role of Logistic Collaboration (Mediator variable) to address the objectives of the study. In this case, the mediation analysis was performed using the Hayes process Macro. Mediation analysis is a statistical approach used to investigate the potential mediating role of a variable in explaining the relationship between an independent variable (X) and a dependent variable (Y).

##### **4.4.1 The Impact of Supply Chain Relationship on Logistic Performance (Direct Effect)**

The first objective of the study was to determine the impact of Supply Chain Relationship on Logistic Performance. This analysis is essential in understanding how changes in Supply Chain Relationship impact the Logistic Performance outcomes. The results for this investigation is presented in table 4.4 below.

**Table 4.4: Hayes coefficients of direct effect**

	Effect	Std. Error	t-test	P-value	LLCI	ULCI
Supply Chain Relationship (X)	0.2465	0.076	3.246	0.0014	0.0967	0.3964

Dependent: Logistic Performance

The results from table 4.4 indicates or shows that, the direct effect of Supply Chain Relationship on Logistic Performance was found to be significant with coefficients 0.2465 and p-value = 0.0014 which is less than the 5% significant level. This indicate a significant direct influence of Supply Chain Relationship on Logistic Performance. This implies that, in the presence of the mediating offers variable (Logistic Collaboration), Supply chain Relationship has a significant effect on logistic performance.

#### **4.4.2 The Impact of Supply Chain Relationship on Logistic Collaboration**

The second objective of the study was to determine the impact of Supply Chain Relationship on Logistic Collaboration. This analysis aims to understand the relationship between Supply Chain Relationship and its influence on Logistic Collaboration outcomes. The results for this investigation is presented in table 4.5 below.

**Table 4.5: Hayes coefficients**

	Effect	Std. Error	t-test	P-value	LLCI	ULCI
Supply Chain Relationship (X)	0.5022	0.066	7.603	0.0000	0.3719	0.6325

Dependent: Logistic Collaboration

The results from table 4.5 indicates or shows that, the effect of Supply Chain Relationship on Logistic Collaboration was found to be significant with coefficients 0.5022 and p-value = 0.000 which is less than the 5% significant level. This indicates a significant influence of Supply Chain Relationship on Logistic Collaboration. This implies that, increase in Supply Chain Relationship has a positive impact on Logistic Collaboration. This insight contributes to understanding how Supply Chain Relationship influences collaborative efforts within logistics.

#### 4.4.3 The Impact of Logistic Collaboration on Logistics Performance

The third objective of the study was to determine the impact of Logistic Collaboration on Logistics Performance. This analysis aims to understand the relationship between Logistic Collaboration and its influence on Logistic performance outcomes. The results for this investigation is presented in table 4.6 below.

**Table 4.6: Hayes coefficients**

	Effect	Std. Error	t-test	P-value	LLCI	ULCI
Logistic Collaboration (M)	0.2771	0.0743	3.732	0.0003	0.1306	0.4237

Dependent: Logistic Performance

The results from table 4.6 indicates or shows that, the effect of Logistic Collaboration on Logistic performance was found to be significant with coefficients 0.2771 and p-value = 0.0003 which is less than the 5% significant level. This indicate a significant influence of Logistic Collaboration on Logistics Performance. This implies that, an increase in Logistic Collaboration has a positive impact on Logistics Performance. This insight contributes to understanding how collaborative efforts within logistics influence overall performance outcomes.

#### **4.4.4 The Impact of Supply Chain Relationship on Logistics Performance through Logistic Collaboration.**

The fourth objective of the study was to determine the impact of Supply Chain Relationship on Logistic Performance through Logistic Collaboration. This analysis aims to understand how Logistic Collaboration acts as a mediator between Supply Chain Relationship and Logistics Performance. The results for this investigation is presented in table 4.7 below.

**Table 4.7: Hayes coefficients of indirect effect**

	Effect	Std. Error	LLCI	ULCI
Logistic Collaboration (M)	0.1392	0.0405	0.0605	0.2194

Dependent: Logistic Performance

The results from table 4.7 shows that, the indirect effect of Supply Chain Relationship on Logistic Performance through Logistic Collaboration was statistically significant. The indirect effect was estimated to be 0.1392 (SE= 0.0405), with a 95% bootstrap confidence interval ranging from 0.0605 to 0.2194 which indicate that the interval does not include zero. This implies that, there is a potential positive indirect effect of Supply Chain Relationship on Logistics Performance through Logistic Collaboration.

#### **4.5 Discussion of Results**

##### **4.5.1 The Impact of Supply Chain Relationship on Logistic Performance (Direct Effect):**

The significant direct effect identified in the analysis (coefficient of 0.2465 and p-value of 0.0014) underscores the pivotal role of Supply Chain Relationship in shaping Logistic Performance within the studied manufacturing context. This finding aligns

with the theoretical premise that robust supply chain relationships contribute positively to overall logistics outcomes. The coefficient of 0.2465 indicates the magnitude of this influence, suggesting that a unit increase in Supply Chain Relationship corresponds to a notable increase in Logistic Performance. This numerical representation is crucial for practitioners and decision-makers, offering a quantitative understanding of the impact and emphasizing the practical importance of cultivating strong supply chain relationships.

Moreover, the persistence of this direct effect even in the presence of Logistic Collaboration introduces an intriguing dynamic. Despite the acknowledged role of collaboration, the study highlights that Supply Chain Relationship independently contributes significantly to Logistic Performance. This suggests that while collaboration is essential and may enhance certain aspects of logistics, the inherent strength and quality of supply chain relationships bear a direct influence on performance outcomes. Organizations, therefore, should not overlook the foundational importance of cultivating and maintaining robust relationships within the supply chain network.

The findings prompt a deeper exploration of the specific mechanisms through which Supply Chain Relationship directly influences Logistic Performance. This may involve examining communication channels, trust-building processes, and information-sharing practices within the supply chain. Understanding these underlying dynamics can empower organizations to strategically leverage and enhance their supply chain relationships for optimized logistical outcomes. Overall, this study's outcomes provide actionable insights for manufacturing firms, emphasizing the enduring significance of

cultivating strong supply chain relationships as an integral component of achieving and sustaining high levels of Logistic Performance.

The identified significant direct effect of Supply Chain Relationship on Logistic Performance aligns with prior research supporting the positive influence of Supply Chain Integration (SCI) on performance. Alam et al. (2014), Seo et al. (2014), and Li et al. (2009) emphasize the positive effect of SCI on overall performance, reflecting the notion that a robust supply chain relationship positively impacts logistics outcomes. Iyer et al.'s (2009) insight that the impact of SCI may vary with product turbulence and demand unpredictability adds contextual depth, emphasizing the nuanced nature of these relationships.

#### **4.5.2 The Impact of Supply Chain Relationship on Logistic Collaboration:**

The substantial effect identified in the analysis (coefficient of 0.5022 and p-value of 0.000) underscores the vital link between Supply Chain Relationship and Logistic Collaboration. This finding supports the notion that as Supply Chain Relationship strengthens, there is a pronounced positive impact on collaborative efforts within logistics. The coefficient of 0.5022 indicates the magnitude of this influence, implying that a unit increase in Supply Chain Relationship corresponds to a significant increase in Logistic Collaboration. This quantification of the relationship provides practical insights for organizations seeking to enhance collaborative initiatives within their logistics processes.

Understanding the positive influence of Supply Chain Relationship on Logistic Collaboration holds strategic importance for manufacturing firms. It implies that investments in strengthening and nurturing relationships within the supply chain can

serve as catalysts for improved collaboration. As organizations increasingly operate in interconnected and complex supply chain networks, the ability to collaborate efficiently becomes a key determinant of overall operational success. The findings suggest that initiatives aimed at enhancing the quality and depth of relationships with key supply chain partners may inherently contribute to fostering collaborative practices within the logistics domain.

Furthermore, this result prompts a deeper exploration into the specific mechanisms through which improvements in Supply Chain Relationship positively influence Logistic Collaboration. It may involve investigating communication protocols, joint planning processes, and the establishment of mutual trust between partners. By identifying and understanding these underlying dynamics, organizations can develop targeted strategies to fortify Supply Chain Relationship, thereby fostering a collaborative environment conducive to improved logistics performance.

The significant effect observed in the study, with increased Supply Chain Relationship positively influencing Logistic Collaboration, is supported by Gimenez et al. (2012). Gimenez et al. highlight the effectiveness of integration in buyer-supplier relationships, especially under conditions of high supply complexity. The findings align, suggesting that as Supply Chain Relationship strengthens, collaborative efforts within logistics are positively influenced, emphasizing the role of robust relationships in fostering collaboration.

#### **4.5.3 The Impact of Logistic Collaboration on Logistics Performance:**

The significant positive effect revealed in the analysis (coefficient of 0.2771 and p-value of 0.0003) underscores the critical role of Logistic Collaboration in shaping

overall Logistics Performance within the studied manufacturing context. This finding aligns with the established notion that effective collaboration within the logistics domain contributes positively to the overall performance of the supply chain. The coefficient of 0.2771 indicates the magnitude of this influence, suggesting that an increase in Logistic Collaboration corresponds to a substantial improvement in Logistics Performance. This quantification provides valuable insights for practitioners, emphasizing the tangible impact of collaborative efforts on the broader logistics outcomes.

The identified relationship between Logistic Collaboration and Logistics Performance highlights the strategic importance of fostering collaborative practices within the logistics framework. Organizations operating in complex supply chains often face challenges that require joint efforts for resolution. The positive influence of heightened collaboration on Logistics Performance implies that initiatives promoting communication, information sharing, and joint problem-solving among supply chain partners can lead to more efficient and effective logistics operations.

Furthermore, the study's findings prompt a deeper exploration of the specific dimensions of Logistic Collaboration that contribute most significantly to improved Logistics Performance. This may involve investigating the role of technology, coordination mechanisms, and the alignment of goals among collaborating entities. Understanding these nuanced aspects can guide organizations in tailoring their collaborative strategies to maximize the positive impact on Logistics Performance.

The study's identification of a significant positive effect of Logistic Collaboration on Logistics Performance resonates with Daugherty et al.'s (2006) claim that formalized strategic collaboration enhances performance by eliminating ambiguity and clarifying

priorities. Additionally, Green et al. (2008) support the idea that supply chain management (SCM) strategies positively influence logistics performance within the manufacturing sector, reinforcing the study's findings on the importance of collaboration in achieving better logistical outcomes.

#### **4.5.4 Supply Chain Relationship on Logistics Performance through Logistic Collaboration:**

The fourth objective of the study delved into the intricate relationship dynamics by exploring how Logistic Collaboration functions as a mediator between Supply Chain Relationship and Logistics Performance. The analysis, as reflected in Table 4.7, unveiled a statistically significant indirect effect, quantified at 0.1392 with a standard error of 0.0405. The calculated 95% confidence interval, ranging from 0.0605 to 0.2194, further substantiates the statistical significance of this mediation. These results signify that Logistic Collaboration indeed plays a mediating role in the pathway between Supply Chain Relationship and Logistics Performance.

The positive indirect effect suggests that improvements in Supply Chain Relationship contribute positively to Logistics Performance, and this impact is, in part, channeled through the mediating influence of Logistic Collaboration. This reinforces the notion that collaborative practices within logistics act as a mechanism through which the benefits of strong supply chain relationships are transmitted to enhance overall performance outcomes. It implies that the positive influence of supply chain relationships on logistics performance is, at least partially, realized through effective collaboration practices. Understanding this mediation process is crucial for organizations aiming to optimize their logistics performance. It highlights the importance of not only fostering robust supply chain relationships but also strategically

cultivating collaborative initiatives. Organizations should recognize that the positive impact of supply chain relationships extends beyond their direct effects and is, in part, contingent on the collaborative practices established within the logistics network.

The study's exploration of Logistic Collaboration as a mediator aligns with Nyaga et al.'s (2010) argument that trust and commitment, elements integral to collaboration, lead to performance improvements. Vieira et al. (2015) also emphasize the importance of psychosocial aspects in buyer-supplier relationships, influencing communication and partners' capacities to solve logistics problems. Aharonovitz et al.'s (2018) findings further underscore the significance of relationship history in contributing to better logistics performance through collaboration.



## CHAPTER FIVE

### SUMMARY OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

#### 5.1 Introduction

This chapter presents a summary of the findings obtained from the study, conclusions and suggested recommendations for implementation to achieve greater improvement in Logistic performance.

#### 5.2 Summary of Findings

The findings obtained from the study are summarized below based on the objectives of the study.

##### 5.2.1 The Impact of Supply Chain Relationship on Logistic Performance

The findings of the study revealed that there exists a significant direct influence of supply chain relationship on Logistic performance. This indicates that, an improvement in supply chain relationship practices will improve the logistic performance significantly. In other words, a firm that improves its supply chain relationship is likely to see improvements in the overall logistic performance.

##### 5.2.2 The Impact of Supply Chain Relationship on Logistic Collaboration

The results from the analysis evident the hypothesis two the study that, there is a positive significant impact of supply chain relationship on Logistic collaboration. This implies that, as supply chain relationship is improving, logistic collaboration improves. In other words, firms that foster positive supply chain relationship, will see an improvement in the overall collaborative efforts within logistics.

### **5.2.3 The Impact of Logistic Collaboration on Logistics Performance**

The impact of logistic collaboration on logistics performance was revealed from the results to be significant. The results imply that, an increase in logistic collaboration will have a positive impact on logistic Performance. This, in other words means that, firms that prioritize a positive logistic collaboration practice, will have an improved Logistic Performance.

### **5.2.4 The Impact of Supply Chain Relationship on Logistics Performance through Logistic Collaboration.**

The results of the study revealed that there exists a significant mediating role of Logistic collaboration in the relationship between supply chain relationship and logistic performance. This implies that, Logistic collaboration plays a significant role in the relationship between supply chain relationship and logistic performance. In other words, an organization that foster a positive supply chain relationship can influence the overall logistic collaboration and in turn, this positive collaboration contributes to higher levels of logistic performance.

## **5.3 Theoretical Implication**

### **5.3.1 Supply Chain Relationship on Logistic Performance**

This outcome, congruent with the Inter-Organizational Relationship Theory, underscores that the quality of inter-organizational relationships holds substantial theoretical implications for logistic performance. The theory posits that collaborative ties and positive interactions between organizations directly impact operational outcomes, aligning with the study's finding. It emphasizes that the strength of these relationships is not merely a by-product but a crucial determinant of logistic

performance. Resonating with the theory's core premise, the study emphasizes that organizations operating within a robust and collaborative supply chain network are more likely to achieve superior logistic performance outcomes. It highlights the strategic importance of actively cultivating and maintaining strong supply chain relationships, recognizing them not only as facilitators of smooth interactions but as integral components influencing the overall efficiency and effectiveness of logistical operations. In essence, the theoretical underpinning supports the strategic imperative for organizations to invest in fostering high-quality inter-organizational relationships, acknowledging their direct and pivotal role in optimizing logistic performance within the complex landscape of modern supply chains.

### **5.3.2 Supply Chain Relationship on Logistic Collaboration:**

In the context of the Inter-Organizational Relationship Theory, this discovery underscores the pivotal role of robust supply chain relationships in catalysing collaborative efforts within logistics. The theory posits that the nature of these inter-organizational relationships significantly shapes cooperative behaviors, a principle reaffirmed by the study's findings. The emphasis here is on recognizing that the strength and quality of relationships between organizations lay the foundation for effective collaboration within the logistics domain. This insight reinforces the theory's assertion that positive, collaborative interactions stem from the inherent qualities of the relationships between supply chain partners. Strong relationships create an environment conducive to shared goals, open communication, and mutual trust—key ingredients for successful collaboration. The practical implication is that organizations should not only prioritize building relationships but also ensure that these connections are robust and dynamic, fostering a collaborative culture. In essence, this finding aligns with the core

tenets of the Inter-Organizational Relationship Theory, emphasizing that the nature of these relationships directly influences and shapes cooperative behaviors, highlighting their indispensable role in driving effective collaboration within the logistics landscape.

### **5.3.3 Logistic Collaboration on Logistics Performance:**

Built upon the foundations of the Inter-Organizational Relationship Theory, this finding accentuates the integral role of collaboration in elevating logistics performance. Aligned with the theory's perspective, which asserts that cooperative endeavours and synchronized actions among organizations directly enhance operational efficiency, the study reinforces the idea that strategic collaboration is paramount for optimizing logistics performance. The theoretical underpinning posits that as organizations engage in collaborative efforts, they contribute directly to the improvement of overall operational efficiency within the supply chain network. The emphasis is on coordinated actions, joint problem-solving, and shared resources, all of which align with the principles of the Inter-Organizational Relationship Theory. The practical implication is clear: by fostering a culture of collaboration and harmonizing efforts, organizations can enhance logistics performance, ensuring smoother operations and, consequently, a more efficient supply chain.

In essence, this outcome not only aligns with the fundamental tenets of the Inter-Organizational Relationship Theory but also emphasizes the transformative power of strategic collaboration in driving optimal logistics performance, providing valuable insights for organizations aiming to enhance their supply chain operations.

### **5.3.4 Supply Chain Relationship on Logistics Performance through Logistic Collaboration:**

Guided by the principles of Strategic Choice Theory, this revelation implies a deliberate and intentional decision-making process within companies. It suggests that organizations strategically choose to invest in both robust relationships and collaborative practices as part of a nuanced strategy to optimize performance. This aligns seamlessly with the core tenets of the theory, which emphasize that organizations make purposeful choices, tailoring their strategies to achieve optimal outcomes. Strategic Choice Theory underscores the importance of conscious decision-making in shaping organizational behavior and performance. In this context, the finding emphasizes that companies actively decide to cultivate strong relationships and foster collaboration within their supply chain networks. This intentional choice is driven by the recognition that a dual focus on relationship management and collaboration is essential for achieving superior logistics performance. The interconnected nature of relationship management and collaborative efforts becomes apparent, reinforcing the theory's premise. By making strategic choices to invest in both aspects, organizations acknowledge the symbiotic relationship between robust relationships and effective collaboration, recognizing that these elements work in tandem to optimize logistics performance. This theoretical lens provides valuable insights into the intentional decision-making processes that organizations employ to navigate the complex landscape of supply chain dynamics and attain superior logistics performance.

## **5.4 Practical Implication**

### **5.4.1 The Impact of Supply Chain Relationship on Logistic Performance**

The practical implication of nurturing robust supply chain relationships for enhanced logistic performance is profound. Manufacturing firms are advised to prioritize the establishment and maintenance of strong collaborative ties with key stakeholders in the supply chain. Emphasizing open communication channels and fostering trust becomes paramount in this strategic relationship management. By doing so, companies create an environment conducive to effective information flow, joint problem-solving, and streamlined operations. Strategic relationship management in logistics planning becomes a key driver for optimizing operational efficiency and responsiveness. Open lines of communication facilitate timely exchange of critical information, reducing the risk of disruptions and enhancing overall coordination. Trustworthy relationships foster a collaborative spirit, encouraging partners to work seamlessly towards shared goals. This practical approach not only improves day-to-day logistics operations but also prepares firms to navigate challenges with agility. In essence, the investment in cultivating robust supply chain relationships directly translates into a more resilient, responsive, and efficient logistics framework, positioning manufacturing companies for sustained success in the dynamic business landscape.

### **5.4.2 The Impact of Supply Chain Relationship on Logistic Collaboration:**

Practically, the strengthening of supply chain relationships directly translates to positive influences on collaborative efforts within logistics for manufacturers. To enhance collaboration, companies should prioritize several key initiatives. Regular communication channels must be established to facilitate the seamless exchange of information among supply chain partners, promoting transparency and responsiveness.

Joint planning initiatives enable coordinated efforts in anticipating and addressing challenges, optimizing resource allocation and operational efficiency. Moreover, the cultivation of trust becomes instrumental in fostering a collaborative environment. Trust-building initiatives, such as reliability in commitments and shared risk management strategies, contribute to a cooperative atmosphere. Manufacturers can leverage these robust supply chain relationships to create an environment conducive to effective logistics collaboration. This practical approach ensures that the supply chain functions as a cohesive unit, with synchronized efforts contributing to enhanced overall supply chain dynamics. The result is not only improved operational efficiency but also heightened adaptability to dynamic market conditions, reinforcing the strategic importance of leveraging strong supply chain relationships for a more collaborative and responsive manufacturing ecosystem.

#### **5.4.3 The Impact of Logistic Collaboration on Logistics Performance:**

The practical significance lies in recognizing that strategic, tactical, and interpersonal collaboration directly contributes to improved logistics performance for manufacturers. Strategic collaboration involves aligning long-term goals and priorities among supply chain partners, facilitating efficient resource allocation and joint problem-solving. Tactical collaboration emphasizes the formalization of processes, such as information sharing and technology adoption, enabling real-time exchanges of critical operational data. Interpersonal collaboration fosters a culture of trust and commitment among team members, encouraging open communication and joint planning. Manufacturers can actively enhance logistics performance by prioritizing and investing in collaborative practices within the logistics domain. This involves formalizing communication channels, streamlining information-sharing mechanisms, and fostering a collaborative

culture. By doing so, companies optimize supply chain operations, ensuring a synchronized and responsive network. Tangible benefits emerge in the form of increased efficiency, reduced lead times, and improved overall supply chain dynamics. The practicality of focusing on collaboration becomes evident in its direct correlation to heightened logistics performance, solidifying the strategic imperative for manufacturers to invest in collaborative initiatives within their logistics framework.

#### **5.4.4 Supply Chain Relationship on Logistics Performance through Logistic Collaboration:**

Practically, recognizing that logistic collaboration acts as a mediator between supply chain relationships and logistics performance underscores the necessity of a comprehensive approach for manufacturers. It's not merely about cultivating strong relationships; it's about actively promoting and formalizing collaborative initiatives within the supply chain. This implies a dual focus: nurturing robust relationships and fostering an environment conducive to effective collaboration. Manufacturers must invest in open communication channels, joint planning strategies, and trust-building measures to ensure that the collaborative aspects of the relationship are optimized. Addressing both relationship quality and collaborative practices becomes essential for optimizing logistics performance in the manufacturing sector. It's not enough to establish strong connections; companies need to operationalize collaboration by integrating it into their day-to-day logistics processes. This comprehensive approach guides strategic decision-making, emphasizing the interconnected nature of relationship management and collaborative efforts. In doing so, manufacturers set the foundation for long-term success by creating a resilient, adaptive, and high-performing logistics framework within their supply chain.

## **5.5 Conclusion**

Supply Chain Relationship aims at improving the overall logistic performance through logistic collaboration. This study is a contribution to the growing research stream trying to clarify the importance of logistic collaboration as a mediating mechanism through which supply chain relationship practices enhances logistic performance. The findings of the study have provided evidence of positive and significant relationship of supply chain relationship and logistic performance through logistic collaboration. Based on this finding, the study concludes that there exists a significant mediating role of logistic collaboration in the relationship between supply chain relationship and logistic performance as well as a direct significant relationship between supply chain relationship and logistic performance.

This result of the mediation analysis supports the hypothesized relationship between supply chain relationship and logistic performance through logistic collaboration. The observed indirect effect further highlights the importance of logistic collaboration as a mediating mechanism through which supply chain relationship practices enhances logistic performance.

## **5.6 Recommendations**

The following recommendations are made based on the findings of the study. Organizations can leverage these insights to optimize their supply chain operations, improve collaboration, and ultimately achieve better logistic performance outcomes.

### **5.6.1 Enhance Supply Chain Relationship Practices**

Organizations should prioritize the development and nurturing of strong supply chain relationships with their partners. This includes fostering collaboration, communication,

and trust among supply chain members. By doing so, organizations can directly impact their logistic performance, leading to more efficient and effective logistics operations.

### **5.6.2 Invest in Logistic Collaboration**

Recognizing the mediating role of logistic collaboration, organizations should actively invest in initiatives that promote collaboration across their supply chain partners. This can involve sharing information, resources, and best practices to improve overall logistics coordination and performance.

### **5.6.3 Integration of Logistic Collaboration in Strategy**

Organizations should integrate logistic collaboration strategies within their broader supply chain and business strategies. This integration ensures that logistic collaboration becomes an integral part of their operations, leading to sustained improvements in logistics performance.

### **5.6.4 Continued Research and Analysis**

The study highlights the significance of logistic collaboration as a mediating mechanism. Future research in this area should delve deeper into the specific factors that drive successful logistic collaboration, the best practices for implementation, and the potential challenges that organizations might face in fostering collaboration within their supply chain. This research can provide more actionable insights for practitioners.

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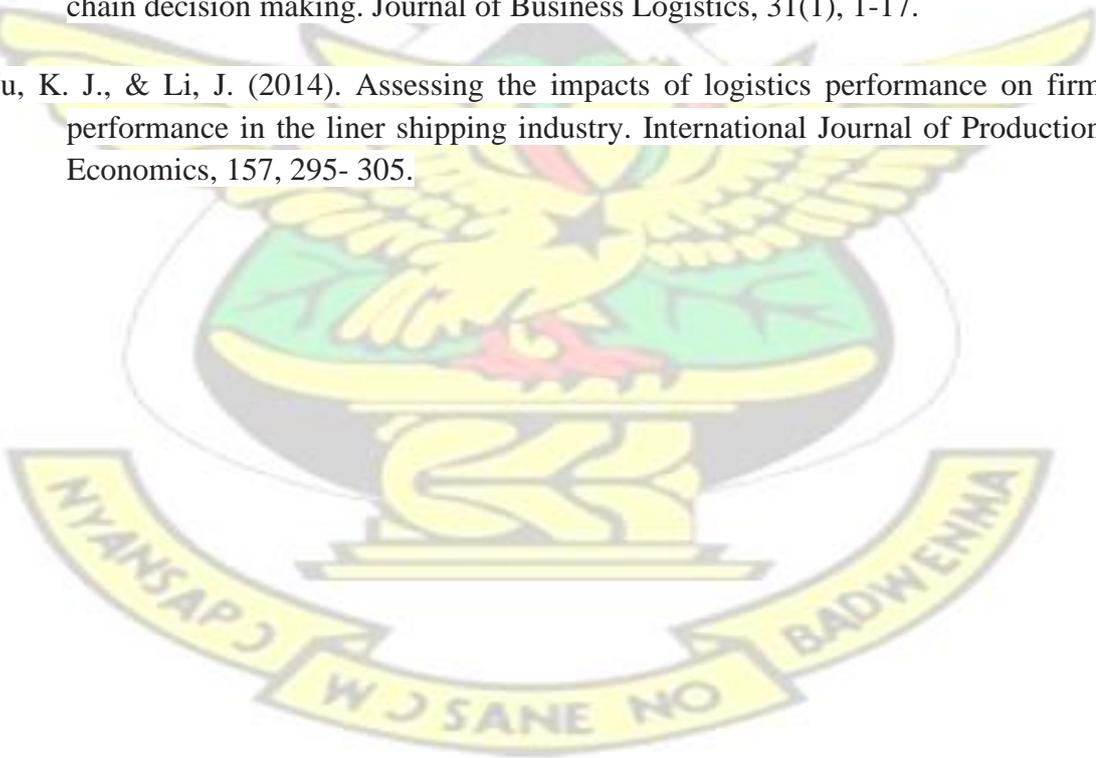
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## APPENDIX

### KWAME NKRUMAH UNIVERSITY OF SCIENCE AND TECHNOLOGY, KUMASI

#### SCHOOL OF BUSINESS

#### QUESTIONNAIRE

#### Dear Respondents,

This survey examines the mediating role of logistics collaboration in the relationship between supply chain relationship and logistics performance. This survey is part of our final year project work. Please you are highly assured that, all responses will be kept confidential and will be used for academic purpose only.

You will be asked questions concerning the company's current business operations. Please kindly spend some few minutes of the time and respond accordingly to the questions given.

#### PART A: DEMOGRAPHIC CHARACTERISTICS

1. Please indicate your gender

Male  Female

2. Which age group do you belongs to?

15-24  25-34  35-44  45-54  55-64

3. What is your highest level of education?

SHS  HND/Diploma  First degree  Master's degree

PhD and Above

4. How long have you worked in this organization?

Less than 2 yrs  2-5 yrs  6-9 yrs  10 yrs and above

5. Please state your position in the organization

**PART B: SUPPLY CHAIN RELATIONSHIP PRACTICES**

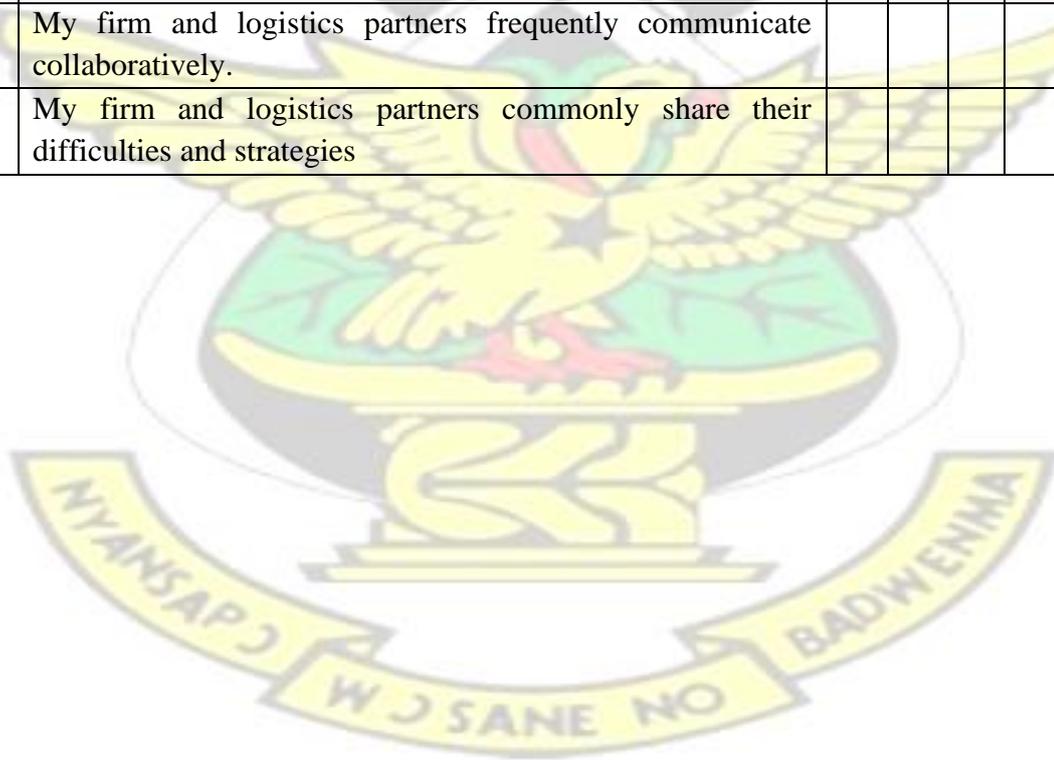
The following questions are about how your organization has been implementing supply chain relationships practices. Please kindly indicate your level of agreement on the following statements using a scale of 1-5 where; **1 = Strongly Agree, 2 = Agree, 3 = Neutral, 4 = Disagree and 5 = Strongly Disagree.**

<b>SUPPLY CHAIN RELATIONSHIP</b>		<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
<b>Information sharing</b>						
1	My organization and its suppliers share accurate information					
2	My organization and its suppliers share reliable information					
3	My organization has a frequent follow-up with its customers for quality/service feedback.					
4	Our trading partners share business knowledge of core business processes with my organization					
5	My organization shares its business units' proprietary information with its trading partners					
6	My organization create compatible communication and information system with its suppliers					
<b>Decision Synchronization</b>						
7	Our organization actively includes its suppliers in the process of developing new products					
8	My organization and its suppliers jointly work on inventory management					
9	My organization frequently solve issues jointly with its suppliers					
10	My organization regularly engage with suppliers to establish its criteria for dependability, responsiveness and other standards					
11	My organization and its suppliers jointly work on demand planning					
12	My organization and its suppliers frequently synchronize decision making					
<b>Incentive Alignment</b>						
13	My organization and its suppliers share cost, benefits and risk					
14	My organization and its suppliers jointly use formal evaluation and feedback procedures					
15	My organization and its suppliers use joint reward system					
16	My organization and its suppliers frequently align incentives					
17	My organization receives rewards based on risk and investment it has done in the relationship.					
18	Our organization frequently hold business trainings with its trading partners					

### PART C: LOGISTICS COLLABORATION

The following questions are about how your organization has been practicing logistics collaboration. Please kindly indicate your level of agreement on the following statements using a scale of 1-5 where; **1 = Strongly Agree, 2 = Agree, 3 = Neutral, 4 = Disagree and 5 = Strongly Disagree.**

	Statements	1	2	3	4	5
1	My firm and logistics partners have frequent contacts on regular basis					
2	My firm and logistics suppliers plan together during products delivery					
3	My firm and logistics partners share information that helps them forecast demand exchange					
4	My firm and logistics partners influence each other's decision through discussion rather than request					
5	My firm and logistics partners have long last trust for each other					
6	My firm and supply chain partners are actively committed during logistics processes					
7	My firm and logistics partners frequently communicate collaboratively.					
8	My firm and logistics partners commonly share their difficulties and strategies					



#### **PART D: LOGISTICS PERFORMANCE**

The following questions are about how your organization has been performing in terms of logistics processes. Please kindly indicate your level of agreement on the following statements using a scale of 1-5 where; **1 = Strongly Agree, 2 = Agree, 3 = Neutral, 4 = Disagree and 5 = Strongly Disagree.**

	<b>Statements</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
1	In our organization, products/services are deliver on time					
2	In our organization, there is accuracy of billing/delivery of information					
3	In our organization, schedules for product collection are fulfilled					
4	In our organization, schedules for products delivery are fulfilled					
5	In our organization, routes are planned/optimized to ensure smooth delivery					
6	In our organization, urgent orders are delivered accordingly					
7	There is a reduction in operation cost					
8	In our organization, customer needs are address accordingly to ensure they are satisfaction					
9	In our organization, vehicles are available for delivery processes					
10	In our organization, delivery are done in periods of high demand					

Thanks for your participation.

