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FACULTY OF BUSINESS AND MANAGEMENT STUDIES

DEPARTMENT OF PROCUREMENT AND SUPPLY SCIENCE

EXAMINING THE IMPACT OF INFORMATION TECHNOLOGY ON PROCUREMENT AND SUPPLY CHAIN MANAGEMENT AT THE ELECTRICITY COMPANY OF GHANA LIMITED, KOFORIDUA

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DECLARATION

We hereby declare that the preparation of this work is supervised in accordance with the guidelines and supervision of project work laid down by Koforidua Technical University. It contains no materials previously published by any person for award of Bachelor of Technology in Procurement and Supply Science.

Signature……. Signature…….

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SUPERVISOR'S CERTIFICATION

I hereby certify that this project work was supervised in accordance with the guidelines of supervision of project works laid down by the university.

Dr. Charles Ricky-Okine Signature ..... Date. 25th October, 2023

(Supervisor)

DEDICATION

We dedicate this work to our parents who remain our backbone in sponsoring this project and funding us through the educational journey in Koforidua Technical University.

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ABSTRACT

This research work was titled; "Examining the Impact of Information Technology on Procurement and Supply Chain Management, the case of Electricity Company of Ghana limited in Koforidua." It identifies some positive impact of IT on procurement and supply chain management activities. It also looks at the challenges that hinders the implementation of IT on procurement and supply chain activities as well as looking at some IT resources used in procurement and supply chain management processes. Questionnaire was used as primary data and the reliance on secondary data. A sample size of thirty (30) was chosen from a population of 53 using purposive sampling technique for the study and it includes, procurement unit, IT unit, accounts unit, audit unit and senior staff respectively. Closed and open-ended questionnaire was relied upon to collect data; also, Statistical Package for Social Science (IBM SPSS 24) was used to draw tables, frequencies and percentages as well as analyzing the data collected for the study. Some of the positive impacts included better management control, Reduction of transaction cost and Minimizing chances of errors. It was also revealed that Suppliers and partners unwilling to compromise, Lack of practice and training before implementation and Staff struggling to adjust to new processes were some challenges that hinders the implementation of IT on Procurement and supply chain management activities at ECG, Koforidua. It was also realized that, the following IT resources were used in the procurement and supply chain management processes of ECG, Koforidua; Information Communication and Technology, Radio Frequency Identification, Electronic Data Interchange (EDI) and Enterprise Resource Planning (ERP) Systems. It is recommended that: IT resources should be used for procurement and supply chain activities for the purpose of reduction of transaction cost, better management control and enhancing budget control. The findings of this study are expected to contribute significantly to the existing body knowledge in procurement and supply chain management. Frequent seminars should be organized for managers of various categories in every organization for training purposes in IT resources usage. Organizations that for some reason of cost cannot purchase some of these IT resources, can come together and purchase these resources since it can be used in different organizations. Finally, culture in the organization should be well handled in adopting the use of these IT resources.

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CHAPTER ONE

INTRODUCTION

1.0 The investigation's backdrop

Procurement varies from buying in that procurement entails following the Procurement Act (Act 914) to get products, works, and services, whereas buying entails following the five purchasing rights.

Procurement entities are defined as "an organization or person with a legal or administrative mandate for procurement purposes" in the PPA Manual (2016). This implies the establishment of a procurement unit in any of the following organizations: Central Management agencies, Ministries and Departments, Sub vented agencies, and state-owned businesses. Section 15 of the Public Procurement Act sets the procurement entity's responsibility for all of the entity's procurement activity, in accordance with the Law and any regulations or administrative instructions issued by the Minister of Finance acting in collaboration with the PPA.

The Procurement Act 914, passed in Ghana in 2003, mandates all public service organizations to appoint a procurement office to oversee the acquisition of products, works, and services in order to acquire the most value for the money spent in a more accountable manner.

According to Harland (2015), supply chain management (SCM) oversees a network of interconnected businesses that handle the final delivery of product and service packages needed by end customers. The phrase was first used in 1982 by Keith Oliver, a manager at Booz Allen Hamilton.

From the point of origin to the point of consumption, supply chain management includes the transportation and storage of finished goods, stocks of goods still in production, and raw materials. Procurement, conversion, sourcing, and logistics management activities are all included in supply chain management, along with their planning and administration. Another crucial aspect of channel management is coordination and cooperation with suppliers, intermediaries, outside service providers, and customers. The integration of demand and supply management both within and between businesses is the essence of supply chain management.

Supply chain management needs to address the following problems in order to:

Distribution network configuration: It consist of the number, location, and network functions of suppliers, manufacturers, distribution centres, storage facilities, cross-docks, and customers.

Distribution Strategy: This part covers topics like replenishment strategy (pull, push, or hybrid), mode of transportation (motor carrier, including truckload, parcel, railroad, ocean freight, and airfreight), delivery scheme (direct shipment, pool point shipping, Cross docking, Direct Store Delivery (DSD), and closed loop shipping), and transportation control (owner operated, private carrier, common carrier, and public carrier).

The network of businesses, individuals, information, resources, and procedures that produce and deliver a particular product to the customer is known as the supply chain. It makes sense that a company's supply chain will be impacted by the products and services it offers. Supply chain entities include, but are not limited to, vendors, warehouses, producers and manufacturers, retailers, distribution centres, in-house personnel, and stock rooms.

A supply chain is managed to increase the flow of goods and services and to transform raw materials into completed commodities for the consumer.

Many in supply chain and procurement management are seeing a change in their business practices due to new devices. Technology is revolutionizing the logistics and transportation sectors, and mobile, wireless, and handheld devices are helping to make supply chain management more efficient. This is because supply chain management requires accurate tracking and delivery systems.

Large organizations that have made significant investments in outdated technology may find it challenging to stay up to date with new features and industry best practices due to the dynamic nature of technology. In this cutthroat market, adopting new technologies is essential, even though they take time to implement.

Recent technological improvements have enabled firms, clients, and individuals to easily access information, which has proven effective in coordinating supply chain activities. "Information Technology (IT) refers to the use of inter-organizational systems for information processing and exchange across organizational boundaries" (Fasanghari and Kamali, 2014). Additionally, information technology (IT) was defined by Attaran (2016) as "the capabilities provided by computers, software applications, and telecommunications to businesses to provide data, information, and knowledge to humans and processes."

Information technology refers to the use of networks, hardware, and software to speed up decision-making and improve information flow.

Coordination and integration of information flows and activities both inside and outside of an organization's boundaries are achieved through the use of integrative technologies. This enables a corporation to manage procurement processes more efficiently in order to respond to client requirements more promptly. Management decisions can be supported by improved mathematical

and technological aspects that enable personalized planning processes and optimization algorithms with the use of these instruments (Krmac, 2017).

Enterprise Resource Planning (ERP) systems are transaction-based, integrated information systems that are used to automate all business-wide operations. By combining all of the company's data into a single computer program, they essentially make it possible to process financial, inventory, and client order data more efficiently by eliminating the need for numerous manual steps and activities.

A consolidated computer system that manages the material handling equipment is called an Information Directed System (IDS), and it is one of the additional instruments. Radio frequency identification and e-data interchange are two more tools.

Businesses rely on information technology tools to simplify their supply chain and procurement operations in order to provide high-quality services to end consumers at the lowest feasible cost and in the shortest amount of time.

This creative adventure began when more organizations decided to replace paper-based work with IT solutions that would speed up their service delivery process.

The internet cannot be disregarded in terms of the technological evolution of the institutions that use it.

When urgent institutional needs must be met, the PPA of Ghana realized the need to forsake the time-consuming and costly traditional method of supply chain operations and procurement. As a result, most public and commercial enterprises have begun to integrate information technology into their supply chain and procurement procedures.

Despite the limitations of its implementation, the benefits cannot be emphasized.

1.1 Problem Statement

There has been minimal empirical research done to examine the effects of information technology on supply chain management and procurement within the framework of the Electricity Company of Ghana, despite the growing recognition of its positive effects on supply chain performance.

According to one researcher, Sani (2019), information technology (IT) has greatly enhanced supply chain performance by improving communication, increasing efficiency, and lowering costs. According to Shaw (2018), the impact of Information Technology on supply chain performance is determined by various aspects, including the supply chain complexity, the level of communication among supply chain participants, and the maturity of Information Technology systems.

By looking into the reasons behind the delays in information delivery across government institutions, the impact of information technology on supply chain performance and procurement, the adoption and usage of ICT systems by employees, the challenges that obstruct the use of ICT in these areas, and the impact of information technology on supply chain performance, this study aims to close these research gaps.

1.2 The study's goals

At the Electricity Company of Ghana Limited, Koforidua, the study's primary objective is to ascertain the effects of information technology (IT) on supply chain management and procurement procedures.

The specific objectives of the investigation are as follows:

1 To examine the positive impacts of IT on ECG's procurement and supply chain management activities.
2 To examine the challenges that hinders the implementation of IT on ECG's procurement supply chain management activities
3 To find out the IT resources used by ECG's procurement and supply chain management processes.

1.3 Inquiries for research

The research questions for this study are as follows:

1. What are some of the positive impacts of IT on procurement and supply chain management at ECG?
2. What are some of the challenges that hinders the implementation of IT on procurement and supply chain management at ECG?
3. What are some of the IT resources used in procurement and supply chain management at ECG?

1.4 The study's significance

Since this study will clarify the advantages and disadvantages of implementing technology in supply chain and procurement procedures, a large number of people will gain from it.

Some of the organizations that stand to benefit from this research effort include the government, stakeholders, firms and businesses, society, and individual academics.

This study will be beneficial to the government since it will highlight some of the IT technologies utilized to accelerate procurement procedures, particularly in the public sector.

This research work will also benefit stakeholders such as user departments, internal customers, and external clients who appear to have a direct interest in procurement activities because it highlights some of the difficulties encountered when using Information Technology in procurement and supply chain management activities and provides recommendations to address the difficulties to improve the quality of work delivery, which seeks to meet the needs of these stakeholders.

This research will benefit the general public as well because it will serve as a knowledge base for anyone planning more research on the effects of Information Technology on supply chain management.

Finally, the student researchers will grasp how Information Technology affects supply chain management and procurement. As a result, they will be better prepared to fulfil their academic obligations.

1.5 Scope of the study

Because they are directly involved in procurement and supply chain management activities with suppliers, the procurement unit, IT unit, accounting unit, and audit department of the Electricity Company of Ghana, Koforidua is the subject of this study. In Ghana, there are various public sector entities with procurement departments.

1.6 Limitations of the study

The researchers encountered a variety of barriers and challenges while working on this project, one of which being the delay in our respondents' responses to our questionnaire being finished on time.

1.7 How the research was organized

There will be five chapters in this inquiry. An introduction, the study's history, a problem description, its objectives, research questions, the investigation's applicability, its scope, its limitations, and its organizational structure are all included in the first chapter. The subsequent section will examine previous research on the topic along with other subsections pertaining to the impact of Information Technology on supply chain management and procurement.

The methodology and a profile of the study region would be included in Chapter three. This comprises research design, data gathering sources, data collection procedures, population and sample size, data analysis, and finally an organization profile.

The study's data are presented, analysed, and discussed in the fourth chapter. Tables and version sixteen of the Statistical Package for Social Science (SPSS) will be used for the analysis of the data gathered from respondents.

A synopsis of the study's results, conclusions, and recommendations would be included in the fifth chapter.

CHAPTER TWO

LITERATURE REVIEW

2.0 Introduction

Information technology (IT) may help supply chain management; this chapter explains how; it also provides an overview of the empirical research and a summary of supply chain performance. Empirical research on the use of IT in supply chain management is also included in this section. Aiding the researcher in understanding earlier IT research is the aim of the literature review.

2.1 Definitions that are conceptual

2.1.1 Procurement

Procurement is the process of locating, purchasing, and paying for goods and services. Although the terms "sourcing," "purchasing," and "procurement" are sometimes used interchangeably in the business world, they each refer to different components of the entire procurement function (Lysons & Farrington, 2017).

2.1.2 Procurement process

It relates to the subsequent steps of the procurement cycle, such as planning, selecting a procedure, asking tenders, reviewing and analysing tenders, awarding a contract, and contract management (Baily and Farmer, 2005).

2.1.3 Supply chain

According to Lynch and Farrington (2006), the supply chain is a network of businesses that engage in a variety of production processes and activities that create value and result in goods and services that the end user or customer can obtain through upstream and downstream links.

An organization that works together to create, transport, and sell a product to a customer is known as a supply chain. This network includes distributors, transporters, warehouses, suppliers, and manufacturers. In Sharma (2010).

2.1.4 Supply Chain Management (SCM)

The process of streamlining the flow of commodities from raw materials to completed goods is known as supply chain management, according to Sakhin and Elango (2018). corporations that provide products to end users are collectively referred to as the supply chain due to the combined efforts of these businesses; nevertheless, most corporations that have a supply chain in place for a long time concentrate only on internal operations. Supply chain management also encompasses other industries, including procurement, information technology, and logistics. Supply chain management is an organizational concept that regulates the flow of goods and services, including the inventory of retained raw materials and work-in-progress. This is according to Nyagawani (2013). Supply chain management is an essential part of any business, no matter how big or little, claim Sakhin and Elango (2018). In order to boost customer value and create long-term competitive advantages, it is the dynamic management of supply chain operations. Accordingly, supply chain management refers to supply chain businesses' deliberate efforts to design and manage their supply chains as efficiently as possible.

Sources, manufacturing, shipping, product development, and information system structure are all included in the supply chain, according to Genovese (2015). According to Gunasekaran (2014), supply chain management (SCM) is the process of managing operations, such as production, distribution, product development, and procurement, with the aim of optimizing customer value, through the use of information systems. The writers further emphasize that in order to produce, store, and transport finished goods to clients, supply chain management combines strategy,

information, procedures, technology, and resources. A competitive infrastructure, new values, supply and demand coordination, and performance evaluation on a global scale are the objectives of supply chain management, as defined by Carter and Rogers (2015). Supply chain management encompasses the design, execution, control, monitoring, and planning of supply chain processes.

2.1.5 Concept of Information technology

Computer-based information systems, including their hardware and software, as well as its design, development, implementation, maintenance, and administration, constitute the subject of information technology, according to Kumar (2014).

IT involves all aspects of computer science and technology innovation, as well as the design, development, installation, and usage of applications and information systems. The information technology architecture integrated framework is used to acquire and develop IT in order to achieve strategic goals. It is made up of both technological and logical components. Logical components include information flows, system configurations, mission, functional, and information needs. According to Harnowo (2015), the logical architecture will be implemented by the application of IT standards and regulations, which are considered technical components. Information technology (IT) is the study of computer-based information systems, which can include development, implementation, support, and administration duties in addition to software and hardware. The ability to acquire, process, store, transmit, and produce information in the forms of words, numbers, images, and sounds is made possible by the convergence of computing and telecommunications (Sachin & Elango, 2018). Information systems, database management systems, software development, and telecommunication are just a few of the many fields it covers.

2.2 Functions of Information Technology

Information Technology provides a range of roles in company, according to Shah (2009), as cited by Muriuki (2013). The implementation of information technology can improve an organization's productivity and size, handle routine business tasks, gather and disseminate data that is essential for management choices, keep track of modifications to the primary business activities of the company, and preserve channels of communication. A supply chain is expected to have these qualities as well. The integration of information technology (IT) may link all the activities in a supply chain, creating a unified, flexible system that can produce large quantities of customized goods at a cheap cost and respond quickly (Muriuki, 2013).

Organizational competitiveness is something that businesses are constantly trying to improve. Businesses are currently confronted with several supply chain challenges. This is because construction projects are becoming more complex, and one of the challenges that firms face is the cost of purchasing equipment, storing it, maintaining it, and supplying it (Tian Yue, 2013). Supply chain management, according to Kaveh (2014), is viewed by businesses in the twenty-first century as a worldwide organization strategy for reaching organizational competency. Information technology and the supply chain management paradigm are being combined by businesses to modernize their operations and increase their flexibility and responsiveness (Muriuki, 2013). The current market is technologically linked and ever-changing.

Because of technology improvements in the last few decades, a lot more competition exists in the corporate sector these days. Businesses have grown from local competitors to competitors in national and worldwide marketplaces by utilizing software, computers, and the Internet. In reaction to these advances, several businesses have automated their processes, collecting and exploiting data important to their industry. Furthermore, because of technological improvements,

organizations must now maintain flexibility in order to adapt their operations to newer and better technical advancements (Nikoloski, 2014).

The utilization of information technology is increasingly required to gain a competitive advantage. Process optimization, cost cutting, communication, and quality control all work together to deliver a competitive advantage to a business unit. Information technology emerges as a significant component of modern firms' competitive advantage since it facilitates managerial decision-making and connects all corporate operations, both of which are required for achieving the organization agility level (Sexton, 2014).

2.3 Positive impacts of Information Technology in Procurement and Supply Chain Management activities

Today's innovations and technology advancements will influence management in a major way tomorrow. By having a complete understanding of the dynamics driving these changes, managers, administrators, and everyone involved in the supply chain will be led to new and improved means of utilizing these advancements to their advantage. The field of information technology is the most knowledgeable sector, with substantial technological advances occurring in the past and continuing to occur (Kleverlaan, 2013).

After using information technology in supply chain management, a firm can gain some advantages, such as the following ones:

- Reducing the possibility of process mistakes caused by human interaction or incorrect interpretation. A productive and effective supply chain is critical for a business. Supply chain management relies heavily on reducing unnecessary, costly errors. Nonetheless,

errors may occur on a regular basis, resulting in additional overhead. It is critical in supply chain management to avoid costly mistakes (Gunasekaranb, 2014).

- Transaction costs are reduced since less time is spent on document reconciliation and less dependence on paper-based procedures is used. By reducing transaction costs, businesses can gain a competitive advantage, increase profitability, and improve their balance sheets. Reduced costs can also help organizations improve customer satisfaction, streamline procedures, and increase efficiency (Gunasekaranb, 2014).
- Improved management control: because all data is managed by a single, centralized database, it is simple to generate relevant analyses and management reports Businesses can save costs and expedite product delivery to clients by effectively managing their supply chain. Nyagawani (2013) states that the corporation maintains vendor supply and tightens control over internal manufacturing, distribution, sales, and stocks in order to achieve this.
- Increased planning capacity as a result of extensive understanding of supply chain participants' performance. Access to accurate, real-time data can help to speed up time-sensitive activities such as just-in-time production and improve decision-making. It improves vendor-distributor interactions, inventory management, and system response to consumer requests (Muriuki, 2013).
- Improving information management (easier access to spending records and competitive vendor costs). Given that it offers the foundation for managers' decision-making and the execution of transactions, information is essential to the performance of supply chains. Information is essential for management to know what the customer base wants, how much inventory to have on hand, and when to develop or ship additional products. Enhancing supply chain performance through information exchange has been identified as a key

strategy. According to Sakhin and Elango (2018), firms can enhance efficiency by providing improved coordination between themselves and their supply chain partners.

- Budget administration has been improved. It is commonly used as a metric for organizational performance management in order to ensure that the company accomplishes its financial targets. Supply chain budget benchmarking identifies opportunities to improve operational efficiency, safeguards against harsh supply chain budget cuts, reduces costs without losing quality, and provides the business case for future investment. Carolina was born in the year 2010.
- Reduce the duration and cost of the purchasing cycle. The procurement process's efficacy and efficiency are evaluated through two crucial performance variables: expenses and purchase cycle time. The procedure a company follows to buy products and services from outside vendors is known as the purchasing process. When purchasing cycle time and cost are reduced, customer satisfaction, cash flow, inventory control, and supplier relationships all improve (Nyagawani, 2013).
- Information has resulted in improved contact with outside service providers. Third-party service providers enable organizations to use or outsource functions inside their supply chain to other companies. According to Nyagawani (2013), they provide full, even one-step solutions for order fulfilment, warehousing, packing, and delivery to enterprise supply chains. They can identify and repair any gaps in your supply chain. They can tackle the most challenging logistics management issues and transform your supply chain into an agile, responsive system, which is critical in today's dynamic market conditions (Muriuki, 2013). They can achieve this by incorporating their knowledge, best practices, and technologies into the operations of your firm.

- Sharing and integrating processes. By integrating the supply chain, a more streamlined process may be formed, ensuring no delays, increased prices, or poor customer experiences the final product all the way from the raw material source reaching the client. A company's goal is to build a better supply chain with the help of integration. Maintaining supply and demand equilibrium would be difficult without the visibility provided by an integrated supply chain. Businesses that use integrated supply chain, financial, product innovation, and logistics approaches can better anticipate and respond to demand (Sharma, 2017).

2.4 Challenges that hinders the implementation of Information Technology in Procurement and Supply chain management activities.

Despite the fact that many public sector firms are embracing IT in their operations, data reveal that most attempts fall short of early plans, making execution challenging. Despite the fact that many government organizations do not provide a comprehensive image of IT operations in their sectors, IT adoption is widely seen as slow (Kumar, 2014). Some difficulties include:

1. Suppliers and associates who are unwilling to compromise. Supplier relationship management is vital in many firms because it can result in better pricing, better planning, better reactions to unfavorable occurrences, and lower risk in operations and the supply chain. To be successful in the long run, such a relationship must benefit both the purchasing and supply groups. If you and your provider get to know each other better, you are more likely to receive specialized service, special pricing, and favorable terms. This will boost your supply chain's production, cost-effectiveness, and efficiency (Nikoloski, 2014).
2. Employees who are having difficulty adjusting to new equipment and procedures. The market is tremendously competitive today. Providing a flawless product is no longer a competitive advantage. Money and attention are now being focused on supply chain

management as a competitive tool for prospering in today's corporate climate. Both the order information transmission pipeline and the product transfer pipeline rely on people cooperating. When employees struggle to adapt to the system, business operations are hampered and bottlenecks are created (Tian Yue, 2013).

3. Prior to implementation, there was insufficient training and experience. The procurement function aids in the acquisition of the value required for a business to operate at maximum efficiency. This training aims to improve performance and efficiency by boosting organization staff members' knowledge and abilities in handling the procurement function (Tian Yue, 2013).
4. Internal and external communication issues. Inadequate communication is a major barrier to an effective supply chain. Without a conduit to promote effective communication, issues cannot be brought up quickly enough, resulting in backlogs and waste of goods and materials. Effective communication is required in all sectors of business, but it is especially important in supply chain management. When a company's supply chain suffers from problems, there is typically a breakdown in departmental communication, resulting in operational delays and inefficiencies (Kumar, 2014).

2.5 Information Technology resources used in Procurement and Supply Chain Management processes.

Information technology can be used to assess corporate settings, organizational structures, and supply chain dynamics and management. Small and medium-sized businesses can reduce supply chain expenses by enhancing their information technologies. The businesses' effective information systems increase the supply chain's effectiveness and efficiency. In contrast, Kumar (2014). In order to measure performance and costs, the management of the firm must evaluate the supply chain's administration, structure, and mix utilizing IT tools and procedures.

2.5.1 Management Systems for Warehouses

Daily operations of the warehouse and order scheduling are handled by management systems for warehouses. This system handles order picking, picking items in order, producing picking lists, allocating storage spaces, receiving goods, replenishing inventory at picking sites, and issuing items. According to Dziuban et al. (2018), these systems also monitor warehouse inventories.

2.5.2 EDI, WWW, and ICT

Supply chain design and management paradigms have been enhanced by advances in information and communication technologies (ICT), including electronic data exchange (EDI), the internet, and the World Wide Web (WWW). These technologies were created in response to the demanding needs of the systems that facilitate communication between suppliers and customers. The internet, according to (Kumar, 2014), facilitates improved communication between the organization and its clients. In contrast, financially viable supply chains are built over the internet to address the obstacles that virtual enterprises confront (Harnowo, 2015). Because it allows businesses to conduct business, online commerce is a symbol of growth in the business community (Sharma, 2017). The usage of EDI technology facilitates information sharing throughout the supply chain.

According to Kaveh (2009), this reduces uncertainty and improves the performance of suppliers' shipments, hence enhancing supply chain quality.

2.5.3 Planning Systems for Enterprise Resources

One of the IT tools that organizations employ is called Enterprise Resource Planning Systems (ERP). Modern business management methods include the ERP system. Information management system that runs on computers serves as its foundation. ERP systems use cutting-edge IT to create networks out of supply chain activity. Activities such as information flow, money movement, and logistics are expertly integrated to achieve the best possible distribution and sharing of capital resources (Leary, 2015). Sharma (2017) describes ERP as a complete transaction management system that stores data in a single database and incorporates a variety of information processing technologies. Another way to conceptualize ERP is as an integrated business software system that manages a variety of operations, including supplier procurement, shop floor management, and financial accounting, and powers a corporate information structure (Leary, 2015). Accounting, human, and material resources can all be managed successfully and efficiently by an organization with the use of an ERP system, which offers a comprehensive integrated solution for information processing demands (Carter & Rogers, 2015). The two most cutting-edge components of ERP are supply chain management and e-commerce. Users can save inventory and reduce cycle times by linking supply chain apps with other business platforms. According to Obeidat (2015), users that engage in e-business venture outside their own firm borders in order to establish more intimate relationships with suppliers, consumers, and distributors.

2.5.4 Identification of Radio Frequencies

Supply chain management, manufacturing, logistics, and inventory control all make use of radio frequency identification, or RFID. Automatic object recognition is something they can do. The serial number on the radio frequency tags used by RFID systems to transmit resident data uniquely identifies each product. An automatic reader, according to Domdouzis and Kumar (2007), can accept data via RFID technology. RFID tools are often used by airports, shipping companies, high-value commodities makers, and transporters. According to Albacete (2013), RFID improves stock level transparency and operational efficiency in the distribution of products with limited shelf life. RFID is also useful in the management of aviation freight. Logistics management can easily monitor and control cargo flow, and freighters can easily locate their cargo owing to tags attached to pallets and containers. Avoiding item misplacing and decreasing delays leads to increased efficiency and higher service quality. By 2020, Xia.

2.5.5 Flexible Manufacturing Systems

Some technologies that contribute to supply chain flexibility are group technology, computer integrated manufacturing, and flexible manufacturing systems (FMS). Because the internet facilitates communication and information sharing, control systems could respond swiftly. Customer loyalty results from the adaptability of these systems. Toyota, according to Sharma (2017), is one corporation that uses FMS to meet customer requests.

2.5.6 E-Commerce

E-commerce is a popular IT tool in supply chain operations. Their rising popularity is due to the operational benefits they give for purchasing procedures. E-commerce has enabled businesses to save money. Transactions use less paper, and orders are handled faster. Purchase orders were handled rapidly, resulting in a reduction in inventory. The rise of websites for business-to-business

communication networks has also helped to deepen the link between suppliers and buyers. According to Carolina (2010), e-commerce enables enterprises to expand into previously unexplored locations and market segments while streamlining critical company activities. Supply networks can quickly adapt to the shifting terrain of internet commerce. This is due to the fact that, in contrast to established organizations, new ones can enter and flourish more quickly. E-commerce creates partnerships between businesses and consumers (B2B, B2C, C2B, and C2C). The formation and maintenance of these partnerships allows businesses to thrive. According to Tian Yue (2009), these platforms help organizations communicate relationship benefits, clarify customer requests and expectations, improve supplier performance indicators, and create competitive advantage The Efficient Customer Response Movement is a collaborative movement in the fast-paced consumer products market with various managerial and technological advancements. This trend aims to bring together manufacturers, distributors, and retailers in a more efficient networked framework (Kumar, 2014).

2.5.7 System for Monitoring Points of Sale

One such instrument for supply chain management is the point-of-sale tracking system. A scanning system that connects to the retailer's inventory management systems is an example of a customer-facing information technology application, according to Muruki (2013). A bar code is typically used to identify commodities, which are subsequently scanned by a scanner. With the items identified, tallied, and a transaction recorded, the point of sale (POS) offers a real-time record of the transaction. Stock outs in retail outlets can be avoided via real-time product restocking, according to (Muriuki, 2013).

2.5.8 Decision Support Systems

Various phases of decision-making in supply chain management are addressed by decision support systems. Strategic, tactical, and operational are the three levels into which supply chain management is divided according to Muruki (2013). Various levels require varying kinds of knowledge, claims Kumar (2014). For instance, tactical decisions pertain to how to supply a particular product; operational decisions, on the other hand, deal with how to satisfy a customer's request; and strategic decisions, which deal with future product development and warehouse locations.

2.6 Network of Supplies

The three primary flows that the supply chain network supports call for careful planning and close coordination. A form of flow that includes reserve flows for product returns, recycling, and servicing is represented by material flows, which are the real product flows from suppliers to customers. Financial and physical flows, including credit terms, payment schedules, consignment, and title ownership agreements, are handled via order tracking and transmissions, two aspects of information flow (Obeidat, 2015). Three pillars lend support to the network: processes, such as knowledge management, new product development, and logistics; enabling technologies, which encompass information and process technologies; and organizational structures, which span from fully vertical integrated businesses to networked enterprises (Obeidat, 2015).

2.7 Performance of the Supply Chain

There are two main tasks that supply networks complete. In contrast to the actual physical tasks of transformation, storage, and transportation, the purpose of a market mediator is to match supply and demand. Interior performance metrics include efficiency. Effectiveness, however, is a statistic that is applied externally to meet different groups' needs (Genovese, 2015). Businesses make use

of performance measures to accomplish their goals. Effectiveness, adaptability, and efficiency are the metrics used to assess a supply chain's performance. Cost, inventory, lead time, and workflow reduction are the main objectives of supply chain efficiency (Carter & Rogers, 2015). The majority of organizations focus on lowering supply chain costs while increasing lead times. The key goals of supply chain effectiveness are the development of new products, increased market share, and better customer service. Tian Yue, Tian Yue. Reduced inventory, according to Genovese (2015), implies that breakeven is reached, time to market is allowed, and inventory levels are maintained. Order fulfilment should gauge how much a supply chain partner influences order processing time and shipment accuracy (Tian Yue, 2009).

The supply chain sector has evolved over the last few years, becoming a more sophisticated network between suppliers and customers, beginning with the transportation of raw materials from the source and extending via numerous value-added activities to the final customer. As a network of cooperating companies that compete with other businesses across the supply chain, competition is defined by (Kleverlaan, 2008). To satisfy the rising demands of a demanding market, businesses are stepping up their efforts to synchronize information flows and processes throughout the whole value-added network (Putri et al., 2019). Companies use metrics including price, speed, creativity, and client happiness to assess their performance. As per Ilkka Sillanpaa (2012), a company's main source of competitive advantage stems from the way its intricate worldwide networks are structured.

Kleverlaan (2008) states that a successful supply chain will effectively coordinate its operations, concentrate on delivering value to customers, reduce costs in critical functional areas, and set up performance measurement systems that give information on the chain's performance in comparison to expectations. Businesses need to provide their customers with high-quality products

at competitive prices and with quick lead times in order to obtain a competitive edge over rivals in the global supply chain (Putri et al., 2019). By reducing duplication, streamlining procedures and systems, and raising standards, businesses aim to reduce waste throughout the supply chain and save costs (Obeidat, 2015). To prevent duplication, inventory levels are centralized and kept under control. Most businesses use evaluations of customer demand to determine how much inventory to keep on hand. Companies are studying customer ordering patterns. And in an effort to cut down on waste, organizations are linking their systems. Enterprises that effectively handle their expenses can offer their products at a discount compared to those of their rivals. generally, for goods when cost is a factor (Kleverlaan, 2008). Reduce uncertainty and shorten order lead times are two other ways to improve supply chain efficiency. Lower inventory levels inside the organization result from longer lead times (Ilkka Sillanpaa, 2012). Furthermore, cash flow increases since customers pay for items on time, which enhances the system's financial performance and cash flow. Shortening delivery times also makes it easier for items and information to move more efficiently throughout the supply chain. Furthermore, this flow enables the parties to respond to client demands in a timely and effective manner. Supply chain systems can be made more efficient to achieve shorter lead times (Tian Yue, 2009). As a result, there is a steady supply and consistent product quality. Customer satisfaction is impacted by a number of factors, including interactions with customers during the delivery of goods and services, as stated by Nyagawani (2013). When the supply chain provides the appropriate products to the appropriate individuals at the appropriate time and location, effective customer service takes place. Building and maintaining connections with customers is another way to provide better customer service. Metrics measuring consumer happiness must be connected for the supply chain to work correctly.

Offering goods and services that are tailored to the individual demands of each consumer is necessary to ensure their pleasure.

2.8 Functional roles of IT in SCM

(Sharma, 2017), in particular, support the notion that information technology creates new business opportunities, generates competitive advantage, and transforms industry structures and competition norms. According to Sayin (2020), information technology (IT) plays a critical role in assisting firms in gaining a competitive advantage in the logistics and supply chain domains by facilitating centralized strategic planning and daily centralized operations. Supply chain management is thought to be significantly impacted by information technology. Case studies from six supply chains in the Finnish sector are used by (Kumar, 2014) to show how IT, together with outsourcing and specialization, is a crucial requirement for organizational networking. Supply chains are becoming less integrated and more focused on the market as a result of information technologies, claim some researchers (Harnowo, 2015). In an arm's length approach, for instance, Williams et al. (ibid) state that electronic supply chain management (SCM) combines the structural benefits of supply chain management with the efficiency advantages. By giving clients the option to choose from a wider range of vendors, this may lead to cheaper expenses. In his landmark work, Nyagawani (2013) suggests that the electronic integration (process coupling), electronic brokerage (by offering an automated, "lean" middleman for settling market transactions), and electronic communication (speed of communication) are the value propositions of IT. IT tends to be especially important in industries that require short response times or adaptation and agility (Carolina, 2010). Numerous theoretical publications have discussed the role of IT in SCM. Supply chain management (SCM) can reduce inventory, minimize the bullwhip impact, and increase distribution route efficiency by leveraging IT, claims Sharma (2017). Many publications that offer

actual data on the advantages of IT in SCM are accessible. Unfortunately, these articles' generally limited scope of discussion hinders the results. Examples of such articles include evaluating the impact of enterprise resource planning (ERP) on order completion performance within a year of system implementation (Lysons & Farrington, 2017) and estimating the dollar value of EDI in relationships between automotive manufacturers and component suppliers (Kumar, 2014).

Overall, there are many issues with reporting on the advantages of IT in SCM, as pointed out perceptively by (Kaveh, 2009) in their analysis of the advantages of EDI:

1. Certain benefits depend on both or multiple supply chain stakeholders, while others are dyadic (or multilateral) and individualistic.
2. From minor to major process changes to the development of competitive advantage, the change's size varies.
3. The location of (EDI) implementation determines benefits.

As a result, depending on how it is implemented, IT has a variety of advantages in SCM. Moreover, there is an unbreakable relationship between process modifications and IT use. For this reason, SCM may be seen as an IT-assisted or -facilitated process modification. As a result, it is frequently difficult, if not impossible, to determine if a benefit is the product of IT, process improvement, or both. Finally, when addressing the benefits and drawbacks of IT, it is impossible to overlook the disputed phenomenon known as the "productivity paradox of IT" (Gunasekaran, 2014). Macroeconomic studies in the United States indicated that, while IT investment was expanding, total productivity estimates performed badly. However, numerous research conducted at the corporate level have refuted the notion of a productivity paradox. IT was found to have a discernible impact on company output, for instance, in a firm-level longitudinal research (Sachin & Elango, 2018). The conceptual issue with the IT productivity paradox, according to Muriuki

(2013) in a more recent paper, stems from the fact that real IT usage is rarely considered in research—only IT investment is. Using the same data, they showed that while overall IT investment was not positively and statistically significantly associated with advances in income and quality, observable IT use was, with a certain temporal lag. In addition, Tian Yue (2013) draws a parallel between the IT productivity paradox and the development of the electrical dynamo, which was a groundbreaking breakthrough that did not immediately affect output at the beginning of the twentieth century. The introduction of new technology is not without its problems, according to Tian Yue (2013), which could cause a temporary lag in productivity gains.

CHAPTER THREE

RESEARCH METHODOLOGY

3.0 Introduction

In order to locate, gather, analyse, and interpret research data, the appropriate research instruments and procedures must be understood and supported. This chapter outlines the research parameters needed for this purpose. As a result, this chapter aided the researcher in comprehending and identifying numerous research procedures and instruments, allowing them to select the best one to suit the study's aims and objectives. This chapter covers the designs, procedures, and technique approaches for gathering, gathering, and analysing data as suggested by the researcher.

3.1 Research Design

The research design provides the framework for the inquiry method. Research design assists in the formulation of the study topic by utilizing suitable instruments and procedures. By combining the idea of the research topic with a suitable research instrument, the research design enabled the investigator to make the study feasible. Thus, in order to satisfy the data need, the technique is utilized to determine the study design. Mixed research (combining quantitative and qualitative designs), qualitative research, and quantitative research are the three most prevalent research methodologies. Considering the nature of the inquiry, the current investigation employs both qualitative and quantitative research design methodologies.

3.2 Population of the Study

All senior management staff members, as well as individuals from the information technology (IT) and procurement departments, are included in the study's population. As a result, employees of the Electricity Company of Ghana, Koforidua account for around 53% of the target population.

3.3 Sample Size

Because gathering data from the complete population for the study will be difficult, a sample size was chosen. This study will include thirty respondents and will be conducted at the Ghanaian Electricity Company in Koforidua. Ten personnel work in the procurement department, five in the accounting department, five in the information technology unit, five in the audit unit, and five are senior staff members. The researcher purposefully and simply chose a sample size of thirty to achieve the study's aims.

Table 3.0.1: Sample size respondents at the Electricity Company of Ghana.

	Departments				
Sample size respondents	Procurement	Account	IT Unit	Audit Unit	Senior staffs
	10	5	5	5	5

3.4 Sampling technique

Sampling is the practice of selecting objects or items when knowing everything about a large number of items is impractical. The method of gaining knowledge about a population as a whole by analysing a subset of it is known as sampling (Nyagawani, 2013). An exhaustive picture of the population in the studied area is intended to be provided by the researcher's sample for data collecting. Selection of study subjects (respondents) is done through the use of sampling procedures. This method yields the chosen responses. Thus, purposeful and random sampling approaches were used to collect data. (Tang, 2010)

3.4.1 Random sampling

Every possible sample combination has an equal chance of being selected and included in the sample in a process known as "random sampling" of sample selection. According to Carolina

(2010), every person of the population has an equal chance of being selected to create a sample because this is a probability sampling method. Each employee has an independent and equal chance of being chosen when this method is used.

3.4.2 Purposive sampling

Purposive sampling is an approach in which the researcher's judgment and intuition are employed to choose which elements of the sample should be included or eliminated (Carolina, 2010). This method is used because it selects personnel who are deemed to be appropriate for the specific study. In light of this, the researcher used the purposive sample approach, enabling him to choose only those respondents whom he thought might provide the necessary data. However, the basic random sampling technique was adopted because each employee had an equal probability of being chosen for the sample (Carolina, 2010).

3.5 Techniques and Approaches for Data Collection

3.5.1 The method by which primary data was gathered

To collect the information required to respond to the research questions, this strategy included a number of techniques. In order to collect primary data, the following procedures were used.

3.5.2 Questionnaires

A questionnaire, according to Nyagawani (2013), is a series of questions with several possible answers from which the respondent can choose. As a result, a questionnaire can be broadly defined as a series of questions that everyone is asked to answer in a predetermined order. Telephone surveys that are structured, offer participants the same set of questions, and allow participants to finish the questions without the researcher present are all deemed inclusive (Addo, 2019).

Information from the research region was gathered using the survey method of data collecting. The researcher utilized both closed-ended and open-ended questions because the respondents were knowledgeable and could provide their own answers to the questions without much help from the facilitator. Procurement and purchasing officers, along with other professionals, were among the target readers of this questionnaire.

The responders, who work for ECG, were given a series of inquiry forms by the researchers.

a) Open –ended Questionnaires

These kinds of surveys are made to allow respondents the chance to voice their own opinions. Because there are no specified options for respondents to choose from, they have a lot of freedom while using this format (Muriuki, 2013).

b) Closed-ended Questionnaires

According to Nyagawani (2013), these are the kind of questionnaires that are intended to limit respondents' options and prevent them from freely selecting from a list of possibilities. Based on the selected sample size and pertinent data, the quantity of copies of the study questionnaire that were given to respondents was determined.

3.6 Source of data

In research, primary and secondary data are the two types of data that are typically taken into consideration. The categories of data are described in further detail below.

3.6.1 Primary Data

Research questions are addressed by gathering this kind of data in the field of study. Muruki (2013) states that research assistants collect them from the field in order to answer a study topic or problem. Primary data is obtained through direct observation, direct correspondence with respondents, or in-person interviews. Questionnaires and interviews, according to Sharma (2017), are two more approaches for gathering information. Observation, questionnaires, and interviews are frequently used by researchers to collect primary data. The core data for this inquiry was collected via a questionnaire and an interview.

3.6.2 Secondary Data

Secondary data refer to previously collected information. They make reference to information that has already been obtained and analysed by another party. Genovese (2015) claims that these are obtained from literary sources or information gathered by third parties for a variety of purposes. They could include published or unpublished works. Secondary data, according to Nyagawani (2013), includes both published and raw information and provides second-hand knowledge. Books, journal articles, newspapers, reports, and other online documentary reviews are examples of secondary data sources. As a result, in addition to the previously described main data, this study used secondary data.

3.7 Data Analysis Technique

The Statistical Package for Social Science (IBM SPSS 24) would be used to statistically analyse the data collected through the use of basic frequencies, percentages, and tables. More information will be provided when it is necessary to properly comprehend the importance of the data gathered.

3.8 A Synopsis of Ghana's Power Corporation

The entirety of The Electricity business of Ghana, a limited liability business, is owned by the Ghanaian government. The Companies Code, 1963 (Act 179) was followed in the creation of the Electricity Company of Ghana Limited (ECG) in February 1997. On April 1st, 1947, it was renamed the power Department and given national authority for the distribution of power. It was renamed the Electricity Division in 1962. Later, in 1967, the NLCD 125 was renamed the Electricity Corporation of Ghana (ECG) (ECG, 2016).

The Volta River Authority (VRA) established the Northern Electricity Department in 1987 to take over the Northern sector of Ghana's electric power distribution responsibilities from the ECG. Since then, six political and administrative regions in southern Ghana have been under the control of ECG for the distribution of energy. GRIDCO (2015) specifically mentions the Greater Accra, Volta, Ashanti, Central, Eastern, and Western Regions.

3.9 Mission

To contribute to Ghana's economic development and advancement by providing dependable, safe, and high-quality electrical services.

3.10 Vision

To be one of Africa's leading energy distribution companies by 2020.

CHAPTER FOUR

PRESNTATION OF RESULTS AND DISCUSSION

4.0 Introduction

The findings are analysed, presented, and discussed in this chapter. In addition to being informed by research questions that were formulated in compliance with Chapter 1's standards and intended to identify connections between different factors, the findings and discussion are mostly based on qualitative and quantitative data that was gathered in the field. After all the data collected over the period was analysed, the research questions were assessed using the results. These findings could influence the way the selected research questions are answered. With regard to the literature review and analysis, the study objectives and research questions serve as the primary guides for the discussion of the following themes and how they relate to the theory and review. The data in this chapter was provided by Koforidua ECG professionals who agreed to be interviewed and answered the questionnaire that was emailed to them.

4.1 Data analysis and interpretation

The conceptual framework and research objectives description served as the study's pillars for data analysis and research conclusions. Thirty respondents provided relevant information for the study's population as a whole, which the researcher obtained using the recommended data collecting procedures.

Only 24 surveys were collected, accounting for 80.00% of all the questionnaires distributed were collected, despite the fact that 30 were sent to the intended sample. The respondents did not complete 20.00% of the total number of questions, or four. As a result, 80.00% of respondents completed the questionnaire, which is an excellent response rate that warrants further investigation.

The use of questionnaires was one strategy used to collect data for the organization. Because the majority of respondents provided rapid, positive comments, this was the simplest option. The procurement managers and personnel were questioned. The researcher wanted to obtain more meaningful data by depending exclusively on the respondents' employment, involvement, background, and decision-making skills.

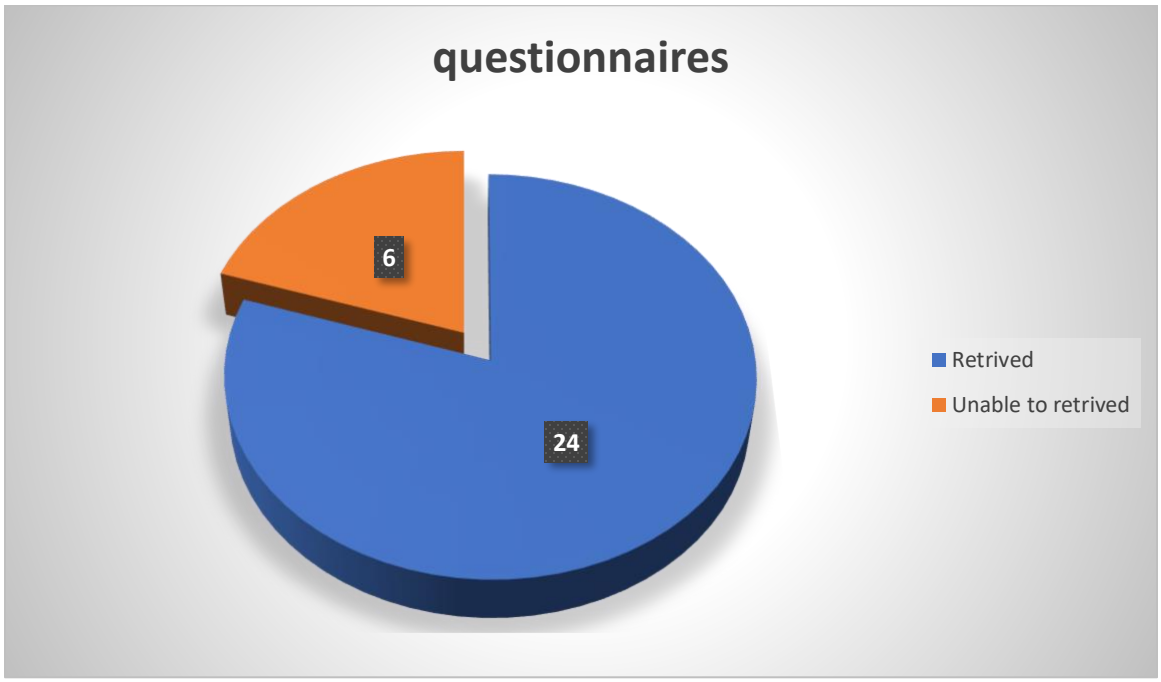

Figure 4.1:Questionnaires (Field survey, 2023).

The above image depicts the surveys that were distributed to ECG Koforidua. Twenty-four (24) of the thirty (30) questionnaires distributed were retrieved, whereas six were not.

Table 4.1: Gender of respondents (Source: field survey, 2023)

		Frequency	Percent
Valid	Male	14	58.3
	Female	10	41.7
	Total	24	100.0

The gender breakdown of the participants is seen in Table 4.1, with 58.3% of the responses being male and 41.7% being female. According to these assessments, male responses outnumber female respondents.

Table 4.1: Age of respondents (Source: field survey, 2023).

		Frequency	Percent
Valid	18-23years	1	4.2
	24-29years	5	20.8
	30-35years	13	54.2
	36-41years	3	12.5
	42-47years	1	4.2
	54-59years	1	4.2
	Total	24	100.0

The ECG Koforidua respondents' ages are displayed in Table 4.2. The data shows that 4.2% of respondents are in the 18–23 age range. 20.8% of the population is between 24 and 29 years old,

54.2% is between 30 and 35 years old, 12.5% is between 36 and 41 years old, 4.2% is between 42 and 47 years old, and 4.2% is between 54 and 59 years old. This proves indisputably that the Koforidua ECG population is engaged and composed of motivated men and women.

Table 4.1: Educational Qualifications of Respondents (Source: field survey, 2023).

		Frequency	Percent
Valid	PhD	2	8.3
	Masters	15	62.5
	First Degree	6	25.0
	HND	1	4.2
	Total	24	100.0

The respondents' combined educational background is listed in Table 4.3. PHD holders made up 8.3% of the sample, followed by Master's degree holders (62.5%), first degree holders (25.0%), and HND holders (4.2%). According to Table 4.3, the majority of ECG respondents are well educated.

Table 4.1: Specialization of Respondent (source: field survey, 2023).

		Frequency	Percent
Valid	Accounting	5	20.8
	Analysist	1	4.2
	Auditing	5	20.8
	Market Analysist	2	8.3
	Procurement Management plan	3	12.5
	Project Procurement management plan	2	8.3
	Software	1	4.2
	Software and Hardware	1	4.2
	User support	3	12.5
	User Support	1	4.2
	Total	24	100.0

The experts' fields of expertise are listed in Table 4.4. “Accounting accounts for 20.8% of the total, Analysis and Auditing accounts for 4.2%, Market Analysis accounts for 8.3%, Procurement Management Plan accounts for 12.5%, Project Procurement accounts for 8.3%, Management Plan accounts for 4.2%, Software accounts for 12.5%, Software and Hardware accounts for 4.2%, and User Support accounts for 4.2%."

Table 4.1: Position of Respondents (source: field survey, 2023).

		Frequency	Percent
Valid	Account officer	4	16.7
	Accountant	1	4.2
	Assistant Auditor	1	4.2
	Assistant Procurement officer	1	4.2
	Internal Auditor	4	16.7
	IT officer	1	4.2
	Procurement manager	2	8.3
	Procurement officer	4	16.7
	Senior IT Assistant	1	4.2
	Senior IT manager	2	8.3
	Senior IT Manager	1	4.2
	Senior Staff	2	8.3
	Total	24	100.0

The locations of the responses are displayed in Table 4.5. There are 16.7% of accounts officers, 4.2% of accountants, 4.2% of assistant auditors, 4.2% of assistant procurement officers, 16.7% of internal auditors, 4.2% of IT officers, 8.3% of procurement managers, 16.7% of procurement officers, 4.2% of senior IT assistants, 8.3% of senior IT managers, 4.2% of senior IT managers, and 8.3% of senior staff.

Table 4.1: Working Years of Respondent (source: field survey, 2023).

		Frequency	Percent
Valid	Less than 2years	1	4.2
	2-6years	1	4.2
	7-11years	12	50.0
	12-16years	8	33.3
	27-31years	2	8.3
	Total	24	100.0

Table 4.6 shows the respondents' ages. Less than 2 years account for 4.2%, 2-6 years account for 4.2%, 7-11 years account for 50.0%, 12-16 years account for 33.3%, and 27-31 years account for 8.3%. As evidenced, the majority of respondents have been with the organization for 7 to 11 years. This indicates that they have witnessed the organization's transition from manual to IT-based business operations, and as such, they have the necessary information for the success of this study.

Table 4.1: Department of Respondent (source: field survey, 2023).

		Frequency	Percent
Valid	Account	5	20.8
	Audit	5	20.8
	IT	6	25.0
	Procurement and supply chain	8	33.3
	Total	24	100.0

Table 4.7 contains a description of the respondents' departments. Accounts, audits, IT and Procurement and Supply Chain accounts for 20.8%, 20.8%, 25.0% and 33.3% of the total, respectively.

4.2 To examine the positive impact of IT on ECG procurement and supply chain management activities.

Table 4.8: The implementation of IT systems in the healthcare industry has positively impacted ECG procurement activities *(source: field survey, 2023).*

		Frequency	Percent
Valid	Disagree	3	12.5
	Neutral	1	4.2
	Agree	20	83.3
	Total	24	100.0

Field survey, 2023.

The respondents were asked to rate how much they agreed with the statement "the implementation of IT systems in the healthcare industry has positively impacted the procurement activities of ECG" in the Table, and a total of 24 responses were received. Thirteen respondents, or 12.5% of the sample size, disagreed with the premise; one respondent expressed neutrality, accounting for 4.2% of all responses received; and twenty respondents agreed with the assertion, accounting for 83.3% of all responses received.

Compare and contrast these three figures (12.5% disagree, 4.2% indifferent, and 83.3% agree). According to the survey, the deployment of IT systems in the healthcare industry has had a positive impact on ECG's procurement processes.

Table 4.9: Organizations have experienced specific benefits due to the fact that in supply chain management utilizing IT in ECG procurement (source: field survey, 2023).

		Frequency	Percent
Valid	Neutral	4	16.7
	Agree	19	79.2
	Strongly Agree	1	4.2
	Total	24	100.0

Field survey, 2023.

The Table was used to collect responses to the question, "Organizations have experienced specific benefits due to the fact that in supply chain management utilizing IT in ECG procurement," obtaining a total of 24 responses from the respondents. One respondent, or 4.2% of all replies received, strongly agreed with the argument, while 19 respondents, or 79.2% of all comments collected, agreed with it. Four respondents, or 16.7% of the sample size, were undecided.

According to the survey, organizations have profited notably due to the fact that in supply chain management adopting IT in ECG procurement (16.7% for neutral, 79.2% for agree, and 4.2% for strongly agree).

Table 4.10: The efficiency and accuracy of ECG procurement processes have been improved through the use of IT, leading to better outcomes in supply chain management (source: field survey, 2023).

		Frequency	Percent
Valid	Neutral	1	4.2
	Agree	21	87.5
	Strongly Agree	2	8.3
	Total	24	100.0

Field survey, 2023.

The Table's major criterion was "increased efficiency and accuracy of ECG procurement processes leading to better outcomes in supply chain management." There was one response to "neutral," twenty-one responses to "agree," two responses to "strongly agree," and no responses to "strongly disagree" or "disagree." The use of IT has boosted the accuracy and efficiency of ECG procurement procedures, enhancing supply chain management results, according to 24 respondents, or 1 indifferent, 21 agree, and 2 strongly agree.

Table 4.11: IT has contributed to enhanced transparency and traceability within ECG procurement and supply chain management activities (source: field survey,2023).

		Frequency	Percent
Valid	Agree	21	87.5
	Strongly Agree	3	12.5
	Total	24	100.0

Field survey, 2023.

A total of 24 responses were gathered when the respondents in the Table were asked to rate their agreement with the statement, "IT has contributed to enhanced transparency and traceability within ECG procurement and supply chain management activities. "The three highly agree comments account for 12.5% of the total number of responses received. This argument is supported by 21 of the respondents, accounting for 87.5% of the sample total.

By comparing these two figures (87.5% agree and 12.5% strongly agree), the poll suggests that IT has greatly contributed to increased transparency and traceability throughout ECG procurement and supply chain management procedures.

Table 4.11: Successful case studies demonstrate significant improvements in ECG procurement and supply chain management through the adoption of IT solutions (source: field survey, 2023).

		Frequency	Percent
Valid	Neutral	2	8.3
	Agree	18	75.0
	Strongly Agree	4	16.7
	Total	24	100.0

Field survey, 2023.

The statement, "Successful case studies demonstrate significant improvements in ECG procurement and supply chain management through the adoption of IT solutions," elicited 24 responses from respondents, the respondents were asked to rate their level of agreement. 18 respondents, or 75.0% of all responses received, agreed, while 4 respondents, or 16.7% of all responses received, strongly agreed. This argument elicited 2 responses, representing 8.3% of the total sample size.

According to the report, effective case studies using IT solutions reveal considerable benefits in ECG procurement and supply chain (8.3% for neutral, 75.0% for agree, and 16.7% for strongly agree).

4.3 To examine the challenges that hinders the implementation of IT on ECG`s procurement and supply chain activities

Table 4.13: The implementation of IT systems on ECG procurement and supply chain activities faces various challenges in healthcare organizations (source: field survey, 2023).

		Frequency	Percent
Valid	Disagree	3	12.5
	Neutral	3	12.5
	Agree	17	70.8
	Strongly Agree	1	4.2
	Total	24	100.0

Field survey, 2023.

Based on the table, a total of 24 responses were gathered from respondents, indicating their level of agreement with the following assertion: "The implementation of IT systems on ECG procurement and supply chain activities faces various challenges in healthcare organizations." Three respondents strongly disagreed with the assertion, accounting for 12.5% of the sample size; three responded neutrally, accounting for 12.5% of the total responses received; seventeen agreed, accounting for 70.8% of the total responses received; and one strongly agreed, accounting for 4.2% of all responses received Based on a comparison of these four percentages, the study concludes that healthcare organizations face a variety of challenges when implementing IT systems on ECG procurement and supply chain activities (12.5% for strongly disagree, 12.5% for neutral, 70.8% for agree, and 4.2% for strongly agree).

Table 4.14: Organizational factors, including resistance to change and lack of IT infrastructure, hinder the successful implementation of IT in ECG procurement and supply chain activities (source: field survey, 2023).

		Frequency	Percent
Valid	Neutral	2	8.3
	Agree	19	79.2
	Strongly Agree	3	12.5
	Total	24	100.0

Field survey, 2023.

Respondents' responses were distributed as shown in the table when questioned whether "resistance to change and a lack of IT infrastructure hampered the successful implementation of IT in ECG." 8.3%, or two responses out of a total of 24, rated the assertion "Neutral." 19 respondents, or 79.2% of all respondents, chose "Agree," while 3 respondents, or 12.5% of all respondents, chose "Strongly Agree." From this data, it is clear that "resistance to change and a lack of IT infrastructure" pose a substantial barrier to the integration of IT into ECG's procurement processes.

Table 4.15: Technological barriers pose specific challenges to the adoption of IT solutions for ECG procurement and supply chain management (source: field survey, 2023).

		Frequency	Percent
Valid	Disagree	3	12.5
	Neutral	7	29.2
	Agree	13	54.2
	Strongly Agree	1	4.2
	Total	24	100.0

Field survey, 2023.

When asked if "technological barriers pose specific challenges to the adoption of IT solutions for ECG procurement and supply chain management," the table shows how respondents responded. 3. Three out of twenty-four responses, or 12.5% of the total, disagreed with the assertion. Thirteen people, or 54.2% of all comments, chose "agree," seven people, or 29.2% of all responses, chose "neutral," and one person, or 4.2% of all responses, chose "strongly agree." This study demonstrates that technological constraints impede the use of Information Technology systems for supply chain management and ECG procurement.

Table 4.16: Regulatory and compliance requirements impact the implementation of IT in ECG procurement and supply chain activities (source: field survey, 2023).

		Frequency	Percent
Valid	Disagree	2	8.3
	Neutral	6	25.0
	Agree	15	62.5
	Strongly Agree	1	4.2
	Total	24	100.0

Field survey, 2023.

The graphic depicts the distribution of responses to the question, "Does IT implementation in ECG procurement and supply chain activities impact regulatory and compliance requirements?" Approximately 8.3%, or 2 of 24 responses, disagreed with the assertion. 1 person, or 4.2% of all respondents, chose "Strongly Agree," while 15 people, or 62.5% of all respondents, chose "Neutral." 6 people, or 25.0% of all respondents, chose "Agree." According to the information supplied, the usage of IT in the ECG supply chain and procurement processes is influenced by legal and regulatory constraints.

Table 4.17: Financial and resource constraints create challenges for ECG when integrating IT into ECG procurement and supply chain management processes (source: field survey, 2023).

		Frequency	Percent
Valid	Disagree	3	12.5
	Neutral	4	16.7
	Agree	9	37.5
	Strongly Agree	8	33.3
	Total	24	100.0

Field survey, 2023.

When asked whether "financial and resource constraints create challenges for ECG when integrating IT into ECG procurement and supply chain management processes," the table shows the range of replies. 12.5% of respondents, or 3 out of 24, disagreed with the claim. 9 people, or 37.5% of all respondents, chose "agree," while 8 people, or 33.3% of all respondents, chose "strongly agree." 4 people, or 16.7% of all respondents, chose "neutral." Due to budgetary and resource constraints, the data reveals that ECG is having difficulty integrating IT into its procurement and supply chain management activities.

4.4 To find out the IT resource used by ECG`s procurement and supply chain management processes

Table 4.18: Various IT resources are utilized in the ECG procurement and supply chain management processes (source: field survey, 2023).

		Frequency	Percent
Valid	Neutral	1	4.2
	Agree	19	79.2
	Strongly Agree	4	16.7
	Total	24	100.0

Field survey, 2023.

A total of 24 responses were collected from the Table, with respondents asked to indicate how much they agreed with the statement "Various IT resources are utilized in the ECG procurement and supply chain management processes." The statement is supported by 19 respondents, accounting for 79.2% of all comments received; 4 respondents strongly support the statement, accounting for 16.7% of all responses received. This assertion had one neutral respondent, accounting for 4.2% of the sample size.

By comparing these three percentages (4.2% for neutral, 79.2% for agree, and 16.7% for extremely agree), the study discovers that different IT resources are used in ECG procurement and supply chain management methods.

Table 4.19: The adoption of IT resources has a significant impact on the potency and efficacy of ECG procurement and supply chain management activities (source: field survey, 2023).

		Frequency	Percent
Valid	Agree	14	58.3
	Strongly Agree	10	41.7
	Total	24	100.0

Field survey, 2023.

The Table was used to collect responses to the question, "The adoption of IT resources has a significant impact on the potency and efficacy of ECG procurement and supply chain management activities," obtaining a total of 24 replies from respondents. 19 people agreed, accounting for 58.3% of all responses. Ten people said they strongly agreed, accounting for 41.7% of the total.

Based on a comparison of these two percentages (58.3% for agree and 41.7% for very agree), the study concludes that the installation of IT resources has a substantial impact on the potency and efficacy of ECG procurement and supply chain management activities.

Table 4.20: Emerging technologies and innovative IT resources are being implemented in the ECG procurement and supply chain management processes (source: field survey, 2023).

		Frequency	Percent
Valid	Agree	15	62.5
	Strongly Agree	9	37.5
	Total	24	100.0

Field survey, 2023.

Responses to the statement "Emerging technologies and innovative IT resources are being implemented in the ECG procurement and supply chain management processes" were taken from the Table, generating a total of 24 responses. 9 respondents strongly agreed, accounting for 37.5% of the total responses, and 15 respondents agreed, accounting for 62.5% of the total.

The survey concludes that creative IT resources and developing technologies are used in the ECG supply chain management and procurement processes by comparing these two percentages (62.5% agree and 37.5% strongly agree).

Table 4.21: Key considerations and criteria guide the selection of IT resources for ECG procurement and supply chain management activities (source: field survey, 2023).

		Frequency	Percent
Valid	Disagree	1	4.2
	Neutral	2	8.3
	Agree	9	37.5
	Strongly Agree	12	50.0
	Total	24	100.0

Field survey, 2023.

A total of 24 responses were obtained from the Table after it was requested of responders to indicate how much they agreed on the assertion "Key considerations and criteria guide the selection of IT resources for ECG procurement and supply chain management activities." 1 person disagreed, accounting for 4.2% of the sample size, 2 people were neutral, accounting for 8.3% of total responses received, 9 people agreed, accounting for 37.5% of total responses gathered, and 12 people strongly agreed, accounting for 50.0% of total responses gathered.

The study concludes that the key considerations and criteria influence the selection of IT resources for ECG procurement and supply chain management activities by comparing these four percentages (4.2% for disagree, 8.3% for neutral, 37.5% for agree, and 50.0% for strongly agree).

Table 4.22: The use of the IT resources for example, Radio Frequency Identification System and Enterprise Resource Planning System, World Wide Web, Electronic Data Interchange and Information Communication and Technology) are very effective in the procurement and supply chain processes (source: field survey, 2023).

		Frequency	Percent
Valid	Agree	4	16.7
	Strongly Agree	20	83.3
	Total	24	100.0

Field survey, 2023.

The respondents were asked to rate their agreement with the statement "The use of IT tools for example, Radio Frequency Identification System and Enterprise Resource Planning, World Wide Web, Electronic Data Interchange, and Information Communication and Technology) are very effective in the procurement and supply chain processes," and a total of 24 responses were collected from the Table. There are four responses that agree with this argument, accounting for 16.7% of the sample size, and twenty responses that strongly agree, accounting for 83.3% of the responses received.

By comparing these two percentages (16.7% agree and 83.3% strongly agree), the study concludes that the use of IT tools for example, Radio Frequency Identification System and Enterprise Resource Planning System, World Wide Web, Electronic Data Interchange, and Information Communication and Technology) is very effective in procurement and supply chain processes.

CHAPTER FIVE

CONCLUSIONS, SUMMARY AND SUGGESTIONS

5.0 Introduction

We wrap up the research in this chapter. Based on the goals of the study, it presents an overview of the key findings and makes a conclusion. Recommendations or proposals are made in order to address some of the concerns uncovered during the inquiry.

5.1 Summary of findings

The study discovered some IT-related effects on procurement and supply chain management.

Some of the positive effects of IT on ECG's procurement and supply chain management activities include reduced transaction costs, improved management control, fewer errors in the process, improved plaining capabilities, improved information management, enhanced budget, shortened the duration and cost of the purchase cycle, enhanced communication with outside service providers, and enhanced process sharing.

The research also revealed some challenges that impede the implementation of IT on ECG's procurement and supply chain management activities, such as uncooperative partners, employees finding it difficult to learn new procedures and technologies, inadequate preparation and training before launch, and problems with internal and external communication.

Warehouse Management Systems, Information Communication and Technology (ICT), World Wide Web (WWW), Point of sale tracking systems, RFID systems, flexible manufacturing systems, electronic data interchange (EDI), enterprise resource planning (ERP), e-commerce, Decision Support Systems, and Inventory Management Systems were discovered to be some of the IT resources used by ECG's procurement and supply chain management processes.

Some of the IT resources used by ECG's procurement and supply chain management processes were discovered to be Warehouse Management Systems, Information Communication and Technology (ICT), World Wide Web (WWW), Point of sale tracking systems, RFID systems, flexible manufacturing systems, electronic data interchange (EDI), enterprise resource planning (ERP), e-commerce, Decision Support Systems, and Inventory Management Systems.

Adoption of IT resources will aid in reducing the likelihood of error, lowering transactional costs, improving management control, improving planning capabilities, enhancing budget control, and lowering purchase time and cost. As a result, this study adds to current knowledge by giving empirical proof of the beneficial influence and challenges of information technology on procurement and supply chain management, while also providing significant insight for academics, government, stakeholders, enterprises, and individuals. Finally, the study underlines the need of firms developing and implementing IT-based procurement and supply chain management operations.

5.2 Conclusions

The researchers would like to conclude by saying that, while there are some challenges to using IT in procurement and supply chain management activities, the benefits cannot be overstated, and adoption should be encouraged in every institution that undertakes procurement and supply chain management for the purposes of better management control, budget control, and transaction cost and time reduction. Warehouse Management Systems, Information Communication and Technology (ICT), World Wide Web (WWW), Point of sale tracking systems, RFID systems, flexible manufacturing systems, electronic data interchange (EDI), enterprise resource planning

(ERP), e-commerce, Decision Support Systems, and Inventory Management Systems are also resources used by Koforidua ECG in procurement and supply chain management.

5.3 Tips for Improvement

These recommendations are derived from the study's conclusions based on its findings; Frequent seminars for managers of various categories in every firm should be arranged for the goal of training in the use of IT resources.

Companies that cannot afford some of these IT resources can band together to buy them because they can be used in several companies.

The above-mentioned IT resources should be leveraged for procurement and supply chain activities to improve management control, budget control, error minimization, and transaction cost and time to realization.

Finally, when implementing the usage of these IT resources, the organization's culture must be carefully considered.

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APPENDIX

KOFORIDUA TECHNICAL UNIVERSITY

FACULTY OF BUSINESS AND MANAGEMENT STUDIES

DEPARTMENT OF PURCHASING AND SUPPLY

QUESTIONNAIRE

TOPIC: ***EXAMINING THE IMPACT OF INFORMATION TECHNOLOGY ON PROCUREMENT AND SUPPLY CHAIN MANAGEMENT: A CASE STUDY OF ECG, KOFORIDUA***

Respondents' Assurance

The purpose of this questionnaire is to collect data for the research above topic. The study is purely an academic work. You are assured and promised of total anonymity of your response. Your assistance is therefore needed and your comments will be treated confidentially.

Instructions

- Please fill the spaces with appropriate answer
- Please tick **(√)** the appropriate box [ ] that best fits your answer

Section I: Demographic

1) Gender: Male [ ] Female [ ]

2) Age Group:

18-23yrs	[ ]	24-29yrs	[ ]
30-35yrs	[ ]	36-41yrs	[ ]
42-47yrs	[ ]	48-53yrs	[ ]
54-59yrs	[ ]	60yrs	[ ]

(a) Level of Education and your area of specialization:

PhD	[ ]	Masters	[ ]

First degree	[ ]	Certificate	[ ]
HND	[ ]	Others: (please specify) ……	
Diploma	[ ]		

(b) Area of specialization

……
……

4) What is your position in the office?

……

5) How many years of working experience do you have in your establishment?

(a) Less than 2 years [ ] (b) 2-6 years [ ] (c) 7-11 years [ ] (d) 12-16 years [ ]

(e) 17-21 years [ ] (f) 22-26years [ ] (g) 27-31years [ ] (h) Above 32years [ ]

6) Department

……
……..

Instructions

- **Please tick (√) the appropriate box [ ] that best fit your answer.**

1- Strongly disagree, 2-Disagree, 3- Neutral, 4- Agree, 5- Strongly Agree

Section II

To examine the positive impact of IT on ECG procurement and supply chain management activities

No	Comment	1	2	3	4	5
7	The implementation of IT systems in the healthcare industry has positively impacted ECG procurement activities					
8	Organizations have experienced specific benefits in supply chain management as a result of utilizing IT in ECG procurement.					
9	The efficiency and accuracy of ECG procurement processes have been improved through the use of IT, leading to better outcomes in supply chain management.					
10	IT has contributed to enhanced transparency and traceability within ECG procurement and supply chain management activities.					
11	Successful case studies demonstrate significant improvements in ECG procurement and supply chain management through the adoption of IT solutions.					

Section III

To examine the challenges that hinders the implementation of IT on ECG`s procurement and supply chain activities

No	Comment	1	2	3	4	5
12	The implementation of IT systems on ECG procurement and supply chain activities faces various challenges in healthcare organizations.					
13	Organizational factors, including resistance to change and lack of IT infrastructure, hinder the successful implementation of IT in ECG procurement and supply chain activities.					

14	Technological barriers pose specific challenges to the adoption of IT solutions for ECG procurement and supply chain management.					
15	Regulatory and compliance requirements impact the implementation of IT in ECG procurement and supply chain activities.					
16	Financial and resource constraints create challenges for healthcare organizations when integrating IT into ECG procurement and supply chain management processes.					

Section IV

To find out the IT resource used by ECG`s procurement and supply chain management processes

No	**Comment**	**1**	**2**	**3**	**4**	**5**
17	Various IT resources are utilized in the ECG procurement and supply chain management processes.					
18	The adoption of IT resources has a significant impact on the efficiency and effectiveness of ECG procurement and supply chain management activities.					
19	Emerging technologies and innovative IT resources are being implemented in the ECG procurement and supply chain management processes.					
20	Key considerations and criteria guide the selection of IT resources for ECG procurement and supply chain management activities.					
21	The use of IT resources such us (Enterprise Resource Planning System, Radio frequency identification, World Wide Web, Electronic Data Interchange and information communication and technology) are very effective in procurement and supply chain processes.					

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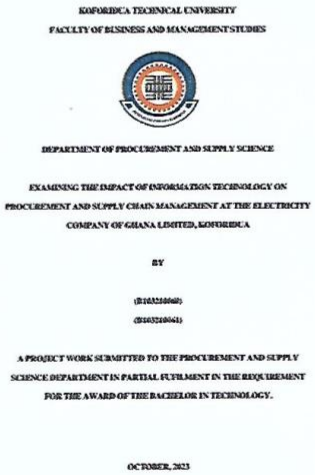

KOFORIDUA TECHNICAL UNIVERSITY

FACULTY OF BUSINESS AND MANAGEMENT STUDIES

DEPARTMENT OF PROCUREMENT AND SUPPLY SCIENCE

EXAMINING THE IMPACT OF INFORMATION TECHNOLOGY ON PROCUREMENT AND SUPPLY CHAIN MANAGEMENT AT THE ELECTRICITY COMPANY OF GHANA LIMITED, KOFORIDUA

BY

(B1032160040)

(B1032160041)

A PROJECT WORK SUBMITTED TO THE PROCUREMENT AND SUPPLY SCIENCE DEPARTMENT IN PARTIAL FUFILMENT IN THE REQUIREMENT FOR THE AWARD OF THE BACHELOR IN TECHNOLOGY.

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