KWAME NKRUMAH UNIVERSITY OF SCIENCE AND TECHNOLOGY, KUMASI

INVENTORY MANAGEMENT AND ORGANIZATIONAL PERFORMANCE: THE ROLES OF TECHNOLOGY AND KNOWLEDGE SHARING

BY

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DECLARATION

I hereby declare that this thesis is the result of my original work towards the MSc. in Logistics and Supply Chain Management and that, to the best of my knowledge, it neither contains material published by another person nor materials which have been accepted for the award of any other degree of the University, except where due acknowledgements have been made in the text.

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DEDICATION

This thesis is being dedicated:

To God Almighty for the gift of life. For in Him I live, move and have my being. Words alone are not enough to express how grateful I am, receive all the praise, honour and adorations.

To Robert, my husband and best friend for his love and unflinching support and commitment.

To my children; Joshua, Janel and Joseph-Prince for your love, encouragement and support. Thank you for making our family a wonderful one. God richly bless you.

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Getting this thesis done was not an easy task. Though challenging, it's been exciting as well, with the simple reason that, it has offered me the opportunity to contribute to a research topic "Inventory Management and Organizational Performance" which is at the heart of many organizations.

I was not alone in putting this work together as the Researcher. Numerous organizations and people have in diverse ways assisted in producing this thesis and their effort, advice and encouragement is duly acknowledged.

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Not all, I am particularly grateful to the ECG for offering me the opportunity to work with the Materials Management Division. The research idea was conceptualized as a result of some challenges and experiences encountered during the course of my work.

ABSTRACT

The aim of the study was to address gaps in the literature on inventory management and organisational performance by developing a research model that introduces technology utilisation and knowledge sharing as crucial intervening variables. It sought to determine the impact of these variables on the relationship between inventory management and organizational performance. To achieve this, a quantitative approach was adopted, and a survey was conducted among 109 power producing and distribution organisations in the Greater Accra Region of Ghana. The collected data was analysed using descriptive and structural modeling techniques. The findings of the study indicate a strong positive relationship between inventory management and organisational performance. Additionally, knowledge sharing was found to positively mediate the relationship between inventory management and organisational performance. However, the research did not find significant evidence for the positive moderating impact of technology utilisation on the relationship between inventory management and organisational performance. Based on these findings, the study recommends the implementation of strategic initiatives such as Vendor Managed Inventory (VMI) techniques, which can contribute to improved performance by reducing overall stocking costs. Furthermore, it emphasizes the importance of information sharing approaches along the supply chain, as they can enhance the level and utilisation of expertise within the chain for the benefit of the organisation.

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CHAPTER ONE

INTRODUCTION

1.1 Background of Study

Inventory management encompasses demand forecasting, replenishment of stock, returns and defective goods, ensuring lead time efficiency, management of asset, forecasting of future inventory price, physical space availability, physical inventory, asset and quality management (Opoku et al., 2020). Optimal inventory levels are the result of balancing these opposing objectives, a process that is continuous as the company demands change and responds to the external environment. Inventory management includes requirements for inventories, effective stock holding and control of the appropriate level of stock, on the one hand, and keeping the overall inventory costs as low as possible, on the other (Orobia et al., 2020). An organization's lack of effective stock control management systems can result in decreased sales, disruptions in production, and even affect the ability of the organisation to fulfil customer demands (Beheshti et al., 2020). A build-up of excessive inventories, on the other hand, might raise inventory holding and storage expenses in terms of breakage, obsolescence, insurance, and an opportunity cost coming from monies that could have been utilised for other investments initiatives (Hashed & Shaik, 2022)

Numerous strategies, such as the just-in-time (JIT) system and material requirement planning (MRP), may be used to accomplish effective inventory management. When manufacturing happens in reaction to demand, JIT promotes efficiency and reduces waste (Atnafu & Balda, 2018; Cesarelli et al., 2021; Mulandi & Ismail, 2018). It adds favourably to an organisation's performance by preventing the accumulation of excessive inventories and, as a result, freeing up money that was previously committed. Material requirement planning, on the other hand, enables a company to predict its inventory requirements in an accurate manner. It is a crucial inventory management approach for scheduling and identifying the right flow of raw materials throughout an organisation (Chebet & Kitheka, 2019; Ji & Zou, 2017) Therefore, effective inventory management will aid businesses in meeting or exceeding client expectations, leading to enhanced performance.

Effective inventory management, a crucial element in sustaining a competitive edge and enhancing an organisation's overall performance, includes minimizing inventory costs by maintaining the right amount of inventory at the right location, and at the right price to produce the precise quantity of items needed (Hashmi et al., 2021). An excessive in-stock inventory has a negative impact on procurement performance as a result of capital tied up. This can lead to decreased efficiency, effectiveness as well functionality. (Muchaendepi et al., 2019). With inventory typically accounting for up to 40% of a company's entire capital, thus representing a high proportion of many of the companies total current assets (Agù & Nnate, 2016), good inventory management is vital for growth and profitability. It is a critical variable in all phases of a product including manufacturing, distribution and sale.

In recent times, there has been numerous calls for adequate and efficient management of inputs and other forms of raw materials (Atieh, 2016, Singh & Verma, 2018). As a result, many businesses are recognising the importance of technology, especially internet-based solutions, in inventory management to reduce costs and enhance coordination (John et al., 2015). Technology has now become a crucial inventory management tool, due to the benefits of lowering transactional cost, increasing competitive sourcing alternatives as well as enhancing inter-organisational alliances. As a result of these benefits, an increasing number of number of companies are becoming aware of the advantages with the use of Internet Based Technology in their inventory management. From the inception of Electronic Data Interchange (EDI) to Vendor-Managed Inventory processes, technology is an essential link between inventory management efficiency and organisational performance. Examining how to improve the quality of logistics services without considering the impact of information technology would be to disregard one of the most effective tools for assuring consistency and boosting productivity that a modern organization has at its disposal (H. Shin et al., 2016).

In conjunction with technology, knowledge management is described as a process to generate, transfer, integrate, and utilise relevant knowledge within and beyond an organisation's boundaries (Pérez-Salzar et al. 2017; Gold et al., 2015). They described knowledge management as a specialized and systematic process whereby the knowledge of one functional unit is applied to other functional units with varying competitive advantage. Knowledge management also entails the development of a set of organizational capabilities that would enable the organization to recognize, create, transform, and distribute knowledge (Lee & Choi,

2003). Consequently, knowledge management must transcend organizational borders owing to the organization's desire to harness its knowledge resources, thus including its Supply Chain Partners.

Emphasising knowledge flow and value creation from intangible resources, knowledge management is vital to improving inventory management activities. Real time information sharing among departments not only contributes to reducing overall stock levels but also enhances an organisation's capacity to meet customer demands on time.

Considering the introduction to the variables of the study, the researcher intends to investigate the association between inventory management and organisational performance, and the roles of technology utilisation and knowledge sharing. The research will concentrate on Power Producing and Distribution Organizations in Greater Accra, Ghana. This work has both theoretical and practical implications. Theoretically, this research tries to add to existing literature on the study's main variables (inventory management and organisational performance), by considering how knowledge sharing and technology play a role. This is essential in light of the increased need for inventory management efficiency, which seeks to reduce holding costs and enhance operational outputs.

1.2 Statement of the Problem

In the contemporary global economy, manufacturers must leverage technology in inventory control to remain competitive, with research showing a positive link between MRP and warehouse management. This indicate that technology plays a significant role in inventory management (Tejesh & Neeraja, 2018). The increased risks associated with higher inventory levels, such as destruction of products and increased cost (Muchaendepi et al., 2019), have spurred significant research into inventory management and its correlation with organisational performance. Studies have mainly found a positive relationship between inventory management techniques (such as just-in time, material requirement planning) and organisational performance (Mbah et al., 2019; D. Shin et al., 2016).

Recent research also explored inventory management and its impact on financial performances of small business, and the outcome revealed significant associations (Orobia et al., 2020).

Beheshti (2010) emphasised the importance of vendor-managed inventory systems (VMI) in improving organisational competitiveness.

Despite prior research focusing on inventory management's relationship with competitive advantage and performance, few studies have examined intervening variables like technology utilisation and knowledge sharing. This study aims to fill the gap by investigating these variables' roles in relation to inventory management and organisational performance amongst Ghanaian Power Producing and Distribution Companies. Additionally, this research seeks to build on previous work of (Orobia et al., 2020) by introducing technology utilisation and knowledge sharing in the context of Ghanaian Power Firms in Greater Accra. The intent is to contribute to literature by considering both financial and non-financial variables, thus providing a comprehensive understanding of inventory management 's impact on organisational performance in a vital sector like Ghana's Power Sector.

1.3 Objectives of the Study

1.3.1 General Objectives

This study's primary purpose is to identify the moderating and mediating roles of technology utilisation and knowledge sharing in the relationship between inventory management and organisational performance. To assess the relationship between inventory management and organisational performance, the specific objectives are stated below;

1.3.2 Specific Objectives

i. To determine the relationship between inventory management and organisational performance
ii. To evaluate the moderating role of technology utilisation on the relationship between inventory management and organisational performance
iii. To evaluate the mediating role of knowledge sharing on the relationship between inventory management and organisational performance.

1.4 Research Questions

i. What is the relationship between inventory management and organisational performance?
ii. How does technology utilisation moderate the relationship between inventory management and organisational performance?
iii. How does knowledge sharing mediate the relationship between inventory management on organisational performance?

1.5 Significance of the Study

This research makes significant contributions to both practice/industries, the entire economy, and research/knowledge/academia. Firstly, from a practical standpoint, the findings of this study offer valuable insights to supply chain managers who seek to optimise their inventory levels, thereby avoiding stockouts and minimising inventory holding costs. By delving into the study of various inventory management approaches, supply chain managers are prompted to minimize the costs associated with ordering and holding inventory, ultimately reducing the overall expenses of the organisation. Moreover, the research highlights the importance of technology adoption, such as inventory management systems like radio frequency identification (RFID), which can further enhance the effects of inventory management on an organisation's competitive advantage. Thus, the study's practical implications provide guidance to supply chain practitioners in improving their inventory management practices.

Secondly, in terms of its impact on the entire economy, this research underscores the significance of effective inventory management in achieving organisational performance. Organisations that can successfully implement inventory management strategies stand to benefit from reduced costs, reduced lead times, minimised risks, enhanced innovation, and improved product quality. These outcomes not only contribute to the success of individual organisations but also have positive ripple effects on the broader economy. Efficient inventory management practices across multiple organisations can lead to improved productivity, increased competitiveness, and overall economic growth.

Lastly, in the realm of research, knowledge, and academia, this study advances the existing literature on inventory management by introducing technology utilisation and knowledge sharing as critical intervening variables. By including these variables in the research model,

the study expands the theoretical understanding of how inventory management impacts organisational performance. This framework can serve as a foundation for future research in related fields, providing scholars and researchers with a valuable paradigm for investigating the dynamics between inventory management, technology utilisation, knowledge sharing, and organisational performances. The study's findings contribute to the collective knowledge and understanding of inventory management's role in organisational performance, stimulating further academic inquiry and exploration in this domain.

1.6 Overview of Research Methodology

The study adopts a survey design to research, focusing on power producing and distributing organisations operating within the Greater Accra Region - Ghana. A quantitative approach is being used, involving the development and testing of hypotheses using quantitative tools. The sample size for the study is one hundred and nine (109) organisations, selected using simple random sampling. The study relies on both primary and secondary data, with a questionnaire being used as the main data source. Data is being analysed using IBM SPSS version 26 and PLS. The research design adopted a survey methodology.

1.7 Scope of the Study

The study's scope geographically is focused on Power Producing and Distribution Organisations operating within the Greater Accra Region – Ghana. From a conceptual point of view, the study's scope is narrowed to inventory management, technology utilisation, knowledge sharing and organisational performance. Inventory management, the predictor variable, is assessed with the use of six items adopted from Orobia et al., 2020. Technology utilisation, the moderating variable, is assessed with the use of five items from Pradabwong et al., 2017, Organisational performance, the predicted variable was measured using twelve items adopted from Orobia et al., (2020) and Khan et al., (2012). Six of the measures were financial while the other six were non-financial measures. The mediating variable, knowledge sharing was measured using seven measures, adopted from Hong and Zou (2017) and Calantone et al., (2012)

1.8 Organisation of the Thesis

There are five chapters in the research. The study's background and problem statement, research aims and questions, the study's scope, significance, overview of the methodology and its organisation are all covered in the first chapter. A review of pertinent literature on inventory management, the use of technology, knowledge sharing, and organisational performance is presented in Chapter 2. An empirical review, a theoretical framework, a conceptual review, conceptual framework and the formation of hypotheses are all included. The methodology of the investigation is covered in Chapter 3. It includes the study's demographic, sample size and strategy, method of data collection and analysis, reliability and validity analysis, and ethical considerations. It also includes the research design. Data analysis and results interpretation are covered in chapter 4. Also included in this chapter is findings of the descriptive and inferential analyses as well as a commentary on them. In chapter 5, the findings are summarised, suggestions for additional study are made, and conclusions are drawn.

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CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

Works and studies carried out on the management of inventory, technology utilisation, organisational performance, and knowledge sharing is thoroughly reviewed. Theoretical, empirical and conceptual framework, as well conceptual review are all found in this chapter. The definitions of the study's variables are provided in the conceptual overview. The theoretical framework describes the theories that will be investigated. The past investigations on the study's variables are enshrined in the empirical review. The conceptual framework depicts the link between the variables in the study.

2.2 Conceptual Review

This section delves into the study's constructs, which include inventory management, technology utilisation, organisational performance and knowledge sharing.

2.2.1 Inventory Management

Inventory management is a crucial framework that organisations utilise to monitor and control their stock levels, encompassing various activities related to maintaining adequate supplies of raw materials, semi-finished, and finished goods. Atieh et al. (2016). It comprises keeping track of and monitoring stock levels, forecasting future demand, selecting when and how to organise deliveries, and protecting the production flow from disruptions such as running out of resources (Hannah et al., 2018). It is necessary to protect the regular and scheduled production flow from the random disruption of running out of resources or items at multiple places within a supply network. Inventory management considers replenishment lead time, carrying costs, asset management, inventory forecasting, valuation, future inventory price forecasting, physical inventory, visibility, available inventory space, quality management, replenishment, returns and defective goods, and demand forecasting.

Inventory management, according to Mulandi & Ismail, (2020) encompasses all activities involved in developing and managing inventory levels of raw materials, semi-finished materials (work-in-progress) and finished goods to ensure adequate supplies and minimize the costs associated with over- or under-stocking. The major purpose of inventory management and control, according to Orobia et al. (2020), is to advise managers of how much of a good to reorder, when to reorder it, how frequently orders should be placed, and the appropriate level of safety stock to prevent stockouts. As a result, the overall goal of inventory management is to have what is needed while minimizing the number of times one is out of stock. Inventory management is a constant activity that is influenced by forecasts and product prices and should be possible within the cost structure and overall plan of the business.

According to Singh & Verma (2018), the utmost goal of managing inventory is the balancing of conflicting needs of avoiding excessive stock and the cost of stock out, highlighting that running out of critical inventory can halt production. Patil & Divekar (2014) break down inventory management into planning and control, focusing on effective coordination and optimal investment. Prasad et al. (2019) argue that inventory control enhances profitability by optimising material storage and handling.

Inventory management, according to (Patil & Divekar, 2014), comprises planning and control. The planning requires calculating ahead of time: i) how many products to order; ii) how frequently (periodicity) we order them to maintain overall source-store sink coordination in an economically effective manner. (iii) How frequently (periodicity) do we want them to maintain effective stock levels. The control aspect (stock control) requires sticking to the technique set during the planning stage to attain the aforementioned aim. This could entail reviewing stock levels on a regular basis and deciding what to do depending on the information gathered and appropriately processed. Because holding down cash in excess inventory is expensive, any organization's management must strive for optimal inventory investment.

Inventory control, according to Prasad et al. (2019) boosts profitability by minimizing material storage and handling costs. Inventory control is the process of making supplies of the appropriate quality and quantity available as needed, taking into account the economy of scarcity, ordering cost, purchase price, and working capital.

Inventory control, according to Fernández-López et al. (2020), affects the level of material stockholding. By decoupling an individual section of the whole operation, it enables material managers to carry out an accurate and efficient operation of the manufacturing organization. Materials control is the normal control over order size, order timing, and raw material quantities left in the shop at any given time. It comprises evaluating stock in the warehouse and issuing stock. Managers must therefore always maintain an ideal stock level in order to maximize earnings and reduce costs. Both overstocking and understocking must be avoided.

Inventory is retained for a variety of reasons, according to (Sarkar & Mahapatra, 2017). Inventories can be kept for the following reasons; improving production scheduling, smooth output in response to fluctuating sales, reduce stockout costs, speculate on or hedge against price changes, reduce purchasing costs by purchasing in bulk, eliminate delivery lags, and so on. A good inventory control system can help a company save a lot of money. Inventory management is essential in almost any manufacturing or distribution activity. The ultimate success of these companies is frequently dependent on their ability to offer the right items at the right time and in the right place. Failure to have the right things in the right place at the right time frequently leads in lost sales and earnings, as well as lost consumers.

A stable inventory system increases client confidence, which leads to ongoing consumption. Inventory management systems are most commonly utilized in manufacturing situations, where their practicality and economic worth have been shown. Inventory is kept on hand to ensure operational dependability, scheduling flexibility, and variations in raw material, delivery time, and purchase order size (Shin et al., 2016).

An inventory system, according to Mbah et al. (2019) establishes operating policies and an organizational framework to keep and regulate stock. A competent inventory management system includes determining how much and when to order and track inventory products. The inventory choice of any organization is based on existing stock levels, predicted demand, lead time and lead time variance, inventory holding costs, ordering expenses, and shortage costs.

Installing an efficient inventory control system is crucial for any business. Inventory refers to the availability of any stock or resource used by an organization. An inventory system collects and monitors inventory levels, deciding the proper amount to keep, the size of orders to place, and when stock should be replenished. Inventory control is the process of monitoring products

storage, distribution, and accessibility to ensure an adequate supply without undue oversupply Pillai, (2022).

Inventory control refers to the availability of commodities whenever and wherever they are needed by keeping a sufficient amount and diversity of stocks on hand. Inventory management is the collection of interconnected actions required for material purchase, storage, sale, disposal, or utilization. Inventory managers must stock up when necessary and utilise existing storage space wisely. Inventory managers should be held accountable. They must adhere to the budget and select what, how, and when to order so that the product is supplied on time and at the lowest possible cost (Saha & Ray, 2019).

2.2.2 Technology Utilisation

Nowadays, technology is used in practically every aspect of the company, from ordering, procurement, storage, and payment. As a result, it is critical for human-centred businesses such as hospitals and pharmacies to incorporate the benefits of contemporary technologies into their practices to improve inventory management. Newer technology, such as radio frequency identification (RFID) microchips, can enhance product distribution from manufacturers to wholesalers and end-users (Makong'o, 2021) According to different research studies, information technology is a crucial tool that has increased competitive advantage in today's ever-changing environment. The impact of information technology (IT) is undeniably important in today's trade and economic environment. Companies may now use IT to distribute information, create real-time agile strategic solutions, engineer novel goods, and carry out business-specific concepts across various events (Jaouadi, 2022).

Efficient inventory management can be accomplished using many methods and approaches like Just-In-Time (JIT) system and Material Requirement Planning (MRP). When production is done in response to demand, JIT assures leanness and eliminates waste (Inegbedion et al., 2019) It aids in avoiding unnecessary inventories in an organization, resulting in less tied up capital, which favourably adds to an organization's performance. Material requirement planning, on the other hand, assists an organization in successfully forecasting inventory needs (the materials). It is a key inventory management approach in an organization for scheduling and determining the right flow of raw materials (Wangari & Kagiri, 2015)

Appropriate management of inventory will go a long way in assisting organisations meet customer service levels thereby exceeding the expectations of customers, leading to enhanced performance. Krupasindhu et al. (2022) asserted that inventory management assists enterprises in reducing locked up capital, hence optimising shareholders value eventually, which happens to be the primary objective of most organisations. At the same time, Makong'o, (2021) contend that inventory management assists organisations in minimising inventory ordering and carrying costs, causing improvements in revenue. Zare et al. (2018) indicated that proper inventory management enables enterprises to accurately estimate their inventory needs, allowing them to address demand uncertainties.

Appropriate information technology system support is critical for providing high-quality logistics services Kasim et al. (2015), IT may significantly impact logistics operations by increasing supply chain collaboration and automating many routine logistics chores, freeing logistics specialists to focus on strategic logistics management concerns (Nwaobia et al., 2020). Indeed, from the early days of Electronic Data Interchange (EDI) to more recent forms of supplier/customer networking, such as vendor-managed inventory (VMI) operations, information technology has served as a unifying force. To discuss the ways and means of enhancing the quality of logistics service with no mention of the contribution by technology use is to overlook one of the most effective tools for maintaining consistency and enhancing efficiency that a modern organisation has at its disposal. Hamdan et al. (2019) showed that commercial and technological development in third-world countries is infancy. He argued that a lack of progress in information and communication technology is one of the reasons third-world countries are unable to adapt to modern economic trends.

Furthermore, Orobia et al. (2020) found that logistics procedures can be meaningful and effective when ICT is employed. This will help the organization develop a cost-effective, competitive advantage; as a result, cycle time will be decreased, and productivity and dependability will increase (Teerasoponpong & Sopadang, 2022). Businesses can use logistics information technology to improve and maintain their competitive advantage.

2.2.3 Organisational Performance

Organizational performance is an economic category that assesses a company's ability to use both human and material resources to achieve its objectives (Zare et al., 2018). An organization's financial operations performance assesses the change in its financial condition or the financial results of management choices and the execution of those actions by the members of the organization. Because the perception of these outcomes is context-dependent, the measures used to describe performance are chosen based on the conditions of the observed organizations. Organizational performance is based on the notion that an organization is a strategic combination of productive assets, including human, physical, and capital resources, with the aim of achieving a common goal (Dana et al., 2021). Donors will only donate assets if they are satisfied with the value they would receive in comparison to alternate uses for the assets. As a result, value creation is at the heart of performance. If the value generated by utilizing the contributed assets is equal to or greater than the value anticipated by the contributors, the assets will be made available to the organization and the organization will remain. As a result, value generation, as defined by the resource supplier, is the most essential criterion in judging each organization's total performance. Most of the management empirical research focuses on value generation.

Belkhir et al. (2017), defines corporate performance as the comparison of actual production to announced objectives and targets. As a result, it compares an organization's actual performance to its expected performance. The success of a business is an important notion that is used as a dependent variable in many studies. When assessing a company's success, it is vital to build a set of meaningful indicators that provide a more realistic basis for comparing its profile and progress over time (Aarseth et al., 2017). As a result, various scholars (Aarseth et al., 2017; Bartram et al., 2018), advocate for financial and non-financial performance metrics to be included as critical criteria in establishing a company's success.

Financial performance is a subjective assessment of a company's (including Ghanaian manufacturers of bottled and sachet water) ability to create income using available assets from its primary mode of operation. As a result, financial performance measures a company's success using monetary metrics (Munten et al., 2021). The most commonly used metrics with regards to financial performance are return on investment (ROI), return on assets (ROA), return on equity (ROE) as well as profitability. In contrast, non-financial performance measures

demonstrate how well a company's product offering performs on the market (Münch et al., 2022). Key non-financial performance metrics include customer loyalty, customer satisfaction, revenue growth, and market share. In accordance with the current body of knowledge, this study examines organizational performance on a multidimensional basis, taking financial and non-financial performance indicators into account.

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2.2.4 Knowledge Sharing

Knowledge can be developed and used in an organization through a process known as knowledge sharing. This procedure is a critical component of a company's knowledge management system (Gold et al., 2015). Knowledge sharing, according to Ji & Zou, (2017), is the collaboration of others to solve challenges through the "supply of task information and know-how." It is regarded as a process in which one party is influenced by the experiences of another (Hayashi et al., 2019). There is no agreement on how to differentiate between information sharing and knowledge transfer. According to (Ávila-Robinson et al., 2022). knowledge transfer is more than merely exchanging knowledge. Because one of the requirements of knowledge transfer is the ability of knowledge recipients to take action, which needs sufficient understanding of the shared knowledge, the sharing phase should come before the transferring step in the knowledge process. Knowledge transfer, according to Pérez-Salazar et al. (2017) is the process of replicating and maintaining a complex and causally ambiguous collection of routines in a new situation, such as transferring best practices between organizational units. According to this source, stickiness denotes difficulty encountered during the process. In other words, when large efforts are required to fluidize the flow of knowledge, knowledge transfer is viewed as difficult or sticky. As a result, knowledge transfer appears to be more difficult than knowledge exchange. In terms of levels of analysis, distinctions between knowledge sharing and knowledge transfer emerge. Within an organizational context, knowledge sharing can include both individual knowledge sharing and group knowledge sharing (i.e. departments, divisions, functions or teams). However, information transfer extends beyond the person. It only refers to knowledge exchange among groups (for example, departments or organizations) (Secundo et al., 2019). It might be argued that the phrase knowledge sharing used in this study embraces a broader range of concepts than knowledge transfer. Knowledge sharing mainly includes significant organizational entities such as departments and organizations themselves (Centobelli et al., 2019).

2.3 Theoretical Review

The foundation or support for any research or a study's theory is the theoretical framework. It defines and also introduces the theory that expounds the views on the existences of research problems. This section goes through the hypotheses that underpin the research: Adaptive Structuration Theory and Expected Utility Theory.

2.3.1 Expected Utility Theory

A corporation will utilise RFID, EDIs, and other technologies to promote or enhance efficiency, according to utility theory (Giri & Masanta, 2020). According to the Sánchez-Franco et al. (2019) study, businesses expect technological inventory management systems to increase efficiency. Adopting inventory management technology like RFID can reduce inventory levels, minimize the quantity and amount of missing materials, and improve the picking and shipping procedures (Santa et al., 2019). Gharaei et al. (2021) discovered that using technology improved inventory visibility, resulting in increased company value. RFID, for example, could boost efficiency by lowering supply chain and warranty/return processing costs and shortening cash-to-cycle time. RFID and EDI systems, according to (Usman et al., 2019) boost inventory visibility through automated data collection. This makes the calculation of current inventory days of supply much easier and precise. With regards to anticipated utility hypothesis, this research work evaluates the adoption and usage of technologies such as RFID and ERP as a means of achieving efficiency and effectiveness. Moreover, utilizing the expected utility theory, this paper proposes effective inventory management as a means of reducing waste and increasing efficiencies.

2.3.2 Adaptive Structuration Theory

Adaptive Structuration theory delineates the intricate interplay between evolving information technologies, social frameworks, human interactions, and the regulations and tools furnished by information technology, forming the bedrock of human endeavours. Initially introduced by Anthony Giddens in 1984, structuration theory aimed to reconcile social systems with the micro/macro perspectives inherent in organisational structures. Building upon Giddens' framework, Garavan et al. (2007) introduced the Adaptive Structuration theory and its

application to the development of group decision support systems. This theory proves invaluable for comprehending the impact of information technology on inventory management, as it encompasses multifaceted viewpoints of change. Notably, as contemporary technology increasingly influences human interaction within the theory, especially within socio-biologically inspired structural designs of security software programs, the significance of adaptive structural theory in modern inventory management becomes pronounced (Bennett, 2014).

The Adaptive Structuration theory offers insights into distinct advancements in information technology that prompt organisational shifts in business alignment, information technology strategy, and developmental trajectories. These adaptations underscore the role of the Adaptive Structuration theory as a catalyst for effective organisational management. Through the lens of this theory, this study investigates the potential of harnessing technology to enhance the effectiveness and efficiency of inventory management.

2.4 Empirical Review

Empirical research is based on observed and measurable phenomena and develops knowledge from experience rather than theory or belief. This section examines previous research on inventory management, technology utilisation, organisational Performance, and knowledge sharing.

2.4.1 Contemporary Issues in Inventory management

(Pillai, 2022) investigated the issues of demand fluctuations, reverse logistics, seasonal changes, stockless inventory management practices, and the risks of lost sales, lost customers, and low customer satisfaction in a study of B2C e-commerce enterprises or online retailers. Their research also looks at many ways for lowering the risk of inventory management for online enterprises. The study's findings show that online retailers face a slew of inventory management issues, including demand swings, reverse logistics, stock-outs, managing SKUs, inventory tracking, multichannel customers, bottlenecks and weak spots, the bullwhip effect, and distressed stocks. To reduce these risks, online merchants used approaches such as drop shipping, inventory classification, hybrid strategies, pre-purchase stocks, and fewer stock

policies, such as acquiring stocks only after customers placed orders. The survey also discovered that better inventory management leads to increased consumer satisfaction, which benefits e-commerce businesses in the long run.

Mbah et al. (2019) analyzed the impact of inventory management on the competitive advantage of Kenyan manufacturing enterprises, particularly focusing on Unga Group Limited. The research considered the role of information technology, inventory lead time, and control methods in gaining a competitive edge. Through descriptive statistics and SPSS analysis, the study concluded that these elements are crucial for competitiveness in Kenyan manufacturing. Sarkar & Mahapatra (2017) investigated the effect of inventory performance on profitability. By examining data from 14 manufacturing sectors in the United States from 1958 to 1999, they found that lower inventory levels positively impacted profitability in nine out of the fourteen sectors. Notably, the effect varied depending on the type of inventory, such as finished goods or work-in-process. According to Zhang et al. (2019), a failure in inventory management may lead to production bottlenecks and inability to maintain investment for maximizing profit. Ineffective management can also cause irreparable market losses, particularly in competitive industries. Striking the right balance between excess and insufficient inventory is vital to meet production and sales demand.

Sarkar & Mahapatra, (2017) delves deeper into the impact of inventory performance on profitability. The goal was to find empirical evidence to back up the idea that operational excellence in inventory management boosts long-term profitability. To that end, the authors examine industry level longitudinal data (14 manufacturing sectors at the SIC two-digit level) from 1958 to 1999 using a set of hierarchical regression models. According to the statistical findings, lower inventory levels, as measured by the industry inventory-to-sales ratio, have a positive impact on industry profitability, as measured by the profit-to-sales ratio. This evidence is significant in nine of the fourteen industrial sectors in the United States. This study also demonstrates that not all inventories, classified by stage of production, contribute equally to enhancing industrial profitability. Lower completed goods inventories, for example, have benefited the profitability of the primary and fabricated metal sectors. In comparison, decreasing work-in-process inventories have predominantly harmed the profitability of the petroleum and coal products industries.

Wangari & Kagiri (2015) emphasized the role of inventory management in coordinating business segments like sales, marketing, and manufacturing. They identified the objective as satisfying customers while balancing supply and demand to increase profits. Effective inventory management practices are crucial for any successful organization.

Inegbedion et al. (2019) highlighted the importance of making critical decisions regarding purchasing and manufacturing within capital constraints. They pointed out that excessive inventory investment might lock up capital, while insufficient investment might lead to shortages and an inability to meet demand. Achieving and maintaining a delicate balance between these two extremes is necessary. The insights from various research articles underline the multifaceted nature of inventory management and its profound impact on different sectors and aspects of business operations.

Additional empirical research on inventory management and organizational performance has been presented in the table below.

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TABLE 2.1 EMPIRICAL REVIEW

Author(s) and Year	Purpose of the Study/Research Objectives	Underlying Theoretical Framework	Methodology	Findings	Identified Gap (From Area of Further Research)
Saha, E., & Ray, P. K. (2019).	The aim of the study was to investigate the challenges of demand variations, reverse logistics, seasonal fluctuations, and stockless	RBV	Quantitative	The study revealed that better inventory management plays an important role in enhancing customer satisfaction levels	The study did not adopt a moderating variable which could provide more depth on the research constructs
Muchaendepi, W., Mbohwa, C., Hamandishe, T., & Kanyepe, J. (2019).	The study assessed the inventory management (IM) strategies that are used by SMEs in the manufacturing sector of Harare, Zimbabwe	Expected utility theory	Quantitative	The research establishes a strong correlation between inventory management and information systems in the SME'S	The research indicated that future research looks at the impact of imperfect inventory information on multi echelon inventory systems
Hooshang M. Beheshti, Iain J. Clelland & K. Vernard Harrington (2020)	The objective of the research was to discuss critical issues concerning vendor managed inventory and examine the impact of VMI on the organization and its supply chain network.	RBV	Qualitative	The study revealed that VMI system is the potential investment that can reduce current inventory management costs	

Author(s) and Year	Purpose of the Study/Research Objectives	Underlying Theoretical Framework	Methodology	Findings	Identified Gap (From Area of Further Research)
Stella Mbah Jeffery Obiezekwem ,Azuka Okuoyibo (2019)	This study aims to ascertain the relationship between inventory management and operational performance	Adaptive Structuration Theory	Quantitative	The study results concluded that there is a positive significant relationship between; inventory cost, just in time approach, materials requirement planning and strategic supplier partnership and operational performance of quoted manufacturing organizations in the southeast region, Nigeria. The study recommends among others that, manufacturing organizations in south-east Nigeria should adopt inventory practices	
Teerasoponpong, S., & Sopadang, A. (2022).	This paper proposes a decision support system (DSS) for sourcing and inventory management, with the aims of helping SMEs compile and exploit data, and supporting their decisions under business ambiguities	The Relationship Marketing Theory	quantitative	The study revealed that information technology, inventory control systems, inventory lead time and inventory control practices are important factors in attainment of competitive advantage of SME'S in Thailand	Data should be obtained from different industries to allow for generalization of the study's findings

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Author(s) and Year	Purpose of the Study/Research Objectives	Underlying Theoretical Framework	Methodology	Findings	Identified Gap (From Area of Further Research)
Hooshang M. Song, J. S., van Houtum, G. J., & Van Mieghem, J. A. (2020).	The model aims to provide a holistic view of the supply chain as an integrated system		Quantitative	The article demonstrates the usefulness of a decision support model in analyzing and developing a cooperative environment among supply chain members to reduce the cost of inventory as well as the cost of goods sold. The effects of utilizing such tools as just-in-time and electronic business systems are illustrated and discussed.	The model used one manufacturer with multiple retailers and distributors. Future research can look into this area and expand the model to allow multiple manufacturers.

2.4.2 Contemporary Issues in Technology Utilisation

According to Djelassi et al. (2018), an inventory management system can completely utilize resources and provide effective storage services. As a result, he investigates the advantages and disadvantages of an inventory management system in a given organization, focusing on logistics and transportation. The article provides a revolutionary way of inventory management and demonstrates how a logistics company might reduce logistical costs. This method includes cost savings in setup, operation, and overall warehouse management system deployment evaluation. In the chosen logistics company, the revolutionary inventory management system will be presented as a case study classified as a qualitative scientific approach. Implementing an inventory management system reduces total warehousing logistics costs and expands the warehouse management system to other sections of the logistics chain.

Chebet & Kitheka, (2019) investigate the impact of product perishability on the established inventory review approach as well as the benefits of reintroducing Time Temperature Integrator technology (TTI) into inventory management. To begin, they created an inventory model for perishable commodities with a fixed life span. They then calculated the inventory system's operational costs when TTI technology was used. The study looked at two types of TTI technology: TTI type 1 technology, which allows for the monitoring of product freshness and notifying when items are no longer fresh, and TTI type 2 technology, which offers information on the remaining shelf life of products. The researchers then created a numerical study to compare the benefits of the proposed strategy without TTI to the existing approach, which ignores product perishability. Finally, the study examines the cost savings realized when TTI technology is employed. TTI technology, according to the research, saves organizations a significant amount of money.

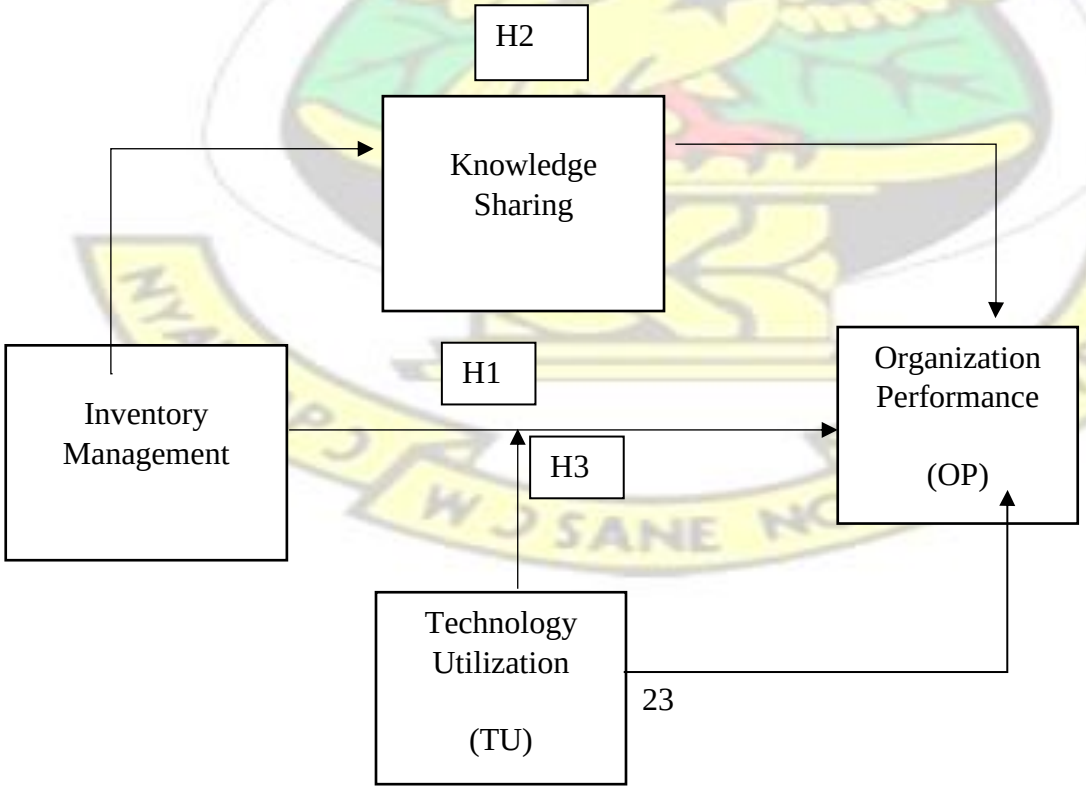
According to Geng et al. (2020) an effective humanitarian inventory management model and emergency logistics system are vital in guaranteeing a steady supply of essential items to victims in shelters and avoiding unforeseen interruptions. This system should not only allow for the efficient usage and distribution of emergency supplies, but it should also be compatible with new information technologies such as Radio Frequency Identification Devices (RFIDs) for commodity tracking and logistics. Their research provides a comprehensive method to building a humanitarian

emergency management framework based on real-time monitoring of emergency supplies and requests utilizing RFID technology in conjunction with a multi-commodity stochastic humanitarian inventory management model (MC-SHIC). First, the logistical and administrative aspects of RFID technology are discussed in the context of the emergency disaster relief framework. The MC-SHIC model is then used to compute the optimal emergency inventory levels to minimize any interruptions at the lowest possible cost. The analysis demonstrates that real emergency inventory levels can diverge from optimal values throughout the disaster relief period due to stochastic interruptions such as variable demand for crucial supplies in shelters. A comprehensive online inventory control architecture is offered to limit the effects of these unplanned disruptions, or, at the very least, to solve the issue at hand.

2.5 Conceptual Framework

A conceptual framework is a collection of concepts and maybe hypotheses that act as a guide for the investigation by illustrating the link between the research variables (Mugenda & Mugenda, 2008). The conceptual framework depicts the relationships between the independent, moderator, and dependent variables. Figure 2.1 displays the variables' direct and indirect relationships.

Figure 2.1 Conceptual framework of the study



2.5.1 Inventory Management and Organisational Performance

The main goal of managing inventory is to prevent understocking and overstocking thereby ensuring that production and sales are not interrupted, minimising inventory carrying costs and achieving better customer services (Beheshti et al., 2020; Özer, 2011) to improve profitability and liquidity position of the organisation. According to Pillai, (2022) organisations that are able to manage its inventory effectively and efficiently manage are not likely to experience production stoppages.. There is the need for organisations o put much emphasis on effectiveness and efficiency of inventory management with the objective of avoiding the risk of a stockout , while minimising carrying costs (Nakandala et al. (2017); this requires the skills and strategies needed in planning and establishing optimal levels of inventory, monitoring and the control of stock movements. Again, the efficiency of inventory planning and control requires the knowing what, knowing why, knowing when and knowing how of managing inventory. It also requires the skills and competences needed to make things happen. Managers who exhibit high skills, abilities and knowledge in inventory management systems are able to transform inventory into a proactive force that reduces investments in inventory, hence lowering holding costs and enhancing confidence in physical supply and distribution service levels (Hannah et al., 2018). For the period 2010–2014, Boru Godana & Karanja Ngugi, (2014) examined the effect of inventory management on the financial performance of Nigerian conglomerate companies. Pearson correlation and multiple regression analysis found a significant positive association between inventory management and financial performance. The researcher determined that effective inventory management systems impair businesses' sales and profit margins.

Similarly, Kofi Opoku et al., (2020) evaluated the impact of inventory management on small and medium-sized enterprises (SMEs) in Ghana's northern area. Their findings indicated that the way inventory is managed positively affects SMEs' financial success. Inventory is one of the most challenging assets to maintain in a business due to its vulnerability to theft and obsolescence as well as changing tastes and preferences (Babbar & Prasad, 1998; Opoku et al., 2020). The monitoring and controlling of inventory movements is crucial so as to avoid unwarranted losses that would eventually jeopardise an organisation's financial performance (Muchaendepi et al., 2019b). The researcher thus hypothesises that:

Hypothesis 1: There is a positive and significant relationship between inventory management and organizational Performance

2.5.4 The Mediating Role of Knowledge Sharing

Several researchers (Ji & Zou, 2017; Secundo et al., 2019) have identified a positive relationship between corporate performance and supply chain management. According to supply chain management theory, effective information sharing leads to cost savings through close organization and integration of partners (Hayashi et al., 2019). Furthermore, growing global competitiveness and low-cost access to information place both opportunity and pressure on corporations. As a result, in order to face risks, a business must establish and enhance information technology facilities in order to communicate accurate information at the proper moment than competitors. Organizations benefited from information technology by lowering transaction and processing costs, increasing productivity, lowering inventory costs through JIT, increasing integration through ERP, providing immediate market response through agility, and increasing customer satisfaction and organizational profit. In general, information sharing improves organizational performance in the supply chain, reduces inventory levels and reduces the bullwhip effect of inventory (Hayashi et al., 2019). Based on the above, the researcher posits that.

H2; Information sharing mediates the relationship between inventory management and organizational Performance.

2.5.5 The Moderating Role of Technology Utilisation

It is impossible to exaggerate the value of technology in inventory management. The most asset for a business is its inventory, hence inventory management is crucial. Today's technology for inventory management helps decision-makers comprehend how their inventory performs as it moves through the supply chain. Businesses that can identify patterns, track shipments, and execute orders efficiently may have greater growth potential, lower risk, and enable new efficiencies that benefit all parties involved, from the factory floor to the customer's door (Mohammed et al., 2016). Robotics solutions, for instance, can effectively respond to volume growth and complete more tasks with fewer people and at a cheaper cost. This is necessary given

increased order volumes, a variety of goods to browse, more customized order packaging, and faster delivery requirements. The increasing demand for warehouse robots with increased performance and flexibility spurs some innovative product development and early adoption of mobile warehouse robotics (Chebet & Kitheka, 2019). Masudin et al. (2020) claims that radio frequency identification (RFID) produces accurate inventory data, ensuring the necessary fact-based knowledge basis to make the best decisions for your business. In this vein, the researcher hypothesises:

Hypothesis 3: the use of technology positively moderates the relationship between inventory management and organizational performance.

CHAPTER THREE

RESEARCH METHODOLOGY AND AREA PROFILE

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3.1 Introduction

The methodology adopted to achieve the study's objectives is presented in this chapter. Sections covered in this chapter include research design, population, sampling technique, data collection methods and analysis, a test of validity and reliability and ethical considerations. The research design details the strategy and the approach. The population as well as sampling details the target population and sampling technique as used in the study. Data collection methods detail the measures and the sources of data for this study.

3.2 Research Design

The framework for data gathering and analysis is established by a research design. The research design could be exploratory, explanatory, and descriptive and in the context of the current research, the descriptive design was selected. A descriptive research design is regarded as theory-based, in which the researcher's main focus is on describing the topic which happens to be the subject of the research. This design, anchored in theoretical principles, aims to provide an in-depth portrayal of the research subject and is often employed in case studies, naturalistic observations, and surveys.

The study adopted a survey with target organisations being power producing and distribution organisations in Greater Accra - Ghana. A research strategy, acting as a well-defined plan, steers the planning, implementation and the monitoring of a study. It can be divided into two categories: surveys and case studies. The survey strategy, with focus on the energy sector in Greater Accra is used in this study.

Surveys collect data from an entire population or uses large, representative samples to provide a better understanding of views on a research topic. On the other hand, a research approach refers to the systematic way business research is carried out, making use of either quantitative or qualitative research method. The researcher adopted a quantitative method in this study. Quantitative research

emphasizes quantification in data collection and analysis and a logical approach to the connection between theory and study, with a concentration on hypothesis testing (Mayer, 2015).

3.3 Population of the Study

Population is a collection of cases that the research wants to investigate (Saunders et al, 2009). The population of the study includes Power Producing, Distribution and Services organisations in Greater Accra. The target population of the study is an estimated one hundred and fifty (150).

3.3.1 Sampling and Sampling Technique

Sampling describes the processing of choosing elements in the population that will be part of the study (Zhao et al., 2013). He divided sampling methods into two groups depending on their frequency of occurrence: probability sampling techniques and non-probability sampling procedures. Probability sampling techniques give each case in the population an equal chance of being selected as part of the study. Conversely, non-probability sampling techniques uses methods that gives an unknown chance of each case being selected. In some non-probability sampling methods, there are some cases that have zero chance of being selected. The simple random sampling technique is used in this study to draw the samples from the target population

Using Yamane's formula ($n = \frac{\mathrm{N}}{(1+Ne^{2})}$) a sample size of one hundred and nine (109) is chosen from the target population of one hundred and fifty (150). The researcher chose Yamane's formula because it offers a 5% margin of error, making the sample size more appropriate for the study. The calculation is as follows:

$$n = \frac{\mathrm{N}}{(1 + Ne^{2})}$$

Where:

N = Target population

n = sample size

e = margin of error (5%)

$$n = \frac{150}{(1+150\ (0.05)^{2})}$$

$$n = \frac{150}{1.5}$$

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n = 109

As a result, the study's sample size is 109.

3.5 Data Collection Method/ Sources

The study made use of both primary and secondary data sources. A primary data source is an original data source; that is, the data is collected directly by the researcher to conduct research or finish a project (Cohen et al., 2000). An online questionnaire is the primary data collecting instrument. Secondary data is information collected by someone other than the primary user (Cohen et al., 2000). The research reviewed publications and journals on inventory management, technology utilisation, organisational performance and knowledge sharing.

3.5.1 Collection Instrument / Measures

The researcher used a primary data source to achieve the study's goals: a structured/self-completion questionnaire. The questionnaire was divided into four parts that corresponded to the constructs of the study: Section A contained information on the independent variable, inventory management. Section B examined the dependent variable, organisational performance. Section C discussed the moderator variable, technology utilisation while section D examined the mediating variable knowledge sharing. Section E contained demographic data about the respondents. The questionnaire was created online using Google Forms and sent to respondents through email and whatsApp. The following sections offer information on how the study's different variables were measured. The Table 3.1 on the next page summaries the measures and the constructs they measured. Also Appendix A gives details of measure used for each construct.

Table 3.1 Summary of Measured items

CONSTRUCTS	NO. OF MEASURES	SOURCE
Inventory Management	6	Singh and Verma (2018)
Organisational Performance	11	Belkhir et al. (2017)
Technology Utilization	5	Inegbedion et al. (2019)
Knowledge Sharing	7	Perez-Salazar et al. (2017)

3.5.2 Collection Procedure

An online questionnaire was created using Google Forms and distributed to the respondents' email addresses and their chosen online channels. The researcher requested for permission and consent of each respondent. After receiving the replies, the researcher sent messages to each respondent to express gratitude for taking the time to complete the questionnaire.

3.6 Data Analysis

Data analysis is the act of analysing, cleaning, converting, and modelling data to find valuable information, informing conclusions, and assisting decision-makers (Berry, 2004). The researcher used both descriptive and inferential analysis to extract critical facts from the collected data and evaluated the study's hypotheses. Mean, standard deviation, kurtosis, and t-value were included in descriptive analytics. Correlational analysis, ordinary least squares regression, and moderated regression were used in the inferential analysis. IBM SPSS version 26 and PLS Version 4, were used for all analyses and structural equation modelling.

3.7 Test of Validity And Reliability

Reliability is concerned with the repetition of research findings and the consistency of the measurements employed to evaluate each component. The extent to which an indicator used to assess a concept accurately measures that idea, on the other hand, is known as validity (Zhao et

al., 2013). To verify the reliability of the data, Alpha's Cronbach's was used to evaluate the data for internal consistency. An exploratory factor analysis was performed to test the discriminant and divergent validity data.

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3.8 Ethical Considerations

The phrase "research ethics" refers to a set of guidelines for how researchers should conduct themselves. Researchers must follow ethical guidelines to protect participants' dignity, rights, and well-being (Burns, 2000). The research considered the following factors to ensure that all ethical standards are fulfilled. To begin, the study protected the privacy of all respondents. Consequently, the survey questionnaire did not ask for respondents' names or sensitive personal information. Any additional information gathered was for academic purposes only. Secondly, the researcher sought the consent of all respondents before disseminating the questionnaires. None of the respondents was compelled to take part in the study.

3.9 Profile of Study Area

Ghana's energy sector is dominated by biomass (wood fuel, charcoal etc), which accounts for over 60% of total primary energy supply. Petroleum, electricity and renewable energy account for the remainder. Electricity generation capacity is around 5,000 MW, with hydro and thermal plants each providing roughly half. Independent power producers contribute about a quarter of generation capacity. Access to electricity is about 84% nationally. Oil was discovered offshore in 2007 and Ghana began commercial production in 2010. Petroleum accounted for 5% of GDP in 2019. However, declining oil production and low oil prices led to a drop in oil's share of GDP. Renewable energy contribution remains low but solar, wind and biofuel investments are increasing, supported by government policies. Less than 1% of electricity comes from solar currently.

Power generation in Ghana is mainly carried out by the Volta River Authority (VRA) – the main power generator, the Bui Power Authority (BPA) and Independent Power Producers comprising of Aboadze T2 (TICo), Tema TT2PP, Osonor (Cenit), Tema Mine Reserve Plant and Sunon Asogli

The Volta River Authority is the main power generator in Ghana. It has an installed capacity of about 2,532MW and two main hydro plants; which are the Akosombo and Kpong generation stations. Also in VRA's portfolio is a number of thermal plants and they include; Aboadze near Takoradi, and the Tema enclave. They are the 330MW Takoradi Thermal (T1) Power Station, 340MW Takoradi International Company Thermal (T2) Power Plant, which is a joint venture between VRA and TAQA from Abu Dhabi; a 110MW Tema Thermal 1 Power Plant (TT1PP), an 80MW Tema Thermal 2 Power Plant (TT2PP), a 220MW Kpone Thermal Power Station (KTPS) and a 250MW Ameri Power Plant.

The transmission of power is mainly carried out by Ghana Grid Company (GRIDC.). GRIDCo was created in accordance with the Energy Commission Act, 1997 (Act 541) and the Volta River Development (Amendment) Act, 2005 Act 692. This allowed for the creation and sole operation of the National Interconnected Transmission System (NITS) by an independent Utility and the separation of the transmission functions of the Volta River Authority (VRA) from its other functions as clearly stated in the plan of the Power Sector Reforms. GRIDCo was established on 15th of December 2006. The company started operating on 1st August 2008.

The objective of establishing GRIDCo was intended to develop and promote competition in Ghana's wholesale power market. For this to be achieved, there was the provision of transparent, fair and equally open access to the NITS for all the stakeholders in the power sector; especially, power generators and bulk consumers and hence bringing about efficiency in power delivery. Other objectives include buying and managing materials, assets, facilities and others relevant systems needed for power transmission. They also perform transmission system planning and implement important upgrade to provide the capacity to reliably transmit electric energy; and manage the Wholesale Power Market. They transmit through their transmission line the electric power from the generation companies like VRA to the bulk distribution clients like ECG and also prepare for their, metering and billing.

The electricity distribution in Ghana is mainly carried out by the Electricity Company of Ghana. (ECG). It started operation as Electricity Department on 1st April 1947 and later became the

Electricity Division in 1962. Later by NLC Decree 125 in 1967, it was changed to Electricity Corporation of Ghana.

The Volta River Authority in 1987, institutionalized the Northern Electricity Department (NED), with its sole aim and responsibility of taking over from ECG the management of electric power distribution in the Northern part of Ghana.

ECG is currently responsible for the distribution of electricity in nine (9) Operational Regions in the southern part of Ghana namely, Accra East, Accra West, Tema, Eastern, Central, Volta, Volta, Western, Ashanti and Sub-Transmission, which are further decentralized into eighty-eight (88) operational districts.

Other stakeholders in the Industry include; the Ministry of Energy, the Energy Commission, and the Public Utilities Regulatory Commission.

The Ministry of Energy is the Government of Ghana's representative in charge of policy development, effective execution, observation, evaluation and also supervision and collaboration of activities of the Energy Sector Stockholders. The Ministry of Energy has undergone several reshaping and restructuring over the years. The Ministry's name was changed to Ministry of Energy and Petroleum in 2012; and divided into Ministries of Petroleum and Power in November 2014 and on February 27, 2017, by Executive Instrument, (E.I. 28), the Ministries of Petroleum and Power were joined to create the now Ministry of Energy. The Ministry of Energy also oversee the activities of Power Generation Agencies like Volta River Authority, Energy Transmission like Ghana Grid Company (GRIDCo), Power Distribution Like Electricity Company of Ghana (ECG), Petroleum Exploration like Ghana National Petroleum Corporation (GNPC), Bulk Petroleum Products Storage and Transportation like Bulk Oil Storage and Transportation Company (BOST), the Licensing and Technical Regulation of Power Sector Agencies like Energy Commission, and the Regulator in charge of regulating the provision of electricity and water utility service, Public Utilities Regulatory Commission (PURC).

The Energy Commission is a statutory body established by an Act of the Ghanaian Parliament, the Energy Commission Act, 1997 (Act 541). The Commission is responsible in regulating and

managing the development and utilization of energy resources of Ghana to ensure the provision of affordable energy supplies in a reliable, efficient and secure manner in order to promote the social and economic well-being of the people of Ghana, enhance environmental quality and public safety. It also certifies and license's electrical and electronic products manufactured locally and imported.

The Public Utilities Regulatory Commission (PURC) established as the Ghana Government's utility sector reforms, was incorporated in October 1997 under the Public Utilities Regulatory Commission Act, 1997 (Act 538) as a multi-sector control the pricing and other mandates in the

The Public Utilities Regulatory Commission (PURC) is an independent organization not under subjection of any authority in the subject of its functions as stated in Section 4 of Act 538. However, the Commission prepares and submits annual fiscal yearly reports to Parliament. The Office of the President also exercises some administrative oversight for the Commission.

The functions of PURC includes;

Providing systems, guidelines and approvals for rates to be charged for the provision of utility services,

Ensures that the interest of consumers and providers of utility services are protected;

The observer and ensure that standards of performance for provision of utility services are up to standard.

They promote fair competition among public utilities providers;

They are a channel where complaints are received investigate and settle complaints relating to utility services.

Ghana imports all of its crude oil requirements. The Tema Oil Refinery is the only refinery but operates below capacity. Bulk oil imports, storage and distribution is handled by a number of private companies.

Key challenges being faced by the sector includes;

- Indebtedness among Sector Agencies
- High transmission losses

- Lack of redundancy in the National Interconnected Transmission Systems (NITS)
- Fragile transmission network and over-aged equipments
- Encroachment on transmission line Right of Way
- Fragile transmission network and over-aged equipments
- Encroachment on transmission line Right of Way
- Improving efficiency of distribution
- Increasing electricity access in rural areas
- Diversifying power sources and
- Managing effects of irregular gas supply and hydro output on thermal plants.

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CHAPTER FOUR

DATA PRESENTATION, ANALYSIS AND RESULTS

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4.1 Introduction

The study's findings and discussions are contained in this chapter. The main objective of the study was to examine the impact of inventory management on organisational performance while establishing the roles of technology utilisation and knowledge sharing. The findings and comments were based on the study goals, and data analysis was done with the use of IBM SPSS and PLS. The research was also analysed using frequency and percentages, means, and standard deviations.

4.2 Response Rate

From a sample size of 109 administered questionnaires, hundred and six (106) responses were successfully returned, representing 97.2% response rate. According to (Sánchez et al., 2011), a response rate of 50% is seen as reasonable, a response rate of 60% is excellent or acceptable, and a response rate of more than 70% is regarded as very high. Therefore, the answer may be regarded as sincere and suitable for the study.

4.3 Descriptive Statistics

This section contains in-depth explanations of descriptive analytics on inventory management organisational performance, technology utilisation and knowledge sharing. The descriptive statistics mean, standard deviation, maximum, minimum, and kurtosis were utilised to analyse the data.

4.3.1 Profile of Respondents

It is crucial to analyse the profile of respondents as qualitative variables of the study and estimate their possible influence on the research output, since respondent demographics have a significant impact on questionnaire replies. Consequently, demographic criteria such as gender, department, age, job experience, and degree of education were appropriately evaluated.

Table 4.1 Respondent's background information

		Frequency	Percentage (%)
(1) Gender	Male	71	67
	Female	35	33
(2) Age	20 to 29	4	3.8
	30 to 39	45	42.5
	40 to 49	39	36.7
	50 years and above	18	17
(3) Work Experience	0-5 years	8	7.5
	6-10 years	21	19.
	11-15 years	34	32.
	15 years and above	44	41.5
(4) Educational Level	undergraduate	31	29.2
	Master's	73	68
	PHD	2	2.8
(5) Sector of Operation	Power Producer	5	3.7

	Power Distributor	69	65.1
	Other services related to energy	32	32.1
Estimated Annual Revenue (GHS)	10,000	2	1.9
	10,001-30,000	3	2.8
	30,001-100,000	2	1.9
	100,001-500,000	2	1.9
	500,001-1,000,000	12	11.3
	Above 1,000,000	83	78.3
	Not sure.	2	1.8
Number of employees	Less than 50	10	9.6
	50-100	5	4.7
	101-150	8	7.5
	151-200	3	2.8

	201-250	2	1.9
	300+	75	74.5

Source: Field study (2023)

From the responses above, males accounted for 67% of the respondents, while 33% were females. The highest age distribution was 30-39years which represented 42.5% of the total response. This clearly shows the maturity and relative youthfulness of the sample size. The highest work duration was above 15years, representing 41.5% of the total respondents. This denotes that the respondents were people with immense industry knowledge. Master's degree recorded the highest qualification, indicating the level of understanding of the respondents at 68%. For the sector of operation, power distributors recorded the highest percentage at 65.1%. above GHS1M also recorded the highest annual earning of the companies, representing 78.3%. lastly, (300+) recorded the highest number of employees (74.5%)

4.3.2 Descriptive Analysis

The descriptive analysis results on inventory management, organisational performance, knowledge sharing, and technology utilisation are analysed in this section.

4.3.2.1 Inventory Management

According to Singh & Verma, (2018), the primary goal of inventory management is to balance the conflicting economics of not holding too much stock to tie up capital and avoid incurring costs for storage, spoilage, pilferage, and obsolescence on the one hand, and avoiding the cost of stock out on the other. If a manufacturer's critical inventory item is out of supply, production may be halted. Inventory management was operationalised using six items on a seven-point Likert scale, where 1-1.99 = strongly disagree, 2.0-2.99 = disagree, 3.0-3.99 = somewhat disagree, 4.0-4.99 = neural and 5.0-5.99 = somewhat agree, 6.0-6.99 =agree and 7 = strongly agree. The descriptive results for inventory management is detailed in Table 4.2.

Table 4.2 Descriptive Results on Inventory Management

Variables	Min	Max	Mean	SD	Kurtosis	Skewness
My organization make plans on when to stock goods	1	7	5.708	1.401	3.731	-1.72
My organization write down details of stock whenever purchases are made.	1	7	5.925	1.445	3.354	-1.788
My organization review stock levels periodically to ensure efficiency	1	7	5.925	1.13	4.836	-1.6
My organization limits access to the storage facilities	1	7	4.953	1.696	-0.009	-0.844
My organization checks stock conditions Periodically.	1	7	5.509	1.422	1.694	-1.236
My organization maintains some stock to be on the safe side	1	7	5.594	1.547	0.66	-1.126
COMPOSITE SCALE	**1.00**	**7.00**	**5.602**	**1.440**	**2.378**	**-1.386**

Source: Field sturdy (2023) SCALE: 1= "strongly disagree" via 4= "neutral" to 7= "strongly agree"

The descriptive results of inventory management are provided in Table 4.2. It includes various statistical measures to describe the inventory management practices among Greater-Accra based power producers and distributors. The composite mean value of 5.6, coupled with a standard deviation of 1.44, denotes a significant level of inventory management within these organisations.

The mean represents the average score for each variable. In this study, the mean values range from 4.953 to 5.925. A higher mean indicates a higher level of agreement or frequency of the specific behavior or practice being measured. For example, variables like "My organisation writes down details of stock whenever purchases are made" and "My organisation reviews stock levels periodically to ensure efficiency" have relatively high means, suggesting that organisations tend to engage in these practices more frequently.

Kurtosis measures the peakedness or flatness of the distribution of scores for each variable. Positive kurtosis indicates a relatively more peaked distribution, while negative kurtosis indicates a relatively flatter distribution. In this study, all variables have positive kurtosis values, suggesting that the distribution of responses for each variable is more peaked than a normal distribution. This

indicates that respondents tend to have a higher agreement or concentration of responses towards the higher end of the scale for each variable.

The standard deviation (SD) indicates the dispersion or variability of the scores around the mean. A higher SD indicates greater variability in responses, while a lower SD indicates less variability. In this study, the SD values range from 1.13 to 1.696. Variables with higher SD values, such as "My organisation limits access to the storage facilities," indicate more diverse responses, with some organisations strongly agreeing and others strongly disagreeing with the statement. Skewness measures the asymmetry of the distribution of scores. Positive skewness indicates longer or fatter tail on the right side of the distribution, while negative skewness indicates a longer or fatter tail on the left side. In this study, all variables have negative skewness values. This implies that the distribution of responses for each variable is skewed to the left, with a majority of organisations showing higher agreement or frequency of the behavior being measured.

4.3.2.2 Organisational Performance

Belkhir et al. (2017), defines corporate performance as the comparison of actual production to announced objectives and targets. As a result, it compares an organisation's actual performance to its expected performance. The success of a business is an important notion that is used as a dependent variable in many studies. When assessing a company's success, it is vital to build a set of meaningful indicators that provide a more realistic basis for comparing its profile and progress over time (Aarseth et al., 2017). Organisational performance was operationalized using eleven items on a seven-point Likert scale, where 1-1.99 = strongly disagree, 2.0-2.99 = disagree, 3.0-3.99 = somewhat disagree, 4.0-4.99 = neural and 5.0-5.99 = somewhat agree, 6.0-6.99 =agree and 7 = strongly agree. The descriptive result for organisational performance is detailed in Table 4.3 below.

Table 4.3 Descriptive Results on Organisational Performance

Variables	Min	Max	Mean	SD	Kurtosis	Skewness
Sales volume has steadily increased	1	7	5.094	1.248	0.874	-0.595
The profits have steadily increased	1	7	4.67	1.439	-0.058	-0.52
Total assets have increased	1	7	5.566	1.296	1.25	-1.044
The total cost of operation has decreased	1	7	3.434	1.66	-0.823	0.136
Cash levels have improved	1	7	4.321	1.674	-0.721	-0.215
Our Material and labour efficiencies are much higher	1	7	4.887	1.383	0.592	-0.619
Our Process improvements and reengineering are much higher	1	7	4.915	1.222	1.413	-0.78
My organisational has a new product introduction approach	1	7	4.396	1.385	0.282	-0.635
My organisational undertakes Staff development and training	1	7	5.566	1.289	1.971	-1.235
We carry out Customer satisfaction surveys	1	7	4.736	1.423	0.022	-0.438
My organisational ensures On-time-deliveries	1	7	4.868	1.474	-0.408	-0.54
COMPOSITE SCALE	**1.00**	**7.00**	**4.7685**	**1.4085**	**0.3995**	**-0.5895**

Source: Field sturdy (2023) SCALE: 1= "strongly disagree" via 4= "neutral" to 7= "strongly agree"

The mean represents the average score for each variable. In this study, the mean values range from 3.434 to 5.566. A higher mean indicates a higher level of agreement or perception of improvement for the specific aspect being measured. For example, variables like "Total assets have increased" and "My organisational undertakes Staff development and training" have relatively high means, indicating that organizations perceive positive progress in these areas.

Kurtosis measures the peakedness or flatness of the distribution of scores for each variable. Positive kurtosis indicates a relatively more peaked distribution, while negative kurtosis indicates

a relatively flatter distribution. In this study, all variables have positive kurtosis values, suggesting that the distribution of responses for each variable is more peaked than a normal distribution. This indicates that respondents tend to concentrate their responses towards the higher end of the scale for each variable, indicating a general perception of improvement. The standard deviation indicates the dispersion or variability of the scores around the mean. A higher SD indicates greater variability in responses, while a lower SD indicates less variability. In this study, the SD values range from 1.222 to 1.674. Variables with higher SD values, such as "Cash levels have improved," indicate more diverse responses, with some organizations strongly agreeing and others strongly disagreeing with the statement. Skewness measures the asymmetry of the distribution of scores. Positive skewness indicates a longer or fatter tail on the right side of the distribution, while negative skewness indicates a longer or fatter tail on the left side. In this study, all variables have negative skewness values. This implies that the distribution of responses for each variable is skewed to the left, with a majority of organizations perceiving improvement in the respective areas being measured.

4.3.2.3 Technology Utilisation

Efficient inventory management can be accomplished using many methods and techniques such as the just-in-time (JIT) system and material requirement planning (MRP). When production is done in response to demand, JIT assures leanness and eliminates waste (Inegbedion et al., 2019). Technology utilisation was operationalised using five items on a seven-point Likert scale, where 1-1.99 = strongly disagree, 2.0-2.99 = disagree, 3.0-3.99 = somewhat disagree, 4.0-4.99 = neural and 5.0-5.99 = somewhat agree, 6.0-6.99 =agree and 7 = strongly agree. The descriptive result for technology utilisation is detailed in Table 4.4 below.

Table 4.4 Descriptive Results on Technology Utilisation

Variables	Min	Max	Mean	SD	Kurtosis	Skewness
My business uses inventory management solutions to improve inventory functioning and fulfilment center administration.	1	7	5.292	1.38	1.76	-1.131
My organisation uses ERP to handle cash, raw supplies, production capacity, shipments, business responsibilities, and human resources.	1	7	5.274	1.551	0.322	-0.899
Barcoding is used in my business to manage inventory levels and track shipments.	1	7	3.849	1.811	-0.904	-0.013
My business use transportation management tools to determine the most efficient and effective routes	1	7	3.575	1.743	-0.65	0.284
Radio frequency identification technology is used by my business to track individual components and subassemblies throughout transportation	1	7	5.208	1.301	1.213	-0.837
COMPOSITE SCALE	**1.00**	**7.00**	**4.640**	**1.557**	**0.348**	**-0.519**

Source: Field sturdy (2023) SCALE: 1= "strongly disagree" via 4= "neutral" to 7= "strongly agree"

The mean represents the average score for each variable. In this study, the mean values range from 3.575 to 5.292. A higher mean indicates a higher level of agreement or utilisation of technology in the specific aspect being measured. For example, variables like "My business uses inventory management solutions to improve inventory functioning and fulfilment center administration" and "My organisation uses ERP to handle cash, raw supplies, production capacity, shipments, business responsibilities, and human resources" have relatively high means, indicating a higher level of technology utilisation in these areas.

Kurtosis measures the peakedness or flatness of the distribution of scores for each variable. Positive kurtosis indicates a relatively more peaked distribution, while negative kurtosis indicates a relatively flatter distribution. In this study, all variables have positive kurtosis values, suggesting that the distribution of responses for each variable is more peaked than a normal distribution. This indicates that respondents tend to concentrate their responses towards the higher end of the scale for each variable, indicating a general perception of higher technology utilisation.

The standard deviation (SD) indicates the dispersion or variability of the scores around the mean. A higher SD indicates greater variability in responses, while a lower SD indicates less variability. In this study, the SD values range from 1.301 to 1.811. Variables with higher SD values, such as "Barcoding is used in my business to manage inventory levels and track shipments," indicate more diverse responses, with some businesses strongly agreeing and others strongly disagreeing with the statement.

Skewness measures the asymmetry of the distribution of scores. Positive skewness indicates a longer or fatter tail on the right side of the distribution, while negative skewness indicates a longer or fatter tail on the left side. In this study, all variables have negative skewness values. This implies that the distribution of responses for each variable is skewed to the left, with a majority of businesses perceiving higher technology utilization in the respective areas being measured.

4.3.2.4 Knowledge Sharing

knowledge transfer is more than merely exchanging knowledge. Because one of the requirements of knowledge transfer is the ability of knowledge recipients to take action, which needs sufficient understanding of the shared knowledge, the sharing phase should come before the transferring step in the knowledge process. Knowledge transfer, according to Pérez-Salazar et al. (2017) is the process of replicating and maintaining a complex and causally ambiguous collection of routines in a new situation, such as transferring best practices between organisational units. Knowledge sharing was operationalized using seven items on a seven-point Likert scale, where 1-1.99 = strongly disagree, 2.0-2.99 = disagree, 3.0-3.99 = somewhat disagree, 4.0-4.99 = neural and 5.0-

5.99 = somewhat agree, 6.0-6.99 =agree and 7 = strongly agree. The descriptive result for knowledge sharing is detailed in Table 4.5 below.

Table 4.5 Descriptive Results on Knowledge Sharing

Variables	Min	Max	Mean	SD	Kurtosis	Skewness
People in my organisation frequently share knowledge based on their experience	1	7	5.019	1.274	0.936	-0.647
People in my organisation frequently collect knowledge from others based on their experience	1	7	4.821	1.257	1.574	-0.839
People in my organisation frequently share knowledge of know-where or know-whom with others	1	7	4.877	1.147	0.677	-0.289
People in my organisation frequently collect knowledge of know-where or know-whom with others.	1	7	5.236	1.225	1.886	-0.931
People in my organisation frequently share knowledge based on their expertise	1	7	5.236	1.233	0.964	-0.676
People in my organisation frequently collect knowledge from others based on their expertise.	1	7	5.142	1.209	0.817	-0.537
People in my organisation will share lessons from past failures when they feel necessary	1	7	4.868	1.474	-0.408	-0.54
COMPOSITE SCALE	**1.00**	**7.00**	**5.028**	**1.260**	**0.921**	**-0.637**

Source: Field sturdy (2023) SCALE: 1= "strongly disagree" via 4= "neutral" to 7= "strongly agree"

The descriptive results of knowledge sharing are provided in Table 4.5. A composite mean of 5.028 and SD of 1.260, indicates that the level of knowledge sharing among Greater Accra-based power producers and distributors is substantial.

The mean represents the average score for each variable. In this study, the mean values range from 4.821 to 5.236. A higher mean indicates a higher level of agreement or frequency of knowledge sharing in the specific aspect being measured. For example, variables like "People in my organisation frequently share knowledge based on their expertise" and "People in my organisation frequently collect knowledge from others based on their expertise" have relatively high means, indicating a higher level of knowledge sharing in these areas.

Kurtosis measures the peakedness or flatness of the distribution of scores for each variable. Positive kurtosis indicates a relatively more peaked distribution, while negative kurtosis indicates a relatively flatter distribution. In this study, all variables have positive kurtosis values, suggesting that the distribution of responses for each variable is more peaked than a normal distribution. This indicates that respondents tend to concentrate their responses towards the higher end of the scale for each variable, indicating a general perception of higher knowledge sharing.

The standard deviation (SD) indicates the dispersion or variability of the scores around the mean. A higher SD indicates greater variability in responses, while a lower SD indicates less variability. In this study, the SD values range from 1.147 to 1.474. Variables with higher SD values, such as "People in my organisation will share lessons from past failures when they feel necessary," indicate more diverse responses, with some individuals strongly agreeing and others strongly disagreeing with the statement.

Skewness measures the asymmetry of the distribution of scores. Positive skewness indicates a longer or fatter tail on the right side of the distribution, while negative skewness indicates a longer or fatter tail on the left side. In this study, all variables have negative skewness values. This implies that the distribution of responses for each variable is skewed to the left, with a majority of individuals perceiving higher knowledge sharing in the respective areas being measured.

4.3.3 Test of Reliability and Validity

Reliability is a measure of consistency and is assessed in this study using Cronbach Alpha and composite reliability. Table 4.6 below provides the reliability results.

Table 4.6 Results of Cronbach's Alpha and Composite Reliability

	Number of Items	Cronbach's alpha	Composite reliability (rho_c)	Average variance extracted (AVE)
Financial performance	6	0.816	0.868	0.528
Inventory Management	6	0.861	0.896	0.592
Knowledge sharing	7	0.931	0.945	0.713
Technology Utilisation	5	0.755	0.833	0.504
Non-financial performance	6	0.828	0.879	0.594

Source: Field study (2023)

Table 4.6 provides the results of the Cronbach's Alpha and Composite reliability test and average variance extracted. Inventory management had an Alpha value of 0.861 and composite reliability of 0.896, organisational performance had an Alpha value of 0.816 and composite reliability of 0.868, technology utilisation had an Alpha value of 0.755 and composite reliability of 0.833, while knowledge sharing had an Alpha value of 0.931 and composite reliability of 0.945. All four-variables scored above the 0.70 threshold for Cronbach Alpha and composite reliability: the data exhibited high internal consistency and therefore reliable. To test the validity of the data obtained, the study used Average variance extracted (AVE), and confirmatory factor analysis. An AVE of above 0.50 is ideal. From table 4.6, it could be seen that all the variables (Inventory Management, Organisational Performance, Technology Utilisation, Knowledge Sharing) scored higher than the 0.5 threshold indicating that all items accurately measured their respective constructs. The data therefore meets all requirements of validity.

4.3.3.1 Confirmatory Factor Analysis

Confirmatory Factor Analysis (CFA), a statistical method is used for validating the factor structure of a collection of observed data. CFA enables the researcher to examine the link between observable variables and their underlying latent constructs. Figure 4.1 shows the loadings for every build. According to Figure 4.1 below, all items meant to assess inventory management, organisational performance, knowledge sharing, and technology use loaded over 0.5 and consequently measure their respective latent variables. Therefore, the data is legitimate, the item with the code FP4 will be deleted.

4.3.3.2 Discriminant Validity

Discriminant validity is the extent to which constructs truly vary from each other experimentally. It also assesses how differently the overlapping constructs vary from each other (Mertler, Vannatta and LaVenia, 2021b). Cross-loading of the indicator, the Fornell and Larcker criteria, as well as heterotrait-monotrait (HTMT) correlation ratio may all be used to assess the discriminant validity.

From the values presented in table 4.7 below, all pairs of constructs have HTMT values below the 0.85 threshold, which is generally a good sign. It suggests that all the constructs in the model are distinct from each other, providing support for the model's discriminant validity. However, it's worth noting that some pairs of constructs have relatively high HTMT values (e.g. Technology Utilisation and Non-Financial Performance at 0.852, Knowledge Sharing and Non-Financial Performance at 0.818, and Technology Utilisation and Financial Performance at 0.862). Although these are below the strict threshold of 0.90, they are close to it. This indicates that while these pairs of constructs are distinct, they share a significant amount of variance, suggesting that they are closely related concepts in the model. The last row of the table shows the HTMT values for the interaction term (Technology Utilisation x Inventory Management) with all other constructs. These are all below the threshold, indicating that this interaction term is distinct from the other constructs in the model.

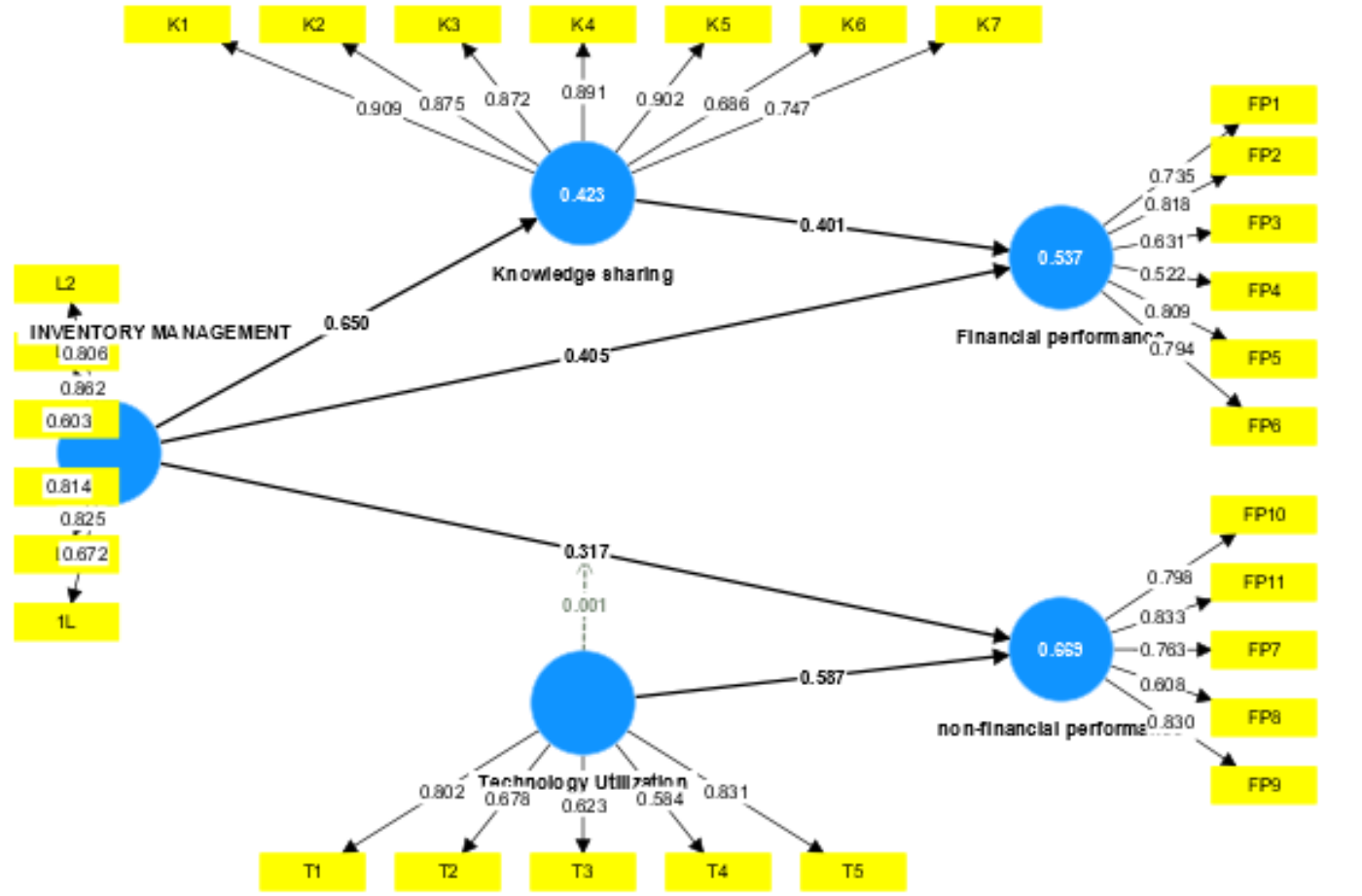
TABLE 4.7 HTMT

	Financial Performance	**Inventory Management**	**Knowledge Sharing**	**Technology Utilisation**	**Non-financial Performance**
Financial Performance					
Inventory Management	0.764				
Knowledge Sharing	0.736	0.675			
Technology Utilisation	0.862	0.669	0.889		
Non-Financial Performance	0.88	0.728	0.818	0.852	
Technology Utilisation x Inventory Management	0.405	0.621	0.403	0.382	0.426

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figure 4.1 Reliability and Validity Measures : Source: Field Study, (2023)



4.4 Structural Equation Modelling

Using the PLS Structural Equation model, the route coefficients (also known as direct effects) and moderation relationship between the variables were examined. A bootstrap of 5000 replicates was conducted to establish the route coefficients of the research model.

Table 4.8 Structural Equation Model (SEM) Result

Path	Coefficients	T-value	P-value
Direct Effects			
Inventory Management -> Financial performance	0.405	3.705	0
Inventory Management -> Knowledge sharing	0.65	11.666	0
Inventory Management-> non-financial performance	0.315	3.864	0
Knowledge sharing -> Financial performance	0.401	4.412	0
Technology Utilisation -> non-financial performance	0.588	8.549	0
Inventory Management -> Financial performance	0.405	3.705	0
Moderation Effect			
Technology Utilisation x Inventory Management - non-financial performanc	0.001	0.023	0.982
Indirect effect			
	0.261	4.125	0.00

Source: Field Study (2023) Notes: inventory management (IM) organizational performance (FP) technology utilization (TU), and Knowledge Sharing (KS).

Table 4.8 presents the results of the structural equation model to test the direct, moderation and mediating relationships between the variables.

Direct Effects

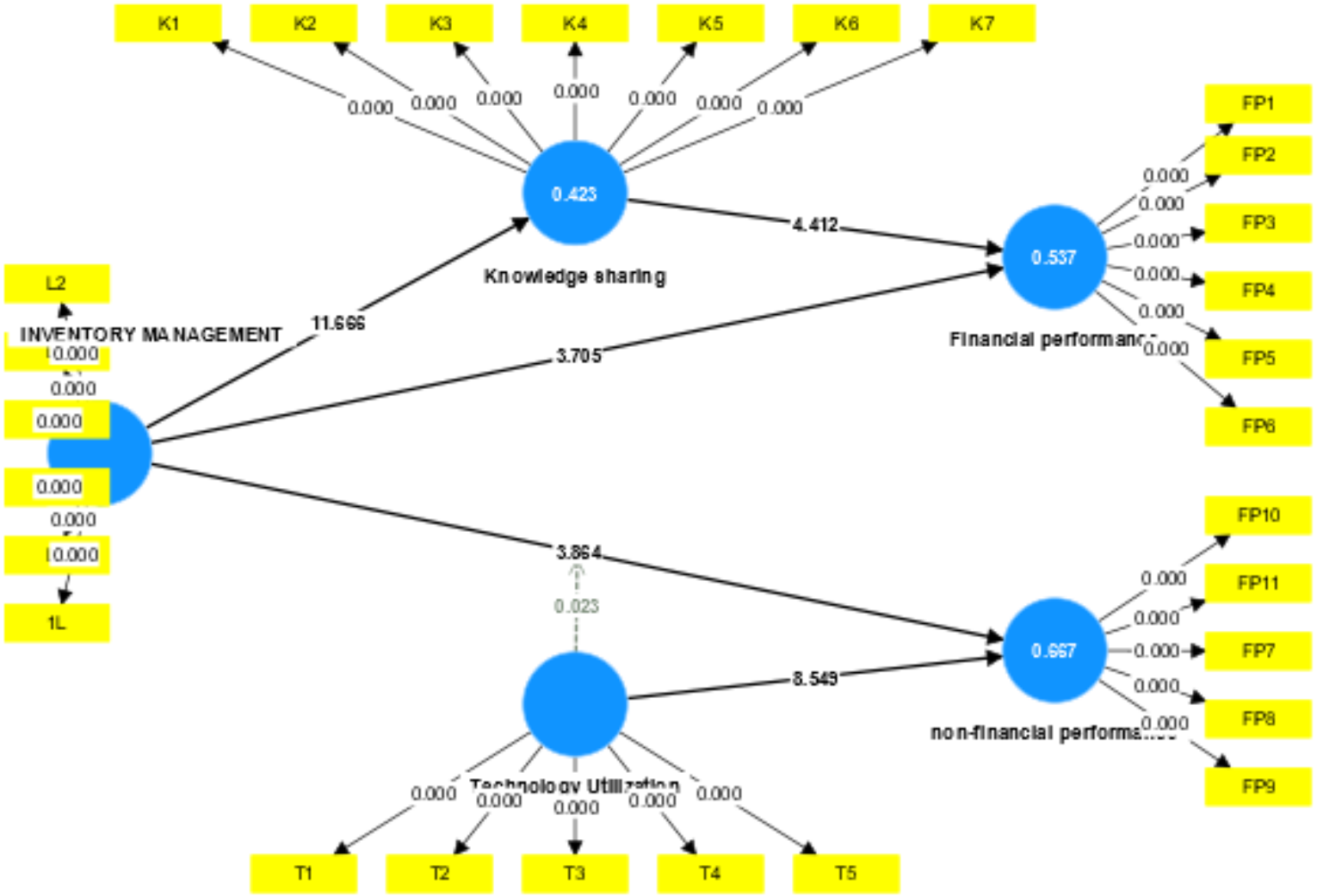
Inventory management significantly affects financial performance, knowledge sharing, and non-financial performance as indicated by their respective p-values of 0 (less than 0.05). The positive coefficients suggest that improvements in inventory management lead to better performance and increased knowledge sharing. For example, if inventory management increases by 1 unit, financial performance is expected to increase by 0.405 units. Knowledge sharing also significantly affects financial performance, suggesting that increased knowledge sharing leads to better financial performance. Technology utilisation significantly affects non-financial performance. This means that better use of technology could enhance non-financial aspects of your organisation's performance.

Moderation Effect

The moderating effect of technology utilisation on inventory management and non-financial relationship is not significant., as indicated by the p-value of 0.982 (which is above 0.05). The coefficient is almost zero, which further suggests no moderation effect.

Indirect effect

There seems to be a significant indirect effect (perhaps of inventory management on financial performance through some mediator, as suggested by the context), with 0.261 and 0 coefficient and p-value respectively. In general, all of the paths are significant, except the moderation effect of technology utilisation on inventory management and non-financial performance relationship. This suggests that the relationships among these variables are not conditional on the level of technology utilisation.



Structural equation modelling, Source: Field Study, (2023)

4.5 Hypotheses Testing

The study's model is tested in this section using ordinary least regression (OLR) and Macro PROCESS. OLR is used to test the direct relationship amongst the variables, whiles the Macro PRCOESS is used to test the moderation effects amongst the variables.

4.5.1 Hypotheses Confirmation

From the prior literature reviewed, three hypotheses were developed for this study. The data gathered was analysed to either confirm or refute each of these hypotheses. The summary of the hypothesis's confirmation is presented in table 4.9 below.

Table 4.9 Hypothesis confirmation

Hypothesis	Path	T-value	Coefficient (P-value)	Decision
H_1	IM → FP	3.705	.405; p < 0.01	**Supported**
H_2	TU*IM →FP	0.023	0.001; p > 0.5	**Not Supported**
H_3	IM→ KS→FP	4.125	0.261; p < .001	**Supported**

Source: Field Study (2023) Notes: inventory management (IM) organizational performance (FP) technology utilization (TU), and Knowledge Sharing (KS)

4.5.2 Inventory Management and Organisational Performance

According to some studies, Organisations must prioritize effective and efficient inventory management in order to minimize stockouts while minimizing holding costs (Nakandala et al., 2017); this entails understanding the techniques involved in identifying the ideal inventory level, inventory planning, monitoring, and control. In other words, inventory management needs "know-what," "know-why," "know-when," and "know-how." Competence refers to the talents and capabilities necessary to make things happen. Managers with demonstrated expertise in inventory management systems help organisations to turn inventory into a proactive force that reduces

inventory investment, thereby lowering carrying costs and enhancing trust in physical supply and distribution service levels (Hannah et al., 2018). Boru Godana and Karanja Ngugi (2014) analysed the impact of inventory management on the financial performance of Nigerian conglomerates from 2010 to 2014. Inventory management and financial performance were shown to have a substantial positive link based on Pearson correlation and multiple regression analysis. Effective inventory management systems increase a business's sales and profit margins, according to the study. The result from this study is consistent with the above reviewed literature given the path coefficient results **β = .405, t = 3.705, p < .01**

4.5.3 The Moderating Role of Technology Utilisation in the Relationship between Inventory Management and Organisational Performance

Modern inventory management technology assists decision-makers in understanding how their inventory performs as it goes through the supply chain. Businesses that can recognize trends, monitor shipments, and effectively execute orders may have higher growth potential, reduce risk, and allow new efficiencies that benefit all parties, from the production floor to the customer's door (Mohammed et al., 2016). For instance, robotics systems can efficiently adapt to an increase in volume and do more jobs with fewer personnel and at a lower cost. This is important due to rising order volumes, a wider selection of products, more customization of order packing, and the need for speedier delivery. The rising demand for warehouse robots with enhanced performance and adaptability motivates the development of novel products and the early deployment of mobile warehouse robotics (Chebet & Kitheka, 2019). Masudin et al. (2020) assert that radio frequency identification (RFID) generates reliable inventory data, providing the information required to make the best business choices. The result from this study is not consistent with the reviewed literature above given the path coefficient result **β = .0.001, t = 0.023, p > .05**.

4.5.4 The Mediating Role of Knowledge Sharing

According to the principle of supply chain management, efficient information exchange results in cost reductions via close partner organisation and integration (Hayashi et al., 2019). In addition, increased worldwide competition and inexpensive information access have presented

organizations with both opportunities and challenges. As a consequence, in order to confront threats, a organizational must create and improve its information technology infrastructure in order to deliver correct information more effectively than its rivals at the appropriate time. Information technology benefits organizations by reducing transaction and processing costs, increasing productivity, decreasing inventory costs through just-in-time (JIT), increasing integration through enterprise resource planning (ERP), providing immediate market response through agility, and increasing customer satisfaction and organizational profit. In general, information exchange enhances organizational performance in the supply chain, decreases inventory levels, and diminishes the inventory whipsaw effect (Hayashi et al., 2019)..The result from this study is consistent with the above reviewed literature given the path coefficient results **$\beta = 0.261$, $t = 4.125$, $p < .01$.**

CHAPTER FIVE

SUMMARY OF FINDINGS, CONCLUSIONS, RECOMMENDATIONS AND LIMITATIONS OF THE STUDY

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5.1 Introduction

This study sought to determine the relationship inventory management had with the performances of power producing and distribution organisations in the Greater Accra Region, whiles considering the roles of technology utilisation and knowledge sharing. The key findings of the study are summarised in this section. Conclusions, recommendations as well as future research suggestions are also discussed. postulate

It was revealed that the relationship between inventory management and organisational performance was significant, as seen in the path coefficient results **β = .301, t = 3.966, p < .01.** The indication is that for each unit of inventory management, organisational performance increases by 0.301 units. With a t-value of 3.966 being above the 1.96 threshold, there is further support for the above relationship as $p < 0.01$ also lends significant support for H1, which stated that inventory management has a positive and significant effect on organisational performance is supported.

The study also showed a positive but irrelevant moderating effect of technology utilisation on the relationship between inventory management and organisational performance, given the path coefficient results **β = .0.012, t = 60.363, p > .05.** This implies that though technology recorded a positive impact, it was not significant and therefore it does not support the second hypothesis which states that technology moderates the relationship.

Again, the study revealed that knowledge sharing had a positive mediating role on the relationship between inventory management and organizational performance, given the path coefficient results **β = 0.196, t = 3.504, p< .01.** This showed that knowledge sharing had a significant effect on inventory management and organisational performance's relationship.

5.2 Conclusion

For most businesses, particularly those engaged in the energy sector, knowledge sharing is a top priority for organisational performance. These businesses have serious concerns about improving their overall performance. As a result, this research investigated how technology utilisation and knowledge sharing moderates and mediates the association between inventory management and organisational performance. Based on the information gathered from one hundred and nine (109) power sector companies, the research draws the following findings. First of all, adopting knowledge sharing improves the integration between managing inventory and ensuring performance. Secondly, encouraging innovations helps businesses operate better by increasing their market share and income. Last but not the least, ensuring technological advancement as a tool in inventory management improves the overall performance of organisations.

5.3 Limitations of the Study

The study had a relatively small sample size of 109 organizations from only the Greater Accra region of Ghana. This limits the generalizability of the findings to the broader population of organizations across Ghana. The study utilized a cross-sectional design collecting data at one point in time. This makes it difficult to infer causal relationships between the variables. A longitudinal design tracking changes over time would allow stronger claims about causality. The measures relied on self-reported data from single respondents in each organization. This introduces potential issues like response bias. More objective data on performance and technology use could strengthen the findings.

Only technology utilization was included as a moderator. Considering additional moderators could provide further insight into boundary conditions of the relationships. Several variables like organizational performance and knowledge sharing used perceptual measures rather than objective data. This could introduce subjectivity into the responses. The use of a single survey instrument to collect data on all the variables could result in common method bias. This could inflate observed relationships between variables. The study only focused on power producers and distributors.

Findings may not extend to other industries. Replicating the study in other sectors would improve generalizability. Only a single mediation relationship was tested. Including analysis of additional potential mediating mechanisms could provide a richer understanding. The correlational design shows relationships between variables but cannot conclusively establish causality. Experimental or quasi-experimental designs could allow stronger causal conclusions.

5.4 Recommendations

The study showed that inventory management significantly affects both financial and non-financial performance. It is therefore imperative for supply chain managers to invest in advanced inventory management strategies and tools. This could involve implementing a robust inventory tracking system, employing demand forecasting techniques, and using just-in-time inventory methods to reduce holding costs and avoid stockouts or overstock situations. Another key finding from the analysis was the positive and significant relationship between knowledge sharing and financial performance. Supply chain managers should encourage a culture of knowledge sharing within their teams. This could be done by implementing regular training sessions, creating platforms for employees to share best practices, and encouraging collaboration across different departments. Knowledge when rightly shared can enhance operational efficiency, minimised errors, and ultimately, better financial performance. While technology utilisation did not moderate the relationship between inventory management and non-financial performance, it did show a direct positive effect on non-financial performance. Thus, supply chain managers should continue to leverage technology in their operations. This could include adopting technologies like IoT for real-time tracking, AI for demand forecasting, and blockchain for increased transparency in the supply chain. These technologies can improve process efficiency, accuracy, and overall supply chain performance.

5.5 Suggestions for Future Research

Although this study has benefited academics, practice, and policymakers, it has significant shortcomings that should be considered by further research.

The study's research model looked at the moderating effect of technology utilisation and the mediating role of knowledge sharing on inventory management and organisational performance relationship. Future studies could adopt this model and introduce different variables like trust, supply chain integration, and dynamic capabilities among others, to determine a different outcome. Also, future studies could adopt this model and investigate a different sector like manufacturing or the service sector. Lastly, the study lacked generalization, as it focuses on power companies only in Greater Accra, Ghana. Future research could broaden the scope and look at the entire country.

Future research should also consider exploring other potential moderating variables. These could include factors like organisational culture, training and development programs, or supply chain integration. Including these additional moderators could provide a more comprehensive understanding of how different aspects of an organisation interact and affect performance outcomes.

In future research, you could consider breaking down 'performance' into more specific measures such as customer satisfaction, employee productivity, waste reduction, or time-to-market for new products. This would allow for a more detailed understanding of how the predictor variables influence different facets of performance.

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APPENDIX A

Survey Questionnaire

Dear Respondent,

I am a final-year student at Kwame Nkrumah University of Science and Technology (KNUST). I am researching on inventory management procedures in organizations. Your honest response will aid in the study's accomplishment of its goals. The data gathered will be used only for academic purposes and treated as highly confidential

Section A: Inventory Management

The following questions assess your organization's inventory management. Indicate your level of agreement or disagreement with the following statements about your business using a seven-point Likert scale: 1= "to a very small extent" to 7= "to a very great extent". Circle the number that accurately reflects your organizational's present conditions.

Variables	To a very small extent						To a very large extent
(1). My organization make plans on when to stock goods	1	2	3	4	5	6	7
(2). My organization write down details of stock whenever purchases are made.	1	2	3	4	5	6	7
(3). My organization review stock levels periodically to ensure efficiency	1	2	3	4	5	6	7
(4). My organization limits access to the storage facilities	1	2	3	4	5	6	7
(5). My organization checks stock conditions Periodically.	1	2	3	4	5	6	7
(6). My organization maintains some stock in order to be on the safe side	1	2	3	4	5	6	7

Section B: Organizational Performance

The following items seeks to measure your organizations performance in relation to inventory management. Indicate your level of agreement or disagreement with each item that applies to your business using a seven-point Likert scale.: 1 = 'strongly disagree' to 7 = 'strongly agree'. Circle the number that accurately reflects your organizational's present conditions relative to same time last year.

Variables	Strongly disagree						Strongly agree
Financial Measures							
1. Sales volume has steadily increased	1	2	3	4	5	6	7
2. The profits have steadily increased	1	2	3	4	5	6	7
3. Total assets have increased	1	2	3	4	5	6	7
4. The total cost of operation has decreased	1	2	3	4	5	6	7
5. Cash levels have improved	1	2	3	4	5	6	7
Non-Financial Measures							
6. Our Material and labor efficiencies are much higher	1	2	3	4	5	6	7
7. Our Process improvements and reengineering are much higher	1	2	3	4	5	6	7
8. My organizational has a new product introduction approach	1	2	3	4	5	6	7
9. My organizational undertakes Staff development and training	1	2	3	4	5	6	7
10. We carry out Customer satisfaction surveys	1	2	3	4	5	6	7
11. My organizational ensures On-time-deliveries	1	2	3	4	5	6	7

Section C: Technology Utilization

The following items seek to measure the degree of your organizational's technology usage in relation to inventory management. Indicate your level of agreement or disagreement with each item that applies to your business using a seven-point Likert scale.: 1 = 'strongly disagree' to 7 = 'strongly agree'. Circle the number that accurately reflects your organizational's present conditions.

Variables	Strongly disagree						Strongly agree
1.My business uses inventory management solutions to improve inventory functioning and fulfilment center administration.	1	2	3	4	5	6	7
2. My organizational uses ERP to handle cash, raw supplies, production capacity, shipments, business responsibilities, and human resources.	1	2	3	4	5	6	7
3. Barcoding is used in my business to manage inventory levels and track shipments.	1	2	3	4	5	6	7
4. My business use transportation management tools to determine the most efficient and effective routes	1	2	3	4	5	6	7
5. Radio frequency identification technology is used by my business to track individual components and subassemblies throughout transportation	1	2	3	4	5	6	7

Section D: Knowledge Sharing

The questions below may assist you in determining your organizational's ability to share knowledge. Indicate your level of agreement or disagreement with the following statements about your business using a seven-point Likert scale: 1 = strongly disagree, 2 = moderately disagree, 3 = disagree, 4 = neutral, 5 = agree, 6 = moderately agree, 7 = strongly agree. Circle the number that accurately reflects your organizational's present conditions.

Variables	Strongly disagree						Strongly agree
Accessibility							
1.People in my organization frequently share knowledge based on their experience	1	2	3	4	5	6	7
2.People in my organization frequently collect knowledge from others based on their experience	1	2	3	4	5	6	7
3.People in my organization frequently share knowledge of know-where or know-whom with others	1	2	3	4	5	6	7
4.People in my organization frequently collect knowledge of know-where or know-whom with others.	1	2	3	4	5	6	7
5.People in my organization frequently share knowledge based on their expertise	1	2	3	4	5	6	7
6.People in my organization frequently collect knowledge from others based on their expertise.	1	2	3	4	5	6	7
7.People in my organization will share lessons from past failures when they feel necessary	1	2	3	4	5	6	7

Section F: Respondent's Profile

Gender: Male [ ] Female [ ]

Age: [ ] Below 20 years [ ]20-29years [ ]30-39 years [ ]40-50years [ ]Above 50years

What is your highest of education? Undergraduate [ ] Masters[ ] PHD [ ]

Years spent working for this organizational [ ] 0-5years [ ] 6-10years [ ] 11-15years [ ] above 15years

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

How long has your company been in business: 1-5[ ] 6-10[ ] 11-15[ ] 16-20[ ] years

Please put a tick in the appropriate sector of the industry for your business.

Power Producer [ ] Power distributor [ ] other services related to power [ ]

Ownership of company: Solely Ghanaian Owned [ ] Foreign Owned [ ] Joint Venture

[ ] Other (specify)_____

Estimated Company's Annual Revenue (GHS): < 10,000[ ]; 10,000-30,000[ ]; 30,001-100,000[ ]; 100,001 –500,000[ ]; 500,000 – 1,000,000[ ]; over 1,000,000 [ ]

Number of employees: Less than 50[ ]; 50-100[ ]; 101-150[ ]; 151-200[ ]; 201-250[ ]; 300+ [ ]

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