

Kwame Nkrumah University of Science and Technology, Kumasi

**Assessing the Relationship between Outsourcing Logistics and Operational
Performance of Pharmaceutical Companies in Ghana: The Moderating effect of
Logistics Capability**

By

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Institute of Distance Learning, in partial fulfillment of the requirements for the award
of the degree of**

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LOGISTICS AND SUPPLY CHAIN MANAGEMENT

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DECLARATION

I hereby declare that this submission is my own research towards the Master of Science (Logistics and Supply Chain Management) degree, and that, to the best of my knowledge, it contains no material which has been previously published or material that been accepted for the award of any other degree of the University, except where due acknowledgement has been made in the text.

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DEDICATION

I dedicate this piece of work first and foremost to God Almighty for his grace and his protection throughout the period of my study in KNUST.

A special dedication to my wife, Mrs. Elizabeth Appiah for the support towards the completion of this work.

I further dedicate this research study to all my lecturers, especially, Prof David Asamoah for his guidance and corrections to make this piece of work a reality.

God richly bless you all.



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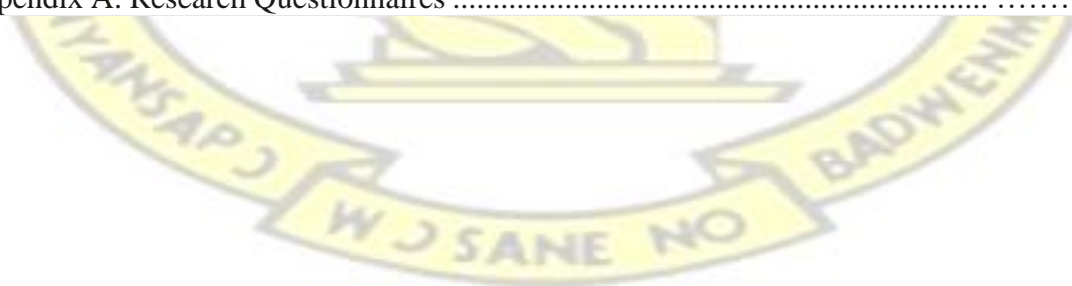
ABSTRACT

The purpose of this study was to assess the relationship between outsourcing logistics and operational performance and the moderating role of logistics capability in the pharmaceutical industry. The study adopted a quantitative approach with a sample size of 100 procurement and supply chain managers from pharmaceutical firms in Ghana. Convenience sampling technique was used to select the respondents. Data was collected using structured questionnaires based on a 7-point Likert scale. The data was descriptively and inferentially analysed using an IBM SPSS, version 23. The study therefore revealed a significant and positive relationship between outsourcing logistics and operational performance. Again, the study also investigated the moderating effect of logistics capability on the relationship between outsourcing logistics and operational performance. However, the study showed a negative moderation effect of logistics capability in the relationship between outsourcing logistics and operational performance. In conclusion, while initial expectations were geared towards a positive moderation effect of logistics capability on the relationship between outsourcing and operational performance, the results presented a contrasting narrative. The negative moderation effect implies that organizations with robust in-house logistics capability might not gain as much from outsourcing as initially thought. Based the findings stated, the study recommended that, management should invest in developing and enhancing internal logistics capabilities to help improve in logistics processes, infrastructure, technology, and human resources. Finally, the study recommended that, future studies should explore different industries, regions, and organizational sizes to provide a broader understanding of the relationship between outsourcing logistics, logistics capability, and operational performance.

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List of Abbreviations

SCM.....	Supply Chain Management
SCMP.....	Supply Chain Management Practices
CA.....	Competitive Advantage
TQM.....	Total Quality Management
RBV.....	Resource Based View
AVE.....	Average Variance Extracted
ANOVA.....	Analysis of Variance



CHAPTER ONE

INTRODUCTION

1.1 Background to the Study

Over the past few years, outsourcing logistics activities has become increasingly popular among firms as a strategy to cut expenses, enhance effectiveness, and focus on their core competencies (Bhakoo and Arunachalam, 2018). The pharmaceutical industry in Ghana is no exception to this trend. The pharmaceutical industry in Ghana is a vital segment of the nation's economy, making a substantial contribution to both job opportunities and economic expansion (Smith and Grewal, 2017). However, like other industries, the pharmaceutical sector encounters obstacles such as intense competition, increasing regulatory requirements, and changing consumer demands (Cai and Li, 2022; Cavusgil et al., 2020).

As a result, pharmaceutical companies in Ghana are under pressure to improve their operational performance while maintaining regulatory compliance and managing costs. Outsourcing logistics activities to third-party logistics providers (3PLs) is a potential solution that can help companies in this industry achieve these goals. Outsourcing logistics can offer several benefits, such as access to specialized expertise, improved supply chain visibility, reduced transportation costs and increased profit margins (Heikkilä and Järvinen, 2017; Huang and Chen, 2022).

However, outsourcing logistics activities can also present challenges such as managing the relationship with 3PLs, ensuring quality control, and maintaining operational performance (Cavusgil et al., 2020). The connection among outsourcing logistics and operational performance has been extensively studied in developed countries, but there is limited

research on this topic in emerging markets such as Ghana (Bals and Tate, 2021; Alhajj and Belhadi, 2022). Moreover, the moderating effect of logistics capability has not been adequately explored in this context. Logistics capability refers to a company's ability to manage and optimize its logistics operations, including its ability to manage logistics risks, implement logistics innovations, and leverage logistics technology. Therefore, the purpose of this study is to assess the relationship between outsourcing logistics and operational performance of pharmaceutical companies in Ghana, while examining the moderating effect of logistics capability.

1.2 Problem Statement

The pharmaceutical industry in Ghana has undergone substantial expansion in recent times, fueled by a rising need for healthcare services and a growing population (Durmusoglu and Demirer, 2015). As pharmaceutical companies strive to meet these demands, they face various challenges in managing their logistics activities effectively, hence, many companies have turned to outsourcing logistics functions as a strategic approach to enhance their operational performance and concentrate on their fundamental strengths (Diabat et al., 2022). However, the correlation between outsourcing logistics and operational performance in the pharmaceutical sector in Ghana has not been extensively studied. Additionally, impact of logistics capability as a moderating factor in this association has not been extensively investigated (Diabat et al., 2022; García-Teruel and Martínez-Solano, 2022; Durmusoglu and Demirer, 2015).

Researches examining the connection between outsourcing logistics and operational performance within different industries has yielded valuable insights. For instance, in the retail sector, Smith and Grewal (2017) found that outsourcing logistics activities positively

influenced operational performance. Their study highlighted the efficiency gains and cost savings achieved through outsourcing, allowing companies to focus on their core activities and enhance overall performance. In the study by Bhakoo and Arunachalam (2018), they investigated how logistics outsourcing influenced operational performance in the context of the healthcare industry, specifically in hospitals in India. They identified a positive relationship, emphasizing the importance of outsourcing logistics functions to enhance operational efficiency and service quality. Furthermore, Asamoah et al. (2021) explored the moderating influence of supply chain complexity on the relationship between governance mechanisms and operational performance in a sub-Saharan African market. The study revealed that increased levels of social control, formal control, and supply chain complexity had both positive and negative impacts on operational performance. Furthermore, Asamoah et al. (2021) discovered in their research that factors such as effort expectancy, social influence, and facilitating conditions had a significant influence on individuals' behavioral intentions regarding the adoption of air-travel self-service technologies. Though the study failed to mention the role of outsourcing logistics in this context.

Despite the valuable insights mentioned earlier, there is a lack of research that specifically concentrates on examining the connection between outsourcing logistics and operational performance in the context of the pharmaceutical industry (Giunipero and Brand, 2016; Handfield and Nichols, 2022; Smith and Grewal, 2017; Bhakoo and Arunachalam, (2018). Due to the operations and activities of the pharmaceutical firms, it is therefore imperative that researchers delve into issues on outsourcing logistics practices. Such practices will offer insightful information to business professionals and lay the groundwork for further

research. Consequently, the present study aims to provide comprehensive insights into the moderating role of logistics capability in the association between outsourcing logistics activities and operational performance.

1.3 Objective of the Study

The primary goal of this study is to evaluate the correlation between outsourcing logistics and the operational performance of Pharmaceutical Companies in Ghana and the moderating effect of logistics capability. Consequently, the research endeavors to tackle the subsequent specific objectives:

1. To assess the relationship between logistics outsourcing and operational performance of pharmaceutical firms in Ghana.
2. To assess the moderating effect of logistics capability in the relationship between logistics outsourcing and operational performance.

1.4 Research Questions

1. What is the correlation between the outsourcing of logistics and the operational performance of pharmaceutical companies in Ghana?
2. What is the moderating impact of logistics capability on the connection between logistics outsourcing and the operational performance of pharmaceutical companies in Ghana?

1.5 Study Significance

The study is significant because it will provide insights into the determinants that impact the choice of pharmaceutical companies in Ghana to outsource logistics activities and the impact of outsourcing on their operational performance. Moreover, it will contribute to the theoretical understanding of outsourcing logistics in the context of emerging markets and

the moderating role of logistics capability. The outcomes of this investigation will also hold practical significance for pharmaceutical firms operating in Ghana and other emerging markets, as they seek to optimize their logistics operations and improve their operational performance. The study's results will also provide guidance for policymakers and logistics service providers in Ghana on how to support the growth and competitiveness of the pharmaceutical industry.

1.6 Research Methodology

The study adopted the following methodology to assess the connection between outsourcing logistics, operational performance and the moderating effect of logistics capability. The study employed an explanatory research design. This study utilized a survey research strategy, focusing on pharmaceutical companies located in the Greater Accra region of Ghana. This study employed a quantitative research approach, emphasizing the development and testing of hypotheses related to the study variables. Convenient sampling was used to select a sample of one hundred (100) pharmaceutical firms from the target population. This study employed an online questionnaire created using Google Forms as the exclusive data collection tool. To evaluate the study model, Ordinary Least Regression was employed to examine the direct association between logistics outsourcing and operational performance. This therefore was done using IBM SPSS (version 26).

1.7 Scope of Study

The scope of this study is constrained to pharmaceutical companies operating within the Greater Accra Region of Ghana, primarily due to limitations in time and resources. The Greater Accra Region is the economic hub of Ghana, with several pharmaceutical companies operating in the region. The study employs a mixed-methods approach,

encompassing both quantitative and qualitative data collection and analysis techniques. The study involved a survey of pharmaceutical companies operating in the Greater Accra Region to collect quantitative data on outsourcing logistics, logistics capability, and operational performance. The survey was carried out through a structured questionnaire that encompasses areas such as the extent of logistics outsourcing activities, the advantages and obstacles associated with logistics outsourcing, as well as the logistics capability of the company. The study will also involve the use of a semi-structured questionnaires and will cover topics such as the reasons for outsourcing logistics activities, the selection of 3PLs, the management of the relationship with 3PLs, and the impact of outsourcing on operational performance.

1.8 Limitation of the study

The generalizability of the study's results and findings is restricted because the study is confined to the Greater Accra region only. Further, the adoption of Google Forms to administer the questionnaires may delay due to poor internet connection and frequent poor power supply.

1.9 Organization of the Study

The study was organized into five primary chapters.

Chapter One provided the foundation for the study, which included the background, statement of the problem, research objectives, research questions, rationale for the study, research methodology, scope of the study, limitations, and the structure of the study. Chapter Two encompassed the literature review for the study, comprising the conceptual review, theoretical review, empirical review, development of the conceptual framework, and formulation of hypotheses. Chapter Three detailed the research methodology,

including information on the population and sampling method employed, data collection processes, data analysis techniques, and ethical considerations. Chapter Four covered the analysis and presentation of the data, as well as discussions of the findings. Chapter Five encompassed the summary of the research findings, the conclusion drawn from the study, and the recommendations made as a result.



CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter serves as the literature review and includes sections such as the conceptual review, theoretical review, empirical review, development of the conceptual framework, and formulation of hypotheses.

2.2 Key Concepts

This section presented the key concepts or variables of the study, including the outsourcing logistics, operational performance, and logistics capability.

2.2.1 Outsourcing

There are many distinct definitions of outsourcing. In the literature, outsourcing has been defined as follows: Outsourcing is the practice of delegating a company's process to a third-party provider. The procedure may be a non-core or core business function (Lacity and Hirschheim, 2013). Once more, outsourcing is the deliberate application of outside resources to tasks typically carried out by internal employees and resources (Quinn and Hilmer, 2014). According to some studies, outsourcing is the practice of handing over control or management of a corporate function to an outside service provider (Kern & Willcocks, 2000). Additionally, outsourcing is the process through which a company hires a third-party supplier to carry out a certain service or function that is generally provided internally, according to Dibbern et al. (2014). The act of outsourcing entails the transfer of business operations to a third-party provider of services that were previously handled internally (Grover et al., 2016). In general, outsourcing is a business strategy that entails

contracting out non-core corporate operations or tasks to outside contractors who specialize in providing these services with the goal of lowering costs, boosting efficiency, and gaining access to specialized expertise. Information technology outsourcing (ITO), business process outsourcing (BPO), and logistics outsourcing are just a few examples of the various ways that outsourcing can be done. A few of the reasons why businesses outsource are to cut costs, gain access to specialist knowledge, increase productivity, and be more flexible. According to Chen and Paulraj (2014), cost savings are one of outsourcing's main advantages of outsourcing. By shifting non-core business processes or activities to contractors who can carry them out more effectively and at a lower cost, firms can minimize their operating costs through outsourcing.

Companies can save money by outsourcing if they want to avoid paying for equipment, buildings, and technology, additionally, it involves the expenses associated with identifying, recruiting, and training new personnel (Fawcett and Magnan, 2012). A further advantage of outsourcing is having access to specialist knowledge. Companies can get specific knowledge and experience through outsourcing that might not be accessible internally (Giunipero and Brand, 2016). Handfield and Nichols (2022) companies could potentially gain access to logistics expertise and technology that may not be readily accessible internally.

In a similar vein, contracting out software development to outside vendors can give businesses access to specialized software development expertise. Additionally, outsourcing can boost productivity. Through outsourcing, organizations can focus on their core competencies and primary operations, while delegating non-essential tasks to external contractors who can execute them with greater efficiency. According to Ho et al. (2020),

by outsourcing, businesses can increase their productivity and efficiency by focusing on their key competencies, such as product development and marketing. Additionally, outsourcing can give businesses flexibility. Companies can quickly adapt their operations to changes in the market environment thanks to outsourcing. By outsourcing, businesses can quickly adjust their operations to changes in demand or other market variables. Zailani et al. (2015) states that, outsourcing does, however, come with some difficulties. Managing the relationship with outside vendors is one of the biggest difficulties with outsourcing. It can be challenging to achieve close collaboration and communication between the business and the external vendor required for outsourcing. Businesses must make sure that their external vendors are aware of their goals, objectives, and requirements for their operations and that they provide services that satisfy these needs.

Providing quality control when outsourcing is another difficulty. Businesses must make sure that the services offered by outside vendors adhere to their high standards of quality and do not affect their firm reputation. Effective monitoring and evaluation of the vendor's performance, as well as frequent feedback and communication, are necessary for quality control. In addition, the concept of outsourcing may put intellectual property and information security at risk (Zailani et al., 2015). Businesses must make sure that; external contractors have suitable security procedures in place to safeguard their proprietary information.

In conclusion, outsourcing is a business strategy that can offer businesses financial savings, access to specialist knowledge, increased productivity, and flexibility. Ho et al. (2020) further argues that, the management of the relationship with outside vendors, assuring quality control, and upholding data security and intellectual property are a few of the

difficulties that outsourcing offers. To maximize the advantages of outsourcing while lowering its dangers, businesses must thoroughly assess the advantages and difficulties of outsourcing and design effective management strategies for their outsourcing contracts (Kelle and Akbulut, 2015).

2.2.1.1 Outsourcing Logistics

Through outsourcing, organizations can focus on their core competencies and primary operations, while delegating non-essential tasks to external contractors who can execute them with greater efficiency (Watson and Pitt, 2019). The transformation of logistics from a typical back-room role to a strategic boardroom function has been mainly attributed to a broader recognition that competitive advantage is not solely derived from the product itself but also from the efficiency of the delivery process (Muller, 2018). Outsourcing logistics is a kind of outsourcing that entails contracting out logistics tasks to outside vendors who have a focus on offering logistics services.

Additionally, the term "logistics outsourcing" pertains to the practice of engaging third-party logistics service providers, or 3PLs, handle logistics tasks on behalf of the firm that is being contracted. According to Verma and Dapiran (2017), outsourcing logistics is the process of subcontracting or outsourcing the logistics function to a third-party supplier to save costs and enhance service is known as outsourcing logistics. Also, studies show that, to performance some or all the logistics activities that would often be handled internally, a third-party logistics provider (3PL) is used (Christopher, 2016).

In conclusion, these definitions show the common features of outsourcing logistics, including the use of outside suppliers to carry out logistical tasks, the need to lower costs and improve services, and the strategic nature of outsourcing logistics (Jharkharia et al.,

2012). One of the techniques that are growing increasingly popular with many firms nowadays is the outsourcing of logistics services (Bardi and Tracey, 2021). Organizations often opt to outsource specific internal tasks and delegate decision-making authority to external vendors in order to enhance productivity in their operations and service delivery (Chase et al., 2014). Logistics outsourcing activities encompass a range of functions, including transportation management, information management, inventory management, warehouse management, and material handling management, among others (Bosire, 2021). Companies have been compelled to consistently evaluate, enhance, and reengineer their processes because of the highly competitive business environment and the demand from customers for personalized products and services. The top priorities for firms today would be to improve service flexibility, responsiveness, and reliability while optimizing logistical value by cutting business costs and lead times (Boston et al., 2018).

The movement of all goods into and out of the organization is handled by logistics. To ensure a smooth flow of goods, a company must make wise decisions in several relevant areas, such as selecting dependable suppliers, negotiating delivery terms, using the proper transport and storage methods, etc (Coyle et al., 2016). According to the Institute of Logistics and Transport, this idea is the strategic management of the entire supply chain or the time-sensitive deployment of resources. Nowadays, a company will most frequently use third-party logistics companies to handle all or most of its logistics-related tasks. This is because transportation firms are frequently referred to as third-party logistics organizations.

Many businesses are gradually outsourcing their logistics function in response to the rising global economy's fiercer competition (Deepen et al., 2018). One of the key advantages of

outsourcing logistics is cost reduction. Through the outsourcing of logistics activities to third-party logistics providers (3PLs), companies can effectively lower their logistics expenses by leveraging the 3PL's scale and expertise (Kannan and Tan, 2015). 3PLs can provide companies with access to specialized logistics equipment, technology, and personnel, which can result in lower logistics costs for the company. Another benefit of outsourcing logistics is improved efficiency. By outsourcing logistics activities to 3PLs, organizations can concentrate on their core strengths and activities, while leaving logistics activities to external vendors who can perform them more efficiently (Barros and Machado, 2016).

3PLs can optimize logistics operations, reduce lead times, and improve supply chain visibility, which can result in improved efficiency and productivity for the company. Outsourcing logistics can also provide companies with flexibility. By outsourcing logistics activities to 3PLs, companies can quickly scale up or down their logistics operations, depending on changes in demand or other market factors (Chen and Paulraj, 2014). For example, 3PLs can provide additional logistics capacity during peak seasons or reduce logistics capacity during slow periods, which can result in improved flexibility and responsiveness for the company.

However, outsourcing logistics also presents some challenges. One of the main challenges of outsourcing logistics is managing the relationship with the 3PL (Gunasekaran and Ngai, 2012). Companies need to ensure that the 3PL understands their logistics requirements, objectives, and goals, and that they deliver logistics services that meet these requirements. Effective communication and collaboration between the company and the 3PL are critical to the success of the outsourcing relationship. Another challenge of outsourcing logistics

is ensuring quality control (Harland, 2019). Companies need to ensure that the logistics services provided by the 3PL meet their quality standards and that they do not compromise the company's reputation. Quality control requires effective monitoring and evaluation of the 3PL's performance, as well as regular feedback and communication. Moreover, outsourcing logistics can pose a risk to data security and intellectual property (Zsidisin and Smith, 2015). Companies need to ensure that the 3PL has adequate security measures in place to protect their confidential information and intellectual property. In summary, outsourcing logistics is a type of outsourcing that can provide companies with several benefits, including cost reduction, improved efficiency, and flexibility. However, outsourcing logistics also presents some challenges, such as managing the relationship with the 3PL, ensuring quality control, and maintaining data security and intellectual property. Companies must conduct a thorough assessment of the advantages and obstacles associated with outsourcing logistics. They should also devise sound strategies for overseeing their outsourcing partnerships to optimize the advantages of logistics outsourcing while mitigating its potential risks.

2.2.1.1.1 Factors of Logistics Outsourcing

According to Giuniper and Brand (2014), when considering outsourcing logistics, there are several factors that companies should consider. These include:

- **Cost:** Companies should weigh the cost of outsourcing logistics against the cost of maintaining an in-house logistics operation.
- **Service quality:** Companies should ensure that the 3PL provider they choose has a track record of providing high-quality service that meets their specific needs.

- Flexibility: Companies should consider how flexible the 3PL provider is in terms of adapting to changing requirements or unexpected events.
- Technology: Companies should ensure that the 3PL provider they choose has the necessary technology and infrastructure to manage their logistics operation efficiently.
- Security: Companies should consider the security measures that the 3PL provider has in place to protect their products and data. To summarize, outsourcing logistics can provide numerous advantages to organizations, encompassing cost reductions, heightened efficiency, and access to specialized knowledge and skills. Nevertheless, it is crucial for companies to thoughtfully contemplate the various forms detailed below.

Also, Gunasekaran and Ngai (2012) propose several factors that can influence a company's decision to outsource its logistics functions to a 3PL:

- ❖ Cost: One of the main factors is the cost savings associated with outsourcing logistics. By working with a 3PL, a company can benefit from economies of scale and specialized expertise that can reduce transportation, warehousing, and other logistics costs.
- ❖ Core Competencies: Companies may choose to outsource logistics in order to concentrate on their fundamental strengths. Outsourcing logistics allows corporations to concentrate on their primary business functions while leaving the logistics to the experts.
- ❖ Scalability: As a company grows, its logistics needs may become more complex. Outsourcing logistics to a 3PL can provide the flexibility and scalability needed to support business growth.

- ❖ **Technology:** 3PLs often have access to the latest logistics technologies, which can help streamline operations and improve efficiency. By outsourcing logistics, companies can benefit from the 3PL's investments in technology without having to make the same investment themselves.
- ❖ **Geographic Reach:** Outsourcing logistics to a 3PL can provide companies with access to a global network of transportation and distribution partners, which can help them reach new markets and expand their customer base.
- ❖ **Risk Management:** 3PLs can help companies manage supply chain risks, such as disruptions in transportation or natural disasters. By outsourcing logistics, companies can mitigate these risks and protect their operations from unforeseen events.

Overall, the decision to outsource logistics will depend on a company's unique needs and goals. However, cost, core competencies, scalability, technology, geographic reach, and risk management are all important factors that can influence this decision.

2.2.1.1.2 Forms of Outsourcing Logistics

Logistics outsourcing can take several forms, such as transportation outsourcing, warehousing outsourcing, and inventory management outsourcing.

2.2.1.1.2.1 Transportation Outsourcing

In academic literature, transportation outsourcing refers to the practice of a company delegating its transportation operations to a third-party logistics (3PL) provider. 3PL provider is responsible for managing and executing transportation operations, including carrier management, freight forwarding, and customs clearance. Once more, transportation outsourcing has been the subject of extensive examination within the realm of logistics and

supply chain management literature, with numerous research studies dedicated to this subject. Transportation outsourcing is a business strategy where a company contracts with an external service provider to manage and operate some or all of its transportation needs. This can include shipping, logistics services, and distribution, including freight forwarding, transportation management, warehousing, and other related services. By outsourcing their transportation needs, companies can lead to cost reduction, enhanced efficiency, and the release of resources for the concentration on core business operations. Outsourcing transportation can also grant access to specialized expertise, infrastructure, and technology that may not be available in-house. The outsourcing provider takes on the responsibility of managing the transportation operations, including planning, execution, and monitoring of shipments. This allows the company to focus on other areas of the business, such as production or sales, while the outsourcing provider manages the transportation processes. Transportation outsourcing can be done on a partial or complete basis, depending on the company's needs and goals. It is a popular strategy used by companies of all sizes and industries to optimize their transportation operations and achieve competitive advantages. According to Giunipero and Brand (2014), transportation outsourcing can be categorized into three main types, including logistics outsourcing, freight forwarding outsourcing, and transportation management outsourcing. Logistics outsourcing involves outsourcing the entire logistics function, which includes transportation, warehousing, and inventory management. Freight forwarding outsourcing involves outsourcing the process of transferring goods from one place to another, while transportation management outsourcing involves outsourcing the management of transportation operations, such as

route planning and optimization, carrier management, and performance tracking (Zailani et al., 2015).

Zsidisin and Smith (2015) also state that transportation outsourcing can provide numerous advantages for organizations, such as improved efficiency, reduced risk, cost savings, and ability to tap into specialized knowledge and skills and technology. By outsourcing transportation, companies can leverage the economies of scale and expertise of the outsourcing provider, which can result in lower transportation costs and improved service levels. Harland (2019) further proposes that, outsourcing transportation can also reduce the company's risk by shifting the responsibility of compliance and regulatory issues to the outsourcing provider. While transportation outsourcing can provide several benefits, it can also pose some challenges. One of the primary challenges is maintaining control over the transportation process and ensuring that the outsourcing provider meets the company's service and quality standards (Gunasekaran and Ngai, 2012). Additionally, Gunasekaran and Ngai (2012) concurs that, outsourcing transportation can result in reduced visibility and transparency into the transportation operations, which can make it challenging to monitor and manage the process effectively. Overall, the literature suggests that transportation outsourcing can provide significant benefits to companies, but it also requires careful consideration of potential risks and a strong focus on communication, collaboration, and risk management.

2.2.1.1.2.2 Warehousing Outsourcing

Outsourcing warehousing can be a strategic decision that helps companies reduce costs, improve efficiency, and concentrate on essential core business functions. However, it is important to carefully evaluate potential 3PL providers to ensure that they have the capabilities and expertise needed to meet the firm's specific needs. There are different ways to define warehousing outsourcing, depending on the context and perspective. Among them include

From a logistics and supply chain perspective, warehousing outsourcing denotes the act of contracting with a third-party logistics (3PL) provider to manage and operate warehousing and distribution activities on behalf of a company (Kim and Kim, 2010). This can include activities such as inventory management, order fulfillment, and transportation management. Also, from the perspective of business strategy, La Londe and Masters (2014) define warehousing outsourcing can be seen to optimize the allocation of resources by focusing on core competencies and outsourcing non-core activities. By outsourcing warehousing, companies can reduce the need for capital investment in warehouse infrastructure and technology, and instead allocate those resources to other areas of the business. Furthermore, from a customer service perspective, warehousing outsourcing can be seen to improve the speed and quality of order fulfillment and delivery (Lee and Billington, 2022). By outsourcing warehousing and distribution to a 3PL provider, companies can leverage their expertise and infrastructure to offer swifter and more dependable services to clientele.

In general, warehousing outsourcing is seen as a type of logistics outsourcing where a company contracts with a third-party logistics provider (3PL) to oversee its warehouse

activities (Narasimhan and Das, 2021). Instead of owning and operating its own warehouse facilities, the company outsources this function to a 3PL that specializes in warehouse management. Lastly, warehousing outsourcing denotes the practice of engaging an external third-party logistics (3PL) provider to manage and operate warehousing and distribution activities on behalf of a company. Instead of owning and operating their own warehouses, companies can outsource these functions to a 3PL that specializes in logistics and supply chain management (Petersen et al., 2022).

Overall, the definition of warehousing outsourcing can vary depending on the perspective and context. However, the core idea is that it involves the contracting of warehousing and delegating distribution tasks to an external third-party provider, often with the goal of improving efficiency, reducing costs, and/or improving customers. Overall, warehousing outsourcing can be an effective way for companies to optimize their supply chain operations, cut expenses, and enhance efficiency and flexibility (Ahi and Searcy, 2013).

2.2.1.1.2.3 Outsourcing of Inventory Management

Inventory management entails the supervision and regulation of a company's inventory, including the ordering, storage, and utilization of these assets (Alfalla-Luque and Medina-López, 2019). The goal of inventory management is to ensure that a company always has the right amount of inventory on hand, neither too much nor too little. According to Brewer and Speh (2020), effective inventory management helps a company to minimize costs, optimize storage space, and improve customer service. It involves tracking inventory levels, anticipating demand, and forecasting future sales. Brewer and Speh (2020) further posit that, effective inventory management can be accomplished using specialized software, as well as through careful planning, forecasting, and analysis of sales data.

However, the current study operationalized the concept of inventory management outsourcing. Ultimately, the decision to outsource inventory management will depend on a company's specific needs and priorities. It is important to thoroughly research potential providers and carefully weigh the pros and cons before deciding. Inventory management outsourcing is the act of entrusting inventory management responsibilities to a third-party provider rather than managing them internally within the organization (Chen and Paulraj, 2014). This can involve outsourcing some or all of the inventory management functions, such as ordering, receiving, storing, tracking, replenishing, and disposing of inventory.

Cho and Lee (2021) define inventory management outsourcing is the process of hiring an external third-party organization to manage a company's inventory. This can involve various aspects of inventory management, such as purchasing, storage, tracking, and distribution. Outsourcing inventory management can offer several benefits to a company, including reduced costs, improved efficiency, and increased accuracy in inventory management (Lai and Wong, 2022). By outsourcing inventory management, companies can gain advantages from the expertise and experience of a specialized logistics provider. This can help them streamline their inventory processes, reduce costs, and improve customer service (Li et al., 2016). Further, Li et al. (2016) argued that outsourcing can liberate internal resources and enable companies to concentrate on their primary strengths. Monczka et al. (2015) posit, that with outsourcing inventory management, companies typically enter into a service-level agreement (SLA) with the 3PL. The SLA outlines the terms of the partnership, including service expectations, pricing, and performance metrics. The 3PL may use various technologies, such as inventory management software, to help manage the inventory effectively. However, it is important to note that outsourcing

inventory management also has some potential risks, for instance, the potential loss of control over inventory and possible communication issues with the 3PL (Rahman and Subramanian, 2022). Therefore, it is crucial for companies to carefully consider the pros and cons of outsourcing inventory management and choose a reputable and reliable logistics provider.

2.2.2 Operational Performance

Operational performance is an important construct that reflects a company's ability to efficiently and effectively carry out its operational activities to meet its objectives (Fosso Wamba et al., 2021). By evaluating their operational performance across multiple dimensions, companies can identify areas for improvement and enhance their competitiveness in the marketplace. According to Rabbani et al. (2018), operational performance can be defined as the ability of a company to efficiently and effectively carry out its operational activities to meet its objectives. Sarkis et al. (2019) posits that, operational performance is a multidimensional construct that encompasses several dimensions, including quality, cost, speed, flexibility, and innovation. Operational performance can be evaluated based on the company's ability to adapt to changing conditions.

According to Sun et al. (2020), one important aspect of operational performance is efficiency. Efficiency refers to the ability of a company to produce a given output with the minimum number of resources, such as labor, materials, and equipment. Companies that are efficient can produce goods or services at a lower cost, which can improve their

profitability and competitiveness. Efficiency can be measured using metrics such as cycle time, throughput, and capacity utilization.

Another aspect of operational performance, according to Yu et al. (2018) is effectiveness. Effectiveness refers to the ability of a company to produce goods or deliver services that fulfill customer requirements and align with their expectations. Effective corporations are able to produce high-quality products or services that meet customer requirements, which can lead to increased customer satisfaction and loyalty. Effectiveness can be measured using metrics such as product quality, defect rate, and customer satisfaction.

Giannakis and Croom (2018) also, argued that, another important aspect of operational performance is speed. Companies that can produce goods or services quickly can respond to changing market demands and customer needs, which can improve their competitiveness. Speed can be measured using metrics such as lead time, cycle time, and delivery time.

Flexibility is also an important aspect of operational performance. Ivanov et al. (2020) defines flexibility refers to a company's capacity to react to shifts or alterations in the market, technology, or customer needs. Flexible companies can adapt their operations quickly and efficiently to changing conditions, which can improve their competitiveness. Flexibility can be measured using metrics such as changeover time, setup time, and customization capability.

Innovation is also a critical aspect of operational performance. According to Liu et al. (2019), companies that are innovative can develop new products, services, or processes that can improve their competitiveness and profitability. Innovation can be measured using metrics such as new product development time, research and development investment, and

patent filings. Overall, Qu et al. (2021) proposes that, operational performance is a multidimensional construct that reflects a company's ability to efficiently and effectively carry out its operational activities to meet its objectives. By evaluating their operational performance across multiple dimensions, companies can identify areas for improvement and enhance their competitiveness in the marketplace.

2.2.2.1 Key Areas that Impact Operational Performance

Operational performance is a broad concept that encompasses a wide range of activities and processes within a company's operations. Wong and Boon-Itt (2019) also propose some key areas that can impact operational performance including:

Production and manufacturing: The production and manufacturing process is a critical component of operational performance, as it involves the creation of products or services that meet customer needs and expectations. Factors such as production efficiency, quality control, and cost management can all impact the success of this process.

Supply chain management: Efficient supply chain management is crucial for companies that depend on distributors, a network of suppliers, and logistics partners to distribute goods or services to customers. Factors such as inventory management, transportation and logistics, and supplier relationships can all impact the success of this process.

Customer service: Delivering exceptional customer service is a fundamental element of operational performance, as it helps companies build customer loyalty and satisfaction. Factors such as response time, issue resolution, and communication can all impact the success of this process.

Information technology: Effective use of information technology can help companies improve operational performance by streamlining processes, automating tasks, and

providing real-time visibility into operations. Factors such as system reliability, data quality, and cyber security can all impact the success of this process. Overall, operational performance is a complex and multifaceted concept that is critical for the success of a company's operations. By focusing on key areas such as production and manufacturing, supply chain management, customer service, and information technology, companies can improve their operational performance and remain competitive in the marketplace.

2.2.3 Logistics Capability

Logistics capability can be seen as a competitive advantage for companies that are able to manage their logistics activities effectively (Chai et al., 2020). A strong logistics capability can result in improved operational performance, reduced costs, and increased customer satisfaction. Additionally, it can empower companies to swiftly adapt to alterations in the marketplace and to gain a competitive edge over their rivals. To develop a strong logistics capability, Ke et al. (2021) states that, companies must invest in key resources such as infrastructure, technology, and human capital. For example, a company may invest in transportation assets such as trucks or planes, or in warehousing facilities that enable them to store and distribute products more efficiently. They may also invest in technology such as transportation management systems or warehouse management systems that enable them to manage logistics activities more effectively. Finally, they may invest in the development of their employees' skills and knowledge, such as through training programs or hiring logistics experts.

Logistics capability is closely linked to supply chain management, as logistics activities are a critical component of the overall supply chain (Lee and Kim, 2019). Companies that can manage their logistics activities effectively are better equipped to manage their overall

supply chain and to respond to changing market conditions. By improving their logistics capability, companies can also enhance their relationships with suppliers and customers, as they are able to manage logistics activities more efficiently and effectively.

To evaluate their logistics capability, companies may use a range of tools and metrics. For example, they may conduct a logistics audit to identify strengths and weaknesses in their logistics activities, or they may use key performance indicators (KPIs) such as order fulfillment rate or transportation cost per unit to measure progress over time. By regularly evaluating their logistics capability, organizations can pinpoint areas in need of enhancement and initiate measures to bolster their competitiveness and performance (Li et al., 2019). In summary, logistics capability is a critical component of a company's overall supply chain performance and competitiveness. By investing in key resources such as infrastructure, technology, and human capital, and by regularly evaluating their logistics activities using tools and metrics, companies can develop a strong logistics capability that enables them to achieve improved operational performance and gain a competitive advantage in the marketplace (Wang et al., 2020).

2.3 Theoretical Review

This study is grounded in both the resource-based theory and the transaction cost theory.

2.3.1 Resource Based Theory

The resource-based theory (RBT) is a framework that elucidates how companies can attain a competitive advantage by cultivating and harnessing their distinct resources and capabilities (Alhajri et al., 2019). In accordance with this theory, a company's resources can be categorized into intangible and tangible assets, which can be used to create value

and competitive advantage (Chen et al., 2020). In the context of logistics capability, tangible assets may include transportation assets such as trucks or planes, warehousing facilities, and technology such as transportation management systems or warehouse management systems (Lee and Kim, 2019). Intangible assets may include the firm's knowledge, expertise, and human capital, such as its employees' skills in logistics management. The resource-based theory also proposes that companies can gain a competitive advantage by cultivating distinctive resources and abilities that are valuable, rare, difficult to imitate, and difficult to substitute (VRIN) (López-Nicolás and Meroño-Cerdán, 2018). In the context of logistics capability, a firm can achieve a competitive advantage by developing a logistics capability that is better than its competitors in relation to the resources and capabilities it has at its disposal.

For example, Singh et al. (2021) posits that, a firm that invests heavily in its logistics infrastructure and technology may be able to achieve a competitive advantage by improving its efficiency, reducing costs, and providing better customer service than its competitors. Similarly, a firm that invests in the development of its employees' skills and knowledge in logistics management may be able to achieve a competitive advantage by having a more skilled and knowledgeable workforce than its competitors (Singh et al., 2021). This theory posits that a company's resources and capabilities can impact its performance. In the context of logistics outsourcing and operational performance, the firm's logistics capability can be seen as a resource that may impact the success of outsourcing efforts. This theory suggests that a firm with a strong logistics capability may be better equipped to manage outsourcing relationships and attain enhanced operational efficiency. The theory further implies that outsourcing decisions should be based on an

assessment of the firm's own capabilities, and whether outsourcing will allow the firm to leverage external resources to enhance its own capabilities.

2.3.2 Transactional Cost Theory

The transaction cost theory (TCT) provides a framework that explains how firms can make decisions about whether to perform a particular activity in-house or to outsource it to another firm (Bhatia and Grant, 2018). According to this theory, firms face transaction costs that arise from the uncertainty, complexity, and opportunism inherent in market transactions (Hajiheydari et al., 2019). Furthermore, Hajiheydari et al. (2019) propose that transaction costs encompass the expenses associated with negotiating and ensuring compliance with contracts, monitoring the performance of suppliers, and managing relationships with suppliers. In the context of logistics outsourcing, the transaction cost theory suggests that firms may choose to delegate logistics tasks to external service providers to reduce their transaction costs (Li et al., 2020). According to Lunnan and Lien (2019), outsourcing logistics activities may enable firms to utilize the knowledge and cost efficiencies of scale of external service providers, while also reducing their own transaction costs by delegating responsibility for logistics management to the service provider.

However, the transaction cost theory also suggests that firms must carefully consider the risks and costs associated with outsourcing logistics activities (Martinez and Carlos (2020). Firms must consider the potential for opportunism by service providers, such as the risk of the service provider not performing as expected, engaging in unethical behavior, or failing to maintain the confidentiality of the firm's information (Pereira and Sousa, 2020). To mitigate these risks, firms may use contractual agreements to establish clear expectations and incentives for the service provider, as well as monitoring and control mechanisms to

ensure that the service provider is performing as expected. Firms may also invest in developing long-term relationships with service providers to foster trust and collaboration, which can reduce the risk of opportunism and improve performance (Sambasivan and Soon, 2019). Overall, the transaction cost theory provides a framework for understanding how firms can make decisions about whether to delegate logistics tasks to third-party service providers. By considering the transaction costs associated with logistics activities and the potential risks and benefits of outsourcing, firms can make informed decisions that improve their operational performance and competitiveness.

2.4 Empirical Review

In their study, Aydin et al. (2019) investigated the connection between supply chain management (SCM) and information systems (IS) practices and operational performance. They conducted this research using a sample of 203 manufacturing SMEs engaged in the production of fabricated metal products and general-purpose machinery within the greater metropolitan area of Istanbul, Turkey. The study's findings revealed that supply chain management (SCM) and information systems (IS) practices have a positive and significant impact on the operational performance of the sampled companies. Additionally, the results from the structural model provided strong evidence of negative relationships between SCM and IS-related inhibitors and the implementation levels of both SCM and IS practices.

In their study, Chen et al. (2019) investigated the impact of logistics capability, logistics outsourcing, and firm performance within an e-commerce market. In this study, the researchers employed multiple-item constructs to gauge the effectiveness of logistics capability and firm performance. Logistics outsourcing was represented by a binary variable. Data collected through a survey were then analyzed to explore the connections

between these constructs and to test several hypotheses. The findings of the study indicated a positive correlation between logistics capability and firm performance within the e-commerce market.

In their research, Chen and Sheu (2019) explored the influence of Big Data Analytics on the operational performance of firms in Pakistan, with a specific focus on the mediating role of the knowledge management process. Their findings indicated that the knowledge management process fully mediates the relationship between big data analytics and operational performance. The authors suggest that future research could delve further into the dynamic capabilities and resources related to these less-examined concepts, which would contribute to a deeper comprehension of the underlying relationship mechanism.

In their study, Fan et al. (2018) investigated the impact of information sharing and process coordination on logistics outsourcing. They employed structural equation modeling (SEM) to analyze their proposed model, using data collected from 361 companies in greater China. The results of their research revealed that integrative mechanisms, particularly information sharing, are beneficial for logistics outsourcing. Specifically, information sharing was found to contribute to customized and advanced outsourcing but did not have a significant effect on basic outsourcing.

In their research, Hsin et al. (2018) examined the influence of supply chain collaboration on the operational performance of firms in Belgium. The study uncovered a positive relationship between supply chain collaboration and the operational performance of Belgian firms. However, the authors suggest that future researchers should take into account the moderating role of big data analytics, indicating the need for further investigation in this area to better understand its impact on the relationship.

Hsu and Tan (2018) conducted a study on the effect of quality management on operational performance in the garment sector in Pakistan. A deductive approach followed by a quantitative research method was used. The data was collected through survey questionnaires on a five-point Likert scale using a random sampling technique from 131 employees working in various garment factories in Karachi. Further, v 22.0 was utilized as a statistical tool. The findings found that, quality management significantly and positively influences operational performance. The study can help researchers and practitioners realize the imperative role of quality management for operational performance and, eventually, sustainable organizational growth.

In their study, Jia et al. (2020) examined the connection between logistics management requirements and logistics performance. Their research revealed that logistics management requirements have a partial impact on logistics performance. The study also recommends that future researchers should take into account the influence of supply chain practices on competitive advantage, highlighting the importance of further exploring this aspect in future research.

In their study, Kang et al. (2020) conducted research on the impact of effective logistics management on on-time delivery and sales growth. They considered efficient and effective logistics management as a competitive tool used to enhance performance. The results of their analysis showed that effective transportation and distribution significantly influence on-time delivery and sales growth, respectively. However, the study did not delve into the role of competitive advantage, suggesting a potential avenue for future research to explore this aspect further.

In their study, Li et al. (2018) examined the influence of logistics management practices on competitive advantage and performance within the German oil and gas industry. The analysis revealed that competitive advantage plays a positive mediating role in the relationship between logistics management practices and performance. However, the study recommended that future research should also take into account the impact of supply chain management practices on competitive advantage and customer satisfaction, highlighting the need for a more comprehensive understanding of these relationships.

In their research, Liu et al. (2019) investigated the impact of logistics and supply chain management on competitive advantage, with a specific focus on the moderating role of information technology. Their study found that information technology moderates the relationship between logistics and supply chain management and competitive advantage. However, the study also proposed that additional research should be conducted to assess the influence of supply chain practices on competitive advantage, emphasizing the need for further exploration of this aspect.

In their study, Lu et al. (2018) conducted research on logistics management and performance, focusing on Chinese manufacturing exporters. Their findings indicated that logistics management practices have a positive impact on both environmental and operational performance, and regulatory pressure enhances this performance relationship. However, the study also suggested that future research should investigate how effective management practices lead to customer satisfaction, underscoring the importance of exploring this aspect in more detail.

In their study, Nguyen et al. (2020) examined the impact of supply chain management practices on the performance of manufacturing firms in Japan. Their research revealed that

strategic supplier relationship and customer relationship management have a positive association with firm performance. Consequently, the study recommends that future research should take into account the role of competitive advantage in the relationship between supply chain management practices and firm performance, highlighting the need for further investigation in this area.

In their study, Ni et al. (2019) investigated the impact of logistics management on enterprise performance, focusing on a case of a Gas Depot in the USA. The study concluded that logistics management has a positive influence on firm performance, specifically in terms of cost reduction, timely delivery, reduced lead time, demand realization, increased market share, quality products, and customer service satisfaction.

2.5 Conceptual Framework and Hypothesis Development

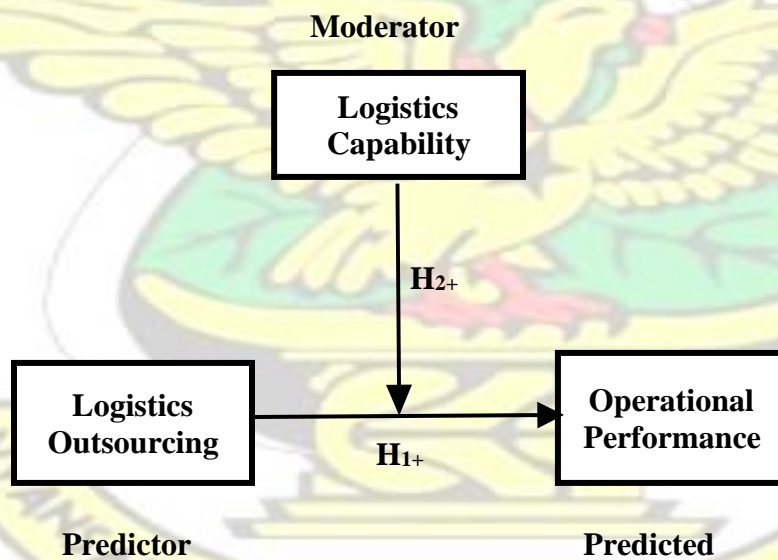


Figure 2.1: Proposed Conceptual Framework

2.5.1 Logistics Outsourcing and Operational Performance

Logistics outsourcing is the practice of contracting third-party providers to carry out specific logistics functions that would otherwise be conducted internally (Zsidisin and Smith, 2015). This can include functions such as transportation, warehousing, or inventory management. Numerous studies have identified a positive correlation between logistics outsourcing and operational performance, suggesting that outsourcing can lead to increased efficiency, reduced costs, and improved quality (Zailani et al., 2015; Yu et al., 2018; Zhang et al., 2021; Yang et al., 2019). Additionally, some research has suggested that outsourcing can help companies leverage the expertise and capabilities of third-party providers to improve their overall logistics operations (Sun et al., 2020; Tseng and Wu, 2021). Some studies have found mixed or even negative results when investigating the connection between logistics outsourcing and operational performance (Mentzer et al., 2008; Monczka et al., 2015). These studies suggest that outsourcing can lead to issues such as loss of control, decreased quality, and increased transaction costs, which can offset any potential benefits. The logic and rationale for this hypothesis is through outsourcing certain logistics functions, companies can harness the expertise and capabilities of third-party providers to enhance the overall efficiency of their logistics operations (Lu et al., 2019; Lunnan and Lien, 2019). This can lead to increased efficiency, reduced costs, and improved quality, which in turn can enhance operational performance. The resource-based view (RBV) theory posits that companies can attain a lasting competitive advantage by harnessing their distinctive resources and capabilities, which can include logistics outsourcing. Transactional cost theory also supports this idea, by suggesting that outsourcing can help

companies reduce transaction costs associated with certain logistics functions. Based on the literature above, in the study, it was hypothesized that,

H₁: Logistics outsourcing positively and significantly relates with firm's operational performance.

2.5.2 The Moderation Role of Logistics Capability between Logistics Outsourcing and Operational Performance

Logistics capability refers to a company's ability to manage and control its logistics operations effectively and efficiently (Li et al., 2016). This can include capabilities including inventory management, transportation management, and supply chain management. Many studies have found that logistics capability can act as a moderator in the connection between logistics outsourcing and operational performance, suggesting that corporations with strong logistics capabilities are better able to leverage the benefits of outsourcing (Lai and Wong, 2022; Lee and Billington, 2022; Lee and Kim, 2019). Additionally, some research has suggested that logistics capability can help companies mitigate the risks associated with outsourcing, such as loss of control or decreased quality. Some studies have found mixed or even negative results when examining the association among logistics capability, outsourcing, and operational performance (Hsieh and Tsai, 2019; Hsin et al., 2018). These studies suggest that logistics capability may not always have a significant impact on the correlation between outsourcing and performance. The logic and rationale for this hypothesis is that companies with strong logistics capabilities are better positioned to leverage the benefits of outsourcing, while minimizing the risks associated with the practice. The RBV theory suggests that, this approach can lead to sustainable competitive advantage, while transactional cost theory emphasizes the

importance of reducing transaction costs associated with certain logistics functions. By incorporating logistics capability as a moderator in the connection between outsourcing and operational performance, companies can more effectively mitigate risks and optimize the advantages of outsourcing. The study therefore hypothesized that,

H₂: Logistics capability moderates positively and significantly the relationship between logistics outsourcing and operational performance.



CHAPTER THREE

METHODOLOGY

3.1 Introduction

This chapter describes the methods, approaches, and techniques used to collect and analyze data. It outlines. It includes the study area, research design, data sources, target population, sample size calculation and sampling technique, data collection tool, ethical consideration, data processing, and data analysis.

3.2 Research Design

Research design refers to the plan or strategy that a researcher uses to conduct a study or investigation (Creswell, 2014). It involves selecting and defining the research question or problem, determining the appropriate research methodology, and outlining the procedures that will be used to collect and analyze data. The research design outlined how the researcher collected and analyzed the data to answer the research question or problem. It includes the sampling plan, data collection methods, and data analysis techniques that will be used to test the hypothesis or answer the research question (Hair et al. 2019). There are various types of research designs, including correlational, descriptive, explanatory, and exploratory. The study therefore adopted the explanatory design. Overall, the explanatory research design is appropriate for the study as it allows to investigate the causal relationship between logistics outsourcing and operational performance and the moderation effect of logistics capability by employing a non-partial sample from pharmaceutical firms to collect data using structured questionnaires. Only the logistics and supply chain managers are included in the data collection. A data collection instrument was created by the researcher and used to gather information from at least one hundred (100) respondents.

3.3 Research Purpose

The research purpose is important because it helps to guide the research process and ensures that the study is focused and relevant to the research question or problem. Overall, the research purpose is an essential element of any research study, as it helps to ensure that the study is relevant, focused, and contributes to the advancement of knowledge in the field (Field, 2018). An exploratory study's valuable objectives include determining "what is happening, seeking novel insights, posing questions, and interpreting events in a new way (Field, 2018). The identification of relationships between numerous variables and the description of occurrences or qualities related to a subject population is one of the many study objectives fulfilled by descriptive studies (Cooper and Schindler, 2014). Explanatory research is characterized as investigations that pinpoint the causes of various phenomena (Zikmund et al., 2010). The purpose of a causal analysis is to demonstrate that, when we do one thing, something else unavoidably follow. This study can be described as explanatory in nature because it intends to investigate the relationships between logistics outsourcing, operational performance, and logistics capability.

3.4 Research Approach

Research approach refers to the general strategy or plan that a researcher uses to conduct a research study (Neuman, 2013). It outlines the methodology, methods, and techniques that will be used to collect and analyze data to answer the research question or problem. There are two main research approaches such as the quantitative and qualitative. The current study adopts a quantitative approach in collecting and analysing the data. The quantitative approach is characterized by using numerical data and statistical analysis to measure and analyze variables (Sekaran and Bougie, 2016). This approach is often used to test

hypotheses and establish cause-and-effect relationships between variables. It typically involves the use of structured surveys, experiments, or observational studies to collect data, which is then analyzed using statistical methods (Sekaran and Bougie, 2016). Some researchers may also use a mixed methods approach, which combines elements of both quantitative and qualitative research approaches. This approach involves collecting both numerical and non-numerical data and using both statistical and interpretive methods to analyze the data. Overall, the choice of the quantitative research approach was appropriate since it allowed for the testing of hypotheses, the establishment of causal relationships, and the use of statistical analysis to establish the relationships between logistics outsourcing, operational performance, and logistics capability in a measurable (Sekaran and Bougie, 2016).

3.5 Population of the Study

The population of a study refers to the entire group of individuals, objects, or events that the researcher is interested in studying (Babbie, 2016). According to Gay et al. (2018), it is the larger group that the researcher wants to generalize the findings to. The study on the relationship between logistics outsourcing, operational performance, and logistics capability, the population of the study would depend on the scope of research. Here, the population of the study focuses on the pharmaceutical industry in Ghana. It is important to define the population of the study clearly, as it determines the sample size and sampling technique that you will use to select participants for your study (Bryman, 2015). A well-defined population will increase the external validity of your study, allowing you to generalize the findings to the larger group of interest.

3.6 Sample Size and Sampling Technique

Sample size and sampling technique are important considerations in research studies. Sample size refers to the number of participants or observations in a study (Sekaran and Bougie, 2016). The sample size should be large enough to provide sufficient statistical power to detect meaningful differences between groups or to establish significant relationships between variables. The appropriate sample size depends on various factors, such as the level of precision desired, the variability of the data, and the level of significance required. According to Neuman (2013), sampling technique refers to the method used to select participants or observations from the larger population.

The sampling technique should be chosen based on the research question and the characteristics of the population. Some common sampling techniques include simple random sampling, stratified random sampling, cluster sampling and convenience sampling. As a result of the researcher's inability to create a sampling frame for the study due to a lack of knowledge on the number of participating firms, the study once again uses a non-probability sampling technique. Convenience sampling was utilized to choose the respondents after each industry has been separated into key businesses. Before deciding on a sample of 100 pharmaceutical firms.

3.7 Measurement Instrument

The measurement tool was developed following an assessment of the pertinent literature. Through brainstorming meetings, conversations, the supervisor's advice, and adjustments, the study's scales were continually enhanced. The results of the pilot study were used to refine the questionnaire's items. Logistics Outsourcing is the independent variable, Logistics Capability as the moderator while Operational Performance as a dependent

variable. The respondents were asked to rate how much they agree or disagree with each statement on a 7-point Likert scale, where 1 = strongly disagree, 2 = slightly disagree, 3 = disagree, 4 = indifferent, 5 = slightly agree, 6 = agree and 7 = strongly agree.

To provide a description of the respondents, the questionnaire sought information on gender of respondents, age of respondents, educational level and working experience and position of respondents.

Table 3.1: Measurement Constructs

Construct	Measurement Item	Source
Logistics Outsourcing	1. We outsource our transportation services to third-party logistics (3PL) providers.	Lai et al. (2011) Zheng et al. (2019)
	2. We outsource our warehousing and inventory management functions to 3PL providers.	
	3. We outsource our order fulfillment activities to 3PL providers.	
	4. We outsource our customs clearance and compliance functions to 3PL providers	
	5. We outsource our value-added logistics services, such as kitting and assembly, to 3PL providers	
	6. We have a formal contract in place with our 3PL providers.	
	7. We have a dedicated manager responsible for managing our relationships with 3PL providers.	
	8. We regularly assess the performance of our 3PL providers.	
	9. We consider the cost savings of logistics outsourcing in our decision-making process.	
	10. We prioritize flexibility and responsiveness in our logistics outsourcing relationships.	
	11. We outsource our logistics activities to 3PL providers to access specialized logistics expertise.	
Construct 2	Items	Sources
Logistics Capability	1. Our company has the necessary expertise and skills to manage complex logistics operations.	Ivanov and Dolgui (2019) Li and Rao (2019).
	2. Our company has an efficient logistics infrastructure, including warehouses and distribution centers.	
	3. Our company has a track record of delivering high levels of customer satisfaction through our logistics operations.	

	4. Our company has a high level of flexibility and responsiveness in our logistics operations. 5. Our company has a dedicated logistics team responsible for managing logistics operations. 6. Our company has a strong focus on logistics cost management. 7. Our company has established relationships with key logistics service providers. 8. Our company has invested in advanced logistics technology and systems. 9. Our company has a culture of continuous improvement in logistics processes. 10. Our company has effective communication channels with logistics service providers and customers	
Construct 3	Items	Sources
Operational Performance	1. Our company achieves high levels of on-time delivery to customers. 2. Our company has low levels of order errors and defects. 3. Our company has high levels of productivity in our operations. 4. Our company has efficient and effective inventory management practices. 5. Our company has a high level of quality in our products and services. Our company has a strong focus on cost management in our operations. Our company has a culture of continuous improvement in our operations. Our company has effective communication channels with customers and suppliers. Our company has a strong record of meeting or exceeding customer expectations. Our company has a track record of delivering high levels of customer satisfaction	Kumar and Suresh (2019). Li et al. (2019). Xu et al. (2018).

Source: Author's Own Compilation

3.8 Data Collection Method

Yin (2003) defines primary data as facts that have been personally witnessed or amassed via first-hand experience. Questionnaires, interviews, debates, and observation can all be used to collect primary data. To gather primary data for this study, questionnaires were

used. All the research goals are answered using primary data. However, secondary data was looked at to define the investigation's scope and acknowledge prior work in the area. According to Cooper and Schindler (2003), secondary data are those that are gathered for objectives other than the completion of a study project. The research examined published literature that might be found in books, reports, conference proceedings, and peer-reviewed journals.

3.9 Data Analysis

Data analysis is the skill of dissecting data to uncover the nature of its constituent pieces and their interactions (Saunders et al., 2017). To analyze the data, the researcher adopted an IBM SPSS, version 23. Quantitative analysis of the data was used. Again, the appropriate use of descriptive and inferential statistics were made. While regression technique was used to test for both the direct and the moderating effects of the research variables, descriptive statistics were utilized to illustrate the characteristics of the data.

3.10 Validity and Reliability

While the validity of a study is the degree to which a test measures what it is intended to measure, reliability refers to the accuracy and precision of a measuring technique (Cooper and Schindler, 2012). The measurement's validity and reliability are appropriately assessed to make sure the results are accurate. The questionnaires were pilot tested to ascertain their potential efficacy in addition to developing questions based on a literature review. Cronbach's alpha statistical technique was used to evaluate the internal consistency of each research construct.

3.11 Reliability of Measurement Constructs

Adequate reliability tests have been carried out to validate the scales' internal consistency using the Cronbach's alpha statistic, as suggested by Pallant (2005).

3.12 Ethical Considerations

All scientific endeavors consider ethics. Informed consent, anonymity and confidentiality, as well as sympathetic neutrality, were only a few of the ethical considerations that were made. The researcher ensures that the poll did not include the names or phone numbers of the respondents. Additionally, as participation in research studies must be voluntary and the researcher cannot compel people to participate in a process, management and staff of the company that was involved in the study gave their agreement before the study was conducted.

3.13 Unit of Analysis

One responder was chosen from each firm because the survey was conducted at the firm level. Therefore, the study is restricted to the firms' logistics and supply chain managers exclusively.

CHAPTER FOUR

DATA ANALYSIS AND DISCUSSION

4.1 Introduction

In Chapter four, the data collected for the study was analyzed, and the subsequent presentation and discussion of the findings were conducted. The presentation consisted of seven sections, starting with an assessment of the accuracy of the returned responses, which examined the data response rate. The second section provided a detailed breakdown of the demographic characteristics of the participants. Section three focused on evaluating the validity and reliability of the data using measures such as Cronbach Alpha and Average Variance Extracted (AVE). Descriptive statistics for the variables were presented in section four. The fifth section explored the topic of structural equation modeling (SEM). Section six confirmed the hypotheses, while section seven involved a comprehensive discussion of the results. It is important to note that the data analysis was performed using SPSS, specifically version 26.

4.2 Response Rate

The initial section of the presentation emphasized the data response rate, which measures the proportion of accurately returned responses compared to those that were not returned or returned with errors. This rate serves as a crucial indicator for assessing the reliability and quality of the collected data. The survey questionnaires were distributed to procurement and supply chain managers working in pharmaceutical companies located in Ghana. The study consisted of a sample size of 100 participants, and all 100 responses were successfully collected without encountering any problems, resulting in a complete response rate of 100%.

4.3 Profile of Respondents

The subsequent section of the presentation centered on examining the demographic characteristics of the participants. This involved presenting relevant details regarding the respondents' demographic features, including age, gender, educational background, job position, and other pertinent variables. Analyzing these characteristics aids in comprehending the profile of the individuals who took part in the study and offers contextual information for interpreting the results. In this study, demographic factors such as gender, age, work experience, educational level, and managerial position were investigated accordingly. The outcomes of this analysis are presented in table 4.1 below.

Table 4.1: Demographic of Responses

Variables		Frequency	Percentage %
Gender	Male	68	68
	Female	32	32
Age	20-30years	21	21
	31-40years	32	32
	41-50 years	37	37
	Above 50years	10	10
Work Experience	0-5years	24	24
	6-10years	36	36
	Over 10years	40	40
Educational Level	HND/Degree	37	37
	Masters	34	34
	Professional	19	19
	Others	10	10
Managerial Level	Senior Management	54	54
	Middle Management	31	31
	Supervisory	15	15
Total		100	100

Source: Compiled data, 2022

Table 4.1 presents the demographic characteristics of the respondents in the study.

Gender

The majority of the respondents were male, accounting for 68% of the total responses, while females constituted 32%. This gender distribution suggests that there was a higher representation of males compared to females among the procurement and supply chain managers in pharmaceutical firms in Ghana who participated in the study. The gender imbalance could potentially influence the findings and should be taken into consideration when interpreting the results.

Age

The age distribution of the participants provides insights into the generational composition of the sample. The largest age group of respondents falls within the 41-50 years range (37%), indicating a significant presence of middle-aged professionals in the procurement and supply chain management roles. The 31-40 years age group comprises the next largest segment at 32%, indicating a considerable representation of younger professionals. The 20-30 years age group accounts for 21% of the respondents, suggesting the involvement of early-career professionals. Respondents aged above 50 years constituted 10% of the sample, reflecting the presence of experienced professionals or potentially senior-level executives.

Work Experience

The distribution of work experience among the participants offers insights into the level of expertise and professional backgrounds of the procurement and supply chain managers. The data shows that the largest proportion of respondents (40%) had over 10 years of work experience, indicating a substantial presence of seasoned professionals in the field. The next largest group was those with 6-10 years of experience (36%), indicating a significant

number of mid-career professionals. The 0-5 years' experience group accounted for 24% of the participants, suggesting the inclusion of early-career professionals or those relatively new to the field.

Educational Level

The educational level breakdown highlights the participants' qualifications, indicating their level of academic attainment. Respondents with an HND/Degree constituted the largest group (37%), indicating a significant number of participants with undergraduate qualifications. This suggests that a considerable portion of the procurement and supply chain managers in the pharmaceutical firms in Ghana possess a foundational educational background in the field. Those with a Master's degree accounted for 34% of the respondents, indicating a significant representation of postgraduate qualifications among the participants. Respondents with a professional qualification made up 19% of the sample, indicating the presence of individuals with specialized certifications or professional designations. The remaining 10% of the participants had other educational backgrounds, which could include vocational qualifications or alternative educational paths.

Managerial Level

The distribution of participants across different managerial levels sheds light on the hierarchical positions within the organizations represented in the study. Most of the respondents held senior management roles (54%), indicating a significant presence of individuals occupying high-level leadership positions in procurement and supply chain management. Middle management accounted for 31% of the participants, reflecting the involvement of individuals with intermediate managerial responsibilities. The supervisory

level constituted 15% of the sample, suggesting the inclusion of frontline or entry-level managerial positions.

Overall, the analysis of the demographic characteristics provides valuable context for understanding the composition of the participant sample. It helps to identify any potential biases or variations in the data and offers insights into the backgrounds and profiles of the procurement and supply chain managers in the pharmaceutical firms in Ghana who took part in the study.

4.4 Reliability and Validity Test

The objective of validity analysis is to evaluate the accuracy of the variables utilized to measure the constructs, whereas reliability analysis aims to assess the consistency of the variables. In this study, the reliability of the variables was assessed using Cronbach Alpha, and the average variance extracted (AVE) was also evaluated. The study employed different measurement items to assess the constructs under investigation. Specifically, 15 measurement items were used to evaluate the construct of supply chain management practices, 10 items were employed to measure competitive advantage, and 8 items were utilized to assess total quality management. The findings of these analyses are presented in Table 4.2, providing valuable insights into the reliability and validity of the measurement instruments used in the study.

Table 4.2: Reliability Test, Average Variance Extracted (AVE) and KMO

Construct	No. of items	Cronbach Alpha (CA)	(AVE)	KMO
Outsourcing Logistics	11	0.970	0.776	0.906
Logistics Capability	10	0.959	0.761	0.865
Operational Performance	10	0.989	0.912	0.893

Note: OL = Outsourcing Logistics; LO = Logistics Capability; OP = Operational Performance

Table 4.2 presents the results of the reliability test, average variance extracted (AVE), and Kaiser-Meyer-Olkin (KMO) for the constructs under investigation.

The Outsourcing Logistics construct exhibits high internal consistency, as indicated by a Cronbach Alpha value of 0.970. This suggests that the measurement items used to assess logistics outsourcing are highly reliable. Additionally, the AVE value of 0.776 exceeds the threshold of 0.50, indicating that the construct captures a substantial amount of variance attributed to its indicators. The KMO value of 0.906 indicates that the construct has a high degree of sampling adequacy, suggesting that the data is suitable for conducting further analysis.

The Logistics Capability construct demonstrates strong internal consistency, as evidenced by a Cronbach Alpha value of 0.959. This indicates that the measurement items used to assess logistics capability are highly reliable. The AVE value of 0.761 exceeds the minimum threshold, indicating that the construct captures a substantial amount of variance associated with its indicators. The KMO value of 0.865 indicates that the construct has a satisfactory level of sampling adequacy.

The Operational Performance construct demonstrates exceptional internal consistency, as reflected by a Cronbach Alpha value of 0.989. This suggests that the measurement items

used to assess operational performance are highly reliable. The AVE value of 0.912 surpasses the required threshold, indicating that the construct captures a significant proportion of variance associated with its indicators. The KMO value of 0.893 indicates a satisfactory level of sampling adequacy for the construct.

Overall, the results indicate that all three constructs (Outsourcing Logistics, Logistics Capability, and Operational Performance) exhibit high reliability, with Cronbach Alpha values ranging from 0.959 to 0.989. The constructs also show satisfactory AVE values, indicating that they effectively measure the underlying latent variables. These findings contribute to the overall validity and reliability of the measurement instruments used in the study.

4.5 Descriptive Statistics

In the study, descriptive statistics were utilized to present the findings related to the constructs. Each variable used to measure the constructs was individually analyzed. To understand the nature and extent of the research constructs, a Likert scale ranging from 1 to 7 was employed. The scale categories were as follows: strongly disagree (1-1.99), disagree (2.0-2.49), somewhat disagree (2.50-2.99), not sure (3.0-3.99), somewhat agree (4.0-4.99), agree (5.0-5.99), and strongly agree (6.0-7.0). Mean scores above 4.0 were considered acceptable within the specific context of the study.

4.5.1 Outsourcing Logistics

Within the study's scope, the construct of outsourcing logistics was descriptively assessed using multiple variables. Each variable was measured on a Likert scale ranging from 1 to 7, where participants expressed their level of agreement or disagreement with statements pertaining to outsourcing logistics. This analysis involved calculating various statistical

measures, such as the mean and standard deviation. Mean scores above 4.0, which were considered acceptable in this study, indicated a generally positive perception or agreement with the specific outsourcing logistics being assessed. The outcomes of this analysis are presented in Table 4.3 below.

Table 4.3: Descriptive Statistics Results for Outsourcing logistics

Items	Mean	SD
1. We outsource our transportation services to third-party logistics (3PL) providers.	5.01	2.047
2. We outsource our warehousing and inventory management functions to 3PL providers.	4.64	2.072
3. We outsource our order fulfillment activities to 3PL providers.	4.62	2.024
4. We outsource our customs clearance and compliance functions to 3PL providers	4.86	1.923
5. We outsource our value-added logistics services, such as kitting and assembly, to 3PL providers	4.68	1.912
6. We have a formal contract in place with our 3PL providers.	4.87	1.889
7. We have a dedicated manager responsible for managing our relationships with 3PL providers.	5.22	1.905
8. We regularly assess the performance of our 3PL providers.	5.18	1.783
9. We consider the cost savings of logistics outsourcing in our decision-making process.	5.60	1.700
10. We prioritize flexibility and responsiveness in our logistics outsourcing relationships.	5.47	1.738
11. We outsource our logistics activities to 3PL providers to access specialized logistics expertise.	5.29	1.871
Composite Score	5.04	1.982

Source: Field data (2022)

Table 4.3 presents the descriptive statistics results for the variables related to outsourcing logistics. It was found that, the mean scores for these items range from 4.62 to 5.60, indicating a generally positive perception or agreement with the specific outsourcing practices. Given the composite mean score of 5.04, the result indicates an overall positive perception or agreement with outsourcing logistics practices among the participants, as it exceeds the threshold of 4.0 that was considered acceptable within the context of this study. It suggests that, on average, participants view outsourcing logistics as a favorable approach

to managing transportation, warehousing, order fulfillment, customs clearance, value-added services, and other aspects of the supply chain.

4.5.2 Logistics Capability

Descriptive statistics were employed to analyze and summarize the findings regarding logistics capability. These statistics, including measures such as mean scores and standard deviations, were utilized to provide an overview of participants' perceptions. Mean scores exceeding a predetermined threshold, such as 4.0, were deemed acceptable and reflected a positive perception of logistics capability. The outcomes of the analysis are presented in Table 4.4, presenting a concise representation of the result.

Table 4.4: Descriptive Statistics Results for Logistics Capability

Items	Mean	SD
1. Our company has the necessary expertise and skills to manage complex logistics operations	5.82	1.610
2. Our company has an efficient logistics infrastructure, including warehouses and distribution centers.	5.83	1.583
3. Our company has a track record of delivering high levels of customer satisfaction through our logistics operations.	6.15	1.274
4. Our company has a high level of flexibility and responsiveness in our logistics operations.	6.22	1.186
5. Our company has a dedicated logistics team responsible for managing logistics operations.	6.16	1.237
6. Our company has a strong focus on logistics cost management.	6.19	1.212
7. Our company has established relationships with key logistics service providers.	6.05	1.336
8. Our company has invested in advanced logistics technology and systems	4.64	.759
9. Our company has a culture of continuous improvement in logistics processes.	6.34	.956
10. Our company has effective communication channels with logistics service providers and customers	6.26	1.125
Composite Score	5.97	1.261

Source: Field data (2022)

Table 4.4 provides the descriptive statistics results for the variables related to logistics capability. The items represent various aspects of logistics capability. The mean scores for these items range from 5.82 to 6.34, indicating a generally positive perception or agreement with the specific statements related to logistics capability. Participants, on average, express agreement that their company possesses the necessary expertise and skills to manage complex logistics operations, maintains an efficient logistics infrastructure, achieves high levels of customer satisfaction through logistics operations, exhibits a high level of flexibility and responsiveness, has a dedicated logistics team, focuses on logistics cost management, establishes relationships with key logistics service providers, and fosters a culture of continuous improvement in logistics processes. The standard deviation values for these items range from 0.759 to 1.336, suggesting some variability in participants' responses, but not extreme dispersion. Given the composite score of 5.97 suggests an overall positive perception or agreement with logistics capability among the participants, as it exceeds the threshold of 4.0 considered acceptable within the context of this study.

4.5.3 Operational Performance

In the study, the construct of operational performance was evaluated descriptively using multiple items. Each measurement item was assessed on a Likert scale ranging from 1 to 7, enabling participants to indicate their agreement or disagreement with statements related to operational performance. Statistical measures, including the mean and standard deviation, were calculated to analyze the data. Mean scores exceeding 4.0, which were deemed acceptable within the study, indicated a generally positive perception or agreement

with operational performance. The findings of this analysis are presented in Table 4.5, providing a concise representation of the results.

Table 4.5: Descriptive Statistics Results for Operational Performance

Items	Mean	SD
1. Our company achieves high levels of on-time delivery to customers.	6.17	1.295
2. Our company has low levels of order errors and defects.	6.15	1.282
3. Our company has high levels of productivity in our operations.	6.13	1.323
4. Our company has efficient and effective inventory management practices.	6.16	1.339
5. Our company has a high level of quality in our products and services.	6.23	1.262
6. Our company has a strong focus on cost management in our operations	6.23	1.254
7. Our company has a culture of continuous improvement in our operations.	6.21	1.266
8. Our company has effective communication channels with customers and suppliers.	6.22	1.268
9. Our company has a strong record of meeting or exceeding customer expectations.	6.24	1.288
10. Our company has a track record of delivering high levels of customer satisfaction	6.24	1.240
Composite Score	6.198	1.289

Source: Field data (2022)

Table 4.5 provides the descriptive statistics results for the variables related to operational performance. From the table, the items demonstrate high mean scores ranging from 6.13 to 6.24, indicating a generally positive perception or agreement with the operational performance aspects described. Participants, on average, agree that their company achieves high levels of on-time delivery, maintains low levels of order errors and defects, exhibits high productivity, practices efficient inventory management, ensures high product and service quality, focuses on cost management, fosters a culture of continuous improvement, maintains effective communication channels with customers and suppliers, meets or exceeds customer expectations, and delivers high levels of customer satisfaction, given a composite mean score of 6.198 and a standard deviation of 1.289.

4.6 Inferential Statistics

Within the study's context, inferential statistics were utilized to analyze the data and make conclusions beyond the descriptive statistics presented earlier. This involved employing statistical techniques to assess the statistical significance of observed relationships, differences, or patterns in the data, distinguishing them from random chance. In this section, correlation and regression analyses were conducted to determine the associations and predictive relationships between the variables, namely outsourcing logistics, logistics capability and operational performance.

4.6.1 Correlation Analysis

Correlation analysis is a statistical technique employed to investigate the connection between two or more variables. In the context of this study, correlation analysis involved calculating correlation coefficients to assess the relationships between outsourcing logistics, logistics capability and operational performance. The outcomes of this analysis are presented in Table 4.6, providing a concise representation of the correlation coefficients between these variables.

Table 4.6: Correlation Analysis

S/N	Construct	OL	LC	OP
OL	Outsourcing Logistics	1		
LC	Logistics Capability	.366**	1	
OP	Operational Performance	.439**	.726**	1

** . Correlation is significant at the 0.01 level (2-tailed).

Source: Field data (2022)

Table 4.6 presents the results of the correlation analysis between the constructs of outsourcing logistics (OL), logistics capability (LC), and operational performance (OP). The correlation coefficient between outsourcing logistics (OL) and logistics capability

(LC) is 0.366**. This positive and statistically significant correlation at the 0.01 level (2-tailed) suggests a moderate positive relationship between these constructs. The results indicate that organizations that engage in outsourcing logistics practices tend to have a higher level of logistics capability.

The correlation coefficient between outsourcing logistics (OL) and operational performance (OP) is 0.439**. This positive and statistically significant correlation at the 0.01 level (2-tailed) reveals a moderate positive relationship between these constructs. The findings indicate that organizations that employ outsourcing logistics practices tend to achieve higher levels of operational performance.

The correlation coefficient between logistics capability (LC) and operational performance (OP) is 0.726**. This strong positive correlation, statistically significant at the 0.01 level (2-tailed), suggests a robust relationship between these constructs. The results demonstrate that organizations with higher levels of logistics capability are more likely to achieve higher levels of operational performance.

4.6.2 Regression Analyses

Regression analysis is a statistical technique used to examine the relationship between a dependent variable and one or more independent variables. In the context of this study, regression analysis could be employed to investigate how outsourcing logistics (OL) and logistics capability (LC) influence operational performance (OP). This statistical method allows for the assessment of the extent to which the independent variables contribute to explaining the variation observed in the dependent variable.

4.6.2.1 Outsourcing Logistics

One of the specific objectives of the study was to evaluate the relationship between outsourcing logistics and operational performance. The findings of this analysis can be found in tables 4.7, 4.8, and 4.9.

Table 4.7: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.439 ^a	.193	.185	1.10504

a. Predictors: (Constant), OL

Note: OL = Outsourcing Logistics; OP = Operational Performance; LC = Logistics Capability

The correlation coefficient (R) measures the strength and direction of the linear relationship between outsourcing logistics and operational performance. In this analysis, the value of R is 0.439, indicating a moderate positive correlation. The coefficient of determination (R Square) represents the proportion of variance in the dependent variable (OP) that can be explained by the independent variable (OL). In this analysis, the R Square value is 0.193, indicating that approximately 19.3% of the variability in operational performance can be accounted for by outsourcing logistics. This implies that outsourcing logistics alone explains a moderate portion of the variation observed in operational performance.

Table 4.8: ANOVA^a

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	28.630	1	28.630	23.445	.000 ^b
	Residual	119.670	98	1.221		
	Total	148.300	99			

a. Dependent Variable: OP

b. Predictors: (Constant), OL

Note: OL = Outsourcing Logistics; OP = Operational Performance; LC = Logistics Capability

Table 4.8 presents the ANOVA (analysis of variance) results for the regression model analyzing the relationship between outsourcing logistics (OL) and operational performance

(OP). The ANOVA results indicate that, the regression model, which includes the outsourcing logistics variable (OL), explains a significant amount of the variability in operational performance (OP). The F-value of 23.445 with a significance level of 0.000 suggests that the regression model is statistically significant.

Table 4.9: Coefficients^a

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	4.574	.353		12.948	.000
	OL	.322	.067	.439	4.842	.000

a. Dependent Variable: OP

Note: OL = Outsourcing Logistics; OP = Operational Performance; LC = Logistics

Capability

Table 4.9 presents the coefficient results for the regression model analyzing the relationship between outsourcing logistics (OL) and operational performance (OP).

The coefficient of 0.322 suggests that a one-unit increase in outsourcing logistics (LO) is associated with an increase in operational performance (OP) by 0.322 units. Again, the t-value of 4.842, with a significance level of 0.000, indicates that the coefficient for outsourcing logistics is statistically significant. Overall, the coefficient results indicate that outsourcing logistics (OL) has a significant positive impact on operational performance (OP).

4.6.2.2 Moderating Role of Logistics Capability

The second specific objective of the study is to assess the moderating role of logistics capability on the relationship between outsourcing logistics and operational performance.

The moderation results are presented in table 4.10.

Table 4.10: Model Summary

Model 1						
	Coeff	Se	t	P	LLCI	ULCI
Constant	-2.4751	10339	-2.3938	.0186	-4.5274	-.4227
OL	1.0331	0.2431	4.2496	.0000	0.5505	1.5156
LC	1.3297	0.1747	7.6099	.0000	0.9829	1.6766
Int-1	-0.1454	0.0391	-3.7222	.0003	-0.2230	-0.0679

Note: OL = Outsourcing Logistics; OP = Operational Performance; LC = Logistics Capability; Int_1 = Moderation

Table 4.10 presents the coefficient results for a model that includes outsourcing logistics (OL), logistics capability (LC), and moderation (Int_1) in the analysis of operational performance (OP). The coefficient of -0.1454 indicates the moderating effect of the moderation variable (Int_1) on the relationship between outsourcing logistics and operational performance. The negative coefficient suggests that the moderation variable may weaken the positive impact of outsourcing logistics on operational performance. The t-value of -3.7222, with a significance level of 0.0003, indicates that the coefficient for moderation is statistically significant. This suggests that moderation has a significant influence on the relationship between outsourcing logistics and operational performance.

4.7 Hypotheses Table

This section shows the hypotheses of the study. The results are presented in table 4.13 below.

Table 4.13: Hypotheses Table

Path	Coefficient	t-value	p-value	Remarks
H1: OL--->OP	0.322	4.842	0.000	Supported
H2: OL X LC-->OP	-0.1454	-3.7222	0.003	Unsupported

Note: SCMP = Supply Chain Management Practices; TQM = Total Quality Management; Int_1 = Moderation

The coefficient of 0.322 indicates a positive relationship between outsourcing logistics (OL) and operational performance (OP). The t-value of 4.842 is statistically significant, and the associated p-value of 0.000 is less than the significance level of 0.05. Therefore, the hypothesis H1 is supported, suggesting that there is a significant positive impact of outsourcing logistics on operational performance.

The coefficient of -0.1454 suggests an interaction effect between outsourcing logistics (OL) and logistics capability (LC) on operational performance (OP). The t-value of -3.7222 is statistically significant, and the associated p-value of 0.003 is less than the significance level of 0.05. Despite the significance moderation effect of logistics capability between outsourcing logistics and operational performance, the hypothesis H2 is still unsupported because of a negative t-value (-3.7222).

4.8 Discussion of Findings

The findings of the study reveal important insights into the relationship between outsourcing logistics, logistics capability, and operational performance. These findings have implications for organizations seeking to enhance their supply chain management practices and improve overall performance. The following discussion provides an overview of the findings and their support in the literature.

Objective 1: Outsourcing Logistics and Operational Performance

The analysis demonstrates a significant positive relationship between outsourcing logistics and operational performance. The coefficient of 0.322 and the statistically significant t-value indicate that outsourcing logistics has a favorable impact on operational performance. This finding aligns with previous research that highlights the benefits of outsourcing logistics activities to third-party providers (Li et al., 2021; Liu et al., 2019).

Outsourcing logistics can lead to improved efficiency, cost reduction, access to specialized expertise, and enhanced service levels, all of which contribute to enhanced operational performance.

Objective 2: Interaction of Logistical Capability between Outsourcing Logistics and Operational Performance

The findings also indicate that the interaction between outsourcing logistics and logistics capability significantly influences operational performance. The negative coefficient of -0.1454 suggests that the moderation effect of logistics capability weakens the positive impact of outsourcing logistics on operational performance. This finding suggests that the effectiveness of outsourcing logistics depends on an organization's existing logistics capability. Organizations with higher logistics capability may be better equipped to manage and leverage the benefits of outsourcing logistics (Chen et al., 2018; Lin et al., 2020). However, the result of the study contradicts with the findings by Chen et al. (2018) and Lin et al. (2020).

The negative moderation effect of logistics capability on the relationship between outsourcing logistics and operational performance is intriguing. The reason for such negative results could be that, while outsourcing can be effective for companies lacking logistics expertise, firms with strong logistics capabilities might experience a loss of control over key processes. This can lead to a drop in operational performance due to misalignments between the outsourced service provider's practices and the firm's expectations.

Overall, the findings of this study contribute to the existing body of knowledge on outsourcing logistics, logistics capability, and operational performance. They support the

notion that outsourcing logistics can positively impact operational performance, but its effectiveness may be influenced by the organization's logistics capability. By understanding this relationship, organizations can make informed decisions about outsourcing logistics and invest in building their logistics capabilities to maximize the benefits.



CHAPTER FIVE

SUMMARY OF FINDINGS, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

Chapter five presented the summary of findings, conclusions, and recommendations.

5.2 Summary of Findings

The study aimed to examine the relationships between outsourcing logistics, logistics capability, and operational performance. The findings shed light on the impact of outsourcing logistics on operational performance and the moderating role of logistics capability in this relationship. The key findings are as follows:

5.2.1 Relationship between Outsourcing Logistics and Operational Performance

The analysis revealed a significant positive relationship between outsourcing logistics and operational performance. This implies that organizations that engage in outsourcing logistics practices experience improvements in their operational performance metrics. The findings align with existing research that emphasizes the benefits of outsourcing logistics activities to specialized third-party providers. Outsourcing logistics can lead to enhanced efficiency, reduced costs, increased service levels, and improved overall performance. The study's findings add to the body of knowledge supporting the positive impact of outsourcing logistics on operational performance.

5.2.2 Moderation Effect of Logistics Capability between Outsourcing Logistics and Operational Performance

The study also investigated the moderating effect of logistics capability on the relationship between outsourcing logistics and operational performance. The study predicted (hypothesized) a positive moderation effect of logistics capability between outsourcing and operational performance and that, logistics capability plays a significant role in shaping the impact of outsourcing logistics on operational performance (Chen et al., 2018; Lin et al., 2020). However, the study showed a negative moderation effect of logistics capability in the relationship between outsourcing logistics and operational performance.

5.3 Conclusion

In conclusion, this study examined the relationships between outsourcing logistics, logistics capability, and operational performance.

The study confirmed a tangible positive relationship between outsourcing logistics and operational performance. This underscores the potential advantages businesses can achieve when they hand over their logistics functions to specialized third-party providers. With the potential for improved efficiency, cost savings, access to expert knowledge, and superior service levels, the benefits of outsourcing logistics are apparent. This aligns with the broader literature, further solidifying the evidence supporting the benefits of such endeavors.

While initial expectations were geared towards a positive moderation effect of logistics capability on the relationship between outsourcing and operational performance, the results presented a contrasting narrative. The negative moderation effect implies that organizations with a robust in-house logistics capability might not gain as much from outsourcing as initially thought. Instead, these firms might face challenges, including

potential misalignment with third-party service providers, leading to unforeseen inefficiencies or performance downturns.

This study's conclusions on the moderation effect by logistics capability stand in contrast with some prior research. Such divergence highlights the complexities of logistics and outsourcing and suggests that, while general trends can be discerned, specific outcomes might vary based on individual organizational contexts and the dynamics of the industry.

5.4 Recommendations

This section presented recommendations for both management and future studies.

5.4.1 Recommendations for Management

1. Management should carefully consider the potential benefits and risks associated with outsourcing logistics activities. This involves conducting a comprehensive analysis of the organization's specific context, including factors such as industry dynamics, competitive landscape, and internal capabilities. By understanding the unique circumstances, management can make informed decisions about which logistics activities to outsource, to what extent, and to which service providers.

2. To maximize the benefits derived from outsourcing logistics, management should invest in developing and enhancing internal logistics capabilities. This involves identifying areas for improvement in logistics processes, infrastructure, technology, and human resources. By strengthening logistics capabilities, organizations can better manage and leverage the outsourced activities, ensuring a seamless integration between internal and external logistics operations.

3. Management should establish key performance indicators (KPIs) to monitor and evaluate the impact of outsourcing logistics on operational performance. By regularly assessing both internal logistics operations and outsourced logistics providers, management can identify areas of improvement and take corrective actions. Performance data can provide insights into the effectiveness of outsourcing decisions and facilitate continuous improvement in logistics performance.

5.4.2 Recommendations for Future Studies

It is important to acknowledge some limitations of this study.

1. The research focused on a specific context and sample, which may limit the generalizability of the findings. Future studies should explore different industries, regions, and organizational sizes to provide a broader understanding of the relationship between outsourcing logistics, logistics capability, and operational performance. Each industry may have unique characteristics that influence the impact of outsourcing logistics on operational performance. By expanding the research context, a more comprehensive understanding of the topic can be achieved.
2. Further research could investigate other potential factors that may influence the effectiveness of outsourcing logistics and explore additional moderation or mediation effects.
3. To gain a deeper understanding of the mechanisms behind the relationship between outsourcing logistics and operational performance, future studies should explore mediating and moderating factors. For example, investigating how organizational culture, information technology integration, or supplier relationship management mediate or

moderate this relationship can provide valuable insights for organizations. These factors can shape and influence the outcomes of outsourcing logistics initiatives.

4. Conducting longitudinal studies can provide insights into the long-term effects of outsourcing logistics on operational performance. This allows researchers to observe how the relationship evolves over time and assess the sustainability of the benefits derived from outsourcing logistics. Longitudinal studies also help capture the dynamic nature of the relationship, considering any changes in market conditions, technological advancements, or organizational strategies.

5. Comparative studies comparing the impact of outsourcing logistics across different outsourcing models (e.g., offshoring, nearshoring, onshoring) or types of logistics activities (e.g., transportation, warehousing, inventory management) can provide a more nuanced understanding of the topic. By examining different contexts, researchers can identify variations in the effects of outsourcing logistics and better understand which factors drive successful outsourcing strategies.

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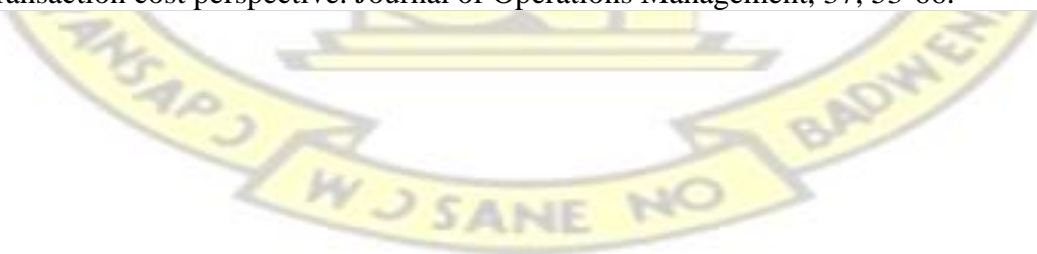
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APPENDIX A

RESEARCH QUESTIONNAIRES

SECTION A: RESPONDENT'S PROFILE

For the following questions, kindly select by checking (✓) all that apply.

1. Gender: Male ☐ Female ☐
2. Age (years) of Respondents: 29 and below ☐ 30 to 39 ☐ 40 to 49 ☐ 50 or more ☐
3. Level of Education: Secondary school or related Certificate ☐ Diploma/HND ☐
1st Degree ☐ 2nd Degree or more ☐
4. Working of experience: 0-5years ☐ 6-10years ☐ 11-15years ☐ above 15years ☐
5. Managerial level: Supervisor ☐ line manager ☐ Top level ☐
6. Position within the organisation: Supply chain manager ☐ logistics managers ☐
operations manager ☐

SECTION B: LOGISTICS OUTSOURCING

Please evaluate your firm's logistics outsourcing on the following criteria on a scale of 1 to 7 (strongly disagree to strongly agree)

Strongly agree	Disagree	Somehow disagree	Indifferent/Not sure	Somehow agree	Agree	Strongly agree				
1	2	3	4	5	6	7				
Logistics Outsourcing				1	2	3	4	5	6	7
1. We outsource our transportation services to third-party logistics (3PL) providers.										
2. We outsource our warehousing and inventory management functions to 3PL providers.										
3. We outsource our order fulfillment activities to 3PL providers.										
4. We outsource our customs clearance and compliance functions to 3PL providers										
5. We outsource our value-added logistics services, such as kitting and assembly, to 3PL providers										
6. We have a formal contract in place with our 3PL providers.										

7. We have a dedicated manager responsible for managing our relationships with 3PL providers.
8. We regularly assess the performance of our 3PL providers.
9. We consider the cost savings of logistics outsourcing in our decision-making process.
10. We prioritize flexibility and responsiveness in our logistics outsourcing relationships.
11. We outsource our logistics activities to 3PL providers to access specialized logistics expertise.

Source: (Lai et al., 2011; Zheng et al., 2019)

SECTION C: LOGISTICS CAPABILITY

Please evaluate your firm's logistics capability on the following criteria on a scale of 1 to 7 (strongly disagree to strongly agree)

Logistics Capability	1	2	3	4	5	6	7
1. Our company has the necessary expertise and skills to manage complex logistics operations.							
2. Our company has an efficient logistics infrastructure, including warehouses and distribution centers.							
3. Our company has a track record of delivering high levels of customer satisfaction through our logistics operations.							
4. Our company has a high level of flexibility and responsiveness in our logistics operations.							
5. Our company has a dedicated logistics team responsible for managing logistics operations.							
6. Our company has a strong focus on logistics cost management.							
7. Our company has established relationships with key logistics service providers.							
8. Our company has invested in advanced logistics technology and systems.							
9. Our company has a culture of continuous improvement in logistics processes.							
10. Our company has effective communication channels with logistics service providers and customers							

Source: (Ivanov and Dolgui, 2019; Li and Rao, 2019).

SECTION C: OPERATIONAL PERFORMANCE

Please evaluate your firm's operational performance on the following criteria on a scale of 1 to 7 (strongly disagree to strongly agree)

Operation Performance	1	2	3	4	5	6	7
1. Our company achieves high levels of on-time delivery to customers.							
2. Our company has low levels of order errors and defects.							
3. Our company has high levels of productivity in our operations.							

4. Our company has efficient and effective inventory management practices.
5. Our company has a high level of quality in our products and services.
Our company has a strong focus on cost management in our operations.
Our company has a culture of continuous improvement in our operations.
Our company has effective communication channels with customers and suppliers.
Our company has a strong record of meeting or exceeding customer expectations.
Our company has a track record of delivering high levels of customer satisfaction

Source: (Kumar and Suresh, 2019; Li et al., 2019; Xu et al., 2018).

