KWAME NKRUMAH UNIVERSITY OF SCIENCE AND TECHNOLOGY

INSTITUTE OF DISTANCE LEARNING

ASSESSMENT OF THE FACTORS AFFECTING IMPLEMENTATION OF E-PROCUREMENT IN PUBLIC SECTOR OF GHANA: A CASE STUDY OF MMDA'S IN CENTRAL REGION.

BY

PAUL MENSAH

PG9460421

A thesis submitted to the Department of Supply Chain And Information Systems Institute of Distance Learning, in Partial Fulfilment of The Requirements for The Award of The Degree of

MASTER OF SCIENCE IN PROCUREMENT AND SUPPLY CHAIN MANAGEMENT

NOVEMBER, 2023

DECLARATION

I hereby declare that this submission is my own work and that, to the best of my knowledge and belief, it contains no material previously published or written by another person nor material which to a substantial extent has been accepted for the award of any other degree or diploma at the Kwame Nkrumah University of Science and Technology, Kumasi or any other educational institution, except where due acknowledgement is made in the Thesis.

Paul Mensah	……..……	…….
PG9460421	Signature	Date
(Student)		

Certified by:

Dr. Kwame Obiri-Yeboah	……..	…….
(Supervisor)	Signature	Date

Certified by:

Prof. David Asamoah	……...……..	……
(Head of Department)	Signature	Date

DEDICATION

I dedicate this thesis to God Almighty for his kindness and favor that enabled me to complete this work. I also dedicate it to my Wife and family for the numerous blessings and for your unfailing support throughout my entire education.

KNUST

ACKNOWLEDGEMENTS

It is said that no one writes a book all by himself or herself. In fact, this is the case for this work. For that reason, I am not ashamed to indicate here, with full conviction and appreciation to the Almighty God for helping and giving me the inspiration, patience, time and strength to accomplish this dissertation. My foremost appreciation is expressed to the immeasurable help given me by the lectures of KNUST, more particularly, my supervisor, Dr. Kwabena Obiri-Yeboah whose generosity and regular attention to my work has resulted in its utmost completion. Sir, your commitment and dedications were awesome. I have also not forgotten the constant supports of Mr. Francis Dzidepo Zometi, Mr. Husein Dawson, Hon. Kojo Asemanyi.

I finally want to say thank you to my lovely Wife (Mrs. Jane Mensah) who has been the most influential factor in my life and to my family and all friends who have provided endless encouragement, support and in diverse throughout, in achieving my goals. Thank you for the many ways in which you have impacted and brightened my path, especially throughout this period of my academic walk.

ABSTRACT

Factors affecting implementation of e-procurement. The study assessed the factors affecting implementation of e-procurement in public sector of Ghana using MMDA's in Central region. Specifically, it identified the factors affecting the implementation of e-procurement in MMDAs in Central region. It also assessed the effects of e-procurement implementation in ensuring value for money within the MMDAs in Central region. Descriptive research was adopted and qualitative methodology was used to retrieve primary data through questionnaires administration from managers and directors within the MMDAs in Central region. The study found the factors affecting the implementation of e-procurement to include cost of implementation, management commitment and employee's competence. The study identified effects of e-procurement implementation as enabling effectiveness and improvement in procurement processes as well as quality and efficiency. The study established the need for staff competency and management support in the implementation of e-procurement and to enhance better the performance. The study recommended that there should be provision of funds to acquire equipment such as computers and automated machines to undertake e-procurement. There should also be hiring of personnel that possess technical skills and knowledge as may be necessary to undertake e-procurement. Senior managers of the organizations should also be committed to e-procurement as that will lead to the attainment of objectives.

TABLE OF CONTENTS

KNUST

KNUST

KNUST

LIST OF TABLES

KNUST

List of Figures

KNUST

List of Abbreviations

Metropolitan and Municipal District Assemblies…… MMDAs

Staff Competence……. SC

Cost of Implementation……. CoI

Management Competence……. MC

KNUST

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

Electronic procurement is an online application of information technology and infrastructure to the processing, management, appraisal, and reporting of government contracts in a transparent, efficient and effective manner (Prabir et al., 2016). It is an internet-based system used to purchase goods and services by offering electronic purchase order to enhance the processes of purchasing alongside administrative functions in order to reflect operational efficiencies with suppliers and buyers and potential cost savings (Sanewu and Nasidai, 2016). E-procurement is a digitalized system of procuring goods and services, using technologies and electronic tools to integrate procurement processes, ensuring effectiveness and efficiency in payment system and acquisition, enhance purchase and supply systems through information networks and internet (Mohammed, 2015).

E-procurement technology reduces transaction cost as it shortens the cycle time of purchasing and simplify the processes to promote flexibility and provide up-date information at a time purchase orders are issued (Au and Low, 2014). E-procurement reduces the cost of procurement and provide better platforms that allow collaboration among suppliers and in ensuring faster time of transaction and increased process efficiency (Kaliannan et al., 2009). It enables procurement organizations to source for goods and services from qualified suppliers, negotiate, order, receive and review supplies to ensure accuracy using internet-based system (Buasà et al., 2013). According to Adebanjo (2010), it reduces the cost per transaction by 65% and enable an achievement of 42%

savings out of purchases of materials and equipment required for an efficient and effective operations.

Procurement of goods and services forms part of the core strategic operations of procurement organizations which cannot be overemphasized. According to Asare and Prempeh (2017), procurement practices contribute to the overall operations of organizations as it enables goods and services to be procured to meet specification from qualified suppliers. Procurement contributes to 20% of global expenditure which requires institutional and regulatory frameworks to guide its practices in a transparent and accountable manner (Victor and Gabriel, 2019). In order to meet the global objective and standard of procurement as indicated in the procurement Act 663, 2003, e-procurement implementation has become necessary by procurement entities in their operations.

The public sector organizations including the Ministries, Departments, Agencies and other State-owned enterprises undertake procurement activities to acquire goods and services through efficient procurement processes, right quality procurement, right quantity requirement, efficient pricing system and right time of delivery (Peprah et al., 2018). Implementation of e-procurement by these organizations will enable them to undertake efficient procurement practices. Various theories such as Social Cognitive theory support e-procurement adoption as it comprises of Manufacturing Resource Planning (MRP) and Enterprise Resource Planning (ERP) systems and electronic data exchange (EDI) that will enable procurement entities to undertake efficient practices (Brandon-Jones & Kauppi, 2018).

In Ghana, the public procurement Act establishes the procurement authorities and harmonizes procurement processes to ensure transparent, fair and non-discriminatory practices and to secure efficient, economic and judicious use of resources that are available to the nation (Public

Procurement Act., 2003 and amendment Act., 2016). The empirical evidence shows that, out of the total importation, 24% comes as a result of public procurement which is represented by 50-70% of the national budget and also 14% of GDP (Peprah et al., 2018b). According to the World Bank report, there is a yearly value of USD 600 million which is spent in procuring goods and works and also in consultancy services representing 14% of Ghana's GDP. This requires a transparent, accountable and best procurement practices devoid of self-interest in the detriment of the nation Ghana which can be achieved electronic procurement (e-procurement).

Implementation of e-procurement is necessary in today's competitive economy where service delivery, speed and precision are critical. Implementation of e-procurement enables procurement organizations to adopt the internet-based platforms in undertaking procurement practices which is crucial towards efficient procurement practices.

Research gap indicates that, in today's competitive market, adopting modern technologies and deploying electronic systems has become a need. The speed of service required by public sector organizations is related to effectiveness, efficiency, and innovation. However, studies conducted on e-procurement in Ghana were mostly limited to some private sector organizations with little on the public sector organizations (Amoako-Gyampah and Salam, 2004). Despite widespread use of e-procurement systems, some MMDAs continue to struggle with implementation, resulting in poor performance. Others fail to explain their organization's original e-procurement adoption choice. For a country like Ghana, where procurement expenditures in the national budget are consistently high, resulting in a budget deficit, it has become imperative for the country to adopt e-procurement in order to reap the benefits (World Bank, 2003). The capacity for e-procurement to deliver policy goals and the need for efficient e-procurement implementation in the public sector organizations in Ghana has created a gap which motivates the choice of the topic to assess the factors that are

affecting e-procurement implementation within the public sector of Ghana: A case study of MMDA's in central region.

1.2 Problem Statement

Electronic procurement has gained ground both in public and private organizations as a basis for competitive procurement and good practice. E-procurement enables procurement organizations to reduce costs and increase profitability by integrating both within and across organizational supply chain activities (Pearcy and Giunipero, 2008). According to Panda et al. (2012), e-procurement application leads to value for money within organizations. Sweden reduced up to 30% of its public sector cost which is one of the cost components through the application of e-procurement as well as other Proceedings as outlined by the International Multi-conference on technology and Computer Science in the year 2009. However, due to the inability to implement the e-procurement as promised by government, the several benefits associated with which includes reducing cost, officials becoming efficient and effective, officials becoming transparent and visible are not attained (Cevdet et al., 2013).

Electronic-procurement and its implementation is mostly affected by lack of a widely accepted and standardized solution which blocks the mediums to integrate different software to facilitate the processes across supply chain processes (Davila et al, 2006). Governments require enough technology to take advantage of internet commerce but there is no enough technology (PPOA, 2009). Government in attempt to take full advantage of e-procurement and to reap the needed benefits must identify different issues such as data confidentiality, synchronization, identification of parties in transactions and bandwidth (Kademaunga & Phiri, 2019).

The share of public procurement in the GDP is ranged between 8-15% in sub-saharan African countries. There is an average savings of 30% as a result of procurement implementation and improvement in legislation (Shalle and Irayo 2013). Despite the e-procurement implementation in Rwanda, Zambia, Uganda, Tanzania and the public sector organizations of other Africa countries, implementation was slow especially within the local levels and at the sub-national levels. Zambia and Rwanda started to break the myth of impossible implementation of e-procurement in Africa. This was followed with effort from many other African countries including Uganda and Tanzania to sign contracts that will result into e-procurement implementation. Problems of e-procurement implementation include difficulties in selling the concept of e-procurement to internal stakeholders including management as well as lack of confidence, lack of technology and innovation champions within the organizations which had inhibited full acceptance of the process as indicated.

Batenburg (2007) discovered that there are disparities in e-procurement adoption based on national culture. According to Amoako-Gyampah (2004), studies conducted on e-procurement in Ghana were mostly limited to private sector organizations with little on the public sector organizations. Some of these studies are inconclusive on the factors that affect e-procurement implementation with inferences that will make the study more understandable and reliable for decision making and as a reference documents (Ameyaw and Osei-Tutu, 2012). However, the Government of Ghana preaches the need to adopt e-procurement to achieve efficient, transparent and value for money supply of goods and services (Doe, 2018). This necessitated the choice of this topic to assess the factors affecting implementation of e-procurement and to draw conclusive and reliable conclusion using MMDA's in central region.

1.3 **Objectives of the Study**

The general objective of the study is to assess the factors affecting implementation of e-procurement in public sector of Ghana using MMDAs in central region.

Specifically, the study seeks:

i. To identify the factors affecting the implementation of e-procurement in MMDAs in Central Region.
ii. To assess the effects of e-procurement implementation in ensuring value for money within the MMDAs in central region.
iii. To establish the effect of staff competency and management support in the implementation of e-procurement within the MMDAs in central region.

1.4 Research Questions

i. What are the factors affecting the implementation of e-procurement in MMDAs in Central Region?
ii. What are the effects of e-procurement implementation in ensuring value for money supply of goods and services within the MMDAs in central region?
iii. What are the effect of staff competency and management support in the implementation of e-procurement within the MMDAs in central region?

1.5 Significance of the Study

The public sector organizations including the Ministries, Departments, Agencies and other State-owned enterprises allocate huge sum of money in undertaking procurement activities to acquire

goods and services. The national budget consistently contains huge expenditure allocation with which there were efforts to reduce cost whilst but have value for money supply. The study is relevant as it contributes to knowledge on e-procurement and the importance of its implementation. This will assist policy makers within the procurement authority to formulate policies regarding efficient implementation of e-procurement within MMDAs in Ghana. The study adds to existing literatures on e-procurement.

1.6 Brief Methodology

Descriptive statistics will be used to determine factors that affect e-procurement implementation at MMDAs in Ghana. The primary data is retrieved through the administering of questionnaires using purposive sampling method to select managers and directors at selected MMDAs. The SPSS software is used to analyze data with further presentation in tables.

1.7 Scope of the Study

The study is limited to the MMDAs in Central region. Staff of the MMDAs form part of the respondents of the study. The study makes use of research publications and student papers that relate to e-procurement and how e-procurement adoption enhances efficiency and effectiveness in procurement. This is to meet the objectives of the study which generally is to determine possible factors that affect e-procurement implementation.

1.8 Limitation of the Study

Studies that relate to e-procurement are of a great relevance to the nation Ghana as procurement forms part of the core operations both within public and private sector organizations. The current study will however be limited to only the MMDAs in the Central region of Ghana. The study is

limited to selected MMDAs in Central region of Ghana. The need for primary data through questionnaires administration pose some challenges as well as time and financial constraint. Despite the limitation, the researcher will put out his effort to ensure the current study meets its objectives and the requirements of the institution.

KNUST

1.9 Organization of the Study

This study will be divided into five main chapters. The first chapter covers the study's introduction, problem statement, research objectives, and research questions, as well as the thesis' scope, limitation, and arrangement. The literature review will be covered in chapter two. This will discuss the various concepts, theories empirical studies and ends with conceptual framework. The research methodology which will be the chapter three will focus on research design, population and sampling strategies, as well as how data will be obtained and will be analyzed. The data analysis and findings discussion will be included in chapter four. The fifth chapter will contain a summary of the findings, as well as conclusions through to recommendations. This will also include recommendations for future research.

NYANSAPƆ WƆSANE NO BADWENMA

CHAPTER TWO

LITERATURE REVIEW

KNUST

2.1 Introduction

This chapter reviews literature on the concepts, theories, empirical studies and ends with the conceptual framework. The chapter begins with a review on the concept of e-procurement, objective of e-procurement and its implementation in Ghana. The empirical review covers previous studies on the subject. The theoretical review states the various theories that support the study and it was followed with the conceptual framework which contains the various variables used in the study.

2.2 Conceptual Review

Concepts that are relevant in the study are described under this review. It also considers key factors, variables and concepts which are relevant in this study. The conceptual review of the study is presented below:

2.2.1 Concept of E-procurement

The concept of e-procurement is about the use of integrated internet-based information and communication technologies to source, negotiate, order receipt and to undertake other post-purchase review of goods and services (Karekezi et al., 2020). According to Rotich and Okello (2015), e-procurement refers to the usage and application of electronic method in carrying out procurement functions which includes competitive bidding process, need identification, contract management as well as enhancing efficiency, effectiveness, accountability and transparency. E-

procurement is the action of using ICT to conduct procurement related activities within different steps of procurement process (Kwadwo & Evelyn, 2017).

The concept of e-procurement is based upon the use of internet and other electronic systems to buy and sell goods and services (Mambo, 2015). Procurement organizations adopt electronic devices to engage with parties to enable a successful purchase of goods and services (Mambo, 2015). The concept of e-procurement results into an effective, flexible and efficient procurement practices (Ongola, 2017). This concept enables procurement organizations undertake procurement across various procurement processes through the use of technology and other internet-based information (Ongola, 2017). The concept of e-procurement in other review relates to the digitization of purchasing activities of an organization in order to successfully search, select suppliers, communicate with various parties, reward contracts through to the time of delivery specified goods and services to an organization (Muhia and Afande, 2015). The concept of e-procurement enables value creation, time and cost efficiency, quality delivery of goods and services through the integration of various parties within procurement processes (Edmund & Nyang'au, 2017).

2.2.2 E-Procurement Implementation

Electronic procurement (e-procurement) implementation is the means of adopting or relying upon the usage of integrated internet-based technologies to undertake procurement activities involving sourcing and other post-purchase review (Karekezi et al., 2020). This also involves automation, integration and management of procurement system of an organization by using electronic tools such as internets and web-based applications (Ongola, 2017). Implementation of e-procurement results into higher return, better visibility and greater efficiency and a more cost savings to organizations (Mambo, 2015). Organizations that implement e-procurement in their operations

benefit from cost, time, resources and money (Mambo, 2015). Implementing e-procurement helps to build the potential of an organizations to enhance its payment systems and in expanding access to financial services (Edmund & Nyang'au, 2017).

In modern organizations, e-procurement implementation has changed the way operations are carried out and other procurement activities which is relevant to achieve procurement objectives (Nyang'au, (2017). According to Kademaunga and Phiri (2019), e-procurement has improved business operations of organizations by means of efficient resource acquisition and services. The implementation of e-procurement by modern organizations results into efficient purchases of materials and other services that are relevant towards the success of organizations (Kademaunga and Phiri, 2019).

Implementation of e-procurement enhances organizational effectiveness and efficiency by means of transparency, fairness and cost reduction and it result into successful works, services and quality product and services. E-procurement implementation increases the use of Business to Government and Business to Business in organizations (Prabir and Sahu, 2016). Electronic procurement implementation results into effectiveness, flexibility and efficiency within procurement practices (Kademaunga and Phiri, 2019). This is relevant especially as procurement of goods and services form the greater operational activities of organizations. Implementing e-procurement enables organizations to reap maximum procurement benefits (Kademaunga and Phiri, 2019).

According to Suleiman (2013), e-procurement implementation refers to an organization's ability to digitize its procurement system to enable efficient purchases of goods and services and delivery of goods. This system enables procurement organizations to build efficient systems of communication with parties to procurement activities before and after award of procurement

contract to selected suppliers. This has changed the manner in which procurement organizations conduct their procurement activities as this has enabled such organizations to be more effective and efficient in undertaking their procurement activities thereby attaining value for money supply of goods and services (Au N and Low R, 2014).

2.2.3 Objectives of E-procurement Implementation

The objectives of implementing e-procurement includes increase in accessibility, economy development, flexibility, effectiveness, transparency, efficiency and economy (Kademaunga and Phiri, 2019). According to Mohammed (2015), e-procurement implementation is a digitalized system adopted to procure goods and services through information and internet works, enhance supply chain systems, ensure effective and efficient payment systems and using electronic tools to integrate procurement processes.

E-procurement implementation enables organizations to benefit from efficient time and cost delivery of goods and services which also helps in preventing project overpricing and for an organization to modify its cost of services, works and goods to align with prevailing market cost (ADB, 2013). Implementation of e-procurement in organizations aims at employing the use of internet-based electronics in undertaking procurement functions. This aims at enhancing the efficiency and effectiveness of organizations of which has gained modern organizations competitive advantages. Efficiency as an objective of implementing e-procurement enables transaction and operating cost reduction as may be related to an organization's processes of transaction and this serves as a means to save cost involved in public contracts (Kwadwo and Evelyn, 2017). Effectiveness as an objective of e-procurement is about how data can automatically be stored from electronic businesses and the means to generate result within a procurement process

(Kwadwo and Evelyn, 2017). This gives better opportunities to drive and organization's supply systems as well as quality data management as may benefit an organization (ADB, 2013). Organizations that implement e-procurement therefore benefit from efficiency and effectiveness which is realized through quality of resources, time and cost of delivery. This also builds effective communication among the parties to procurement activities within organizations and gain organizations the advantage of sustainable operation and performance.

Implementation of e-procurement has eliminated some form of coercion and has resulted into an improved transparency and accountability of public officers by checking every procurement related operation (Muhia and Afande, 2015). E-procurement adoption in organizations aims at allowing better procurement supervision and supplier management. It helps to achieve the objectives of procurement through transparency, accountability, openness and with the e-GP to mitigate corrupt procurement practices especially in public procurement (Muhia and Afande, 2015). E-procurement implementation is used in catalyzing the high value principles of e-catalogue and to implement e-commerce and in ensuring inclusive and equitable e-payment, e-bidding and tender announcement (Muhia and Afande, 2015).

2.2.4 E-procurement Implementation in Ghana

Procurement forms the greater operational activities in Ghana and it forms 60-70% of the expenditure of the budget system in Ghana. The nation Ghana has for the past years strived to achieve effectiveness and efficiency in its procurement system to replace the manual system which is criticized as being associated with corrupt practices. The Central and local government system of Ghana has seen the operations within the central government in which Ministries, Departments and Agencies render public services as may maximize the satisfaction of Ghanaians. The local

government as well covers the operations of Metropolitans, Municipal and District assemblies whose activities require purchases of goods and services. The public sector in Ghana started with the measures in enhancing the usage of technology in government from the year 2010 to deal with the public sector organizations through the e-Ghana project (PPA Procurement on E-Bulletin, 2010). The objective of e-procurement in Ghana is to enable efficient procurement practices by ensuring optimum efficiency, transparency, effectiveness, security of processes, accountability, non-discrimination and open competition.

Electronic procurement in Ghana requires that the Procurement Act, (663) and the amendment Act is altered to enable incorporation of e-procurement practices and such has effect on legislation infrastructure and landscape of procuring goods and services in Ghana. This also requires that the Act (663) is amended to support the public sector procurement bodies to undertake e-procurement thereby awarding contracts to suppliers after successful biding processes (Bondzi, 2010).

Am empirical assessment by Kwadwo and Evelyn (2017) shows that, e-procurement relates to the use of electronic medium by government in procuring goods and other services in a way as it may enable value for money achievement in the public sector. This medium makes it possible for goods and services to be procured by relying on information and communication mediums and to equally sell products through the same mediums. Adoption of e-procurement is to enable government to change the traditional procurement processes which is associated with inefficiency and corrupt practices.

The past and present government of Ghana has made effort to be successful in its procurement practices and with several attempts which led to e-procurement systems and serve as evidence to the commitment of implementation. The establishment of the e-Ghana project is to enable the

establishment of internet infrastructure to government offices all throughout the country of which will enable easy accessibility and procurement activities. According to the PPA Procurement E-Bulletin (2010), the nation Ghana has benefited from the two million US Dollars which was voted by the 21 World Bank which was to enable the country to establish e-procurement under its e-Ghana project.

KNUST

2.2.5 Importance of E-procurement Implementation at the Public Sector

The public sector of the nation Ghana has suffered from inefficiency and corrupt procurement practices which was associated with the traditional procurement system. The nation Ghana before the enactment of the Public Procurement Act of Ghana, 2003 (Act 663) has recorded some forms of inefficiency in its procurement practices. The nation has recorded excessive budget deficits, corrupt practices and unsustainable debt and huge arrears from its services and procurement of goods. There was an approximate annual value of US$600 million allocated to purchase of goods and services which represents almost 10% of the country's GDP (Bondzi, 2010).

The procurement Act among other things seek to institute transparent, accountable, efficient and value for money procurement practices in the nation. To enable the fulfilment of the objectives of the Act, there was an establishment of basic pillars of procurement in the nation which include clear and standardized procurement procedures, transparent legal and institutional framework, comprehensiveness, anti-corruption measures as well as proficiency of procurement practitioners. The enactment of the procurement Act is to also ensure transparency, efficiency, accountability and to facilitate ease of procurement administration (Bondzi, 2010).

According to PPA E-Bulletin (2010), e-procurement is important as it increases transparency in procurement practices and enable easy accessibility and award of contract to qualify and reliable

suppliers. The e-procurement is to help in reducing resources involved in undertaking procurement activities by introducing easier and flexible means of payment, reduction in cost and time and increasing transparency and accountability within the procurement. The adoption of e-procurement practices enables public institutions to procurement goods and services and achieve value for money procurement practices (PPA E-Bulletin, 2010).

Generally, the Procurement Act seeks to institute efficiency and value for money delivery of goods and services in the nation especially at the public sector through effective services, works or utilities. Despite this provision, there has been a huge expenditure in the procurement of goods and services which is reflected in the yearly national budget of the nation. The adoption of e-procurement enables transparent procurement activities thereby allowing procurement officials to remedy circumstances and follow the status of orders as and when such occurs (Bakos, 2009).

2.3 Challenges of E-procurement Implementation

Inadequate security and infrastructure of procurement transactions, inadequate legal systems, lack of employee's competency were found among other challenges of adopting e-procurement within the public sector of Ghana (Abagna and Akay, 2015). Study conducted by Ochieng E.O (2016) found the adoption of e-tendering, e-invoicing and e-ordering and award as enhancing procurement performance despite challenges that are associated with its implementation. According to Mwangi (2016), limited quality of training, inadequate top-level assistance and inability of staff adopting ICT changes are among the challenges of e-procurement adoption.

According to Muhia and Afande (2015), executive involvement, cost implementation and staff competency are among the major factors affecting e-procurement implementation just as it was found by Ongola (2017) in similar study on the subject.

The implementation challenges also include procurement proficiency by staff, political interference and legal frameworks and financial resource availability (Price Water House Coopers, 2007).

KNUST

2.4 Theoretical Review

Theoretical review contains the review of theories that relate to the area of study and how such theories are relevant to the study. The institutional theory, principal-agent theory and the E-technology perspective theory are used in this study.

2.4.1 Transaction Cost Theory

The transaction cost theory supports the need for efficient transaction system that support the operations of organizations (Dedrick et al., 2008). According to the theory, transactions must be undertaken with ultimate transparency and with the objective to benefit organizations rather than resulting into cost of an organization (Dedrick et al., (2008).

The pillar of this theory relates to how things should be done in an efficient and effective manner thereby deriving its values through compliance and implementation. The shared understanding that underpins this pillar is common beliefs and shared understanding. The theory is relevant because of ICT as this will help to reduce cost of procurement and also ensure efficient and effective procurement processes. An effort of an organization to undertake transaction with the application of electronic devices and mediums is a prerequisite to attaining ultimate efficiency, accountability and value for money procurement activities (Muhia and Afande, 2015).

2.4.2 Resource based theory

The resource-based theory relates the success of an organization to its ability to efficiently utilize the available resources to the benefit of such organization. The theory supports the need for efficient use and management of organizational resources as such result into greater organizational benefits (Bales & Fearon, 2006). The theory also considers human resource as enabling efficient usage of other resources available for use by organizations. The resources available to organization including raw material and other machinery must be put into efficient usage to support both short and long-run organizational operations and to benefit stakeholders of organizations thereby attaining maximum efficiency, effectiveness, flexibility and sustainable performance (Pressutti, 2003).

This theory is relevant as it guides on the application of resources to procure value for money goods and services by organizations. Resource based theory considers management and employees as valuable resource whose efficiency can be put into best use to transform other resource towards the performance of organizations Ayuso & Argandona, 2007). The use of ICT will make this possible in a more efficient and transparent manner.

2.5 Empirical Review

Staff competence contribute towards efficient e-procurement implementation within organizations. The application of internet and other IT resources require training and re-training of staff as that will enable them to acquire requisite knowledge and expertise needed for effective implementation of e-procurement in order to reap the needed objectives.

Staff competence result into better interpersonal relationship, self-management and also brings intellectual which generally improve procurement and supply chain activities of procurement organizations (Spense and Spenser, 2008).

According to Addai (2017), there is the need for proper education regarding the application of e-procurement practices and to get committed and dedicated officials who will be willing to adhere to the code of conducts relating to procurement as well as other scholarly articles and training section to better position officials in the position of admitting the need for e-procurement and following its application is lacking especially within public organizations and this make it impossible to attain the efficiency and effectiveness as required from officials in charge of procurement.

Ghartey (2014) finds e-procurement adoption as important to the operations of Municipal Assemblies in Ghana. The descriptive study reveals that investment into e-procurement is minimal among the many Municipal Assemblies that operate in Ghana. The study however, consider investment into internet tools and implementation of e-procurement as relevant towards the selected organizations.

Barsemoi et al. (2014) reveals the need for sensitization of procurement regulations which requires better staff training to gain the expertise needed to comply with regulatory in undertaking e-procurement to as to attain value for money supply of goods and services in organizations.

Witting (2003) conducts a descriptive study to find the importance of technology in procurement practices in organizations. The study reveals the need for adoption of e-procurement as these results into time efficiency in resource acquisition. According to the findings, e-procurement helps organizations to quickly connect with suppliers and parties to procurement practices by relying on

technological and communication devices. The study agrees with similar study which finds e-procurement as important as it enables organizations to rationalize their purchase orders in less repetition and enhanced precision.

2.6 Conceptual Framework

The study will be conceptualised to capture the dependent and independent variables. The main dependent variable in the study is Value for Money. The independent variables include electronic procurement and operational efficiency. These variables require the adoption of e-procurement among organisations.

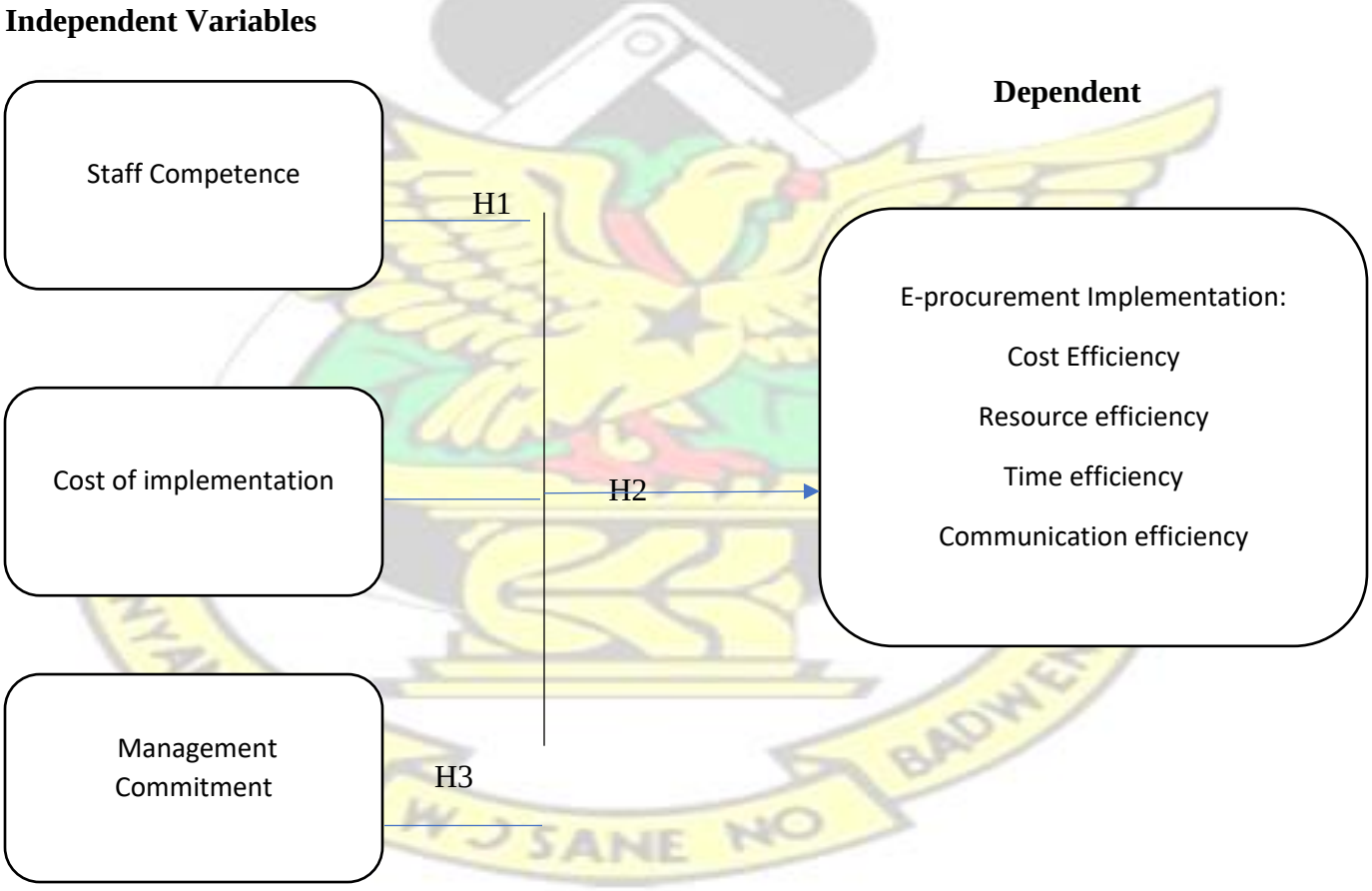

Figure 2.1: Researchers Model

Hypotheses Development

2.6.1 Effect of staff competence on implementation of e-procurement

According to Croom and Brandon-Jones, (2005), an organization that is prepared to gain competitive advantage is an organization which is prepared to carry out its operations efficiently and effectively by relying upon competent and innovative employees.

Altayyar and Beaumont-Kerridge (2016) find e-procurement as having a positive relationship with organization's performance. Among the factors considered in the study is the need for staff competence as this ensures better e-procurement administration within organizations.

Mambo (2015) conducts a study with the objective of knowing the factors that influence e-procurement implementation within organizations. The study finds human resource as one of the major factors that contributes towards e-procurement implementation in organizations. According to the study, staff training enables skills acquisition which is needed to undertake e-procurement practices within organizations. So, the study hypothesized that:

H1 **Staff competence is more enhanced through the implementation of e-procurement**

2.6.2 Effect of e-procurement on value of money for procurement

Implementation of e-procurement in an organization result into an efficient and value for money supply of goods and services through management commitment, resource efficiency, time efficiency Communication efficiency (Altayyar and Beaumont-Kerridge, 2016). E-procurement practices require investment into ICT and other resources which may be needed to attain efficiency and effectiveness in procurement practices and this generally benefit organizations rather than the traditional procurement in the public sector (Alpar & Olbrich, 2005).

Bondzi (2010) in a study on e-procurement concludes on the need for efficient online procurement as such provides an avenue for service providers to effectively participate in a continual practice. This according to the study is important as it speeds up the time for delivery and other operating practices that are involved in the procurement activities of organizations.

Barnett et al. (2010) in their study on e-procurement and value for money find the need for accountability, transparency and fairness in procurement practices. This enables procurement organizations to attain value for money in their procurement of goods and services and to obtain maximum benefits from their available resources. Batho Pele Handbook (2007) finds the achievement of value for money as important within the procurement practices of organizations. According to the study, this is achieved through efficient and economical government procurement practices. Therefore, the study postulates that;

H2 **Implementation of e-procurement makes it more effective to ensure value for money procurement**

2.6.3 Impact of management transparency on the use of e-procurement

According to Shaw, (2014), an effective procurement practice by management in organizations will lead to reduction in cost which will translate into a reduction in the prices of services and products whiles maintaining the quality of services. Bondzi (2010) find the need for online procurement by management as such provides an avenue for transparency and increased participation of service providers.

Chimwani et al. (2014) conduct a study on staff competence in undertaking procurement activities on value for money supplies in an organization. The conclusion of the study revealed that,

efficiency in operations and the activities of qualified staff in organizations contribute to value for money attainment within procurement organizations. Hence the study proposes that:

H3 **Management is more transparent and effective when using e-procurement**

KNUST

CHAPTER THREE

RESEARCH METHODOLOGY

KNUST

3.1. Introduction

This chapter contains the methods used to undertake the study. The chapter contains the research design, population of the study, data sources, data analysis, reliability and validity and ethical consideration. The main objective of conducting research is conduct methodical and systematic investigation in order to increase knowledge.

3.2 Research design

Research design covers sources of data, procedures for collecting data and the instruments that a researcher used to undertake particular research. The descriptive study is used to achieve the objectives of the study. The cross-sectional data enables the research to derive data from the population at specific point in time.

3.3 Research method

Research method involves principles, assumptions and procedures in a particular research approach (Kothari, 2009). Research method is the technique used to conduct research which includes data collection (Levin et al., 2003). The descriptive study is used in obtaining an in-depth analysis on implementation of e-procurement. The survey method is used and the quantitative analysis to achieve the objectives.

3.4 Study population

Population makes up of individual respondents that a researcher includes in a particular study (Onwuegbuzie & Leech, 2005). The researcher centers the study's population on selected staff from the MMDs who are in the position to provide information on e-procurement.

The population of the study includes MMDAs within Central Region. The staff of the selected organizations form the population of this study which is estimated to be in the thousands.

3.5 Sample size and sampling technique

According to Mugenda and Mugenda (2003), a sample is the entire group that allows for a large population to be generalized. The researcher selected two hundred (200) sample size. This comprises of Senior Level (100), Middle Level (50) and also (50) from the Junior Level within the MMDA's in the Central Region.

ORGANIZATIONS	SAMPLE SIZE DISTRIBUTION	Proportion of Sample of Distributions
Senior Level	100	50%
Middle Level	50	25%
Junior Level	50	25%
TOTAL	**200**	**100%**

Devaus (2002) formular for computing sample size is applied to determine the study's sample size. The formular is quoted as follows

$$n = \frac{N}{I+N\,(a)^2}$$

From the above,

n = the sample size of the study.

N = the population of the study.

a = the significant level.

3.6 Data Collection Methods

Secondary and primary data sources are recognized in empirical study (Kothari, 2004). The study uses primary data which makes use of new data derived through questionnaires using the 5-point Likert scale (Mesly, 2015). The statement of the questionnaires ranges from strongly disagree (1) to strongly agree (7).

3.6.1 Data processing and analysis

Deriwachter and Valsiner indicate the need for data to be reduced to enable suitable analysis after collecting it (Diriwachter and Valsiner, 2006). The research cleaned, coded and inputted data into computer after retrieving it from questionnaires. The use of SPSS software enables the analysis of the result. Descriptive and inferential statistics were used.

3.7 Validity and reliability tests

Research must be accurate and must ensure steadiness to guarantee its reliability and validity (Lancaster et al., 2012). Oliver (2010) considers validity to be a compulsory requirement for all types of studies.

Reliability is associated with subjectivity (Wilson, 2010). According to Wilson (2010), once a researcher adopts a subjective approach towards the study, then the level of reliability of the work is going to be compromised.

3.8 Ethical consideration

In research divulging information is unethical. As part of measures to ensure ethics, the respondents were assured of confidentiality of the information and that that the exercise was for academic purpose and they were also given the option to opt out if they were not interested. The responses were gathered without disclosing the identities of the persons, no statements are attributed to a particular name. The respondents were also above 18 years.

3.9 Profile of MMDAs in Central Region

The Cape Coast Metropolitan is one of the 261 Metropolitan, Municipal and District Assemblies (MMDAs) in Ghana and forms part of the 22 MMDAs in Central Region. The Metropolis covers an area of 122 square kilometers and is the smallest metropolis in the country. It is located on longitude 1° 15'W and latitude 5°06'N. It occupies an Area of approximately 124 square kilometers. With its administrative capital as Cape Coast**,** The Cape Coast Metropolitan Area is one of the oldest districts in Ghana. It was raised to the status of municipality in 1987 by LI 1373 and upgrade to metropolitan status in 2007 by LI 1927. Metropolitan is bounded on the south by the Gulf of Guinea, west by Komenda Edina Eguafo Abrem Municipal, east by the Abura Asebu Kwamankese District and north by the Twifo Hemang Lower Denkyira District. The population of the Metropolis according to 2021 population and housing census stands at 189,925 with 92,790 male and 97,135 female.

Local governments in Ghana play very important roles in administration and development at the local areas. The 1992 Constitution of the Republic of Ghana provides for "Decentralisation and Local Government" that creates a framework for citizens' participation in decision-making and local governance. The Decentralization Policy of Ghana devolves power, functions and responsibility as well as human and financial resources from the Central Government to the district level. It also establishes major areas of relationship between the Local and Central Government. The Local Government in Ghana has a long history, which predates colonialism. During the colonial era, the native authorities were used to facilitate communication and decision-making in their areas of jurisdiction. After independence, successive governments implemented various forms of Decentralization and Local Government policies.

CHAPTER FOUR

DATA PRESENTATION, ANALYSIS AND DISCUSSION

4.1 Introduction

This chapter presents data analysis and interpretation. The objective of the study is to assess the factors affecting implementation of e-procurement in public sector of Ghana using MMDAs in central region. Data was drawn from 200 officials of MMDAs in the central region of Ghana.

4.2 Demographic Characteristics of Respondents

The socio-demographic data on respondents were collected to enable the researcher gain an understanding of the profile of the respondents, as almost all the variables of the respondents such as age and educational attainment are known to influence the choices that people make regarding issues that are relevant to their lives.

4.2.1 Respondents Distribution

The demographic characteristics of respondents are reported in Table 4.1 below.

Table 4.1 Demographic Characteristics of Respondents.

Variable	Frequency	Percentage
Gender		
Male	140	70%

Female	60	30%
Age Group		
20- 30 years	32	16%
31- 40 years	84	42%
41- 50 years	48	24%
51 years above	36	18%
Level of Education		
High National Diploma	22	11%
Degree	88	44%
Master's Degree	50	25%
Professional Qual.	40	20%
Position Held		
Management staff	22	11%
Senior staff	74	37%
Junior staff	104	52%

KNUST

Department		
Procurement	66	33%
Stores	14	7%
Records	44	22%
Finance	40	20%
Audit	36	18%
Years of Experience		
Less than 1 year	24	12%
1-3 years	36	18%
4-6 years	80	40%
7-9 years	42	21%
Above 10 years	18	9%

Source: Field Survey, 2023

According to the result in the table 4.1 above, 70% (140) of those that have responded were males. The remaining 30% (60) of those that have responded were females. The results show that the respondents from the MMDAs were more of men as compared with the women which possibly could mean that there was male dominance that oversee procurement within the assembly.

Based upon the table 4.1 above, 16% (32) of those that have responded were within the ages of 20-30 years. There were also 40% (80) of the respondents whose ages fell within the 31 – 40. Out of the total respondents, 24 % (48) of them were within 41-50 years' group. 18% which represents 36 of the respondents were also between 51-60 years. According to the result as presented above, those that have responded were largely in their middle age. This indicates that when the respondents are given the required training on e-procurement and resources, the public sector could be the panacea to unemployment with efficient and value for money procurement practices.

In terms of education, the table 4.1 above shows that, 11% (22) of those that have responded had HND education. There were also 44% (88) of the respondents who had their University degree. The table also shows that 25% (50) had master's degree whereas 20% (40) remaining had professional qualification. This implies that the entire respondents had some level of education which is an indication that they fully understand and appreciate issues relating to procurement.

According to the table 4.1 above, 11% (22) of the respondents were management staff. 74 (37%) were senior staff, while 104% (52) were junior staff. This also indicates that those that have responded have had longer tenure of office and occupied responsible positions to appreciate procurement issues.

From table 4.1 above, 33% (66) of those that have responded were in the procurement department. There were also 7% (14) who work at the stores department. 22% (44) of them also works at the records department. There were also 20% (40) in the finance department. 18% (36) of those remaining work at the audit department.

As shown in table 4.1 above, 12% (24) of those that have responded had less than 1-year experience and 18% (36) of them also had between 1 to 3 years' experience. Those that had

between 7–9-year groups were 40% (80). There were 9%, which represents 18 respondents who had over 10 years' experience.

4.3. Reliability and Validity Test

Reliability and validity information is contained in this section in determining if the data used could be trusted in providing accurate result when it is performed again but in a different scenario. Validity and reliability tests were both conducted to assess the effectiveness of a test, method or construct and to conclude on whether it measures what it was designed to measure (Taherdoost, 2016). Cronbach alpha is the method used to conduct the test on validity and reliability. The construct that has above 0.7 is considered to be valid and reliable under the Cronbach alpha test and those below 0.7 are considered as being unreliable. This requires that 1 or 2 items that measure construct must be taken out of the construct in order to make it reliable and valid. The result is presented as shown below:

Table 2: Reliability Analysis

Constructs	No. of Items	Cronbach's Alpha
Cost of implementation affects implementation of e-procurement.	4	0.951
Management commitment affects implementation of e-procurement.	5	0.952
Employee's competence affects implementation of e-procurement.	4	0.93
Effectiveness and improvement ensure value for money	3	0.89
Quality and efficiency ensure value for money	4	0.96
Staff competence and management support	4	0.915

Source: Field Survey, 2023

Cost of implementation affects implementation of e-procurement had a Cronbach alpha score of 0.951, commitment of management affects implementation of e-procurement had a Cronbach alpha score of 0.952, and employee's competence affects implementation of e-procurement had a Cronbach alpha score of 0.93. Effectiveness and improvement ensure value for money had Cronbach alpha of 0.89. Quality and efficiency and management support have Cronbach alpha

scores of 0.96 and 0.915 respectively. This is to mean that all the sub-construct as considered as measuring e-procurement had passed the Cronbach alpha test and the data is valid and reliable.

4.4. Factors Affecting the Implementation of E-procurement

4.4.1. Descriptive Statistics for Cost of Implementation.

Cost of implementation affects the implementation of e-procurement.

Responses on Cost of implementation affects the implementation of e-procurement are presented in table 3.

Table 3: Descriptive Statistics results for Cost of implementation.

Variable	N	Min	Max	Mean	Std. Deviation
Financial to acquire resources	200	1.00	7.00	6.11	1.470
Cost of hiring experts to undertake e-proc.	200	1.00	7.00	6.32	1.091
Cost of maintaining capacity of existing IT.	200	1.00	7.00	6.27	1.262
Availing tender documents	200	1.00	7.00	6.34	1.085

Source: Field Survey, 2023

According to the result in the table 4.3 above, financial to acquire resources time ranged from 1 which represents strongly disagree to 7 which also represents strongly agree. The result shows a mean value of 6.11 with a standard deviation (SD) of 1.470. This implies that those that have responded have generally agreed that financial to acquire resources affect the implementation of e-procurement. The resource-based theory posits the need for organizations to acquire the

resources necessary to enhance operations and the need for such resources to be effectively handled (Bales & Fearon, 2006).

Based upon the result in table 4.3 above, cost of hiring experts to undertake e-procurement ranged from 1 which represents strongly disagree through to 7 which also represents strongly agree. The 6.32 mean value and the standard deviation (SD) of 1.091 together indicate that those the respondents have agreed that cost of hiring experts to undertake e-procurement in their organizations affect e-procurement implementation. Altayyar and Beaumont-Kerridge (2016) consider staff competence as a major factor that contributes towards e-procurement implementation which agrees with this finding.

According to the table 4.3 above, cost of maintaining capacity of existing IT ranged from 1 to 7. These represent strongly disagree and strongly agree respectively. The 6.27 mean value and SD of 1.262 imply that majority of the respondents have agreed that cost of maintaining capacity of existing IT affects the implementation of e-procurement. This also borders on employee's competence just as it was found by Altayyar and Beaumont-Kerridge (2016).

Based upon the result, availing tender documents ranged from 1 which represents strongly disagree all through to 7 which represents strongly agree. The mean value of 6.34 and the SD of 1.085 shows that those that have responded generally agreed that availing tender documents affect e-procurement implementation.

4.4.2. Descriptive Statistics for management commitment.

Management commitment affect the implementation of e-procurement.

The responses on management commitment affecting the implementation of e-procurement are presented in table 4 below.

Table 4.4 Responses on Management Commitment as affecting E-procurement Implementation.

Variable	N	Min	Max	Mean	Std. Deviation
Management strategy on e-procurement	200	1.00	7.00	6.458	0.459
Policies and procedures of management	200	1.00	7.00	6.367	0.049
Management assurance for digital security	200	1.00	7.00	6.279	0.662
Management awareness on global competition.	200	1.00	7.00	6.318	1.089
Structure put in place by management	200	1.00	7.00	6.174	1.288

Source: Field Survey, 2023

Based upon the result in the table 4.4 above, management strategy on e-procurement ranged from 1 which represent strongly disagree to 7 which also represents strongly agree. The 6.458 mean value and the SD of 0.459 means that the respondent have generally agreed that management strategy affect the implementation of e-procurement in organizations. Addai (2017) concluded on the need for proper education regarding the application of e-procurement practices. These

require that management of organizations must implement policies that will enable employee's education on e-procurement implementation.

Based upon the result in the table 4.4 above, policies and procedures of management as affecting the implementation of e-procurement ranged from 1 which represents strongly disagree to 7 which also represents strongly agree. The 6.367 mean value with 0.049 SD value indicate that those that have responded agreed that policies and procedures of management as affect the implementation of e-procurement.

From table 4.4 above, management assurance for digital security affects the implementation of e-procurement has been ranged from 1 (strongly disagree) to 7 (strongly agree). The 6.27 mean value with 1.262 SD value indicate that those that have responded agreed that management assurance for digital security affect the implementation of e-procurement.

From table 4.4 above, management awareness on global competition ranged from 1 which represents strongly disagree to 7 which also represents strongly agree. The 6.318 mean value and the SD of 1.089 show that those that have responded generally agreed that management awareness on global competition affect e-procurement implementation.

According to the result in table 4.4 above, structure put in place by management as affecting the implementation of e-procurement has been ranged from 1 representing strongly disagree to 7 which also representing strongly agree. The 6.17 mean value and the SD of 1.288 show that those that have responded have agreed that structure put in place by management affect the implementation of e-procurement. The pillar of transaction cost theory indicates the need for things to be done in an efficient and effective manner thereby deriving values as a result of compliance and implementation.

4.4.3. Descriptive statistics on employee's competence.

Employee's competence affects the implementation of e-procurement.

The responses on employee's competence as affecting the implementation of e-procurement are presented in table 4.5 below.

Table 4.5: Responses on employees' competence

Variable	N	Min	Max	Mean	Std. Deviation
Knowledge of staff on e-procurement	200	1.00	7.00	6.11	1.470
Nature of staff adaptation to change	200	1.00	7.00	6.32	1.091
Technical expertness of staff	200	1.00	7.00	6.27	1.262
Employees readiness level	200	1.00	7.00	6.34	1.085

Source: Field Survey, 2023

Based upon the result in the table 4.5 above, knowledge of staff on e-procurement as affecting the implementation of e-procurement ranged from 1 through to 7 accordingly. The 6.11 mean value and the SD of 1.470 show that those that have responded generally agreed that knowledge of staff on e-procurement have effect on e-procurement implementation. The conclusions drawn by Barsemoi et al. (2014) reveal that there is the need for personnel to have requisite knowledge on e-procurement which is in tandem with the current finding.

From table 4.4 above, nature of staff adaptation to change affects the implementation of e-procurement has also been ranged from 1 through to 7 accordingly. The 6.32 mean value and the

SD of 1.091 show that the respondents have agreed that the respondents have generally agreed that nature of staff adaptation to change affect the implementation of e-procurement.

According to table 4.5 above, technical expertness of staff as affecting the implementation of e-procurement is arranged from 1 through to 7. The 6.27 mean value and the SD of 1.262 show that the respondents have agreed that technical expertness of staff has effect on the implementation of e-procurement.

From table 4.5 above, employee's readiness level affecting the implementation of e-procurement ranged from 1 to 7 which also represents strongly agree. The 6.34 mean value and the SD of 1.085 show that the respondents have generally agreed that employee's readiness level have effect on the implementation of e-procurement.

4.5 Effects of E-procurement Implementation

4.5. Descriptive Statistics on effectiveness and improvement.

Table 4.6: Responses on the effectiveness and improvement

Variable	N	Min	Max	Mean	Std. Deviation
Competitive process and negotiation	200	1.00	7.00	6.455	1.180
Service delivery in procurement	200	1.00	7.00	6.540	0.670
Simple and timely	200	1.00	7.00	6.285	1.186

Source: Field Survey, 2023

Based upon the result in the table 4.6 above, competitive process and negotiation affecting the implementation of e-procurement has been ranged from 1 representing strongly disagree to 7 which also representing strongly agree. The 6.38 mean value and the SD of 1.052 show that the respondents have agreed that generally that competitive process and negotiation affecting the implementation of e-procurement.

According to the result in the table 4.6 above, service delivery in procurement as affecting the implementation of e-procurement has been arranged from 1 to 7 accordingly. The 6.38 mean value and the SD of 1.052 show that the respondents have agreed mainly that service delivery in procurement has an effect on e-procurement implementation. Bondzi (2010) concluded that, the use of online procurement provides the avenue for an increased participation of service providers.

Based upon the result in the table 4.6 above, simple and timely affecting the implementation of e-procurement has been ranged from 1 to 7 respectively. The 6.38 mean value and the SD of 1.052 show that the respondents have agreed generally that simple and timely affecting the implementation of e-procurement.

4.5.1. Descriptive Statistics on Quality and Efficiency.

The responses on quality and efficiency as affecting the implementation of e-procurement are shown in table 4.7 below.

Table 4.7: Responses on quality and efficiency for e-procurement implementation

Variable	N	Min	Max	Mean	Std. Deviation
Goods and services with same quality	200	1.00	7.00	6.13	1.468

Adequate functional quality level	200	1.00	7.00	6.42	0.976
Efficiency in both pre and post procurement	200	1.00	7.00	6.32	1.238
Goods and services to meet specification	200	1.00	7.00	6.38	1.052

KNUST

Source: Field Survey, 2023

From table 4.7 above, goods and services with same quality as affecting the implementation of e-procurement ranged from 1 which is representing strongly disagree to 7 which is also representing strongly agree. The 6.13 mean value and the SD of 1.468 implies that the respondents have generally agreed that goods and services with same quality affect the implementation of e-procurement in the selected organizations.

Based upon the result in the table 4.7 above, adequate functional quality level as affecting the implementation of e-procurement has been ranged from 1 to 7 accordingly. The mean value of 6.42 with its SD of 0.976 implies that those that have responded agreed generally that adequate functional quality level affect e-procurement implementation in the MMDAs. According to Shaw, (2014), an effective procurement practice by management in organizations will lead to reduction in cost.

From table 4.7 above, efficiency in both pre and post procurement as affecting the implementation of e-procurement has been ranged from 1 to 7 accordingly. The mean value of 6.32 with its SD of 1.2387 implies that those that have responded agreed generally that efficiency in both pre and post procurement have effect on the implementation of e-procurement in the selected organizations within the MMDAs.

According to the result in the table 4.5 above, goods and services to meet specification as affecting the implementation of e-procurement ranged from 1 to 7. The mean value of 6.38 with its SD of 1.052 implies that those that have responded agreed generally that goods and services to meet specification affect the implementation of e-procurement.

KNUST

4.6 Effect of staff competency and management support in the implementation of e-procurement

4.6.1. Descriptive Statistics on staff competency and management support

Table 4.8: Responses on staff competency and management support as affecting e-procurement implementation are presented in Table 4.8.

Table 8: Responses on staff competency and management support affect e-procurement implementation.

Variable	N	Min	Max	Mean	Std. Deviation
Management support in computer competencies.	200	1.00	7.00	6.115	1.172
Training of staff on e-procurement tools	200	1.00	7.00	6.603	0.620
Employing qualified staff	200	1.00	7.00	6.377	1.143
Management ability to react towards IT system	200	1.00	7.00	6.672	1.201

Source: Field Survey, 2023

From table 4.8 above, management support in computer competencies ranged from 1 which represents strongly disagree to 7 which also represents strongly agree. The mean value of 6.115

with its SD of 1.172 implies that those that have responded agreed generally that management support in computer competencies have effect on e-procurement implementation.

According to the result in the table above, training of staff on e-procurement tools ranged from 1 which represents strongly disagree to 7 which also represents strongly agree. The mean value of 6.603 with its SD of 0.620 implies that those that have responded agreed generally that training of staff on e-procurement tools is considered as a prerequisite in the implementation of e-procurement.

According to the result in the table 4.8 above, employing qualified staff ranged from 1 which represents strongly disagree to 7 which also represents strongly agree. The mean value of 6.377 with its SD of 1.143 implies that those that have responded agreed generally that employing qualified staff have effect on e-procurement implementation.

The result in the table shows that management ability to react towards IT system ranged from 1 which represents strongly disagree to 7 which also represents strongly agree. The mean value of 6.672 with its SD of 1.201 implies that those that have responded agreed generally that management ability to react towards IT system affect the implementation of e-procurement.**4.6.1**

4.6.1 Correlation Analysis

Correlation analysis was necessary for this study because it reveal meaningful relationships between different metrics or groups of metrics. Information about those connections can provide new insights and reveal interdependencies, even if the metrics come from different parts of the business. The Pearson product-moment correlation analysis was done to analyze the correlations between the variables and to assist establish whether there is multicollinearity among the variables employed in the study. The correlation data are shown in Table 9 below.

Table 9: Correlation of Construct

Variables	SC	CoF	MC	IoEP
Staff Competence	1			
Cost of Implementation	.675**	1		
Management Commitment	.758**	.680**	1	
Implementation of E-procurement	.785**	.6778**	.466**	1
**. Correlation is significant at the 0.01 level (2-tailed).				

4.7. Inferential Analysis

Inferential statistics make use of measurements from sample of subjects in an experiment to compare the treatment groups and generalize larger population

The objectives were analyzed to ascertain their applicability and findings were as follows:

4.7.1. Regression Analysis

Regression analysis estimates the difference between the variables both dependent and independent. This enables the relationship between the variables and its significance to be realized in a particular study.

Model Summary

Table 4.9 Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate

1	.933[a]	.870	.866	.33121

a. Predictors: (Constant), staff competence, cost of implementation, management commitment.

The R- is the multiple correlation coefficient which according to the result, is 0.933. This is considered relevant as it measures the quality of prediction of the variables in the study. This indicates a strong correlation between all the independent variables used in the study. R2 is the coefficient of determination which at 87.0% gives the proportion of the variance in the dependent variables taken together for only 87.0% of the total variance in efficiency, effectiveness and cost of use.

4.7.2. Variable Analysis

Table 4.10: ANOVA

ANOVA[a]

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	70.404	3	23.468	213.931	.000[b]
	Residual	10.531	96	.110		
	Total	80.935	99			

a. Dependent Variable: efficiency, effectiveness and cost of use

b. Independent: staff competence, cost of implementation, management commitment.

The Anova table is meant to test the good fit of the overall regression model. The F-ratio of 213.931 was found to be statistically significant at p> .00. The result has shown that the independent variables had significant influence on the dependent variables.

4.7.3. Regression Table

The table shows the regression of individual metrics of independent variables against that of the dependent variables. The p-value in the result was compared with the significance levels as indicated by (a) and this decides whether the variables were significant or not. If the p- value is less than the significance level the variable is considered significant.

Table 4.11: Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	.512	.334		1.533	.129
	e-tendering	1.139	.349	1.267	3.261	.002
	e-payment	-.803	.352	-.992	-2.278	.025
	e-informing	.585	.151	.661	3.876	.000

a. Dependent Variable: cost efficiency, resource efficiency, time and communication efficiency.

The unstandardized coefficient of B has given the values of 0.512, 1.139, -0.803 and 0.585 for constant, the variables. The values above have shown the levels of variation between both dependent and independent variables at a point when independent variables are held constant. The 0.512 which is the constant value is a representation of fixed value which remains unchanged despite the changes in other variables. The independent variables have recorded 0.002, 0.025 and 0.000 respectively.

The test result shows the level of significance of the independent variables. The test is to also show whether the unstandardized in the population are equal to zero. Statistical significance of the coefficient is established at the level where the $p < 0.05$. The coefficient becomes insignificant at a level where $p > 0.05$. The 1.139 shows an unstandardized coefficient at a 0.002 significant level. This shows that the two variables are statistically significant. The other variables show -0.803 and 0.585 unstandardized coefficients on significant variables of 0.002 and 0.000 respectively to indicate a positive relationship between the variables.

4.7.4 Hypothesis Testing

Table 5.0 – h=Hypothesis Testing

Hypothesis	Path	T-value	Coefficient (P-value)	Decision
H1	SC →IOE	6.360	0.644; p=0.000	Supported
H2	MC →IOE	4.900	0.517; p=0.000	Supported
H3	CoI → IOE	2.673	0.208; p=0.008	Supported

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1. Introduction

This chapter contains summary of the findings, conclusions and recommendations on the factors that affect the implementation of e-procurement in the public sector of Ghana: A case study of MMDA's in central region.

The main objective of the study is to assess the factors affecting implementation of e-procurement in public sector of Ghana using MMDAs in central region.

5.2. Summary of Findings

The qualitative data was used in the study of which the data was derived from two hundred respondents.

The following findings were revealed based upon the specific objectives.

5.2.1 The factors affecting the implementation of e-procurement

According to the study, the factors affecting the implementation of e-procurement include cost of implementation, management commitment and employee's competence. The majority of respondents have agreed with these factors. The study considered cost of implementation based upon financial requirements to acquire resources, cost of hiring experts to undertake e-procurement, cost of maintaining capacity of existing IT and available tender documents. The majority of respondents agreed with these cost components. Management commitment as affecting the implementation of e-procurement was considered based upon management strategy

on e-procurement, Policies and procedures of management, Management assurance for digital security among others. These according to the findings affect the implementation of e-procurement implementation. Employee's competence is found to affect the implementation of e-procurement. This was considered based upon Knowledge of employees on e-procurement, technical expertness of staff and level of readiness of employees. These factors were found to be relevant as they affect e-procurement by majority of the respondents.

5.2.2 To assess the effects of e-procurement implementation

The study identified effects of e-procurement implementation as enabling effectiveness and improvement in procurement processes as well as quality and efficiency. These were supported by the majority of respondents. According to the study, effectiveness and improvement in procurement processes was based upon competitive process and negotiation, service delivery in a simple and timely manner.

5.2.3 To establish the effect of staff competency and management support in the implementation of e-procurement.

Responses on staff competency and management support was based upon management support in computer competencies, training of staff on e-procurement tools, employing qualified staff and management ability to react towards IT system. The majority of those polled agreed with these findings. Staff competency and management support was found to affect the implementation of e-procurement within the selected organizations.

5.3. Conclusion

Based upon the findings, the study concludes that, factors that affect e-procurement implementation included cost of implementation, management commitment and employee's competence within the selected organizations. The study established significant relationship among the variables which implies that efficient control in cost of implementation, management commitment and employee's competence result into e-procurement implementation.

The study established that e-procurement implementation within the selected organisations result into effective and improvement in procurement processes as well as quality and efficiency to gain value for organization in terms of procurement of goods and services.

5.4. Recommendations

1. There should be provision of funds to acquire equipment

Based upon the findings and empirical literature, it was revealed that cost of implementation is a major factor that affects e-procurement implementation within procurement organizations. The study recommends the need for provisions of fund to enable the acquisition of equipment such as automated machines and computers as may be necessary to undertake electronic procurement.

2. Hiring of personnel who possess technical knowledge and Skills

Staff competency is one of the major variables considered in the study. The empirical review has established that staff competency affects the implementation of e-procurement just as it has been established in the current study. The study recommends the need for hiring personnel that possess

technical skills and knowledge as may be necessary to undertake e-procurement and re-training of staff within organizations.

3. Acquisition of e-procurement Technology

There should be acquisition of technology to promote e-tendering, e-invoicing and purchasing and those needed to carry out e-procurement activities within the organizations. These will enhance the e-procurement implementation processes within the organizations.

4. Management commitment to e-procurement

Management commitment is found in empirical review to affect the implementation of e-procurement within organizations. The study recommends the need for consistent managerial effort and commitment to successful e-procurement activities within to organization thereby engaging with staff and other resources necessary to successfully implement e-procurement.

5.5. Suggestion for Further Research

The current study has used smaller sample size to generate its result due to time and financial constraints. Bigger sample size is suggested to be used in future research. The researcher recommends that in future the study can adopt survey method across the sixteen regions of Ghana to ascertain whether there are regional differences in e-procurement.

References

Abagna James Azanlerigu & Akay,Emmanuel (2015). Prospects and Challenges of E-procurement. An MBA project submitted to the University of Nairobi.

Brandon-Jones A. & Kauppi K. (2018). Examining the antecedents of the Technology Acceptance Model within e-procurement. International Journal of Operations and Production Management.

Edmund & Nyang'au (2017). Factors Affecting the Adoption of E-Procurement Practices in Public Sector in Kenya: A Case of the Department of Refugee Affairs in Dadaab, Imperial Journal of Interdisciplinary Research (IJIR) Vol-3, Issue-6, ISSN: 2454-1362.

Gedion Alang'o Omwono, Sazir Nsubuga Mayanja Karekezi Rodrigue (2020). Factors Influencing E-Procurement on the Implementation of Public Institution in Rwanda: A Case of Kigali City (2014-2016).

Kademaunga, C.K. and Phiri, J. (2019). Factors Affecting Successful Implementation of Electronic Procurement.

Kaliannan M. Awang H. and Raman M. (2009). Government Purchasing: A Review of E-Procurement System in Malaysia, Journal of Knowledge Economy & Knowledge Management.

Kwadwo and Evelyn (2017). An Empirical assessment of factors that influencing the implementation of E-Procurement in Technical Universities in Ghana, MPRA Paper No. 81959.

Makali S. (2015). E-procurement and procurement performance in supermarkets in Nairobi.

Mambo P. (2015). Factors influencing implementation of e-procurement in the national Government. A case of the ministry of interior and co-ordination of national government. Strategic journal of Business and change management, 46(2).

MOF. (2017). Manual for Procurement of Goods. *Department of Expenditure, Government of India*.

Muhia D.W. and Afande F.O. (2015). Adoption of E-Procurement Strategy and Procurement Performance in State Corporation in Kenya: A case of Kenya Revenue Authority. Industrial Engendering Letters Journal, ISSN 2224-6090, V 5(6),

Musau G. (2015). Inventory Optimization: A Factor Affecting E-Procurement Performance of State Parastatals in Kenya. *Journal of Business and Management,*17(4).

Ongola N. Anne (2017). Factors affecting effective implementation of e-procurement in supermarkets' supply chain management in Nairobi and its environs Kenya. A dissertation submitted in partial fulfillment of the requirements for the award of master of business administration (procurement and supplies management) in the school of business at KCA University.

Prabir Panda1 and Sahu GP (2016). E-Procurement Implementation: Critical Analysis of Success Factors' Impact on Project Outcome.

Public Procurement Act. (2003). The public procurement (amendment) act, 2016. Accra, Ghana: Minister of the Environment.

Isaksson, R., & Lantz, B. (2015). The impact of strategic planning on firm performance: A comparison between Swedish and Chinese companies. Management and Organization Review, 11(1), 121-140.

Jirawuttinunt, P. (2015). Supply chain collaboration and operational performance: Evidence from Thailand. Asia-Pacific Journal of Business Administration, 7(2), 125-138.

Kenyon, G. N., & Meixell, M. J. (2016). An exploratory study of supply chain integration in small and medium-sized enterprises. International Journal of Logistics Management, 27(3), 787-813.

Kolawole, O. D., & Agha, N. A. (2015). An empirical analysis of the relationship between strategic planning and organizational performance: A study of Nigerian banks. Research Journal of Finance and Accounting, 6(10), 65-75.

Lavina, E., & Ross, J. (2003). Global supply chain management: A survey of US and European manufacturing. Production and Inventory Management Journal, 44(2), 54-65.

Letica, M. R. (2016). A case study: Integrating qualitative and quantitative research for country risk analysis. Journal of Financial Studies & Research, 2016, 1-12.

Lysons, K., & Farrington, B. (2006). Purchasing and supply chain management. Pearson Education Limited.

Mahoney, J. T. (2001). Resource-based approach to organizational analysis. Journal of Management, 27(6), 689-704.

Malhorta, N. K. (2013). Marketing research: An applied orientation. Pearson.

McIvor, R. (2008). What is the right outsourcing strategy for your process? Strategic Outsourcing: An International Journal, 1(1), 7-22.

Mella, P., & Pellicelli, A. C. (2012). Outsourcing decision-making process: a case study. International Journal of Information Technology and Management, 11(2), 107-122.

Musubika, L. K. (2010). The effect of supply chain management practices on the performance of supermarkets in Uganda. MBA thesis, Makerere University Business School.

Musubika, S., & Obadia, C. (2010). The impact of strategic planning on organizational performance: evidence from Rwanda. Journal of Management and Strategy, 1(1), 33-41

Muweesi, R. (2011). The effect of strategic planning on organizational growth of small and medium scale enterprises in Uganda. Journal of Economics and International Finance, 3(11), 599-612.

Naliaka, P., & Namusonge, G. S. (2015). Factors affecting the adoption of strategic management in secondary schools in Kakamega County, Kenya. International Journal of Humanities and Social Science Research, 5(1), 1-11.

Panahifar, F., Alambeigi, A., & Tahmasebi, R. (2015). The impact of strategic planning on organizational performance: Evidence from Iranian pharmaceutical firms. Iranian Journal of Pharmaceutical Research, 14(3), 809-817.

Pearce, J. A., & Robinson Jr, R. B. (2009). Strategic management: Formulation, implementation, and control. McGraw-Hill Irwin.

Petronile, V. R. (2013). Impact of supply chain management practices on performance of small and medium scale enterprises in the food processing sector in Kenya. International Journal of Business and Commerce, 3(9), 19-33.

Petronile, A. (2013). The importance of strategic management to business organizations in South Africa. Mediterranean Journal of Social Sciences, 4(14), 579.

Quinn, J. B. (2004). Strategic outsourcing: leveraging knowledge capabilities. Sloan Management Review, 45(4), 9-21.

Raghavan, S. (2013). Impact of strategic planning on organizational performance and survival. International Journal of Management, IT and Engineering, 3(4), 406-424.

Relly, J. E., & Tamkin, P. (1996). The development of strategic management and the rise of supply chain management. Supply Chain Management: An International Journal, 1(1), 12-22.

Rothaermel, F. T., & Deeds, D. L. (2001). Exploration and exploitation alliances in biotechnology: A system of new product development. Strategic Management Journal, 22(1), 1-22.

Shaharudin, M. R., Yusoff, R. M., Kamarudin, S., & Wahab, M. I. M. (2014). Supply chain collaboration and business performance: A study of Malaysian automotive suppliers. International Journal of Logistics Systems and Management, 19(2), 247-262.

Simchi-Levi, D., Kaminsky, P., & Simchi-Levi, E. (2004). Designing and managing the supply chain: Concepts, strategies, and case studies (Vol. 218). McGraw-Hill.

Stroh, L. K., & Treehuboff, K. M. (2003). HR outsourcing and the HR function: opportunities, risks and tradeoffs. Human Resource Planning, 26(2), 35-44.

Yang, J. T., Chen, M. C., & Wu, C. L. (2007). The impact of supply chain agility on business performance: focusing on the role of demand variability. The Journal of American Academy of Business, Cambridge, 11(1), 198-204.

Yeboah, J. (2013). The impact of strategic planning on organizational performance: evidence from the oil and gas industry in Ghana. International Journal of Business and Social Science, 4(9), 56-64.

Vivian, R. W., & Christopher, M. (2015). The impact of supply chain integration on firm performance: Evidence from the UK retail sector. International Journal of Operations & Production Management, 35(2), 216-240.

Welch, L. S., & Nayak, R. R. (1992). An empirical study of marketing channel choice and coordination in a decentralized retail context. Journal of Marketing, 56(4), 69-82.

Appendix

ASSESSMENT OF THE FACTORS AFFECTING IMPLEMENTATION OF E-PROCUREMENT IN PUBLIC SECTOR OF GHANA: A CASE STUDY OF MMDA'S IN CENTRAL REGION.

KNUST

SURVEY QUESTIONNAIRE

I am a Postgraduate student at the Kwame Nkrumah University of Science and Technology. This survey instrument has been designed to enable me carry out research on the topic: **'Assessment of the factors affecting implementation of e-procurement in public sector of Ghana".** Any information provided will ONLY be used for academic purposes, and it will be treated as **HIGHLY CONFIDENTIAL.**

Please 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.

SECTION A: DEMOGRAPHICS OF RESPONDENTS

1. What is your gender?
   (a) Female [ ] (b) Male [ ]

2. What is your age?
   (a) 20 – 30 years [ ] (b) 31 – 40 years [ ] (c) 41 – 50 years [ ]

   (d) 51 and above [ ]

3. What is your level of education?
   (a) HND/Equivalents [ ] (b) First Degree [ ] (c) Master's Degree [ ]

   (e) Professional Cert. [ ]

   [ ] Other, please specify……..

4. Please indicate the position held in the organization.
   (a) Director of Procurement (b) Procurement Manager (c) Finance Manager (d) Production Manager
   (g) Other, please specify ……...……

5. Which Department or Unit of the organization do you work?

(a) Procurement [ ] (b) Stores [ ] (c) Records [ ]

(d) Finance [ ] (e) Audit [ ]

Other, please specify ……

6. How long have you worked for the organization?

(a) Less than 1 year [ ] (b) 1 – 3 years [ ] (c) 4 – 6 years [ ]

(d) 7 – 9 years [ ] (d) 10 years and above [ ]

7. When was the organization incorporated in Ghana?

……

SECTION B: FACTORS AFFECTING THE IMPLEMENTATION OF E-PROCUREMENT.

Please using a scale of **1=strongly disagree; to 7=strongly agree**, how would you rate the **factors affecting the implementation of e-procurement** in this firm as shown in the table below:

Strongly Disagree	**Disagree**	**Somewhat Disagree**	**Neither Agree nor Disagree**	**Somewhat Agree**	**Agree**	**Strongly Agree**
1	**2**	**3**	**4**	**5**	**6**	**7**

Please tick [√] the extent to which you agree with the following as practiced in your firm:

PART 1 COST OF IMPLEMENTATION	1	2	3	4	5	6	7
8. Financial ability of my firm to acquire resources affects the implementation of e-procurement.							
9. Cost involved in adopting efficient e-procurement practices affect implementation in my firm.							
10.Hardware and software application cost in my firm affect the implementation of e-procurement.							
11. Cost of maintaining capacity of existing IT infrastructure affects e-procurement implementation in my firm.							
PART 2: MANAGEMENT COMMITMENT							
12.Management strategy on e-procurement affects implementation of e-procurement in my firm.							
13. Policies and procedures of management on technology affect e-procurement implementation in my firm.							
14. Management assurance for digital security and authentication affect e-procurement implementation in my firm.							
15. Management awareness on global competition and the need for e-procurement adaptation in my firm.							
16. Institutional structure put in place by management affects the implementation of e-procurement in my firm.							

PART 3: EMPLOYEES COMPETENCE								
17. Knowledge of staff on e-procurement affect the implementation of e-procurement in my firm.								
18. Nature of staff adaptation to change affect the implementation of E-procurement in my firm.								
19. Technical expertness of staff on technology affect the implementation of e-procurement.								
20. Employees readiness level to work with e-procurement affect the implementation of e-procurement.								

SECTION C: EFFECTS OF E-PROCUREMENT IMPLEMENTATION IN ENSURING VALUE FOR MONEY SUPPLY OF GOODS AND SERVICES.

Using a scale of **1=strongly disagree; to 7=strongly agree]**, indicate the **effects of e-procurement implementation in ensuring value for money supply of goods and services** in this firm by rating it as shown in the table below**:**

Strongly Disagree	**Disagree**	**Somewhat Disagree**	**Neither Agree nor Disagree**	**Somewhat Agree**	**Agree**	**Strongly Agree**
1	**2**	**3**	**4**	**5**	**6**	**7**

Please tick [√] the extent to which you agree with the following as practiced in your firm:

	1	2	3	4	5	6	7
PART 1: EFFECTIVENESS AND IMPROVEMENT							
21. E-procurement enables procurement activities to be established through competitive process and negotiation to achieve value for money supply of goods and services.							
22. E-procurement leads to an improved service delivery in procurement activities of my firm which results into value for money supply of goods and services.							
23. E-Procurement activities in my firm are simple and timely resulting in Value for money supply of goods and services.							
PART 2: QUALITY AND EFFECIENCY							
24. E-procurement implementation enables goods and services ordered to be of essentially the same types, quality as requested.							
25. E-procurement enables the items purchased in my firm to be of an adequate functional quality level.							
26. E-procurement in my firm results into efficiency in both pre and post procurement award contract phases.							
27. E-procurement enables goods and services to meet specification and received on the date needed in my firm.							

SECTION D: EFFECT OF STAFF COMPETENCY AND MANAGEMENT SUPPORT IN THE IMPLEMENTATION OF E-PROCUREMENT

E-PROCUREMENT ADOPTION

Using a scale of 1 to 7 [where 1=strongly disagree; 7=strongly agree], indicate the effect of staff competency and management support in the implementation of e-procurement **in this firm.**

Strongly Disagree	**Disagree**	**Somewhat Disagree**	**Neither Agree nor Disagree**	**Somewhat Agree**	**Agree**	**Strongly Agree**
1	**2**	**3**	**4**	**5**	**6**	**7**

Please tick [√] the extent to which you agree with the following as practiced in your firm:

	1	2	3	4	5	6	7
STAFF COMPETENCY AND MANAGEMENT SUPPORT							
28. Management support in computer competencies and skills as prerequisite in e-procurement affect implementation.							
29. Training of staff on the use of e-procurement tools enhances the implementation of e-procurement.							
30. Employing qualified staff facilitates the implementation of e-procurement.							
31. Management ability to react towards IT system breakdown with contracts experts to fix it affects implementation.							

Thank for your participation in the survey.