

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

**TOPIC:**

**EXAMINING THE RELATIONSHIP BETWEEN E-PROCUREMENT AND  
PROCUREMENT PERFORMANCE: THE MODERATING ROLE OF DIGITAL  
LITERACY**

**BY**

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## DECLARATION

I, Michael Griffiths Ebo Sam, hereby declare that this submission is my own work towards the Master of Science and that to the best of my knowledge, it contains no material previously published by another person nor material which has been accepted for the award of any degree of the University, except where due acknowledgement has been made in the text.

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## DEDICATION

This Thesis is dedicated to Almighty, the Highest God for His abundant grace, innumerable blessings and guidance throughout my entire education.

I wish also to reciprocate the good wishes of my dear wife. Mrs. Roberta Baah-Sam, my mom, Lily Aboagyewah Mantey, my children, Betty, Manuel, Miguel, my sister, Rita Sam, Hon. David Gyewu, (a former Deputy Minister, Ministry of Communication), my nieces, Emmanuella and Freda Apau Frempong.

Lastly, in remembrance of my beloved grandma, Beatrice Asabea Akuffo and Nana Batafo Akyeampong Nti, II, Konongohene who passed on to eternity during the course of my course.

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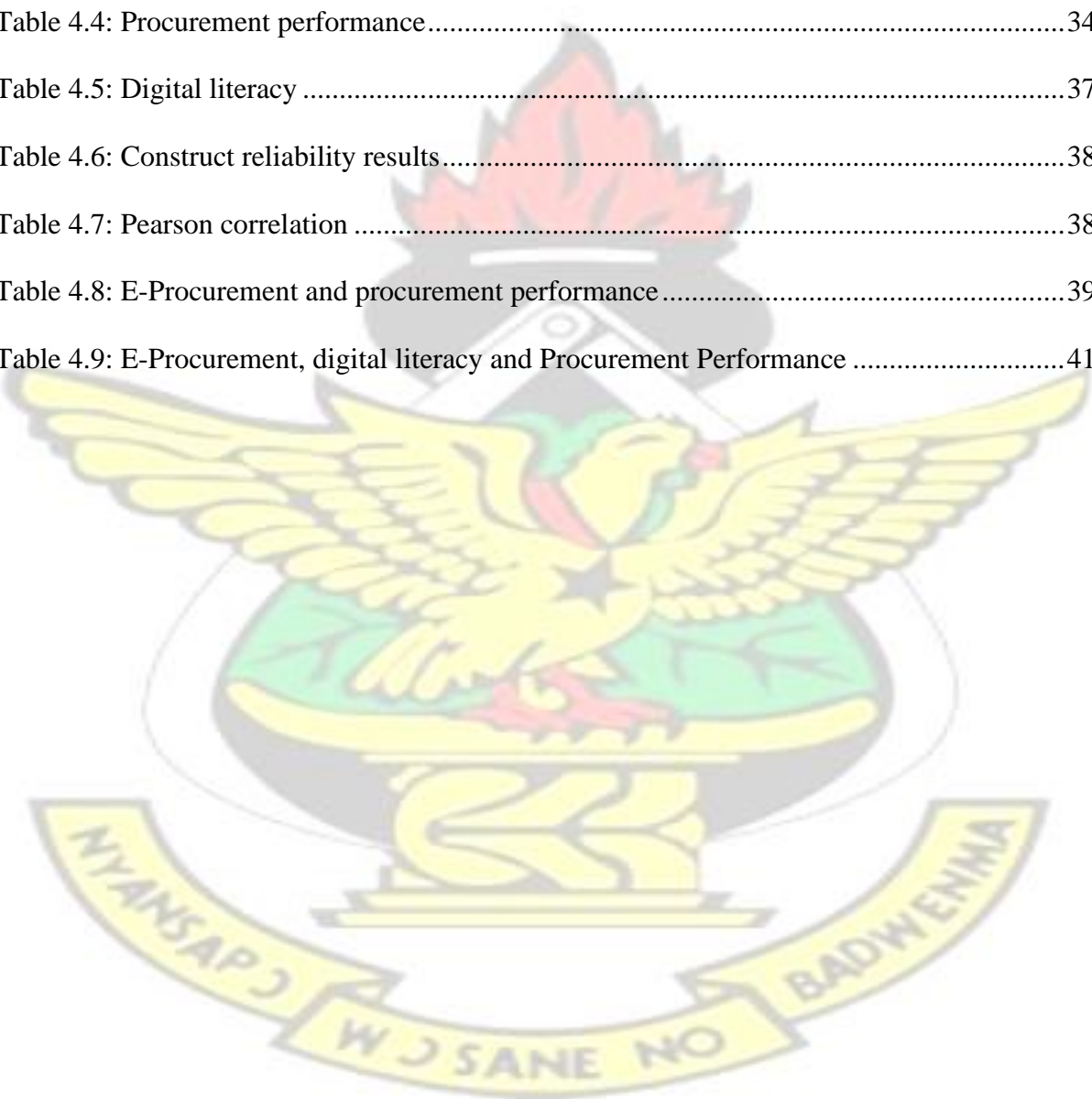
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## LIST OF ABBREVIATIONS

PP: procurement performance

EPR: E-procurement

REV: revenue

Emp: number of employees

Wkexp: Work experience

DL: digital literacy



## ABSTRACT

Digital literacy has become important in the procurement process. Digital literacy can influence attitudes towards e-procurement and perceived behavioural control, affecting organizations' ability to identify benefits, assess risks, and develop successful adoption strategies. Management teams with high digital literacy may be more adept at leveraging e-procurement systems to achieve their goals, while those with low digital literacy may face challenges and hesitations in adoption. This study investigated how digital literacy strengthens or weakens the relationship between e-procurement and procurement performance. The study was conducted in Greater Accra region by sampling 203 health facilities in the region. The data was gathered using a 7-point likert scale questionnaire and analysed using multiple regression. It was discovered that E-procurement increased the procurement performance of health organizations. Also, it was found that the positive relationship between E-procurement and procurement performance was weakened by digital literacy of top management. Top management should be involved in the e-procurement implementation process to ensure that they are familiar with the system and understand how it works. Healthcare organization should assign accountability for the success of e-procurement implementation to a specific individual or team, who can ensure that the project stays on track and that any issues are addressed promptly.

# CHAPTER ONE

## INTRODUCTION

### 1.1 Background of the Study

In today's fast-paced and fiercely competitive global marketplace, organisations must maintain their core principles and remain competitive by providing their customers with high-quality items at reasonable prices. As a result, businesses are under constant pressure to enhance the effectiveness of their processes, utilisation of resources, and product development. With the proliferation of the Internet, having access to web-based tools is no longer a perk but a requirement (Korpela, Hallikas and Dahlberg, 2017).

E-procurement is a technology solution that enables businesses to make purchases from suppliers via the World Wide Web (Frimpong, Andoh-Baidoo and Asamoah, 2020). Organizations have used e-procurement systems for quite some time, and for good reason. E-procurement is significant because it helps businesses enhance their operations management by sourcing both indirect and direct goods, as well as value-added services like quality validation online (Cherian, Munuswamy and Jasim, 2020). E-procurement solutions, such as e-procurement platforms, purchasing alliances, B2B market exchanges, and B2B auctions, help businesses save money by pooling their purchasing power, streamlining internal processes, and discovering untapped sourcing opportunities on the World Wide Web (Jain et al., 2018). The efficiency with which the procurement department achieves its objectives while keeping costs to a minimum is a measure of its performance (Kakwezi, and Nyeko, 2019). By reducing manufacturing costs through improved coordination of production activities between buyer and supplier, e-procurement enhances the performance of the procurement process, and it boosts customer satisfaction by reducing procurement errors (Chegugu, and Yusuf, 2017; Oppong, 2020). Procurement accounts for a significant portion of most companies' budgets, so reducing procurement costs has become an important focus in the supply chain (Kar, Kothari, and Jha,



2021). E-procurement is a viable solution since it streamlines operational procedures, disseminates information to the appropriate parties, and facilitates collaboration and coordination. Due to this, it can reduce costs and cut the time required to make a purchase (Nawi, Roslan, Salleh, Zulhumadi, and Harun, 2016).

To use e-procurement, individuals must be comfortable with computers (digital literacy) and have access to the internet. To be digitally literate is to be able to use digital tools effectively for research, analysis, production, and dissemination of knowledge (Reddy, Sharma, and Chaudhary, 2020). When top management has a better grasp of digital technologies, they are maybe more supportive of the adoption of e-procurement systems. On the other hand, the procurement process may be hampered (eg managers unwillingness to use the system) if managers do not have the requisite knowledge in IT related services (Chang and Wong, 2010).

## **1.2 Problem Statement**

Procurement is an essential aspect of supply chain management, and IT has long been used to aid in the process (Korpela et al., 2017). Because of the Internet and e-commerce, electronic procurement (or "e-procurement") is rapidly replacing the more conventional paper-based procurement methods (Chegugu et al., 2017). Electronic procurement facilitates communication between numerous organisations, which speeds up the purchase process and improves efficiency (Chen, Bretschneider, Stritch, Darnall, and Hsueh, 2022). With the help of innovations like the reverse auction, e-procurement helps businesses cut down on costly upfront purchases. On the other hand, e-procurement improves supply chain management, cut down on human error, decrease cycle times, and guarantee compliance with contracts (Gunasekaran et al., 2009). A review of the literature shows studies on e-procurement and procurement performance (Rotich, and Okello, 2015; Quesada, González, Mueller and Mueller, 2010; Mwangi and Kagiri, 2016; Innocent and Kalaskar, 2016) and the success of businesses

(Hung, Lin, Tai, Ho, and Jou, 2014; Ho, Tai, Wu, and Jou, 2008; Masudin, Aprilia, Nugraha, and Restuputri, 2021).

Other researchers like Chan and Wong (2010) argued that firms must trust the e-market place and the vendors on the platform which will encourage its adoption and help to strengthen the relationship between the e-procurement and procurement performance. Also, Marei (2022) considered competitive pressure as a moderator arguing that organizations may feel pressured to adopt e-procurement in order to stay competitive. If their competitors are using e-procurement and achieving benefits such as cost savings or improved efficiency, an organization may feel pressured to adopt e-procurement in order to keep up.

Daoud and Ibrahim (2017) also argued that the level of uncertainty or unpredictability in an organization's external environment such as market conditions, economic trends, political changes, and technological developments can affect the e-procurement - procurement performance relationship. They explain that stable external environment allows for firms to improve efficiency and adopt new technology, while an unstable environment prevent firms from being innovative hence affecting the e-procurement - procurement performance relationship.

This study follows the arguments of these prior authors but considers a less explored variable (digital literacy) as a moderator. The theory of planned behaviour proposes that a person's intention to perform a behaviour is the most important predictor of whether they will actually perform that behaviour (Ajzen, 1991). Based on the theory of plan behaviour (Ajzen, 1991) digital literacy affects (A) attitudes towards a behaviour and (B) the perceived behavioural control and as such organizations with management teams that have high levels of digital literacy may be better equipped to identify the benefits of e-procurement systems, to assess the risks and costs of adoption, and to develop and implement strategies for successful adoption.

They may also be more adept at leveraging the capabilities of e-procurement systems to achieve their goals (Yevu, and Yu, 2020).

On the other hand, organizations with management teams that have low levels of digital literacy may find e-procurement systems more challenging to use and may be more hesitant to adopt them (Li, Pillutla, Zhou, and Yao, 2015). They may also be less able to leverage the capabilities of e-procurement systems to achieve their goals (Chang and Wong, 2010). Does it mean that the success of E-procurement in the procurement process depends on the level of the digital literacy of management? Based on the above arguments, it can be implied that digital literacy could weaken or strengthen the relationship between e-procurement and procurement performance. Despite these arguments, little has been done to explore the important role of this variable. This study seeks to investigate this question by assessing how digital literacy moderates the E-procurement - procurement performance relationship. This study chose the Ghanaian healthcare sector as the focus since E-procurement remains vastly underdeveloped in the health sector. For the public health sector, the implementation of e-procurement began in 2019 and currently some facilities have not implemented it. A study of this nature will be valuable to policy makers to address digital literacy issues through seminars and programs to strengthen the success of e-procurement in various facilities across the health sector in Ghana.

### **1.3 Objective of the study**

The general objective is to examine the relationship between e-procurement and procurement performance with digital literacy as the moderating variable.

#### **1.3.1 Specific Objectives**

This research addresses the following specific objectives:

1. To examine the relationship between e-procurement and procurement performance

2. To examine the moderating role of digital literacy on the relationship between e-procurement and procurement performance.

#### **1.4 Research Questions**

Based on the problem stated above, the study seeks to address these research questions:

1. What is the relationship between e-procurement on procurement performance?
2. What is the moderating role of digital literacy on the relationship between e-procurement and procurement performance?

#### **1.5 Significance of the Study**

This study will assist researchers in the area of e-procurement as it will serve as a point of reference for the researchers as they conduct studies in this and other related topics. Procurement being an area that is attracting a lot of professional, academic and scholarly attention, this project can be used as a reference to promote the general academic and scholarly input to the understanding of this body of knowledge. The study will also assist in confirming the theoretical assumptions on the impact of e-procurement on organisational performance.

The findings of the study may also serve as a benchmark to other organizations that intend to adopt e-procurement. It will enable them to better understand the role and effects of e-procurement in the performance of an organization. The findings is also useful to managers since this study will enable them to understand the relevance of managers understanding of IT in the success of e-procurement in firms.

The study is useful to suppliers of health related equipments. This study will provide them with through understanding of e-procurement and help them make an informed decision to register with the government and join the on-line market platform.



## **1.6 Research Methodology**

The study is purely quantitative, and the research design is an explanatory research design. This is because the study entails statistical, mathematical, or numerical analysis of data. Also, the study explains the link between e-procurement and procurement performance using multivariate regression analysis hence fitting the description of an explanatory research. In scientific and social research, the methods and tools used to collect data are very important. This is because choosing the right instrument gives researchers enough freedom to treat respondents differently while looking at the phenomenon they are studying. Primary data is the main source of information for this study. The instruments for collecting data are questionnaires. These respondents for the study shall be determined using purposive sampling technique. In this case the researcher shall distribute the questionnaire to healthcare facilities that make themselves available for the study. The data for the study shall be gathered using Likert-scale questionnaires. The independent variable is e-procurement. The dependent variable is procurement performance, and the moderating variable is digital literacy.

## **1.7 Scope of the Study**

The study focuses on healthcare facilities within the Greater Accra region. Healthcare facilities that are considered for this study are both private and public healthcare facilities. The top management of each facility is considered for this study.

## **1.8 Limitations of the Study**

The quantitative approach of data collection has the disadvantage of restricting the quality of replies because the study does not examine the use of qualitative measurements. In addition, because the questions are closed-ended, it is possible that the information acquired from the questionnaires will not allow employees to express their opinions in their completeness. By



combining academic work with research, the time constraint will affect the number of respondents for the study.

### **1.9 Organization of the Thesis**

Five chapters comprise the research study. Chapter one contains the study's introduction, which includes a background description, a problem definition, the study's goals, scope, significance, and organization. Chapter two is about the study's literature review. The relevant literature of the authors and other researchers is examined in this section. Chapter three discusses the research technique, which includes the procedures used to collect data and conduct the study. Chapter four discusses data presentation and analysis, while chapter five includes the study's summary, results, and conclusions taken from the findings, as well as suggestions based on the findings.



## **CHAPTER TWO**

### **REVIEW OF LITERATURE**

#### **2.1 Introduction**

The purpose of this chapter is to review the literature on issues related to performance in procurement and how it is affected by e-procurement, thus forming a basis to establish a conceptual framework to guide the study. This chapter starts by defining the key concepts used in the study, and then it describes the theoretical literature and empirical literature, as well as presents the conceptual framework.

#### **2.2 Conceptual Review**

The various concepts relevant to the study are explained in this section.

##### **2.2.1 E-Procurement**

Procurement describes the various channels via which businesses and governments acquire the resources necessary to function. Procurement occurs at the beginning of the supply chain and ensures that end users may access the goods and services they require (Mwangi and Kagiri, 2016). Corporations invest substantial resources in the acquisition of various inputs and outputs at various points in the manufacturing or provisioning processes. The procurement procedure links the organization's strategic objectives with its suppliers. An organization's sourcing requirements are derived from its long-term objectives.

E-procurement is a technology solution that enables businesses to make purchases from suppliers via the World Wide Web (Jain et al., 2018). E-procurement, often known as on-line purchasing or intranet purchasing, is an Internet/Intranet-based purchasing application or hosted service that improves the efficiency of all stages of the supply chain and the flow of goods and services. In addition, it automates the procurement process so that sourcing, vendor selection, procurement processes, shipment status tracking, and payments can all be done on-

line; and it aids buyers and sellers in conducting more productive negotiations over the Internet (Chegugu, and Yusuf, 2017; Masudin et al., 2021). E-Procurement refers to the process of acquiring goods and services through the use of ICTs (information and communication technologies) that are facilitated by the Internet, including but not limited to, on-line research, price comparison, negotiation, order placement, shipment tracking, and post-purchase evaluation (Cherian, Munuswamy and Jasim, 2020).

E-Procurement is defined by the Pongsuwan (2016) as "the use of electronic systems for the sourcing, acquisition, and administration of goods and services," including "the management of value-added services such as transport, payment, and warehouse facilities". According to Marei (2022), e-Procurement is "an information technology-based solution that aids corporate purchasing at the outset of a supply chain and has the potential to enhance purchasing procedures and performance." E-procurement is a novel approach that connects numerous companies with one another, facilitating both contracting and information sharing (Mishra and Agarwal, 2010).

Different forms of e-Procurement, like e-Tendering, e-Marketplace, e-Auction/Reverse Auction, and e-Catalogue/Purchasing, emphasise different aspects of the procurement process. On the other hand, e-Procurement can be viewed as a comprehensive system that unifies and simplifies the company's procurement procedures. Despite the popularity of the phrase "end-to-end e-Procurement," experts in both business and academia agree that the ideal paradigm it describes is rarely implemented (Pongsuwan, 2016). Using innovative methods like the reverse auction, e-procurement helps businesses save money on their initial purchases. On the other hand, e-procurement can improve supply chain management, cut down on human error, decrease cycle times, guarantee compliance with contracts (Mishra and Agarwal, 2010).

These advantages make the transition to electronic procurement from more conventional methods likely to occur swiftly among businesses.

### **2.2.2 Procurement Performance**

The efficiency with which the procurement department achieves its objectives while keeping costs to a minimum is a measure of its performance (Kakwezi, and Nyeko, 2019). The indicator of Procurement performance illustrates the degree to which the procurement function is successful in accomplishing its objectives while allocating the smallest number of resources necessary (Kiage, 2013). Effectiveness and efficiency, as outlined by Kiage, are said to be the two components of successful procurement that are most important. Procurement effectiveness is the degree to which the planned results are realised. It establishes a link between what people want and what they actually do (Chimwani, Iravo and Tirimba, 2014). The efficiency of the procurement process is the link that establishes a relationship between the activities that will lead to the desired outcomes and those actions (Odero, and Ayub, 2017). Because of this, the effectiveness of the procurement process is highly dependent on the performance of the suppliers.

If an organisation wishes to alter its focus and become more competitive, Procurement Performance is a vital driver for raising the quality of services (Kakwezi, and Nyeko, 2019). The improvement of the purchasing function can be slowed down or even come to a complete halt if procurement performance is lacking or if the wrong tactics are used to improve it. However, the majority of developing nations are being forced to adjust their purchasing practises in order to keep up with constantly shifting demands. The department of procurement is under a lot of stress to modify the methods in which it uses different kinds of processes and procedures, both internal and external, in order to accomplish its goals (Munyimi, 2019).



### **2.2.3 Procurement Process**

The procurement process is the method that an organisation plans to use in order to acquire the goods, raw materials, or services that it requires (Moretto, Ronchi, and Patrucco, 2017). This method takes into account a variety of factors, including the procurement timetable, funding and budget, as well as anticipated risks and opportunities. Monitoring and exercising control over the organization's external resources is under the purview of a knowledgeable professional. Depending on the specifics of the project at hand, firms may face difficulties in procurement that are also of critical importance. Every company is special in its own way, and they all differ from one another in terms of their business strategies, sizes, product lines, and market shares (Heckman, 2020).

This indicates that the characteristics of customers, suppliers, and logistics differ from one industry to another. In spite of these differences, however, procurement practises are often very uniform. Everything, however, depends on how complicated the job actually is. Within a manufacturing company, each division or department is responsible for its own process, which acts as a blueprint for maximising both productivity and efficiency. These practises and rules serve as a description of the organization's approach for accomplishing its objectives (Masudin, Kamara, Zulfikarijah, and Dewi, 2018).

### **2.2.4 Digital Literacy**

Literacy is the capacity to recognise, and process printed and written information in a variety of contexts, including reading, writing, communicating, and solving mathematical problems. Literacy is an ongoing learning process that empowers individuals to better themselves, contribute to their communities, and advance society as a whole (Inoue, Georgiou, Parrila, and Kirby, 2018). Literacy is not a singular talent but rather a set of related social behaviours. Also, it establishes the right to education in the field of literacy. This implies that those who take the



time to learn to read and write and then apply those talents contribute to a more just and free society. According to Cetindamar, Abedin and Shirahada (2021), the definition of digital literacy includes the following three parts: digital skills, trust, digital readiness). "Digital skills" refers to the ability to conduct an online meeting, use the web, and distribute digital materials. The term "trust" is used to describe how confident a person is in their capacity to determine the credibility of information found online and to keep their own private data secure. The term "digital readiness" describes an individual's proficiency with digital technology (Cetindamar et al., 2021).

Digital literacy is defined as the skills and knowledge needed to find your way through a fragmented and complicated information environment (Inoue, Georgiou, Parrila and Kirby, 2018). According to Heitin (2016), there are three main components to digital literacy: the ability to (a) locate and use digital material, (b) create digital content, and (c) share or communicate digital content. Therefore, the literature offers a wide variety of explanations for digital literacy, each of which integrates distinct facets of digital literacy's technical and non-technical dimensions.

According to Kaeophanuek, Na-Songkhla and Nilsook (2019) digital literacy is the ability to use technology to find, evaluate, create, and communicate information. This includes the ability to use a computer and other digital devices, as well as the knowledge of how to use the internet to find and use information.

## **2.3 Theoretical Review**

The relevant theories are the transaction cost theory and the theory of planned behaviour.

### **2.3.1 Transaction Cost Theory**

Coase (1937) proposed the Transaction Cost Theory (TCT). It explains why the corporation does certain tasks while leaving others to the market. The concept is predicated on the

assumption that firms would like to spend as little money as possible on external resources and internal bureaucracy (Schermann, Dongus, Yetton and Krcmar, 2016). As a result, organisations seek a middle ground between the external and internal costs of resource exchange. Simply put, transaction costs are the expenses incurred when distributing a product or service to a consumer outside rather than internally (Ping Ho, Levitt, Tsui and Hsu, 2015).

Decision-making, bargaining, information gathering, and rule enforcement are all examples of transaction costs. These fees originate from the fact that the economic system as a whole is complex and fraught with uncertainty. In the supply chain transaction cost economics says that when companies negotiate with a small number of other companies, they have to deal with the problem of opportunism. Since this is the case, having more than one supplier reduces this risk and makes it easier for the organisation to get better deals, since the buyer is not as dependent on a single supplier (Ibem and Laryea, 2015). Candra and Gunawan (2017) assert that a company should choose the right number of suppliers based on the best balance of three major transaction factors: fit, coordination costs, and risk opportunism. By standardising and automating procurement procedures, information technology can cut down on the cost of coordinating with more suppliers, which in turn cuts down on the cost of dealing with more suppliers. Information technology helps businesses limit the number of suppliers they work with, focus on low-cost providers of common items, and combine purchases to get discounts for buying in bulk. In summary, transaction cost theory is a framework for understanding and analysing the costs associated with economic transactions. It suggests that firms will engage in transactions either through markets or through internal organization, depending on the relative costs of each option. The theory suggests that e-procurement can potentially improve a firm's procurement performance by reducing transaction costs and increasing efficiency in the procurement process.

### 2.3.2 Theory of Planned Behaviour

The theory of planned behaviour (TPB) proposed by Ajzen (1991) is a theoretical model that explains how people form attitudes and make decisions about certain behaviours. The TPB proposes that a person's intention to perform a behaviour is the most important predictor of whether they will actually perform that behaviour. Intention is influenced by three key factors: attitudes toward the behaviour, subjective norms (the perceived social pressure to perform or not perform the behaviour), and perceived behavioural control (the individual's belief in their ability to perform the behaviour). Attitudes toward the behaviour refer to the individual's evaluation of the behaviour, including whether they believe it is good or bad, and the positive or negative consequences they expect to result from performing the behaviour. Subjective norms refer to the individual's perception of what is considered acceptable or unacceptable behaviour by their social group or reference group. Perceived behavioural control refers to the individual's belief in their ability to perform the behaviour, including factors such as their skills, resources, and any external constraints or barriers that may prevent them from performing the behaviour. Together, these three factors influence a person's intention to perform a behaviour, which in turn influences their likelihood of actually performing the behaviour. The TPB suggests that when a person has a strong intention to perform a behaviour, they are more likely to actually perform that behaviour (Mahata, Boharia, Azmana, Khalilb, Adnana, Iskandar, and Malekc, 2022).

The TPB has been applied to a wide range of behaviours in various contexts, including health behaviours, environmental behaviours, and organizational behaviours. In the context of e-procurement adoption, the TPB suggests that a firm's decision to adopt e-procurement may be influenced by its attitudes towards the technology, the perceived social pressure to adopt e-procurement (such as from competitors or industry standards), and the perceived ease or difficulty of implementing and using e-procurement systems (Gamal Aboelmaged, 2010).



Hence the theory suggests that digital literacy can affect a firm's adoption of e-procurement, with firms that have a high level of digital literacy being more likely to adopt and benefit from e-procurement because their IT competence will give them the belief to implement it, and firms with a low level of digital literacy potentially facing challenges in adopting and using e-procurement because of their low level of which affects the procurement performance of the firm.

## **2.4 Empirical Review**

Oppong (2020) investigated the efficacy of electronic procurement and the performance of Ghana's commercial companies. The research set out to ascertain whether or not commercial state companies in Ghana had made use of e-procurement and, if so, to what extent. A total of 40 participants were selected using a stratified random selection technique for this descriptive study. The first-hand data was collected via a questionnaire filled out by supply chain officials. Tables, charts, and histograms were created to illustrate the data. To further investigate the potential correlation between e-procurement and productivity, a regression analysis was also conducted. Based on the statistics, it seems that commercial state enterprises in Ghana have adopted e-procurement but are still manually doing certain processes. Reducing the number of potential suppliers, putting out a call for bids, and the actual bidding procedure are all examples. E-procurement was also proven to increase transparency, save costs, and empower individuals. The purpose of the research conducted by Chegugu and Yusuf (2017) was to determine the impact of e-procurement strategies on business efficiency. The research set out to examine the effects of electronic tendering, electronic invoicing, and electronic payment on the administration of hospitals in Uasin Gishu County. The research included conducting a descriptive survey at five different medical facilities. The total number of respondents was 367. Surveys were utilised extensively to gather data. The research relied on both quantitative and

qualitative information. The study concluded that hospital bids are more competitive when conducted through electronic bidding. Electronic invoicing has the potential to reveal hidden fees incurred by both consumers and vendors. Concerning e-payment, the study found that it is more cost-effective to pay suppliers promptly when they supply items through e-payment since e-banking services charge less to transfer money.

In order to determine the value of e-procurement to businesses, Chang and Wong (2010) analysed and evaluated its performance in the context of the online marketplace. There was an examination of how trust influences the connection between e-procurement and e-marketplace participation. The analysis consisted of two phases, each of which used qualitative and quantitative techniques. After some speculation, a prototype was created to put the assumptions to the test. A research questionnaire was created and distributed, and then its results were examined and validated. According to the findings, organisations who used electronic procurement strategies were also more likely to make use of e-marketplaces, leading to improved efficiency. When considering entering an e-marketplace, it has been proven that a lack of trust reduces a company's propensity to employ electronic procurement.

The effects of e-procurement on the productivity of Indonesian manufacturing companies were studied by Masudin, Aprilia, Nugraha, and Restuputri (2021). The research examines four factors: top-level support, information quality, e-procurement utilisation, and corporate success. The researcher sent sample questionnaires to gauge respondents' comprehension of the questions. Those who participated in the pilot survey were emailed the final version of the survey after its completion. The pilot test data and final questionnaire were analysed using Statistical Package for the Social Sciences (SPSS) version 21 and SmartPLS v3.0 software to determine the interrelationships between the various variables. This research provides support for three distinct hypotheses. The findings of this study highlight the significant impact that



managerial support has on e-procurement strategies. The study also suggests that the quality of the information has a significant impact on the rate of e-procurement adoption, whereas the deployment of e-procurement significantly impacts business outcomes.

Researchers Kalatya and Moronge (2017) set out to determine what role procurement processes have in determining the efficiency with which Kenyan logistic firms carry out their duties. The study set out to determine the impact of e-procurement on the success of Kenyan logistics companies, as well as the relationship between procurement strategy and Kenyan logistics company success. This study used a descriptive survey approach. The target audience for this survey was 400 purchasing managers at logistics firms in Kenya. Eighty firms participated in the survey, all of which were selected using simple random selection. Research was conducted mostly via the use of questionnaires. The data analysis was performed using SPSS. It was easy to see a positive correlation between the various explanatory variables and the outcome variable. The research found that the performance of Kenyan logistics firms was influenced by their E-procurement and procurement strategies.

The impact of e-procurement on the administration of the Kenyan energy supply chain was studied by Ngeno and Kinoti (2017). The purpose of this research was to examine the impact of e-procurement on supply chain management in Kenya's energy sector. Both qualitative and quantitative approaches were employed in the investigation. The purpose of the study was to gather information from the participants who took part. A stratified random sample approach was used to identify 152 respondents from a target group of 246 persons in the energy business. Electronic data interchange, electronic tendering, and supply chain integration were identified as contributors to effective supply chain management in the energy sector.

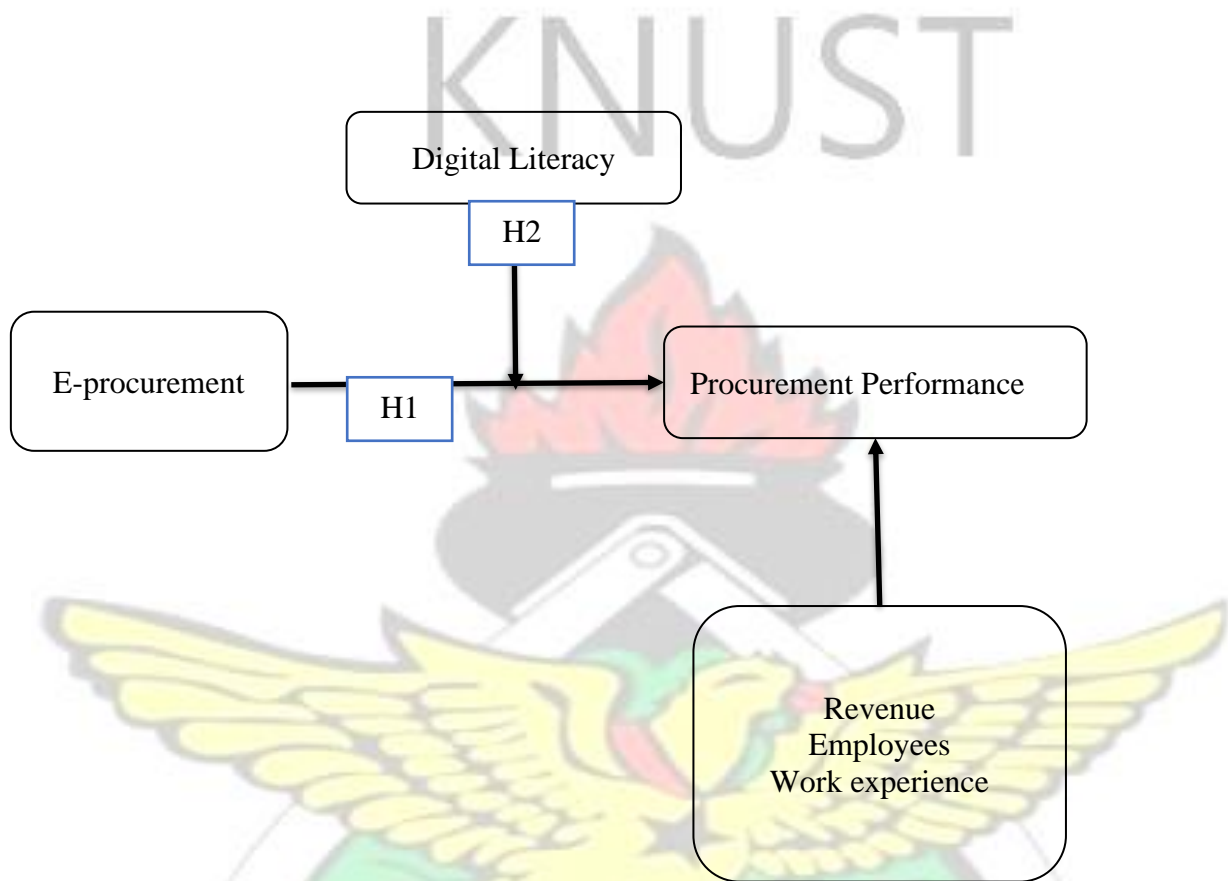
The effects of e-procurement on the efficiency of Kenyan parastatals were studied by Kioko and Mwangangi (2017). The primary objective of this research was to determine whether or

not e-procurement improves the efficiency of parastatals. The primary objective was to determine whether or whether the use of electronic means of procurement (such as electronic sourcing, electronic information dissemination, electronic payment, and electronic tendering) improved the efficiency with which parastatals carried out their duties. The vast majority of respondents to the poll believed that electronic bidding significantly affects market share. Sixty-nine percent of those who participated in the poll believed that e-evaluation had a significant impact on market share, suggesting the importance of this factor warrants further investigation. Almost half of respondents (47%) agreed that expanding access to tender materials online would have a significant effect on market share. E-bidding was seen as very important to respondents, with 100% agreeing that it increased their income. The vast majority of respondents (96%) believed that e-evaluation had a significant impact on revenue. According to the findings, parastatals may improve their efficiency via the use of electronic methods of sourcing, informing, paying, and tendering.

## **2.5 Conceptual Framework and Hypothesis**

The conceptual framework for the study is presented in this section. The independent variable is E-procurement, the dependent variable is procurement performance, and the moderator is digital literacy. The control variables are revenue, employees and work experience. The independent variable is linked to the dependent variable. The moderator is linked to the relationship between the independent variable and the dependent variable. The control variables are linked to the dependent variable.

**Figure 1: Conceptual framework**



Source: Author's Creation

### **2.5.1 E-procurement and Procurement Performance**

E-procurement is strategically important because it can be used to get around a number of institutional problems. It includes new and changing trends that lead to good procurement management practises and, in turn, make it easier for suppliers and the company to work together. It gives organisations the chance to gain a competitive edge by improving their operational performance (Chegugu and Yusuf, 2017). E-procurement systems and techniques can be used to make procurement more efficient in ways like lowering costs, keeping track of spending and making sure it's done right, increasing productivity, standardising purchases, making processes more efficient and effective, speeding up transactions and reducing mistakes.

E-procurement saves many companies a lot of money and makes their operations run more smoothly. E-procurement systems also have the benefits of being accountable and open (Angeles and Nath, 2007). The main benefits of e-procurement are that it cuts costs outside of the contract by using technology to learn more about what goods and services are available and how to get them, and that it makes placing an order easier and more seamless. According to transaction cost theory, firms will engage in transactions through either markets or internal organization, depending on the relative costs of each option. By streamlining and automating the procurement process through the use of e-procurement systems, firms can potentially reduce transaction costs and increase efficiency (Li, Pillutla, Zhou and Yao, 2015). This can lead to improved procurement performance, as the procurement process becomes more efficient and effective. Based on the above, the study hypothesis that:

***H1: there is a positive relationship between e-procurement and procurement performance.***

### **2.5.2 Moderating Role of Digital Literacy**

To be digitally literate, a person must be able to: do basic computer tasks and access resources; find, identify, and study information effectively for research and learning; choose and learn how to use the most important tools or features to do their jobs, solve problems, or make products. This includes how people can understand on-line communities and act properly in them, as well as how they can protect themselves from danger in digital spaces (Santoso, Abdinagoro and Arief, 2019). According to theory planned behaviour (Ajzen, 1991), the level of digital literacy of management determines their belief to adopt and implement the e-procurement practices. Hence management with higher digital literacy may comprehend the on-line marketplace where e-procurement transactions occur and engage fully in it, resulting in a favourable correlation between e-procurement and procurement success (Yevu and Yu, 2020). Also, the theory explains digital literacy levels could affect the attitude of management



towards e-procurement adoption and implementation since management with lower levels of digital literacy may perceive e-procurement as complex and unsustainable which may lead rejection or resistance to fully implement it resulting in a negative moderation between e-procurement and procurement performance. Based on the above, the study hypothesis that:

***H2: Digital literacy moderates the relationship between e-procurement and procurement performance.***



## **CHAPTER THREE**

### **RESEARCH METHODOLOGY AND PROFILE OF ORGANIZATION.**

#### **3.1 Introduction**

This chapter describes the method that was applied in carrying out the study. It details the research design, purpose, approach, population, sampling technique, instrument of data collection, data analysis, instrument validity and reliability and ethical consideration.

#### **3.2 Research Design**

The study adopted a survey research design. A survey research design is a method of collecting data from a sample of individuals through the use of questionnaires or interviews. Surveys can be administered in a variety of ways, including in person, by telephone, by mail, or on-line. The goal of a survey research design is to gather information about a particular population or group of people in order to understand their attitudes, behaviours, opinions, or other characteristics (Kanika, 2015). This design was suitable for the study because survey research designs are a useful tool for gathering data from a large number of participants in a convenient, cost-effective, and efficient manner. The instrument for the data collection was questionnaires and the researcher wanted to gather information from a large number of respondents and the survey design was suitable to achieve that. Surveys can be an economical way to gather data from a large number of participants since the researcher distributed the same questionnaires to all the respondents. Surveys can be completed relatively quickly, due to tight deadlines of the thesis project, this design was adopted.

#### **3.3 Research Purpose**

This study adopted explanatory research. Explanatory research is a type of research design that is used to explain a phenomenon. This type of research design is typically used when the researcher wants to understand why something is happening, and to identify the factors that

may be contributing to the phenomenon (Bryman and Bell, 2007). In general, explanatory research involves collecting data from a sample of individuals or groups and using statistical or other analytical techniques to identify patterns and relationships in the data (Kanika, 2015). The ultimate goal of explanatory research is to provide a better understanding of the underlying causes of a phenomenon, and to inform the development of theories and interventions that can help address the problem being studied. This study fits the explanatory research since the focus of the study was to identify the pattern of association between the variables of the study (E-procurement, digital literacy and procurement performance) and to determine the strength of the relationship.

### **3.4 Research Approach**

The study employed the quantitative approach. Quantitative approach is a method of collecting and analysing numerical data in order to answer research questions or test hypotheses. It is a type of research design that focuses on collecting and analysing numerical data and uses statistical analysis to identify patterns and relationships between variables (Bryd, 2020). In a quantitative research design, the researcher typically begins by formulating a research question or hypothesis and then develops a plan for collecting and analysing data to test that question or hypothesis. This study employed the quantitative approach because the research questions and hypothesis require the collection of numerical data. Also, the research questions required objectivity and minimization of bias hence this approach allows for statistical tests to be carried out on the data in a standardised manner to establish statistical significance.

### **3.5 Population of the study**

The population is basically a total set of observations out of which the sample is selected for analysis on the basis of certain sampling techniques (Saunders, Lewis, and Thornhill, 2007).

The population of the study consisted of healthcare facilities in the Greater Accra region. There are 438 healthcare facilities in the Greater Accra region (Sasu, 2022).

### 3.6 Sample Size and Sampling Technique

The study adopted Gomez and Jones (2010) formula for sample size determination as shown in equation 1.

$$n = \frac{N}{1+Ne^2} \quad \text{equation (1)}$$

**Where:**

n= sample size

N= target population (438)

e= error margin set at 5%

From the formula, the sample size was determined as below:

$$n = 438 / (1 + (438 * [0.05^2])) = 209.069 = 209$$

Stratified sampling and simple random sampling techniques were employed in selecting the sample for the study. First, the healthcare facilities were categorized into Accra Metropolitan Area, Tema Municipal Area, Ga East District, Ga West District, Dangme West District and Dangme East District. Second, the simple random sampling was used to distribute the questionnaires to the health care facilities in those areas.

### 3.7 Measurement Instrument

The independent variable was E-procurement. It was measured following the studies of Chang and Wong (2010). It included electronic ordering to suppliers, electronic payment to suppliers,



on-line information on inventory to suppliers. The dependent variable was procurement performance. It was measured following the studies of Sánchez-Rodríguez, Martínez-Lorente and Hemsworth (2019). It included questions on the procurement process such as Reduction in the duration of the purchasing ordering cycle (from release of the purchase order to the issuing of the payment to the supplier), Reduced inventory levels, Reduced prices paid for purchases, Reduced errors in purchase transactions. The moderating variable was digital literacy. It was measured following the studies of Santoso, Abdinagoro, and Arief (2019). It included questions such as Ability to learn new technology easily, motivation to learn with information and communication technology, willingness to use information and communication technology at work. All the constructs follow a 7-point likert scale. The study controlled for firm specific variables such as revenue of the firm, number of employees and work experience.

**Table 3.1: Measurement construct**

Construct	No. of Items	Source
E-procurement	5	Chang and Wong (2010)
Digital literacy	3	Santoso, Abdinagoro, and Arief (2019)
Procurement performance	7	Sánchez-Rodríguez, Martínez-Lorente and Hemsworth (2019)

Source: Author's Creation

### 3.8 Data Collection Method

The primary sources of data were used in this study. Primary data is data that is collected directly from its source rather than being gathered from existing sources (Saunders, Lewis, and Thornhill, 2007). Questionnaires were used as the major data collection technique. Becker, Bryman, and Ferguson (2012) described a questionnaire as a collection of questions that are delivered to respondents. It is a common method of gathering information, and it may be done in person, over the phone, or on the internet. A wide variety of questions may be asked in a

survey. In this study, closed-ended questions were used to collect the information. The questionnaire was divided into two sections. The first section included demographic information on the healthcare facility. The second section focused on e-procurement, procurement performance and digital literacy. The questionnaires were distributed to the healthcare facilities in person. The researcher together with his team visited the healthcare facilities. The respondents were made aware that the exercise was for academic purpose and their responses shall never be used against them before they participated.

### **3.9 Data Analysis**

After the data was collected, the following actions was taken: A statistical tool, SPSS vs 21, was used to analyse the data acquired. Basic descriptive statistical procedures in terms of means and frequencies were used. A correlation metric was first carried out. The correlation measure provides a concise and straightforward representation of the direction and intensity of the link between two or more numerical variables. It can quantify the direction of the connection but cannot forecast how the independent variable will influence the dependent variable (Fu, Yan and Huang, 2008). To further investigate the link between the constructs, regression analysis was employed as well.

When attempting to forecast the variance of the dependent variable based on a number of independent factors, regression analysis is used. Regression analysis explains the relationship between the changes in each independent variable and the dependent variable. Regression analysis may identify relationships between two variables, quantify those relationships, and provide predictions (Gromping, 2015). The study employed cross-sectional regression and the equation is presented below.

$$PP_i = \alpha + \beta_1 EPR_i + \beta_2 Rev_i + \beta_3 Emp_i + \beta_4 Wkexp_i + \varepsilon_i \dots (1)$$

$$PP_i = \alpha + \beta_1 EPR_i + \beta_2 DL_i + \beta_3 (DL * EPR)_i + \beta_4 REV_i + \beta_5 Emp_i + \beta_6 Wkexp_i + \varepsilon_i \dots (2)$$

PP: procurement performance, EPR: E-procurement, REV: revenue, Emp: number of employees, Wkexp: Work experience, DL: digital literacy

### 3.10 Validity and Reliability of Data

Validity refers to the extent to which a research study accurately measures what it is intended to measure (Heale and Twycross, 2015). A study has high validity if it is able to accurately measure the concept or phenomenon that it is intended to study. In terms of validity, data collection instruments were validated by using questionnaires from previous studies in designing the constructs of the study. Also, the questionnaires were pilot tested before final distribution to the main respondents. Reliability refers to the consistency of the research findings. To guarantee the study's reliability, Cronbach's alpha was employed to test scale reliability. A Cronbach's Alpha with value higher than 0.7 is considered as reliable in comparison with values lower than 0.7 (Santoso, Abdinagoro, and Arief, 2019).

### 3.11 Ethical Consideration

Ethical considerations are the principles and guidelines that are used to ensure that research is conducted in a manner that is fair, responsible, and respects the rights and dignity of participants (Taherdoost, 2016). These considerations are important because they help to protect the welfare of research participants and ensure that the results of a study are reliable and valid. Prior to delivering the questionnaires, the informed agreement of the students were sought. This was to ensure that the participation in the survey was voluntary. It was made clear

to them that their responses would be kept confidential, and the researcher shall take appropriate efforts to guarantee that their information remained confidential.

### **3.12 Unit of Analysis**

This study was firm level study hence respondents were top management of each healthcare facility. Hence the study considered one top manager for each healthcare facility.





## CHAPTER FOUR

### DATA PRESENTATION AND ANALYSIS

#### 4.1 Introduction

This chapter presents the results of the study based on the objectives of the study. The chapter also discusses the findings of the study.

#### 4.2 Demographic Characteristics

The demographic of the respondents is presented in this section.

##### 4.2.1 Respondents' Job Position, Nationality and Work Experience

Table 4.1 indicates that majority of the respondents are administrators (31.5%) followed by procurement officers (23.2%). Again 20.7 per cent of the respondents were chief executive officers, while 9.4 per cent of them were community officers. Further, the table shows that 6.4 per cent of the respondents are medical superintendent with 5.4 per cent being midwives and 3.4 per cent as health directors.

**Table 4.1: Respondents demographics**

		Frequency	Percent
Job Position	Procurement Officer	47	23.2
	Health director	7	3.4
	Midwife	11	5.4
	Community Officer	19	9.4
	Medical Superintendent	13	6.4
	CEO	42	20.7
	Administrator	64	31.5
<b>Total</b>		<b>203</b>	<b>100</b>
Nationality	Foreigner	10	4.9
	Ghanaian	193	95.1
<b>Total</b>		<b>203</b>	<b>100</b>
Work experience	1-5	69	34
	6-10	79	38.9
	11-15	26	12.8
	16-20	21	10.3
	Above 20	8	3.9
<b>Total</b>		<b>203</b>	<b>100</b>

Source: Author's Creation

## 4.2.2 Type of Health Facilities, Number of Employees and Revenue of Respondent

### Firms

The data in Table 4.2 shows that majority of the sampled firms are Clinics (46.3%). Also, 33 per cent of them are Hospitals and 11.8 per cent of them are health centres. Again, Polyclinics represent 4.9 per cent and Maternity homes represents 3.9 per cent. The table further indicates that 39.9 per cent of the health facilities have employees between 30-59. This is followed by those with employees between 1-29 (29.1%). Health facilities with employees of more than 100 represent 18.2 per cent, and also 12.8 per cent represent firms with employees between 60-69. Also, 25.1 per cent of the health facilities generate average revenue between GHS120,000- GHS160,000. This is followed by 19.2 per cent of the health facilities that generate average revenue between GHS80,000- GHS120,000, 17.2 per cent (above GHS1,000,000), 16.3 per cent (GHS160,000- GHS200,000), 10.8 per cent (GHS 500,000- GHS1,000,000) and 10.3 per cent of the health facilities generate average revenue between GHS200,000-GHS500,000. It is also seen that majority of the health facilities are privately owned (64%) with the state owning 36 per cent of the firms.

**Table 4.2: Health facility demographics**

		Frequency	Percent
Type of health facility	Hospital	67	33
	Polyclinics	10	4.9
	Clinics	94	46.3
	Health Centre	24	11.8
	Maternity Home	8	3.9
	<b>Total</b>	<b>203</b>	<b>100</b>
Employees	1-29	59	29.1
	30-59	81	39.9
	60-99	26	12.8
	100+	37	18.2
	<b>Total</b>	<b>203</b>	<b>100</b>
Revenue	40,000-80,000	2	1
	80,000-120,000	39	19.2
	120,000-160,000	51	25.1
	160,000-200,000	33	16.3
	200,000-500,000	21	10.3
	500,000-1,000,000	22	10.8
	>1,000,000	35	17.2
Business Model	<b>Total</b>	<b>203</b>	<b>100</b>
	YES	73	36
<b>Total</b>	NO	130	64
	<b>Total</b>	<b>203</b>	<b>100</b>

Source: Author's Creation

### 4.3 Descriptive Statistics

The descriptives of the variables of the study are presented in this section.

#### 4.3.1 E-procurement

Table 4.3 reveal that respondents agree that their health facilities occasionally use IT to manage Electronic ordering to suppliers (Mean=4.66, SD=1.99). This suggests that the firms represented by the respondents in your study or survey have adopted the use of information technology (IT) to manage electronic ordering with their suppliers to some extent. By using IT to manage electronic ordering, these firms may be able to improve the efficiency and accuracy of their procurement processes, reduce the time and effort required to manage orders and enhance communication with their suppliers.

Respondents further agree that their health facilities occasionally use IT to manage electronic payments to suppliers (Mean=4.62, SD=1.95). This suggests that the firm has adopted some level of technology to facilitate electronic payments to its suppliers. The use of IT can help automate and streamline payment processes, increasing efficiency and reducing errors in payment processing. However, the fact that the respondents indicate that their firm only occasionally uses IT for this purpose could mean that the firm may not be fully leveraging the benefits of technology in managing electronic payments. There may be opportunities for the firm to increase the use of technology in this area to further optimize payment processes and improve the overall effectiveness of its supplier management system.

Respondents further agree that their health facilities occasionally use IT to provide on-line materials inventory information to their suppliers (Mean=4.58, SD=1.88). This suggests that the firm is utilizing technology to facilitate communication and collaboration with its suppliers. By providing on-line materials inventory information, the firm can ensure that its suppliers have real-time access to accurate and up-to-date information on the availability of materials

needed to fulfil orders. This can help to improve the efficiency of the supply chain, as suppliers can better plan and manage their own inventory levels in response to the information provided by the firm.

**Table 4.3: E-procurement**

	Min	Max	Mean	Std. Dev
Our firm uses IT to manage electronic ordering to suppliers	1	7	4.66	1.99
Our firm uses IT to manage electronic payment to suppliers	1	7	4.62	1.952
Our firm uses IT to Provide on-line materials inventory information to our suppliers	1	7	4.58	1.882
Our firm uses IT to Provide specific on-line information about product specifications that our suppliers must meet	1	7	4.7	1.886
Our firm uses IT to Provide on-line production planning information to suppliers	1	7	4.59	1.999

Source: Author's Creation

Respondents further agree that their health facilities occasionally uses IT to provide specific on-line information about product specifications that their suppliers must meet (Mean=4.70, SD=1.88). This suggests that the firm recognizes the value of using technology to communicate and collaborate with its suppliers. By providing on-line information about product specifications, the firm can ensure that its suppliers have access to accurate and up-to-date information, which can help to improve the quality of the products and services they provide. This can also help to streamline communication and reduce errors or miscommunication that may occur when sharing this information through other channels. However, the fact that the firm only occasionally uses IT for this purpose may indicate that there is still room for improvement in their use of technology for supplier management. The firm could potentially



benefit from the more consistent and systematic use of IT to manage supplier information and communication, which could lead to more efficient and effective supplier management overall.

Respondents further agree that their health facilities occasionally use IT to provide on-line production planning information to suppliers (Mean=4.59, SD=1.99). This suggests that this is not a regular or constant practice but rather something that happens on an intermittent basis. The reasons for this could be due to various factors such as limited IT infrastructure, resource constraints, or simply because it is not necessary to provide such information on a frequent basis.

#### **4.3.2 Procurement Performance**

Table 4.4 indicates that respondents agree that the use of purchasing management IT tools has reduced the cost of processing purchase orders (Mean=4.48, SD=1.83). This suggests that the implementation of purchasing management IT tools has been successful in improving the efficiency of processing purchase orders, leading to a reduction in costs. The use of technology can automate many of the manual and time-consuming tasks involved in the purchasing process, such as data entry, paperwork, and communication with suppliers. By reducing these inefficiencies, organizations can save time and money, as well as increase accuracy and transparency in the purchasing process.

Respondents agree that the use of purchasing management IT tools has reduced the duration of the purchasing ordering cycle (Mean= 4.80, SD=1.81). This suggests that the implementation of technology has improved the speed and efficiency of the procurement process. This can lead to a number of benefits for the organization, including faster delivery of goods and services, improved cash flow management, and better.

Respondents neither agree nor disagree that the use of purchasing management IT tools has reduced inventory levels (Mean=4.42, SD=1.77). This suggests that the implementation of

technology has improved the accuracy and timeliness of inventory data, allowing organizations to better manage their stock levels. By reducing inventory levels, organizations can save on storage costs, reduce the risk of stock obsolescence or expiry, and free up capital that can be used elsewhere in the business. Additionally, having a better understanding of inventory levels can help organizations optimize their purchasing decisions, ensuring that they are only ordering what is needed when it is needed.

Respondents neither agree nor disagree that the use of purchasing management IT tools has reduced inventory levels (Mean=4.13, SD=1.87). This suggests that the respondents may not have a clear or definitive opinion on the matter. It is possible that they have not personally experienced or observed a significant reduction in inventory levels due to the use of purchasing management IT tools.

**Table 4.4: Procurement performance**

	Min	Max	Mean	Std. Dev
Reduced the cost of processing purchase orders (efficiency)	1	7	4.48	1.83
Reduced the duration of the purchasing ordering cycle (from release of the purchase order to the issuing of the payment to the supplier)	1	7	4.8	1.814
Reduced inventory levels	1	7	4.42	1.779
Reduced prices paid for purchases	1	7	4.13	1.873
Reduced errors in purchase transactions	1	7	4.67	1.846
Increased the reliability of information in the purchasing department	1	7	4.65	1.872
Increased the conformance of purchase orders	1	7	4.67	1.817

Source: Author's Creation

Respondents agree that the use of purchasing management IT tools has reduced errors in purchase transactions (Mean=4.67, SD=1.84). This suggests that the implementation of technology has improved the accuracy and consistency of the procurement process. By

automating many of the manual and error-prone tasks involved in purchasing, such as data entry and calculations, organizations can reduce the risk of errors and improve the accuracy of purchase transactions. Additionally, the use of purchasing management IT tools can provide greater visibility and transparency into the purchasing process, allowing organizations to quickly identify and correct any errors that do occur. Reducing errors in purchase transactions can lead to a number of benefits for organizations, including improved supplier relationships, faster processing times, and reduced costs associated with correcting errors. Overall, this suggests that the use of purchasing management IT tools can be a valuable investment for organizations seeking to improve the accuracy and efficiency of their procurement processes.

Respondents agree that the use of purchasing management IT tools has increased the reliability of the information in the purchasing department (Mean=4.65, SD=1.87). This suggests that the implementation of technology has improved the accuracy, completeness, and timeliness of information used in procurement processes. By automating many of the manual and paper-based processes involved in purchasing, such as data entry and documentation, organizations can improve the reliability and consistency of information used in procurement processes. Additionally, the use of purchasing management IT tools can provide greater visibility and transparency into the purchasing process, allowing organizations to quickly identify and correct any errors or discrepancies in the data. Increasing the reliability of information in the purchasing department can lead to a number of benefits for organizations, including improved decision-making, better supplier relationships, and reduced risk of errors and fraud. Overall, this suggests that the use of purchasing management IT tools can be a valuable investment for organizations seeking to improve the reliability and effectiveness of their procurement processes. Respondents agree that the use of purchasing management IT tools has increased the conformance of purchase orders (Mean=4.67, SD=1.81). This suggests that the implementation of technology has improved the accuracy and completeness of purchase orders,



as well as the organization's ability to ensure that purchase orders comply with established policies and procedures.

By using purchasing management IT tools, organizations can automate the creation and approval of purchase orders, ensuring that all necessary information is included and that the purchase order meets established standards and requirements. Additionally, the use of purchasing management IT tools can provide greater visibility and transparency into the purchasing process, allowing organizations to quickly identify and correct any non-conformances or deviations from established policies and procedures. Increasing the conformance of purchase orders can lead to a number of benefits for organizations, including improved supplier relationships, faster processing times, and reduced risk of errors and fraud. Overall, this suggests that the use of purchasing management IT tools can be a valuable investment for organizations seeking to improve the accuracy and effectiveness of their procurement processes.

#### **4.3.3 Digital Literacy**

Table 4.5 indicates that respondents agree that top management has the ability to learn new technology easily (Mean=5.0, SD=1.78). This suggests that the organization's leadership is open to embracing and adopting new technology as part of its overall business strategy. Having a management team that is comfortable with technology and willing to learn new tools and systems can help organizations stay competitive and responsive to changing market conditions. It can also help to ensure that technology investments are used effectively and are aligned with the organization's overall business goals. Respondents agree that top management is motivated to learn information and communication technology (Mean=5.0, SD=1.77). This suggests that the organization's leadership is interested in and committed to leveraging technology to drive business results and achieve strategic goals. Having a management team that is motivated to



learn about and use ICT can help organizations stay up-to-date with emerging trends and best practices in technology, and can help to ensure that technology investments are used effectively and are aligned with the organization's overall business strategy.

Respondents agree that top management is willing to use information and communication technology to work (Mean=5.0, SD=1.66). This suggests that the organization's leadership is open to using technology to improve their own work processes and stay connected with their teams, stakeholders, and customers. Having a management team that is willing to use ICT can set an example for the rest of the organization and help to create a culture of technology adoption and innovation. It can also help to ensure that technology investments are used effectively and are aligned with the organization's overall business goals.

**Table 4.5: Digital literacy**

	Min	Max	Mean	Std. Dev
Top management have the ability to learn new technology easily	1	7	5	1.787
Top management are motivated to learn information and communication technology	1	7	5	1.77
Top management are willing to use information and communication technology to work	1	7	5.08	1.669

Source: Author's Creation

#### 4.4 Reliability Statistics

The data in Table 4.6 indicates that in all three cases, the Cronbach's Alpha values are above the commonly accepted threshold of 0.70, indicating high internal consistency or reliability. This means that the items within each construct are strongly correlated with each other and consistently measure the intended concepts. Researchers can have confidence in the reliability of the measurements obtained from these constructs.

**Table 4.6: Construct reliability results**

Construct	Sub-construct	No. of Items	Cronbach's Alpha
E-procurement	None	5	0.94
Digital literacy	None	3	0.97
Procurement performance	None	7	0.95

Source: Author's Creation

#### 4.5 Correlation Matrix

Table 4.7 shows the correlation statistics. The data shows that the highest correlation is between revenue and the number of employees at 79 per cent. Also, the VIF data shows all the values are less than 4 suggesting that there is likely no significant multicollinearity among the independent variables in the regression analysis. A VIF value of less than 4 indicates that the variance of the estimated coefficient for a particular independent variable is not being significantly inflated due to the presence of correlations with other independent variables in the model. In other words, a low VIF value suggests that each independent variable is adding unique information to the model and is not redundant with the other independent variables.

**Table 4.7: Pearson correlation**

	PP	EPR	DL	Rev	Emp	Wkexp	VIF
PP	1						
EPR	.339**	1					1.79
DL	.233**	0.09	1				1.02
Rev	.183**	.644**	0.081	1			3.04
Emp	.140*	.611**	0.119	.794**	1		3.02
Wkexp	.195**	.249**	-0.028	.295**	.374**	1	1.17

Source: Author's Creation, PP: procurement performance, EPR: e-procurement, DL: digital literacy, Rev: revenue, Emp: employee, Wkexp: work experience, VIF: variance inflation factor.

#### 4.6 E-Procurement and Procurement Performance

The R-square in Table 4.8 is 0.14 which indicates that the independent variables explain the variance in the dependent variable by 14%. The Anova test is significant confirming that overall model is significant. The coefficient of E-procurement is 0.361 and the p-value is 0.00.

This information suggests a positive relationship between E-procurement and procurement process performance and the p-value of 0.00 indicates that the relationship is statistically significant at the 1% level. This finding relates to the study of Kalatya and Moronge (2017).

**Table 4.8: E-Procurement and procurement performance**

	Coeff	Std. Error	T-stat	P-value
E-procurement	0.361	0.081	4.448	0.00***
Revenue	0.024	0.104	0.23	0.82
Number of employees	-0.275	0.175	-1.566	0.12
Work experience	0.229	0.104	2.207	0.03**
Constant	3.142	0.372	8.457	0.00***
r-square	0.14			
Anova	8.25***			

*Source: Author's Creation, \*\*\*: 1% significance level, \*\*:5% significance level*

The finding is explained by the fact E-procurement systems provide health facilities with greater visibility into supplier performance, enabling them to identify and address issues with suppliers more quickly and effectively. This can help to improve supplier relationships and ensure that hospitals are receiving high-quality products and services. Also, E-procurement systems collect and analyse data on procurement activities, such as spending patterns, supplier performance, and inventory levels. This data can be used to identify areas for improvement, optimize procurement processes, and make more informed purchasing decisions.

The finding supports the transaction costs economics theory (TCT) (Coase, 1937). The TCT suggests that transactions (such as procurement transactions) are associated with costs, such as search and information costs, bargaining costs, and monitoring and enforcement costs. These costs can be reduced by improving the efficiency and effectiveness of the transaction process. E-procurement can help to reduce transaction costs by automating and streamlining many of the manual processes associated with procurement transactions. For example, e-procurement systems can facilitate electronic communication between hospitals and suppliers, reducing search and information costs. E-procurement systems can also standardize procurement

processes, making them more transparent and reducing bargaining costs. Finally, e-procurement systems can provide hospitals with greater visibility and control over their procurement processes, reducing monitoring and enforcement costs. By reducing transaction costs, e-procurement can help to improve the efficiency and effectiveness of the procurement process, leading to cost savings and better procurement outcomes for health facilities.

#### **4.7 Moderating role of Digital Literacy between E-Procurement and Procurement**

##### **Performance**

The R-square in Table 4.9 is 0.21, which indicates that the independent variables explain the variance in the dependent variable by 21%. The Anova test is significant confirming that overall model is significant. Table 4.8 further shows that the interaction between e-procurement and digital literacy has a p-value of 0.01 which indicates that the interaction effect between e-procurement and procurement process performance is statistically significant at the 1% level of significance. This means that the interaction effect is unlikely to be due to chance and suggests that there is evidence to support the hypothesis that the relationship between e-procurement and procurement process performance depends on the level of digital literacy of top management. The coefficient of -0.087 for the interaction effect is negative, indicating a negative moderation. This indicates that digital literacy negatively moderates the relationship between e-procurement and procurement process performance. This means that the effect of e-procurement on procurement process performance is not constant but varies depending on the level of digital literacy of top management. The coefficient of e-procurement is 0.79. This means that the positive relationship between e-procurement and procurement process performance may be weaker (or even negative) when there are higher levels of digital literacy of top management.



**Table 4.9: E-Procurement, digital literacy and Procurement Performance**

	Coeff	Std. Error	T-stat	P-value
EPR	0.79	0.192	4.109	0.00***
DL	0.608	0.169	3.606	0.00***
DL*EPR	-0.087	0.035	-2.492	0.01***
Rev	0.045	0.1	0.452	0.65
Emp	-0.338	0.169	-1.996	0.05**
Wkexp	0.234	0.101	2.322	0.02**
Constant	0.234	0.897	0.26	0.80
r-square	0.21			

*Source: Author's Creation, EPR: e-procurement, DL: digital literacy, Rev: revenue, Emp: employee, Wkexp: work experience, \*\*\*: 1% significance level, \*\*:5% significance level*

The finding could be explained by the fact that if top management lack digital literacy skills, they may not fully understand the potential benefits of e-procurement and may not provide the necessary support and resources to implement and use e-procurement systems effectively. This can lead to a negative moderation effect on the relationship between e-procurement and procurement process performance. For example, if top management are not familiar with e-procurement systems, they may not understand how these systems can improve the efficiency and effectiveness of the procurement process. As a result, they may not provide the necessary resources and support to implement and use e-procurement systems effectively, limiting their potential benefits.

Also, the negative moderation effect of digital literacy can occur if top management is digitally literate but uses that knowledge to sabotage the effective implementation of e-procurement for their personal gain. This is because e-procurement can potentially reduce opportunities for corruption and increase transparency and accountability in the procurement process. Top management may intentionally design e-procurement systems in a way that allows them to continue their corrupt practices, such as giving contracts to friends or inflating prices. They may also provide inadequate training and support to procurement staff or deliberately undermine the effectiveness of e-procurement processes, such as by failing to enforce internal

controls or by limiting access to information. Another way is the use of digital literacy to exploit weaknesses in e-procurement systems. For example, top management may use their digital literacy to hack into e-procurement systems or to manipulate data in a way that benefits them or their associates.

The finding supports the theory of planned behaviour (Ajzen, 1991). The theory of planned behaviour suggests that an individual's behaviour is influenced by their attitudes, subjective norms, and perceived behavioural control. Top management's attitudes, subjective norms, and perceived behavioural control can affect their behaviour towards e-procurement implementation. If top management have a negative attitude towards e-procurement, they may resist its implementation or use their digital literacy to sabotage its effectiveness (Attitude). If there is a culture of corruption and unethical behaviour in the health facilities, top management may feel pressure to maintain the status quo and resist the implementation of e-procurement (subjective norms). If they believe that they are not capable of using e-procurement effectively, they may resist its implementation or use their digital literacy to sabotage its effectiveness (perceived behavioural control).

## **CHAPTER FIVE**

### **SUMMARY OF FINDINGS, CONCLUSION AND RECOMMENDATIONS**

#### **5.1 Introduction**

This section presents a summary of the overall studies. The chapter is presented in four main sections. Summary of the findings are presented followed by a conclusion of the study and recommendations and suggestions for further studies are presented as well.

#### **5.2 Summary of Findings**

The study found that the coefficient of E-procurement was 0.361 and the p-value was 0.00. This information implied that positive relationship between E-procurement and procurement performance suggesting that E-procurement increases the procurement performance of firms. It was further discovered that the interaction between e-procurement and digital literacy had a coefficient of -0.087 and a p-value of 0.01 which indicated that the interaction effect between e-procurement and procurement process performance was statistically significant and negative. This finding meant digital literacy negatively moderated the relationship between E-procurement and procurement performance.

#### **5.3 Conclusion**

The general objective of the study was to examine the relationship between e-procurement on procurement performance with digital literacy as the moderating variable. The study was conducted in Greater Accra region by sampling 203 health facilities in the region. The data was gathered using a 7-point likert scale questionnaire and analysed in multiple regression. It was discovered that E-procurement increased the procurement performance of health organizations because it reduces the time required to complete the procurement process, allowing procurement professionals to focus on more strategic activities. Also, it was found that the positive relationship between E-procurement and procurement performance was weakened by

digital literacy of top management because top management use their digital literacy skills to exploit weaknesses in the e-procurement systems thereby weakening its effectiveness in the procurement process.

#### **5.4 Recommendation**

Health care organisations should conduct a thorough analysis of their organization's procurement processes to identify areas that could benefit from e-procurement. Procurement process analysis can be conducted by reviewing current procurement processes, identifying bottlenecks, and determining areas where e-procurement can be applied.

Top management should be involved in the e-procurement implementation process to ensure that they are familiar with the system and understand how it works. Healthcare organization should assign accountability for the success of e-procurement implementation to a specific individual or team, who can ensure that the project stays on track and that any issues are addressed promptly.

#### **5.5 Further Studies**

Further studies can be conducted to examine other factors that can moderate or mediated the relationship.



## REFERENCE

- Afolabi, A., Ibem, E., Aduwo, E., Tunji-Olayeni, P., Oluwunmi, O. and Ayo-Vaughan, E., 2022. Gauging parameters for e-procurement acquisition in construction businesses in Nigeria. *International Journal of Construction Management*, 22(3), pp.426-435.
- Barney, J., 1991. Firm resources and sustained competitive advantage. *Journal of management*, 17(1), pp.99-120.
- Beauvallet, G., Boughzala, Y. and Assar, S., 2011. E-procurement, from project to practice: Empirical evidence from the French public sector. *Practical Studies in E-Government: Best Practices from Around the World*, pp.13-27.
- Belisari, S., Appolloni, A. and Cerruti, C., 2019. Positive and negative impacts of the adoption of e-procurement solutions: The Italian market case. *International Journal of Procurement Management*, 12(2), pp.219-241.
- Candra, S. and Gunawan, F.E., 2017. The impact of e-procurement practice in Indonesia government: A preliminary study (The case of electronic procurement service at Bekasi district). In *Journal of Physics: Conference Series* (Vol. 801, No. 1, p. 012023). IOP Publishing.
- Cetindamar, D., Abedin, B. and Shirahada, K., 2021. The role of employees in digital transformation: a preliminary study on how employees' digital literacy impacts use of digital technologies. *IEEE Transactions on Engineering Management*.
- Chang, H.H. and Wong, K.H., 2010. Adoption of e-procurement and participation of e-marketplace on firm performance: Trust as a moderator. *Information & management*, 47(5-6), pp.262-270.
- Chegugu, N.R. and Yusuf, K.G., 2017. Effect of electronic procurement practices on organizational performance in public hospitals in the county government of Uasin Gishu, Kenya. *International Academic Journal of Procurement and Supply Chain Management*, 2(3), pp.16-32.

- Chen, Y., Bretschneider, S., Stritch, J.M., Darnall, N. and Hsueh, L., 2022. E-procurement system adoption in local governments: the role of procurement complexity and organizational structure. *Public Management Review*, 24(6), pp.903-925.
- Cherian, T.M., Munuswamy, S. and Jasim, K.M., 2020. E-procurement practices to improve the efficiency of vendor transactions in Indian cement companies. *International Journal of Procurement Management*, 13(4), pp.443-461.
- Chimwani, B.I., Iravo, M.A. and Tirimba, O.I., 2014. Factors influencing procurement performance in the Kenyan public sector: case study of the state law office. *International Journal of Innovation and Applied Studies*, 9(4), p.1626.
- Frimpong, J.M., Andoh-Baidoo, F. and Asamoah, D., 2020, January. The association between institutional absorptive capacity, electronic procurement assimilation and procurement process in public sector organizations. In *Proceedings of the 53rd Hawaii International Conference on System Sciences*.
- Galbreath, J., 2005. Which resources matter the most to firm success? An exploratory study of resource-based theory. *Technovation*, 25(9), pp.979-987.
- Gamal Aboelmaged, M., 2010. Predicting e-procurement adoption in a developing country: An empirical integration of technology acceptance model and theory of planned behaviour. *Industrial Management & Data Systems*, 110(3), pp.392-414.
- Heckman, R., 2020. Managing the IT procurement process. In *Enterprise Operations Management* (pp. 367-383). Auerbach Publications.
- Heitin, L., 2016. What is digital literacy. *Education week*, 36(12), pp.5-6.
- Ho, C.F., Tai, Y.M., Wu, W.H. and Jou, J.J., 2008. Exploring the impacts of web-based e-procurement on organizational performance. *PACIS 2008 Proceedings*, p.106.
- Hung, W.H., Lin, C.P., Tai, Y.M., Ho, C.F. and Jou, J.J., 2014. Exploring the impact of Web-based e-procurement on performance: organisational, interorganisational, and systems perspectives. *International Journal of Logistics Research and Applications*, 17(3), pp.200-215.

- Ibem, E.O. and Laryea, S., 2015. e-Procurement use in the South African construction industry. *Journal of Information Technology in Construction (ITCon)*, 20(23), pp.364-384.
- Innocent, R.U.Z.I.N.D.A.N.A. and Kalaskar, P.B., 2016. The Adoption of e-Procurement and its impact on the Procurement Performance of Selected Telecommunication Companies in Rwanda. *European Journal of Business and Management*, 8(15), pp.125-133.
- Inoue, T., Georgiou, G.K., Parrila, R. and Kirby, J.R., 2018. Examining an extended home literacy model: The mediating roles of emergent literacy skills and reading fluency. *Scientific Studies of Reading*, 22(4), pp.273-288.
- Jain, M., Abidi, N. and Bandyopadhyay, A., 2018. E-procurement espousal and assessment framework: A case-based study of Indian automobile companies. *International Journal of Technology Management & Sustainable Development*, 17(1), pp.87-109.
- Jelassi, T., Martínez-López, F.J., Jelassi, T. and Martínez-López, F.J., 2020. Interaction with Suppliers: e-Procurement. *Strategies for e-Business: Concepts and Cases on Value Creation and Digital Business Transformation*, pp.275-305.
- Kaeophanuek, S., Na-Songkhla, J. and Nilsook, P., 2019. A learning process model to enhance digital literacy using critical inquiry through digital storytelling (CIDST). *International Journal of Emerging Technologies in Learning*, 14(3).
- Kakwezi, P. and Nyeko, S., 2019. Procurement processes and performance: Efficiency and effectiveness of the procurement function. *International Journal of Social Sciences Management and Entrepreneurship (IJSSME)*, 3(1).
- Kalatya, B. and Moronge, M., 2017. Influence of Procurement Practices on Performance of Logistic Firms in Kenya. *Strategic Journal of Business & Change Management*, 4(4), pp.605-610.
- Kar, S., Kothari, C. and Jha, K.N., 2021. Developing an optimum material procurement schedule by integrating construction program and budget using NSGA-II. *Journal of Construction Engineering and Management*, 147(4), p.04021017.



- Kiage, J.O., 2013. Factors affecting procurement performance: A case of ministry of energy. *International journal of business and commerce*, 3(1), pp.54-70.
- Korpela, K., Hallikas, J. and Dahlberg, T., 2017, January. Digital supply chain transformation toward blockchain integration. In *proceedings of the 50th Hawaii international conference on system sciences*.
- Kurnia, S., Karnali, R.J. and Rahim, M.M., 2015. A qualitative study of business-to-business electronic commerce adoption within the Indonesian grocery industry: A multi-theory perspective. *Information & Management*, 52(4), pp.518-536.
- Li, X., Pillutla, S., Zhou, H. and Yao, D.Q., 2015. Drivers of adoption and continued use of e-procurement systems: Empirical evidence from China. *Journal of organizational computing and electronic commerce*, 25(3), pp.262-288.
- Lioukas, C.S., Reuer, J.J. and Zollo, M., 2016. Effects of information technology capabilities on strategic alliances: Implications for the resource-based view. *Journal of Management Studies*, 53(2), pp.161-183.
- Mahata, N., Boharia, A.A.M., Azmana, M.A., Khalilb, N., Adnana, A.S., Iskandar, M. and Malekc, A., 2022. E-Procurement Adoption in the Malaysian Construction Sector: Integrating Diffusion of Innovations and Theory of Planned Behaviour Framework. *Jurnal Kejuruteraan*, 34(3), pp.347-352.
- Marei, A., 2022. The effect of e-procurement on financial performance: Moderating the role of competitive pressure. *Uncertain Supply Chain Management*, 10(3), pp.855-866.
- Masudin, I., Aprilia, G.D., Nugraha, A. and Restuputri, D.P., 2021. Impact of E-procurement adoption on company performance: Evidence from Indonesian manufacturing industry. *Logistics*, 5(1), p.16.
- Masudin, I., Kamara, M.S., Zulfikarijah, F. and Dewi, S.K., 2018. Impact of inventory management and procurement practices on organization's performance. *Singaporean Journal of Business Economics and Management Studies (SJBEM)*, 6(3), pp.32-39.



- Mishra, A.N. and Agarwal, R., 2010. Technological frames, organizational capabilities, and IT use: An empirical investigation of electronic procurement. *Information Systems Research*, 21(2), pp.249-270.
- Moretto, A., Ronchi, S. and Patrucco, A.S., 2017. Increasing the effectiveness of procurement decisions: The value of big data in the procurement process. *International Journal of RF Technologies*, 8(3), pp.79-103.
- Munyimi, T.F., 2019. The role of procurement quality controls in procurement performance in the energy sector in Zimbabwe. *Cogent Engineering*, 6(1), p.1631563.
- Mwangi, E.W. and Kagiri, A., 2016. Effects of e-procurement on procurement performance in hospitality industry in Kenya: Case of Sarova chain of hotels. *International Academic Journal of Procurement and Supply Chain Management*, 2(2), pp.1-19.
- Nawi, M.N.M., Roslan, S., Salleh, N.A., Zulhumadi, F. and Harun, A.N., 2016. The benefits and challenges of E-procurement implementation: a case study of Malaysian company. *International Journal of Economics and Financial Issues*, 6(7), pp.329-332.
- Odero, J.A. and Ayub, S.E., 2017. Effect of procurement practices on procurement performance of public sugar manufacturing firms in Western Kenya. *International Journal of Management Research and Reviews*, 7(4), p.521.
- Oppong, W.A., 2020. Electronic Procurement and Organizational Performance Among Commercial State Corporations. *Journal DOI*, 10, p.22501991.
- Pearson, J.M. and Grandon, E.E., 2005. An empirical study of factors that influence e-commerce adoption/non-adoption in small and medium sized businesses. *Journal of Internet commerce*, 4(4), pp.1-21.
- Ping Ho, S., Levitt, R., Tsui, C.W. and Hsu, Y., 2015. Opportunism-focused transaction cost analysis of public-private partnerships. *Journal of management in engineering*, 31(6), p.04015007.

- Pongsuwan, P., 2016. How does procurement capability maturity affect e-Procurement adoption and leverage purchasing in supply chain. *International Journal of Business and Economic Development (IJBED)*, 4(3).
- Quesada, G., González, M.E., Mueller, J. and Mueller, R., 2010. Impact of e-procurement on procurement practices and performance. *Benchmarking: An International Journal*.
- Reddy, P., Sharma, B. and Chaudhary, K., 2020. Digital literacy: A review of literature. *International Journal of Technoethics (IJT)*, 11(2), pp.65-94.
- Rotich, G.K. and Okello, B., 2015. Analysis of use of e-procurement on performance of the procurement functions of county governments in Kenya. *International Journal of Economics, Commerce and Management*, 3(6), pp.1381-1398.
- Ruikar, K., Anumba, C.J. and Carrillo, P.M., 2006. VERDICT—An e-readiness assessment application for construction companies. *Automation in construction*, 15(1), pp.98-110.
- Sasu, D. D., 2022. Number of health facilities in Ghana. Stistica. <https://www.statista.com/statistics/1238770/number-of-health-facilities-in-ghana-by-region/>
- Schermann, M., Dongus, K., Yetton, P. and Krcmar, H., 2016. The role of Transaction Cost Economics in Information Technology Outsourcing research: A meta-analysis of the choice of contract type. *The Journal of Strategic Information Systems*, 25(1), pp.32-48.
- Tai, Y.M., Ho, C.F. and Wu, W.H., 2010. The performance impact of implementing web-based e-procurement systems. *International Journal of Production Research*, 48(18), pp.5397-5414.
- Wernerfelt, B., 1984. A resource-based view of the firm. *Strategic management journal*, 5(2), pp.171-180.
- Yevu, S.K. and Yu, A.T.W., 2020. The ecosystem of drivers for electronic procurement adoption for construction project procurement: a systematic review and future research directions. *Engineering, Construction and Architectural Management*, 27(2), pp.411-440.

## APPENDIX 1- QUESTIONNAIRE

My name is Michael Griffiths Ebo Sam. I am a Student at Kwame Nkrumah University of Science and Technology School of Business, Department of Supply Chain and Information Systems. This survey instrument has been designed to enable me carry out research on Examining the Relationship Between E-Procurement and Procurement Performance the Moderating Role of Digital Literacy. The purpose of the research is to provide an understanding of how electronic purchasing methods affect the Performance of procurement processes. Any information provided will ONLY be used for general information, and it will be treated as HIGHLY CONFIDENTIAL.

**INSTRUCTIONS:** Please kindly write in ink in the box which corresponds to the statement, which in your opinion is the most appropriate answer to the related question. For the following questions, kindly select by checking ( ) all that apply.

Name of Company	Title or Job Position in the Company:	
Nationality: ( A ) Ghanaian (B) Foreigner	State run Enterprise: Yes No	How long have you worked in this company_____
Number of Employees [ ]<6; [ ] 6-29; [ ] 30-59; [ ] 60-99; [ ] 100+		
Please place a check in your company's corresponding industry	( A ) CHPS facilities ( B ) Clinics ( C ) Maternity Homes ( D ) Health Centres ( E ) Hospitals ( F ) Other (specify)_____	
Please indicate the Revenue of the Company in New Ghana Cedis	( A ) 40,000; ( B ) 40,000-80,000; ( C ) 80,000-120,000; ( D ) 120,000-160,000; ( E ) 160,000-200,000; ( F ) 200,000-500,000; ( G ) 500,000-1,000,000; ( H ) >1,000,000	

**Instructions:** Indicate your opinion for the following statement by placing a checkmark ( ) in the right column under the 7-point Likert Scale.

To what extent does your company use information technology tools in managing the following purchasing activities	Never	Very Rarely	Rarely	Neither occasionally nor Rarely	Occasionally	Frequently	Very Frequentl y
Our firm uses IT to manage Electronic ordering to suppliers							
Our firm uses IT to manage Electronic payment to suppliers							
Our firm uses IT to Provide online materials inventory information to our suppliers							
Our firm uses IT to Provide specific online information about product specifications that our suppliers must meet							
Our firm uses IT to Provide online production planning information to suppliers							

The use of purchasing management IT tools has (indicate your level of agreement or disagreement)	Strongly Disagree	Moderately Disagree	Disagree	Neither Agree nor Disagree	Agree	Moderately Agree	Strongly Agree
Reduced the cost of processing purchase orders (efficiency)							
Reduced the duration of the purchasing ordering cycle (from release of the purchase order to the issuing of the payment to the supplier)							
Reduced inventory levels							
Reduced prices paid for purchases							
Reduced errors in purchase transactions							
Increased the reliability of information in the purchasing department							
Increased the conformance of purchase orders							
Digital Literacy of Top management	Strongly Disagree	Moderately Disagree	Disagree	Neither Agree nor Disagree	Agree	Moderately Agree	Strongly Agree
Top management have the ability to learn new technology easily							
Top management are motivated to learn information and communication technology							
Top management are willing to use information and communication technology to work							



## APPENDIX 2 - OUTPUT

### Regression Output

Equation one

#### Model Summary

Model	R	R Square	Adjusted Square	R	Std. Error of the Estimate
1	.378 <sup>a</sup>	.143	.126		1.51896

a. Predictors: (Constant), work experience, E\_procurement, Number of employees, Revenue

#### ANOVA<sup>a</sup>

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	76.218	4	19.055	8.259	.000 <sup>b</sup>
	Residual	456.835	198	2.307		
	Total	533.053	202			

a. Dependent Variable: Procurement\_performance

b. Predictors: (Constant), work experience, E\_procurement, Number of employees, Revenue

#### Coefficients<sup>a</sup>

Model		Unstandardized Coefficients B	Std. Error	Standardized Coefficients Beta	t	Sig.
1	(Constant)	3.142	.372		8.457	.000
	E_procurement	.361	.081	.392	4.448	.000
	Revenue	.024	.104	.026	.230	.818
	Number of employees	-.275	.175	-.178	-1.566	.119
	work experience	.229	.104	.157	2.207	.028

a. Dependent Variable: Procurement\_performance

Equation two

#### Model Summary

Model	R	R Square	Adjusted Square	R	Std. Error of the Estimate
1	.467 <sup>a</sup>	.218	.194		1.45831

a. Predictors: (Constant), work experience, Digital\_literacy, E\_procurement, Number of employees, Revenue, DL\_EPR

### ANOVA<sup>a</sup>

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	116.227	6	19.371	9.109	.000 <sup>b</sup>
	Residual	416.826	196	2.127		
	Total	533.053	202			

a. Dependent Variable: Procurement\_performance

b. Predictors: (Constant), work experience, Digital\_literacy, E\_procurement, Number of employees, Revenue, DL\_EPR

### Coefficients<sup>a</sup>

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.234	.897		.260	.795
	E_procurement	.790	.192	.856	4.109	.000
	Digital_literacy	.608	.169	.638	3.606	.000
	DL_EPR	-.087	.035	-.675	-2.492	.014
	Revenue	.045	.100	.050	.452	.652
	Number of employees	-.338	.169	-.219	-1.996	.047
	work experience	.234	.101	.159	2.322	.021

a. Dependent Variable: Procurement\_performance