UNIVERSITY FOR DEVELOPMENT STUDIES

FACTORS AFFECTING THE ADOPTION AND IMPLEMENTATION OF THE E-PROCUREMENT SYSTEM IN THE PUBLIC SECTOR:

A CASE OF TAMALE TEACHING HOSPITAL

BY

IDDRISSU ALHAJI GARIBA

NOVEMBER, 2019

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SCHOOL OF BUSSINESS AND LAW

WA CAMPUS

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THESIS SUBMITTED TO THE DEPARTMENT OF PROCUREMENT AND MARKETING, SCHOOL OF BUSINESS AND LAW, UNIVERSITY FOR DEVELOPMENT STUDIES, IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE AWARD OF MASTER OF COMMERCE DEGREE IN PROCUREMENT AND SUPPLY CHAIN MANAGEMENT

NOVEMBER, 2019

DECLARATION

I hereby declare that the thesis is my own work towards the Master of Commerce, Procurement and Supply Chain Management and that no part of it has been accepted for the award of any other degree anywhere, except where due acknowledgements have been made in the text.

Student:

Idrissu Alhaji Gariba …… ……

)S/MCM/0025/13 Signature Date

pervisor:

ereby declare that the preparation and presentation of the dissertation/thesis was supervised accordance with the guidelines on supervision of dissertation/thesis laid down by the iversity for Development Studies.

Certified By …… ……

Mr. Asante Job Signature Date

(Supervisor)

ABSTRACT

Electronic procurement has a greater potential to be valued as compared to the manual procurement system. The adoption of electronic procurement makes the activities of procurement more effective in terms of cost, time, and content management within the institutions. This study aimed at identifying the right factors for the system of e-procurement implementation in the Tamale Teaching Hospital as well as the revealing factors that could militate against its implementation successfully. The study employed the survey strategy where the questionnaire and interview guide was used in data collection. The key study findings have shown that e-procurement comes with several benefits such as: improvement of the supply chain management and an increase in the confidence level of the public and suppliers in procurement processes of the hospital. The e-procurement system implementation by the Tamale Teaching Hospital was due to clear accountability, the existence of information system specialists and the involvement of stakeholders in the procurement process. Based upon the findings of the study, it is recommended that management of the hospital upgrade the level of Information Communication and Technology in the hospital and widen the scope of internet connectivity to cover every department that uses e-procurement applications. It was also recommended that the National Communications Authority should implement a nationwide internet connection that allows the small-scale businesses or suppliers and rural enterprises engage in e-procurement. This will increase the level of competition of which the rural enterprises are a part, thereby introducing high quality products and/or services procured. The study further recommended that the hospital should consider the training needs of employees, especially the workers who are involved directly in the processes of procurement.

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To my colleague students, the 2013 year group of MCom Procurement and Supply Chain nagement who encouraged me and offered useful pieces of advice to make my studies a cess. Finally, my heartfelt gratitude goes to Mr Benjamin Apam for his occasional support, l assistance in this academic exercise.

DEDICATION

This work is dedicated to my loving family: Mrs Rahinatu Adams Gariba, Tasneem, Wajeehu and Silahu-Deen for their understanding and patience during the period of this work. May Allah continue to bless us all – Amen.

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B2B	-	Business-to-Business
EPS	-	Electronic Procurement System
PPA	-	Public Procurement Authority
PPB	-	Public Procurement Board
ICT	-	Information and Communication Technology
OGC	-	Office of Government Commerce
BACS	-	Bank Automated Clearing System
ℜO	-	Maintenance, Repair and Operations
P	-	Enterprise Resource Planning
C	-	Entity Tender Committee
B	-	Tender Review Board
D	-	Standard Tender Documents
M	-	Value for Money
T	-	Resource Based Theory
M	-	Technology Adoption Model
ℜP	-	Material Requirement Planning

CHAPTER ONE

INTRODUCTION

1.1 Background

In recent years several public sector institutions globally have acknowledged the emergence and essence of e-procurement (electronic procurement) as priority; and are in the implementation process or have implemented it (Sajeev & Callender, 2006). Traditionally, the process of procurement had involved slower systematic process and slow procedures ıally for executing the transactions of procurement (Hawking, Stein, Wyld & Foster,). In the commerce of business to business, electronic procurement has increasingly had ɪnportant role to play. Electronic procurement improves the coordination of inter ıization leading to the opportunities of sourcing competitively for the organization ıg and savings in transaction cost (Subramaniam and Shaw 2002).

ronic procurement (e-procurement) is the process of electronically purchasing the goods ervices needed for an organizations operation (Beauvallet, Boughzala & Assar, 2011). ocurement entails implementing electronic means to process, publish exchange and store mation concerning procurement without a paper medium. Hence, in concrete terms it consists of publishing calls for tenders on the internet, sending out documents and specifications (consultation files for companies, binding tender forms, etc.) in digital form, receiving tenders electronically, and so on, with a view to ensuring greater efficiency in managing procedures for awarding procurement contracts (Beauvallet et al., 2011). It offers tangible and intangible benefits (Beauvallet et al., 2011). The tangible benefits include opportunities for cross-sales, cost reduction, reduced inventory and shorter cycle time in

ordering (Beauvallet et al., 2011). The intangible benefits include enhancement of brand and corporate image communication (Beauvallet et al., 2011). Electronic procurement accounts for one billion dollars per annum worldwide and is promoted by progressive Governments since it coincides with environmental sustainable initiatives (Done, Liao & Maedler, 2011).

E-procurement is a phenomenon that started in the developed economies but due to the spread of the internet, it has been increasingly adopted in the developing world. nizations and individual business people have come to embrace it due to the integration fits and the immense possibilities it brings about: collapsing space, distance and time ɔpean Union, 2012). Organizations adopt e-procurement due to the myriad benefits: ration, tap digitization benefits, improve procurement efficiency, cost management and nation of sourcing errors (Done et al., 2011, European Commission, 2012; Reddick,). Efficiencies are generated from the adoption of e-procurement technologies which les transaction processes to less mistake, and more efficient purchasing (Singh & Punia,). Companies have adopted e-procurement due to the benefits of digitization, easy ıgement of catalogues and the advantage of convenience (Singh et al., 2009).

Many public sector institutions have now identified electronic Procurement as a key for cutting waste in government procurement and have put measures in place to implement and adopt e-procurement in their various procurement stages. In Ghana procurement practices have seen several changes and reforms all with the aim of cutting down or minimising public procurement corruption; and potency in the processes of procurement; and ensure value for money, among others. The enactment of the Act of Public Procurement in 2003 (Act 663)

has been recognized as a major change. Though the Act 663 implementation has rationalized the process of procurement in Ghana and has instituted a certain high degree of sanity in the environment of procurement, its manual process has forced some practitioners of procurement to call for the electronic procurement formulation in Ghana (Addison, 2017).

The manual processes are faced with challenges such as high cost and delay in the process of procurement as procurement and the supply chain has a propensity of involving large tities of paperwork in its operations. This process comprehensively takes into account a er planning of procurement, bids invitation, budgetary allocation, bids assessment, act awarding, management of contract, measurement of performance, auditing, ting and monitoring (Azanlerigu & Akay, 2015). All these information and nunication is necessary for potential suppliers. The introduction of Information munication Technology (ICT) has tremendously improved the way business is acted between parties.

essence of enacting the Act 663 for Public Procurement was to provide harmony in the ess of procuring public goods, works and services by the public institutions; ensure the efficient, economic and judicious utilization of resources of the state; and secure non-discriminatory, transparency and fairness in the public procurement processes (Ministry of Finance, 2001). The initial purpose of the Act was to curtail corruption and other financial malfeasance. This now seems to be defeated due to human interference, hence the need for an adoption of technology-based procurement system that would minimise human interference. Moreover, the Tamale Teaching Hospital is one of the recently upgraded

hospitals implying that there would be an increase in human resource, procurement-related activities. The financial status of the hospital is also likely to grow, making it difficult to be managed manually. Considering the financial misconduct and alleged procurement-related scandals of several public institutions in Ghana, it is therefore reasonable to ensure such practice does not occur in the Tamale Teaching Hospital.

1.2 Problem Statement

asingly, the globe is progressively getting interconnected via electronic networks and, er shrinking with each passing day (Gates, 2009). In the view of Friedman (2006), s all organizations business transactions are transitioning steadily to electronic orms. The barriers of time, distance and space are collapsing at a rapid pace (Gates,). Meanwhile the current electronic commerce trend breeds new risks which require ntinuous and innovative thinking in reducing its risk impact (Friedman, 2006). The ementation of e-procurement by organizations is a strategy, aimed at decreasing tical and administrative complexity in the process of purchasing (Van-Weele, 2005).

However, health institutions in Ghana have been experiencing a myriad of problems including corruption, nepotism and mismanagement in its procurement circle. For example a world bank report (2003) stated that a key area for corruption busting reform is the health and civil society sector which when compared to similar economies are a drain on resources that could benefit the public and locus of corruption that thrives sector especially when coupled with lax oversight, mismanagement and fiduciary control procedures. It is believed that, e-procurement is the only reforms to offer better expenditure management and other support

service in the health sector. The general story is one of loss, fraud, theft and gross mismanagement which are hampering improved and sustained performance and service delivery.

In view of the myriad challenges of budgetary allocations, staffing, and deterioration and near collapse of infrastructure, negative admissibility by governments on activities of health institutions, coupled with actual and perceived concerns regarding safety and security results ɛgative publicity affecting health efforts (Emiliani *et al.*, 2004). Undoubtedly, public h institutions have been experiencing challenges on their procurement performance but s been asserted that organizations which have enhanced their performance through ɾacing e-procurement strategy have been able to supersede others in terms of ɹntability and transparency (Subramaniam and Shaw, 2002). For the past years, donor utions have complained bitterly about the high rate of corruption in the process of ɹrement and even described it as a canker (Frimpong, 2014). Experiences show that it be only curtailed and cured through the introduction of an e-procurement system which ɛliminate human's involvement to a large extent.

Based on this, the Government of Ghana through the Public Procurement Authority (PPA) has identified the enormous benefit of the system of electronic procurement by its introduction. As such, it has been stated that there will be a major relief for suppliers and contractors who are usually denied the chance to get bids for contract(s), of which procurement officers normally tender. This will also aim at checking the rampant corrupt practices associated with involvement of human interface in the procurement processes.

A study by Chan and Lu, (2004) found that organizations which adopted e-procurement have reduced costs through transactional and process efficiencies and thereby promoting their procurement performance. However, in Singapore, previous research by Lai and Li (2005) on the survey of the role of e-procurement adoption strategy shows that global organizations use of the internet is high, while in Kenya, previous research by Kim *et al*., (procurement 2008) on usage, obstacles and policies on e-procurement show that only 33% of state corporations implemented e-procurement as a strategy to improving services.

e, the study main objective was to look out for the hindering factors and driving forces e adoption and implementation of e-procurement to enhance the performance of the urement function, but none of the existing research explores further on how these ering factors to the adoption and implementation of e-procurement affects the overall urement performance of the institutions. This study therefore explains the factors ting the adoption and implementation of e-procurement system. It is based on this notion he study further aimed at getting deep insight into the hindering factors and the driving forces that affect the electronic procurement system implementation in Ghana's public institutions using the Tamale Teaching Hospital (TTH) as a case study. Meanwhile, the main reason for choosing TTH was based on the fact that, the hospital has started using e-procurement in all its procurement processes. Therefore, the researcher deemed it fit to use it as a case study to better provide more insight to the hindering factors to e-procurement implementation.

1.3 Main Research Question

What are the hindering factors and driving forces in the implementation of e-procurement in the Tamale Teaching Hospital?

1.3.1 Specific Research Questions

1. What factors hinder or militate against the implementation of the e-procurement system in the Tamale Teaching Hospital?
. What are the success factors or driving forces to the adoption of e-procurement system?
. What is the level of expert knowledge and perception of staff on the implementation of the e-procurement system?

Main Research Objective

general objective of the research was to determine the driving forces and hindering rs in the implementation of e-procurement in the Tamale Teaching Hospital.

Specific Research Objectives

1. To examine factors hindering or militating against the implementation of the e-procurement system in the Tamale Teaching Hospital.
2. To determine the success factors or driving forces to the adoption of e-procurement system in the Tamale Teaching Hospital.
3. To explore the level of expert knowledge and perception of staff on implementation of the e-procurement system.

1.5 The Research Significance

This research has significant and fresh relevance in the sense that the study is expected to offer recommendations to ease the adoption and practices of e-procurement in the Tamale Teaching Hospital. These recommendations will be of much benefit to agencies and departments in the Tamale Teaching Hospital, which employ the technology of electronic procurement. The study findings will further help suppliers and contractors who bid for contracts in the e-marketplaces. Also the research will form part of the literature that is useful

ocurement scholars and supply chain practitioners from the perspective of a developing

omy.

r effects of e-procurement that will enhance transparency is that it acts as a catalyst for

standardization of documentation, tendering templates, tendering rules, policies and

edures and enhances supplier and civil access to the oversight of procurement processes.

ically, this study would help to prevent bribery in procurement in the Tamale Teaching

ital. This research will further enhance an important decrease in the complaints of the

lier at the selection stage. It will further help to improve the quality and transparency of procurement procedures and to relieve procurement units dealing with complex and highly regulated processes since product requirements and selection criteria are automated and known to all suppliers.

1.6 The Study Scope

This study geographically was done in Tamale Teaching Hospital in Ghana. The research covered the electronic procurement and factors affecting its adoption in Tamale Teaching

Hospital. The Tamale Teaching Hospital was chosen because it forms part of some of the semi-autonomous institutions that are supposed to implement the e-procurement in Ghana. In addition, proximity and accessibility to data for the study were considered in choosing the study area. Contextually, the study looked at e-procurement as a technology that is used for skilled delivery of services to the public.

1.7 The Research Limitation

result of time constraint, the researcher limited the conduct and focus of the study to the ale Teaching Hospital out of the numerous public sector institutions in the country. It is ı to indicate that the study findings are not generalizable since the findings are generally ıe to the Tamale Teaching Hospital and might not be the true reflection of the whole c sector institutions in Ghana.

ronic procurement is a new field for the participants in the Tamale Teaching Hospital, h presupposes that the participants might not yet have a full understanding and ıtions of the e-procurement during the period of the research.

Further study limitation was the sample size adopted. The thirty (30) respondents were selected due to time limitation even though the sample size still provided an adequate data for the study.

1.8 Delimitations of the Study

The limited time period for the study necessitated the choice of the objective to specifically explore the implementation of the electronic procurement system and factors affecting its adoption by Tamale Teaching Hospital.

The study was confined to interviewing personnel who are part and parcel of the process of procurement of the Tamale Teaching Hospital (Engineers, Quantity Surveyors, Procurement ers, Finance Officers, Planning Officers, Store Officers and Project Managers). The considers the aspect of personnel's' personal knowledge on implementation of the e-urement system in the Tamale Teaching Hospital; the challenges they face due to the ementation of the system; the benefits derived as well as their perception towards its ementation. Though suppliers form part of the procurement function, they were excluded the study.

he Study Organization

research has been sectioned in five chapters: The chapter one looked at the study introduction which covered the study background, the statement of the problem, the study questions and objectives, study significance, research limitations and delimitations. The chapter two comprises of relevant literature review; with the chapter three focusing on the research methodology and approach. Also chapter four presents empirical results that the study has gathered, discussed and presented. Finally the chapter five draws summary of the findings, the research conclusion and the researcher's recommendation including suggested topics or issues for policy formulation and studies in the future.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

The literature review of a study is a fundamental component of every investigation and does give not only an idea on a study in past times, but helps to describe or indicate precisely the area of a problem and further provide basis of discussion and interpretation of findings. This review covers theoretical and empirical literature concerning factors that affect the adoption implementation of electronic procurement (e-procurement) in the Tamale Teaching ital. Also this section highlights the study critique and gaps of the empirical and etical literature.

efinition of Concepts

Procurement

hen Public Procurement Board (PPB, 2007) had defined procurement as the process of iring goods, works and services, covering both acquisitions from third parties. The ess involves options, appraisal and the critical "make or buy" decision, which may result in the provision of goods and services in appropriate circumstances.

Matechak (2007) defines procurement as a "formal process by which many organizations obtain goods and services". Her view of procurement was epitomized by Koorn (2001), as the function of business management that ensures access, sourcing, management and identification of resources externally, which an institution need or may require in achieving its objectives strategically. He again opined that the existence of procurement is to explore

the opportunities of the supply markets and to put in place resourcing strategies that can deliver to the organization the possible best supply outcome, to its customers and stakeholders. The opinions espoused above undeniably underscore the importance of an effective function of procurement in any institution and the essence to embark on a strategic procurement to bring about an efficient and effective usage of the available resource.

2.2.2 Electronic Procurement

ɔcurement involves an electronic data transfer in the process so as to support operations planned procurement. Electronic procurement has been in operation years before the itself, which came into operation in the 1990s. Before then, electronic procurement was ally in the form of Electronic Data Interchange (EDI).

rding to Vaidya, Sajeev & Callender (2006), confusion exists in defining electronic urement. While both "e-Procurement" and "e-Purchasing" are synonymously used in al jurisdictions in the attempt to demonstrate their engagement in the revolution of ronic commerce (McManus, 2002), meanwhile the term "purchasing" has a scope that is wer. For instance, electronic procurement is a specific field of electronic business that covers all the internal processes including the processes of business-to-business (Versendaal & Brinkkenper, 2003). Meanwhile Davila, Gupta & Palmer (2003) have stated that every technology that is designed for the purposes of easing the purchasing of services or goods using the internet may be termed as electronic or e-procurement. Elaborating on the above views, Croom & Brandon Jones (2004) asserted that electronic procurement simply means the utilization of integrated internet base communication and information technologies to do

all stages or an individual process of procurement including sourcing, searching, ordering, negotiating, post-purchase and receipt review.

Furthermore, e-procurement delivers several forms of solutions that are based on many or one stage of the process of procurement such as e-marketing place, e-tendering, e-catalogue/purchasing and e-auction/reverse auction. E-procurement can therefore be broadly looked at as a solution that is end-to-end, which streamlines and integrates many processes of urement throughout an institution. Hence electronic procurement can be defined as the ess of streamlining publication to the process of payment by improving stakeholders, from documents-based system through to the utilization of technology including rence to quality control (McConnell, 2009).

the purpose of this study, this definition seemed to have provided the basic tenets nology, process, people and compliance) that defines the success of e-procurement ms and would inform the basis for the analysis of the research findings.

Public E-procurement

Public e-procurement has been defined as the use of information and communication technology such as internet / web based system by governments in conducting their procurement relationship with bidders for an acquisition of goods, services and works required by public organizations (Davila et al, 2003). In addition, Davila et al., (2003) have posited public electronic procurement serves as a system of inter-organizational information which “automatizes” every part of the process of procurement in order to improve

government procurement efficiency, transparency and quality. However for the purpose of this study the views of Vaidya et al. (2003) appear very appropriate.

Again whereas there seem to be various components of electronic procurement that is much centred on many or one stage of process of procurement comprising of e-tendering, e-catalogue or purchasing, e-auction or reverse auction and the e-marketplace: electronic procurement as such can be considered broadly as the very end to end procurement solutions streamlines and integrates a lot of process of procurement throughout an organization. Boer at al. (2002) identified the following systems; with each of this type of the system for specific purposes including its own special characteristics and functionality.

forming/E-notification: Gathering and distributing purchasing information both from and internal and external parties using internet technology. It involves an organization tronically notifying potential suppliers and/ or procurement agents of the opportunity to ering in future. Typically this channel is facilitated through a system of online ication; for instance within the public sector of United Kingdom context; a website is oyed in commerce in the Government Office.

Electronic Sourcing: This involves the process of identifying new procurement agents for suppliers of specific categories of purchasing requirements using the technology of internet.

Electronic sourcing: it is the process of sending requests for prices and information to suppliers or procurement agents and then receives response through the usage of the internet technology. This involves an organization having the capacity to electronically receive tender

submission from potential suppliers. Typically, this is facilitated through online tender receipt systems, similar to that used for the tender notification.

E-Reverse auctioning: Internet-based reverse auction technology emphasizes on the price of the auctioned services and goods. In the application of electronic reverse auction, suppliers' price quoted generally decreases.

ronic awarding: E-awarding involves secure opening of tender (thus being able to open ers only that is supposed to be submitted by a closing time and date); an evaluation of er; and tender award. Typically, it is facilitated using similar systems to people, used for lectronic tendering and electronic notification.

ronic management of contract: The use of technology for enhancing the efficiency and tiveness in contracting processes of companies is done at this stage. This involves the lishment of an agreement with a supplier and can arise as a result of the e-notification, dering and e-awarding stages; or can arise through technology solutions. For example an ction which typically involves suppliers bidding for the supply of goods based on tender specification prepared by an organization.

Unlike conventional auction where the prices generally increase, e-auction are commonly referred to us reverse auction as the price quoted by suppliers generally decreases.

E-Ordering: Internet utilization to facilitate the operational process of purchasing including order approval, requisition ordering, process of payment and receipt ordering. This involves

an organization raising agreement orders of catalogue or contract (following it from the above stages) and the transmission and acceptance of it by suppliers.

Electronic markets: E-markets are the meeting venues for component purchasers and suppliers who utilize an exchange mechanism to support electronically, the process of procurement. Early electronic procurement solutions focused on this aspect of e-procurement (e.g. electronic data interchange, e-catalogue and e-marketplaces); as a result of the eption as the era whereby maximum efficiency may be achieved since this has direct ection with electronic ordering. However internet technology in this field include: Ariba, ra Technologies, Oracle, to mention but a few.

ronic web and MRO-based ERP: The process of creating and approving purchasing sitions, placing purchase orders and receiving the goods or services ordered via a vare system based on internet technology. For instance, e-MRO deals with indirect items O), and web-based ERP deals with product-related items.

voicing: This involves an organization electronically receiving invoices from suppliers and following electronic matching (e.g. against the purchase and goods received notes), making electronic payment via a Bank Automated Clearing System (BACS). This electronic payment of suppliers has been identified by many organizations as a quick win in relation to e-procurement, given the processes and activities. E-invoicing is performed alongside E-MRO and ERP above.

2.2.4 Public Procurement

In defining public procurement some think tanks have explained that "it is the acquisition of, goods and services at the best possible total cost of ownership, in the right quantity and quality, at the right time, in the right place for the direct benefit or use of governments, corporations, or individuals, generally via a contract" (Ghana Integrity Initiative (GII), 2007). This can be looked at as the purchasing of public services, works and goods by public institutions and government.

ırement therefore can be said to have both a significant impact on an economy and a t effect on people's daily lives since it is a process in which policies for the public are nto practice (Ghana Integrity Initiative 2007). Public procurement has been recognized e central tool in enabling and ensuring efficient public resources management (Burton,). Burton (2005) further stated that public procurement promotes the services, goods and s of governments and takes care of every acquisition including furniture, stationery, orary office employees and high and complex cost areas (e.g. construction projects). rding to a United Nation's report, public procurement is a system of government ıess which concerns more about the processes of government procurement; which include project specification preparation, putting in requests, assessing and receiving bids, contract payment and awarding.

Public institutions procurement however can be said to be not one-off process, but this is seen to be multifaceted. In support of this, a scholar outlined three (3) phases to procurement process, and these include procurement budgeting and planning, awarding of contract, and performance and solicitation of procurement. Again five stages of the process of procurement

was proposed by Szymanski (2007) that are: needs evaluation and procurement planning, tender process, documentation and product design, implementation and awarding of contract, and audit and accounting. Recent views indicate that, procurement has the following stages: advertising, design and identification, pre-qualification, preparing bid documents, bids submission, bid assessment, contract award and post-qualification, contract performance, supervision and administration (Ware et al., 2012).

Act of Public Procurement 2003 (Act 663), has listed the following stages to be followed rganizations in procuring works, goods and services which include: planning of urement, offer invitations, contracts awarding and contracts management to be the ng principles in the activities of public institutions procurement. There has been the ement that public procurement role is to enable the effective machinery functioning of rnments and for this to be practicable, public entities procurement should be done in s and devoid of interference and circumvention. Meanwhile this definition seemed to be ly appropriate for this study purpose (Ghana Initiative, 2007).

Procurement Requirements of Public Sector

Public sector procurement has been a significant government function (Thai, 2001). This in timely manner is to satisfy the requirements for systems, services, goods and works. In addition it is to meet the fundamental principles of transparency, integrity, accountability and good governance (Wittig, 2003).

2.2.6 Transparency, Competitiveness and Fairness

The ultimate goal of the Public Procurement Act is to ensure that there is harmony in public process of procurement in Ghana for the purposes of achieving transparency and fairness. The procurement must ensure that public funds are used to achieve the highest value of works and services possible.

Wittig (2003) further asserted that the principle of transparency can be referred to as the ess whereby an enabling environment is created where data on existing actions, itions and decisions are made visible, understandable and accessible to every person cipating. Procurement procedures that are transparent can contribute a lot to an efficient irce allocation through a rise in competition, budgetary savings and a high procurement ty for government; as in the case of taxpayers (PPB "Training" 3rd Module, 2007). More rtantly to cut off corruption in public sector procurement systems, it is vital to publish rtisement for tenders; ensure contract awards notification in media, naming successful ers and the final price and ensuring criteria of awards more accountable and transparent. e view of Evenett & Hoekman (2005), some of these are transparency fundamental iples in the procurement of government which affect directly practices that are corrupt.

This statement has been backed by Brown (2005) where he believed that institutions of government can accomplish transparency through an efficient and effective advertisement; opening public bid documents; effectively assessing bid documents; award results publication; speedy and fair dispute and protest resolution processes handling; contracts signed disclosure; and the utilization of independent assessment method that is in line with bid documents terms.

2.2.7 The Principle of Accountability

By definition accountability is the process whereby an organization or individual is fully held responsible for every component of the process of procurement upon which they exercise an authority. The main reason for accountability is to encourage and strengthen fairness and transparency perception in procurement activities. This helps to decrease the corruption incidences and enforces further the regulatory framework and Procurement Act 663 which defines clearly responsibilities (PPB "Training" 3rd Module, 2007).

ırement practitioner holding public offices' contractors as well as the ordinary citizenry have the opportunity to follow and check all procurement operations at every phase of procurement process. They have access to an up-to-date policies, information on ering programmes, status of tender evaluation, and notification of the results. An e-ırement method turns as a vehicle for standardization of files documentation and oves suppliers and allows the supervision of procurement procedure. For fairly nsive operations, accountability is reinforced through public disclosure at every phase of ırement process. For small operations, accountability is achieved through enhanced competences.

2.2.8 Efficiency

A system of public procurement that is efficient is said to be one that operates with minimum bureaucracy and in timely manner including being responsive towards the final users of the facilities or goods procured needs. Based on this, efficiency can narrowly be defined in the form of value-for-money (which implies ensuring lowest cost with the best quality available).

In this sense the principle of efficiency can be best achieved with open competition; as the reform of procurement seems to be the fuel behind more system liberalization. To be effective and efficient in Ghana in procurement is to take charge of activities of procurement in an environment of transparency and professionalism with clear arrangement of a pre-defined rule to promote and improve competition; thereby stimulating innovation and efficiency amongst bidders. Sarpong (2007) agrees with this assertion and claims that procurement in general is the sustainable management acquisition of services, works and s for value-for-money optimization through an audible, transparent and professional ework.

ronic workflows have greatly facilitated in the reduction of operational or transactional related to the transaction processing as a result of electronic procurement, and thereby ng as a significant way of cost savings for public contracts. According to Aberdeen p (2008), the performance of government corporations has greatly improved, because of curement method with less transaction costs, as well as few times of transaction cycle. while an automation of the requisition to cycle payment has brought about a manual processing decrease of which is characterised by task-prone errors that allow procurement practitioners to emphasize on a more productive operation (ADB, 2013).

2.2.9 Effectiveness

Through e-procurement, data from electronic businesses are stored automatically and reports are in the procurement process. Enhancing the quality of data management can give better chances in controlling supplier performance including managing their levels of acceptance

and benefit (ADB, 2013). One important function of this publication strength is that the Central Procurement Bodies (CPBs) may now additionally negotiate for competitive pricing. With e-procurement, CPBs gain easy access to data leading to a more effective negotiation with the parties consented.

2.2.9 Legal and Regulatory Framework

The regulatory, legal, and institutional framework set out by the Act of Public Procurement, (Act 663) is to secure the public accountability and fiscal transparency in Ghana's m of procurement. Basically the Procurement Act has five established principles or s base on which public sector procurement is centred (World Bank, 2003). The pillars de: tender documents; standardized procedures for procurement; the institutional and framework; measures for anti-corruption; proficient procurement workers; and an pendent system of control.

importantly, the Procurement Act 663 objectives are for the public sector to harmonize rocesses of procurement to ensure an economic, efficient and judicious use of resources he public, through ensuring that public organizations undertake transparent, non-discriminatory and fair functions of procurement.

This Act is applied to procurement finance in partly or wholly from the funds of the public for works, services and goods procurement and loans contracted to finance procurement by governments of Ghana in addition to donor funds and foreign aid.

Again the Procurement Act establishes the Public Procurement Authority (PPA) which was previously Public Procurement Board (PPB); tender reviews boards (TRB), and the entity tender committee (ETC). The Act specifies clearly the laws and conditions for procurement thresholds and methods, complaints resolution and appeals procedures, stores disposal, and procedures. According to the Act (appendix 3), organizations are authorized to handle the issuance of an enforceable guidelines, regulations, manuals, and standard tender document (STD).

0 Paper / Traditional Based Procurement Problems

ature review has shown a variety of problems connected with the system of traditional urement. In the view of McConnel (2009), all the problems can be grouped into four broad unique topics of process, technology, compliance and people.

problems of technology arise primarily as a result of limited use of technology solution e traditional procurement process. These problems include: the absence of information onization and poor information quality.

Process-related problems outlined include: increase errors handling; slow nature of transaction and manual processing; the large paper volume generated; complicated procedures; the bureaucratic processes; difficulty in expenditure delivery; too much intervention from the state; product standardization inadequacy; and poor centralization of control.

The problems that are related to people with traditional procurement are key issues identified. These problems have overwhelming influence on technology and process-related issues regarding the efficiency of every procurement system. The problems identified therefore include: the low internal concern for procurement and the change resistance (McConnell, 2009).

The problem of compliance identified is ignoring strategic procurement (Hawking, Stein, l & Foster, 2004), an issue that is related to procurement entities inability to follow ırement plans but largely engaging in maverick spending. These problems will lay bare oundation for assessing the problems associated with the Public Procurement Act, 2003 663).

1 Adoption of Electronic Procurement

dwide many public sector organizations have recognized e-procurement as a very vital ronic government agenda; with some implementing it and others in the implementation ess of electronic procurement system. OGC (2005) observed that UK public sector in ıt years has begun to evaluate and adopt e-procurement. The enquiry further revealed that the UK government has been driving the adoption of ecommerce across the public sector since 1998 and core element of this should be electronic procurement.

Over the years organizations in the private sector in particular have been using information technology (IT) systems to automate and streamline their procurement and other process. As such it is in recent past that the systems of e-procurement began to attract attention of the public sector. Meanwhile there has been the debate on how electronic procurement has

evolved; though there has not been any doubt that the utilization of internet in electronic procurement delivers a number of benefits over the conventional procurement system (Koorn *et al*, 2001).

Without doubt, the technology of electronic procurement can enhance and promote a rise in procedural efficiency and transparency without any prejudice to competition (Heywood, Barton & Heywood, 2002). He argues further for this not just because of its transparency, but apacity to improve efficiency. The benefits of e-procurement technology include: an ase in contract compliance, leveraging the procurement spend, increased involvement of and lower processing costs. Technological developments have added a new dimension otential procurement reforms in both developing and industrial economies, thus e- urement presents the promise of cutting costs and simplifying administrative procedures. lmeida et al (2004) have stated, the promising innovative mechanism which operate nd electronic procurement has seen implementation of it in Brazil, whereby it has tedly brought about great increase in accountability and transparency and cost savings blic procurement institutions.

Furthermore, the observation then later saw corroboration from Quinnox (2012) where it was asserted that electronic procurement as a comprehensive phenomenon should include the formulation of strategic initiatives which can be utilized in the reorganization of the whole procurement processes. Having done this, an organization will be ensured that a very properly implemented system of electronic procurement can then link the processes of business and that of the organization directly to suppliers whereby all interactions are further

managed. Meanwhile, it has been said that electronic procurement initiatives implementation must be regarded as the very effort to enhance the goals of procurement which mostly include cost; timeliness; quality; maintaining integrity; maximization of competition; maximization of business; and minimization technical and financial risks.

2.2.12 E-procurement Systems

According to Koorn, Smith and Müller (2001), there are three types of e-procurement ms: Buyer e-procurement Systems, Seller e-procurement Systems and Online mediaries. In a related study, Subramanian & Shaw (2004) defined e-procurement m as a Web-based client or server application used to replace the manual procurement ess. Per the results of their study, e-procurement solutions cover three major urement areas: Procurement Transactions, Procurement Management and Market ng. It also impacts four major operative procurement activities, which are: searching of ucts or services, order processing, monitoring and control, and coordination of relevant mation. On the buyer's side the e-procurement solution is usually connected to other ing information systems, such as Enterprise Resource Planning (ERP). This allows companies to leverage critical enterprise data present on these systems. On the supplier's side, the solution is mostly connected to the supplier's order fulfilment system or product catalogues on the website of the supplier (Subramanian & Shaw, 2004). For the purpose of this study, Subramanian & Shaw (2004) Presentation would be more appropriate because it has incorporated elements of Koorn *et al*, (2001).

2.2.13 Security and Authentication

Because of the sensitivity of the government data and the legal nature of orders and payments, security of data is critical in e-procurement systems. The system must have mechanisms for identifying and authenticating the user who places an order so that the supplier knows it is safe to fulfil the order. In an e-procurement study, Birks, Bond, & Radford (2001) relate the security requirements at the e-tendering stage to authentication, arguing that e-purchasing systems and processes need protection because they involve a cial transaction and may be vulnerable to fraud. Stenning & Associates (2003) highlight ıeed for transactions between different systems to be exchanged in secure ways with lute assurances regarding the identities of the buyers and suppliers. In order to encourage rs and suppliers to engage in e-procurement, it is critical that both parties have complete dence and trust in the underlying security infrastructure.

4 Standards of Communication

ɔcurement requires various buyer-supplier systems to exchange information and ronic documents. This requires common standards. It seems that there is agreement ging on the adoption of e-Xtensible Mark-up Language (XML) as the basis for standards (S&A, 2003). The XML standard defines the content in communication and in the selection of general data formats, KPMG (2001). In defining e-procurement requirements, a key concern is the standard for formatting electronic catalogues (Birks *et al.*, 2001). The World Bank (2003) suggests that developing an e-procurement system in an open environment allows it to link to other systems for interoperability and simplifies upgrading the system. According to the DOF (2001), successful introduction and adoption of e-

procurement in the public sector also depend on the ease with which procurement-related data can be exchanged both within the agencies and between their supply bases.

2.2.15 E-procurement Implementation Strategy

The creation of documented and executable strategies prior to the deployment of the e-procurement solution is an important critical success factor (Neef, 2001). This notion is further supported by the OSD Report (2001) findings that as the procurement strategy is ded to provide savings, enabled by the technology, e-procurement should be driven by procurement-driven and technology. Therefore, a clearly defined e-procurement strategy nly emphasizes the importance of e-procurement in the public sector but takes into deration major institutional changes from the procurement process perspective as well m the organizational perspective (World Bank 2003).

6 System Integration

very important to determine the level of integration required between the e-procurement ion and existing information systems, KPMG (2001). If integration issues are complex, it is more likely that underlying business processes within an organization should be changed or adapted, ECOM (2002). It is also critical to link the e-procurement system to the financial management system in order to facilitate the process of online payment to suppliers, World Bank (2003). It is necessary for purchase transactions carried out through an electronic ordering transaction support system to be reflected in agencies' Financial Management Systems and communicated to suppliers for fulfilment, DOF (2001).

Another report DOF (2001) notes that the e-procurement strategy should be based on the introduction of sound procurement practices while taking into account the differences in requirements of the public and private sectors.

2.2.18 Procurement Process

The procurement process is one of the key organizational activities performed by public institutions and private entities. Conventional knowledge suggests that public procurement ices usually vary from private procurement process due to activity times and relations suppliers. However, a basic procurement process starts with forecast and procurement ıing and ends with settlement and payment of outstanding bills. Presutti (2003) states e-procurement systems have the power to transform the purchasing process because it n effect on all of the steps identified.

ocurement brings about important simplifications of the operational workload for buyers ecentralizing the operational procurement process, therefore improving the effectiveness efficiency of the purchasing process, allowing buyers to focus on more strategic tasks utti, 2003).

The six phases of e-procurement according to the Chartered Institute of Procurement and Supply (CIPS) (2013) that are involved in the electronic procurement function are presented in the figure below.

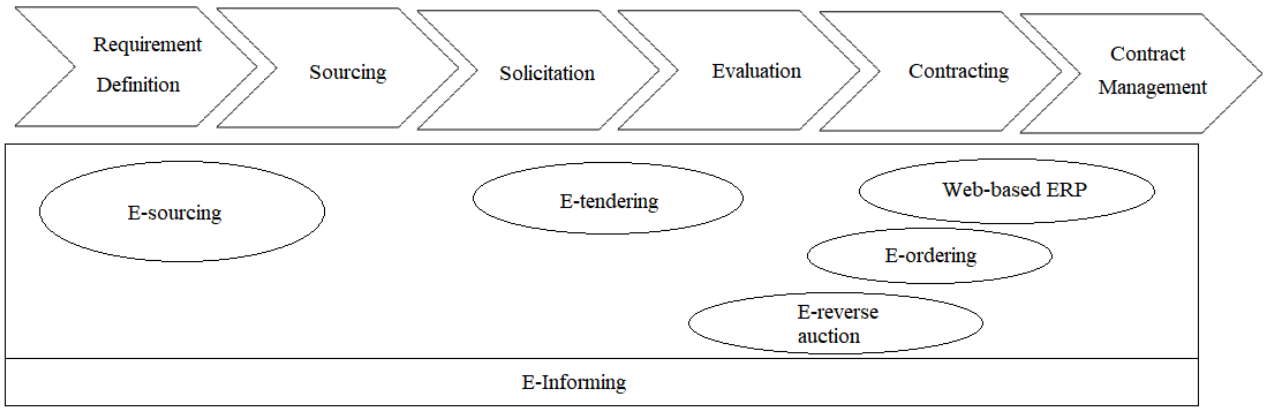


Figure 2.1: E-procurement process

ce: CIPS, 2013

9 Re-engineering the Process

ocurement should be viewed as an enabling mechanism to make the process of urement more efficient in terms of cost, time, and achievement of value for money M (2002). Where existing procurement practices and procedures may contradict the and objectives of the new initiative, the implementation of e-procurement will require e-engineering of existing purchasing processes (KPMG, 2001). Birks *et al*, (2001) noted roles and responsibilities might change substantially with the new process, which res staff to adapt according to these.

According to the Stenning & Associates Report (2003), as a significant proportion of the benefits to be gained from implementing e-procurement initiatives are related to the changes made through process re-engineering rather than the implementation of the e-procurement initiatives themselves, existing processes for dealing with procurement will need to be

revised. Birks *et al*. (2001) suggest that the process of re-engineering should not only address process but also supplier relationships and all the internal groups affected by procurement.

2.2.20 Change in Management Programme

The changes required to support business processes are directly related to the speed of adoption of e-procurement, with change management issues becoming more substantial as stakeholder needs increase (CGEC, 2002). The OGC (2002) recommends that increasing

ge in underlying processes requires more learning and effort on the part of users. equently, the OGC suggest more attention should be given to change management s, citing three ways to achieve successful change management for e-Procurement: ıltation, communication, and issue resolution (OGC, 2002). The World Bank Report ons that while change management may be the least expensive aspect of an e- ırement project, a lack of it can be a leading cause of project failure (World Bank,).

1 Value for Money in Procurement

Value for Money (VfM) is the optimum combination of whole cost and quality of a product to meet the customers' requirements. It is reflected in the price of the item or service procured. It has to be noted that VfM is a critical measure of the effectiveness of the procurement process, its outputs and outcomes. Achieving VfM requires a strategic and integrated approach to procurement (PPA Manual, 2006). This, of course, has significant organizational and institutional implications. This in procurement function is an important test against which well-functioned procurement management must be addressed to justify a

procurement outcome as necessary conditions for best value, transparency and accountability in public procurement (World Bank, 2003). VfM is therefore associated with deployment of resources for the realization of some expected value in an economically efficient and effective manner. VfM would be more achievable with e-procurement systems, since it has the power to transform the purchasing process because of its effect on the procurement cycle (Presutti, 2003).

2 Benefits of E-Procurement

benefits of adopting e-procurement technologies have been widely authored in the ture (Kalakota & Robinson 2001; Attaran & Attaran 2002; de Boer *et al*., 2002; Davila . 2003). The primary motivation for companies adopting e-procurement solutions has cost reductions and process efficiencies. Croom & Brandon-Jones (2005) found that reductions in goods purchased comprise from three key issues: consolidation of purchase fications; reducing the number of suppliers; through improved compliance with existing acts. A research by Quesada *et al*. (2010) proposes that e-procurement technologies t positively, a company's procurement practices and procurement performance. Positive impact on procurement practices facilitates the development of operational tasks in the procurement function, which leads to continuous improvement. As the operational tasks are performed more effectively, the procurement performance is enhanced.

According to Davila *et al*. companies using e-procurement solutions report savings of 42 percent in purchasing transactions costs. Another research by Croom & Johnston (2003)

found that e-procurement implementation can have up to 75% cost reduction in procurement process costs and 16 – 18% reduction in purchasing price for indirect purchases. According to Croom & Brandon-Jones (2005), complying with existing contracts is an important mechanism for realizing lower prices and discounts. The savings that come out from automating the process derive from eliminating paperwork and human intervention, reducing transaction costs and cycle time and also from streamlining and automating the audit trail and approval process (Neef, 2001). While the cost savings can be significant, de Boer *et al*. 2) argue that the total volume of purchases needs to be high, as well as the amount of ıal customers, in order to reach savings as high as mentioned above.

esearch by Davila *et al.* (2003) also identifies that companies using e-procurement gain ional control over maverick spending and can reduce the headcount supporting ıasing transactions. To support this, Croom & Johnston (2003) found that e-procurement ıave a major impact on compliance on many different levels of the procurement process: pports managerial budgetary control; reduces data entering failures; offers greater parency and accessibility to corporate wide spending; improves system reliability; and ıproves the access to managerial information.

2.2.23 Challenges and risks of E-Procurement

A research by Smart (2010) identifies that there are numerous obstacles in implementation projects to achieving in full the benefits which e-procurement offers. In some cases the benefits of implementing an e-procurement solution have been hard to evaluate. Piotrowicz & Irani (2010) propose that companies should use various measuring methods in order to

fully track and understand how benefits are distributed according to the level and area of their impact.

Even though the benefits of adopting e-procurement solutions can be significant, there are some internal and external challenges and risks related to the adoption of e-procurement. In a research by Smart (2010), the researcher came to a conclusion that there has been a long-term problem with identifying value from IT investments and in creating a case for IT introduction eneral. This is why companies need a clear plan for implementing e-procurement ıologies.

ırding to Kalakota & Robinson (2001), before the implementation of e-procurement, a ɔany must first clearly define the business problems its e-procurement solution is ded to address. Furthermore, before an e-procurement solution can be deployed, a ɔany must undergo thorough procurement process re-engineering. Automating an ing procurement process will only make matters worse (Kalakota & Robinson 2001). hamann & Alt (2005) recognize that in the successful practices, the redesigning of the ırement process is focused on: reduction or elimination of authorization stages; regulation of exceptions to a limited degree in the beginning; elimination of paper; integration of suppliers in the entire process chain; and consideration of the complete process from searching for goods through to invoicing.

A study by Angeles & Nath (2007) identified three important challenges to e-procurement implementation:

i. lack of system integration and standardization issues

ii. immaturity of e-procurement-based market services and end-user resistance

iii. maverick buying and difficulty in integrating e-procurement with other systems

Lack of system integration and standardization issues relate to the fact that e-procurement is still relatively new business application and it is not unusual to find a lack of benchmark ence models. Another challenge is software immaturity and the lack of certain key res like invoicing, payment reconciliation or managing of different geographical dictions, tax structures, currencies, etc. Also, companies need to be aware of the possible en costs related to implementation of e-procurement solutions, such as system ration, content aggregation and rationalization, catalogue and search engine tenance, supplier enablement, end-user training and procurement process re-neering. These costs can easily exceed software licensing and maintenance cost by five n times (Angeles & Nath 2007).

second challenge relates to the immaturity of providers of e-procurement services and the lack of supplier preparation, and the resistance of solutions by end-users. In some cases the immature service providers may not be able to provide a complete suite of services, especially for more complex or advanced e-procurement implementation projects. The immaturity of suppliers and the lack of preparation is also a challenge for many companies. After all, suppliers need to learn how to generate catalogues, process electronic purchase orders, how to use invoicing mechanisms among other tasks (Angeles & Nath, 2007). Including companies preferred suppliers is also very important as according to Davila *et al*.

(2003), the success of e-procurement solutions relies on the network effect that will be more effective if enough players are adopting the same technology. The other challenge here relates to the resistance of end-users towards operating the e-procurement solution. To prevent this, Angeles & Nath (2007) state companies should encourage using new e-procurement technologies through intensive training and educational sessions with end-users.

The third challenge is linked to the difficulty of changing purchasing-related behaviour ıg the company's employees. Some companies find it difficult to eliminate maverick ıg even after the implementation of e-procurement. This can be prevented by intensive ıser training and educational programmes. Companies also need to be aware of the lems in integrating the e-procurement solution with other systems (Angeles & Nath). According to Gilbert (2000), integrating e-procurement solutions with other business cations (e.g. accounting) can be more complex than businesses think.

research by Davila *et al*. (2003), four risks associated with adopting e-procurement ıologies were identified. The authors stress that these risks need to be carefully essed before these technologies are adopted. Internal business risks: Businesses have to be careful while integrating e-procurement technologies with other business applications such as accounting, human resources, accounts payable and cash management. Most companies already have invested heavily in these other applications and the integration of e-procurement should go as smoothly as possible, or it can jeopardize the reliability of organizational information.

External business risk: e-procurement solutions also need to be able to cooperate with supplier's IT-infrastructure. For e-procurement solution to be successful suppliers must be accessible through the Internet and provide catalogues to satisfy the needs of their customers. In some cases, suppliers might lack the resources to meet the demands of customers in catalogue developing and updating. Companies also need to develop mechanisms that provide the buyers with assurance that new suppliers meet the expectations and standards relating to supplier quality, service and delivery capabilities.

nology risks: Many companies are unsure which e-procurement solution best suits the fic needs of their company. The lack of widely accepted standards blocks the integration fferent e-procurement solutions across the supply chain.

researchers insist that without widely accepted standards for coding, technical, and ess specifications, adoption of e-procurement technologies will continue to be slow and fail to deliver the promised benefits. E-procurement process risks: This risk relates to the rity and control of the e-procurement process itself. Such issues can be related to, for iple data security and fraud prevention of fake suppliers, fake bids etc.

As identified in the examination of earlier e-procurement literature, adopting e-procurement solutions can provide substantial cost savings and other benefits, but there are also challenges and risks companies need to take into account when considering e-procurement adoption. Making the procurement process more efficient and faster can be achieved with the use of e-procurement solutions. Nonetheless, this requires that the implementation process must be

planned and executed thoroughly in order to minimize the challenges and risks companies might face.

While indirect purchases can sometimes account for a big part of a company's overall spending, it is important also that these purchases are conducted following company policies and instructions. Using e-procurement only for indirect purchases in the beginning can act as a stepping stone for companies before moving into comprehensive e-procurement which also ves direct purchases.

4 Relationship between E-procurement and Performance

siness has radically altered the ways in which firms interact with their suppliers (Phillips). Continued improvements in Internet technology connectivity provide an opportunity ake procurement for goods and services more transparent and efficient (Carayannis & scu, 2005). Knudsen (2003) reminds researchers that e-procurement is not a single cation but consists of many different tools. As organizations seek to enhance market encies, six forms of e-procurement applications have been noted. Knudsen cites: e- cing, e-tendering, e-informing, e-reverse auctions, e-MRO and web-based enterprise resource planning. In addition, e-collaboration is an important enabler (Knudsen, 2003). Hawking *et al.* (2003) view e-procurement not only as a strategic player in the value chain but as a major driver in the extended supply chain.

Over the last decade e-procurement has emerged as a major component in the Supply Chain Management field. At its most basic level, e-procurement has changed the ways businesses

purchase goods. At a strategic level it is anticipated that e-procurement will free purchasing resources from transaction processes to strategic sourcing activities (Rajkumar, 2001). How the performance of a purchasing department can improve remains uncertain (Cheng *et al*. 2004). In many commercial organizations the business case for e-procurement is predicated on being able to deliver a variety of benefits, which include: lower prices, lower transactional costs, better compliance and speedier processing and delivery. However, recent research has questioned whether e-procurement is really an ugly duckling (Hawking *et al*., 2004). In one e first empirical studies, Carr & Pearson (1999) confirmed that strategic purchasing has ive effect on a company's financial performance. Encouragingly, firms that do long- planning and consider purchasing to be strategic are also likely to build long-term erative relationships with their key suppliers (Carr & Pearson, 1999).

ronic commerce (e-commerce) tools provide the opportunity to enhance two elements of urement process: communication and transaction aspects (Oslomobekov *et al*., 2002). eys have confirmed that e-commerce tools and IT solutions have an influence on urement-related processes. Companies have reported:

i. Cost reduction
ii. Reduction in purchasing cycle time or order time
iii. Reduction in number of suppliers
iv. Increase in the number of products supplied by main suppliers
v. Inventory savings
vi. Reduction of purchasing prices

Surprisingly very few papers have considered the internal customer. An exception can be found in Croom & Johnston (2003) who noted an increase in internal customer service levels, achieved as a result of cost reduction, process compliance and customer satisfaction.

Some companies have created very close links with their suppliers, closer than just long-term cooperation. Companies have taken an interest in improving their suppliers' performance by exchanging staff, providing the necessary training, tools, technologies and performance ıation. The key roles in business relations provide a two-way communication, cross- ıional teams and larger purchasing power. These factors were analysed by Humphreys *et* 2004) who highlighted that supplier development is associated with buyer-supplier ırmance improvement. Carr and Pearson (1999), reported links between supplier and r relationship and firm's financial performance. According to their research results, ; may achieve competitive advantage from long-term relationships rather than merely -term.

'heoretical Review

A theory highlights and explains things that one would otherwise not see or that are difficult to get a complete understanding. The main characteristic of a theory is that it provides an explanation about a phenomenon (Gilbert, 2007). According to Makau (2014), a theory is a logically developed and elaborated network of interrelationships between variables significant to the situation under study. E-procurement studies in least developing countries had been few in literature and were typically generalised from the context of other developing countries.

2.3.1 Resource Based Theory (RBT)

The search for Information Technology has been a key factor in procurement and supply chain management (Pressutti, 2003). Within this field, resource-based theory (RBT) has been identified as a new set-up for analysing the sources and sustainability of Information Technology (Baily, 2008). According to RBT, Information Technology measured as economic rent (Bikshapathi & Raghuveer, 2007) derives from strategic resources. This Information Technology is sustainable to the extent that the resources upon which it is based aluable, scarce, inimitable, and non-substitutable (Birks *et al.*, 2001). Further, RBT is l on concept that resources controlled by firms are different and relatively immobile chmann & Alt, 2005).

it is difficult to know with certainty that competitors have stopped to attempt to imitate s Information Technology or will not attempt the same in future. Second, definition of inable Information Technology realizes on outcomes and excludes the technique and urement of processes. These definitions do not address the changing nature of processes ed to continuous improvement or organizational learning. Organizations acquire mation Technology from resources (such as new knowledge and capabilities) which are developed from time to time. Information Technology acquired from such resources will be sustainable since other firms which attempt to imitate them do not have the prerequisite organizational skills, capabilities and learning needed to emulate them (Davila *et al.,* 2003). Therefore, it is very important for any organization to boost its competitiveness by implementing unique resources such as human, capital and information technology.

2.3.2 Technology Adoption Model (TAM)

This theory posits that information system usage behaviour is largely linked with behavioural intention that is formed as a result of conscious decision-making processes. Behavioural intention, consequently is brought about by two belief factors: perceived usefulness (PU) and perceived ease of use (PEOU).

This model aims to explain why individuals accept information technologies. According to s (1989), TAM perceived ease of use and perceived usefulness are the critical factors in ıining acceptance of information technologies by individuals. TAM notes that, in ion to perceived ease of use and perceived usefulness, subjective norm is also an rtant factor influencing adoption decisions of individuals.

catesh, Morris, Davis & Davis, (2003) stated that, to consolidate all the prior studies on otance and usage in information technology is to identify a holistic view of individual otance and usage behaviour in relation to information technology. The framework ifies four factors that are determinants of user acceptance: performance expectancy, t expectancy, social influence and facilitating conditions. In addition to these three frameworks, the IT implementation literature also identified four key factors: senior management support, vendor support, user training, and user involvement (Ang, Sum & Chung, 1995).

Senior management support is generally reflected in two ways: a) willingness to provide the necessary resources to the implementation of an IT application; and b) a strong role played at resolving disputes that result from the introduction of the IT system. When employees are

given a clear signal from their senior management about the importance of the IT application to succeed and also receive considerable support in terms of necessary training and required changes necessary for business process, their willingness to accept that IT are increased (Ang, Sum & Chung, 1995).

Training helps employees in two ways: a) It helps in the transfer of knowledge from vendor's consultants to employees about why the IT system is needed and how it should improve their . This in turn helps in addressing the fear employees may have about the IT system; b) -on training helps employees to know about the features of the software and thus helps eveloping a familiarity with the system. Thus, user training is essential to generate oyee acceptance of any IT system. Finally, user involvement which refers to the cipation in the IT system implementation process by representatives of target employee os facilitates their acceptance of the IT system (Zhang, Lee & Banerjee, 2003).

ving employees at both planning and implementation stages decrease the resistance to T system because they develop a feeling that they are important stakeholders who can e decisions about how the system can be made to work for them. According to TAM, one's actual use of a technology system is influenced directly or indirectly by the user's behavioural intentions, attitude, perceived usefulness of the system, and perceived ease of the system. TAM also proposes that external factors affect intention and actual use through mediated effects on perceived usefulness and perceived ease of use.

2.3.3 Stakeholder Theory

The stakeholder concept has been demonstrated as a powerful tool of understanding the organization environment. This approach is with the sole aim of broadening the management's vision of its responsibilities and functions other than profit maximization concept and stakeholders identified in input output-models of the organization and also include interests (Mitchell *et al.* 1997).

ɾding to Freeman (1997), the main reason for stakeholder theory is to help managers to rstand stakeholders and manage them strategically. It is also important for management ıow how to handle stakeholders since the fair and just treatment of stakeholders is nensurate to the organizations long-term survival (Jawahar & McLauglin, 2001; hell *et al.* 1997).

eholders include customers, project managers, designers, funding organisations, users, oyees, local communities, subcontractors and owners (Newcombe, 2003). As a result of st construction management, theoretical knowledge has developed in terms of how to ify and handle stakeholder interest and relationships. Effective stakeholder management starts with identifying the key stakeholder; identifying the strategic role of stakeholder groupings which in turn determines the types of strategies to be implemented. Moreover it has been noted that stakeholder can be classified according to urgency, power and legitimacy (Newcombe, 2003).

2.3.4 Organisational Adoption Theory

Organizational adoption decisions comprise both the adopted innovation as well as the adopting organization. The factor model proposes that when making adoption decisions, an organization needs to span simultaneously the innovation and organizational dimensions because the equality of technological dominance and fit with the adopting organization was not automatically guaranteed. It was noted that structured members' attitudes toward technology, and decision-making practice could be a vital organizational characteristics of tion decision-making (Frambach & Schillewaert, 1999). Several theories relating to nisational adoption theories are proposed and in use by industries and public institutions s the globe. These include institutional theory (King, Covin, & Hegarty, 2003), action cost theory (Williamson, 1985), and innovation diffusion theory (Roger, 1983).

Institutional Theory

rding to King *et al.* (2003), institutional theory was held as the most appropriate etical lens to understanding the factors that enable the adoption of e-procurement in an rganization and suited to understanding the behaviour of public organization. An institution that adopts new technologies such as the e-procurement system are government agencies, international agencies, professional and trade industry associations, research-oriented higher educational institutions, trend setting corporations, multinational corporations, financial institutions, labour organizations as well as religious institutions. Several dimensions of institutional interventions were considered in developing the institutional model. The model

demonstrates the dimensions of institutional action toward adoption of e-procurement into supply push side and demand pull side (King *et al.* 2003).

Based on the analogy of King *et al.* institutional theory can be categorised into four, such as influence-supply push, influence-demand pull, regulation-supply push and regulation-demand pull. According to authors, influence in an institution meant exerting of persuasive control over the practice, rules, and belief of those under the institution. Supply push meant ɔrganization produces innovative products which by any means need to adopt new ıology (King *et al.* 2003). Actions that need to be implemented under the four categories efined below,

wledge Building: Provides the bases of scientific and technical knowledge required to ɹce and exploit innovation. Research projects are used as the focal tool to construct ɾledge in an organization. The organization directly or indirectly funds knowledge-ing programmes in order to facilitate the innovation and adoption of e-procurement.

wledge Deployment: Stimulation of dissemination of new knowledge either in the form of knowledgeable individuals and organization or in the form of repositories of knowledge in schools and libraries. The major objective of knowledge deployment was to stimulate the dissemination of new knowledge (i.e. e-procurement) among adopting organizations (King, Gurbaxani, Kraemer, McFarlan, Raman & Yap, 1994).

Subsidy: A subsidy is provided whenever an institution uses its resources or authority to defray the otherwise unavoidable costs or risks to innovators and users in the process of innovation and diffusion in use. It targeted activity to achieve a specific end. The government may set aside special funds and other incentives like provision of electrical power and training to enhance the adoption of e-procurement.

Mobilization: Basically it meant the encouragement of decentralized actors and organizations ink in a particular way with respect to an innovation. The most common instruments for lization were promotion and awareness campaign. Building awareness influences, to a extent, the decision to adopt e-procurement in an organization.

dard Setting: These were form of regulation aimed at constraining options of ntralized actors and organizations in line with larger social or institutional objectives. had voluntary or a force of law. Standard appeared as instruments for institutional vention, in innovation in several ways. They did stimulate or speed up investment in vation (i.e. e-procurement).

2.3.6 Transaction Cost Theory

Transaction cost theory was developed to assist the comparative analysis of costs of planning, adapting, and monitoring task completion under alternative governance structures. The unit of analysis, as was introduced in the theory was a transaction, which occurred when a good or service was transferred across a technologically separate interface (Williamson, 1985). The actual intensity of e-procurement application under any circumstance depended

on the specific transaction circumstance. Transaction cost theory was how the organisation would go to reduce the transaction-related costs. Under this theory three features were considered thus: asset specificity, uncertainty and frequency of transactions (Kraljic, 1983).

Asset specificity primarily addressed the uniqueness of asset for specific transactions; asset specificity affected the transaction because of the risk derived through opportunistic behaviour. The factors were deeply interdependent and when one increased or decreased, this

tion required analysis in relation to the effects reflected in the interdependencies among
f the various factors. On the other hand, whilst uncertainty was related to technological
ges and complexity of the e-procurement that the government/organisation would enter
it was cautioned that the high frequencies of transactions, especially routine items
d lead to adoption of e-procurement (Kraljic, 1983).

transaction cost theory focused more on how the organization engaged into e-
ırement by reducing the cost of transaction in an effective manner. The application of e-
ırement in relation to this theory focuses more on the feature where there is low asset
ficity for each transaction done at the organization as well as low uncertainty of the technological changes to lead to more gain by shift procurement activities from decentralized layer of public hierarchies toward transparency market. According to transaction cost approach, a higher transaction frequency provided higher incentives for both buyers and sellers to improve their coordination. As such e-procurement application in the organization decreased transaction cost by increasing the potential benefits (Pani, 2007). Williamson (1985) argued that two human and three environmental factors led to transaction costs

arising. The two human factors were: Bounded rationality and opportunism. The author used Bounded rationality to describe the fact that humans were unlikely to have the abilities or resources to consider every state-contingent outcome associated with a transaction that might arise. Opportunism, as the author noted is the willingness of humans to act in order to further their own self-interests.

2.3.7 Innovation Diffusion Theory

process of innovation diffusion was explained by Rogers (2003) as one which was ted by uncertainty reduction behaviour amongst potential adopters during the duction of technological innovations in relation to e-procurement implementation. gh innovations typically offer its adopters new ways of tackling day-to-day problems, ncertainty as to whether the new ways would be advanced to existing ones presents a antial impediment to the adoption process. To defy this uncertainty, prospective ters were motivated to seek additional information, particularly from their workplace (Brancheau & Wetherbe, 1990).

rding to Rogers (2003), the adopters of any new innovation or idea could be classified into one of five categories as *innovators, early adopters, early majority, late majority, and laggard*. The innovation diffusion model suggests that innovations should differ essentially from existing choices in order to shape prospectives for adoption. These disagreeing aspects, which Rogers emphasized as being important for adoption, are listed below (Dodgson, Grann & Salter, 2008).

Relevant advantages: The greater the advantages compared to existing alternatives, the better and faster the adoption. Rogers defined these criteria with aspects of economic profitability, low initial cost, social prestige, and time and effort savings.

Complexity of innovation: If an innovation was difficult to understand or use, it will have negative effects on diffusion.

ability of innovation: The possibility to experiment with and to get experience from an vation.

rvability: The degree to which the usability and result of an innovation could be ved. Innovations which did not have clear visible benefits and results would be adopted er than those with obvious benefits.

framework for the innovation diffusion theory as was developed by Rogers (1983) is nted in Figure 2.2.

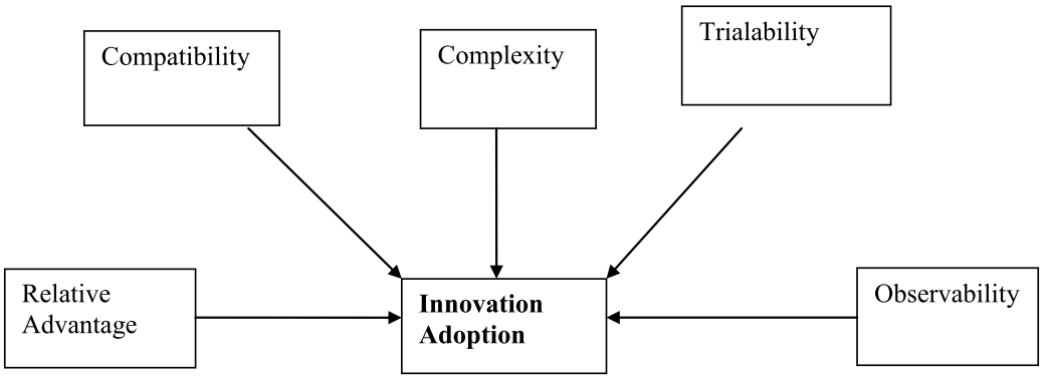


Figure 2.2: Innovation Diffusion Theory (Source: Rogers, 2003)

2.3.8 Individual Adoption Theory

Both the organizational and the innovation diffusion adoption theories would be of little importance if compliance or implementation plan is not accepted by the individual members of the organization. According to Bhattacherjee (1998), an innovation must be accepted by its target user group in order to appreciate the benefits the organization intends to achieve. It is therefore important to assess the acceptance of innovations at the level of organizational members because if acceptance among the target group was lacking, the desired ɛquences cannot be realized and the organization may eventually discontinue the ⁄ation adoption process. Frambach (1999) noted that there were many examples of ıizational innovations that only succeeded with the acceptance of organizational bers. The author added that some specific cases were computer technology for sales and eting professionals, as well as medical technologies for health care.

ɛ was a versatile behavioural theory called the Theory of Reason Action (TRA) that was loped by Ajzen & Fishbein, (1988). Unlike the individual adoption theory, TRA detailed actors and inputs that result in particular behaviour such that attitude relates to intention which also relates to behaviour.

According to Singh & Kumar (2011), an individual's actual behaviour was directly influenced by their behavioural intention to use based on the Theory of Reason Action. The intention was said to have been affected by the individual's attitude towards that behaviour and subjective norm. Attitude was defined as "an individual's positive or negative feelings about performing the target behaviour" whereas, subjective norm was defined as "the

individual's perception that most people who are important to him think he should not perform the behaviour in question" (Singh & Kumar, 2011). Rahim (2008) added that an individual's behaviour in relation to the acceptance of e-procurement system is directly influenced by behavioural intention which in turn is affected by that individual's attitude towards that behaviour and subjective norm.

From the perspective of the e-procurement adoption, subjective norm and attitude might be rtant factors in helping to study an individual's behaviour in an organization. Sheppard, wick & Warshaw (1988) emphasised that TRA was concerned only with behaviours and with the outcomes as a result of these behaviours. Therefore, the TRA model might be ul in studying factors affecting behaviour that might lead to the adoption of e-rement. However, it does not provide variables to study the consequence of these viours.

tudying the importance of behaviour in the adoption of e-procurement, Ajzen (1985,) extended the TRA model to include perceived behavioural control to the original mode n additional determinant of intention and behaviour (Kittipong, 2008). The modified version of the TRA model postulated that individual behaviour was driven by behavioural intentions where behavioural intentions were a function of an individual's attitude toward the behaviour, the subjective norms surrounding the performance of the behaviour. Attitude toward the behaviour was defined as the individual's positive or negative judgment about performing behaviour. It determined through a consideration of one's beliefs regarding the

consequences arising from behaviour and an evaluation of the desirability of these consequences.

A fundamental proposition of Theory of Planned Behaviour received substantial empirical support. In the context of e-procurement usage, the users' actual behaviour determined by their behavioural intention to use the e-procurement; equally important was another proposition about the perceived behavioural control that the actual usage behaviour was also ted by whether the users had perceived sufficient control of capability and resources ssary to adopt the e-procurement (Chen *et al*., 2008). The Theory of Planned Behaviour nmarised in Figure 2.3 (Ajzen, 1991).

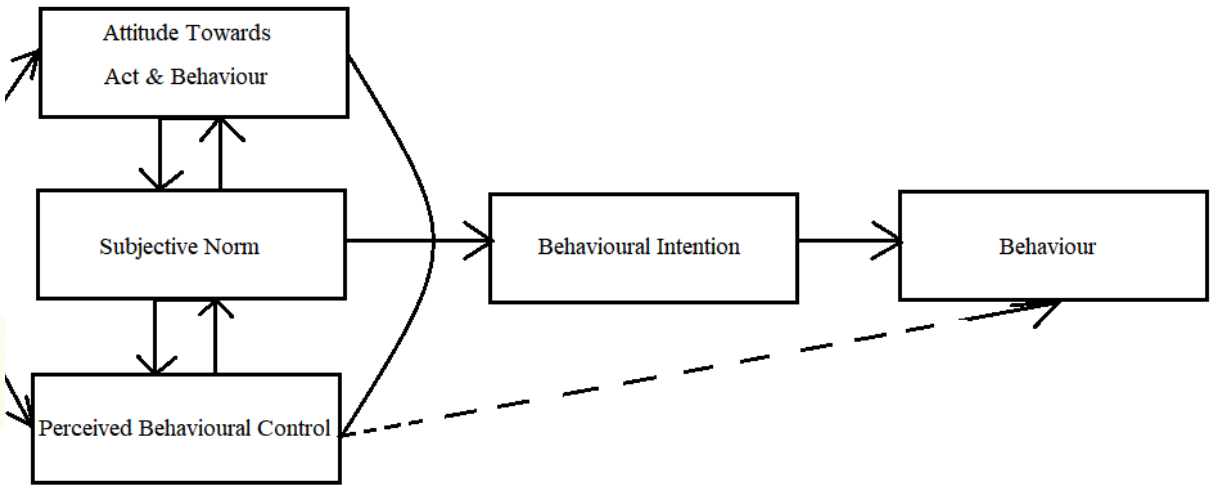


Figure 2.3: Theory of Planned Behaviour Model (Source: Ajzen, 1991)

2.4 Conceptual Framework

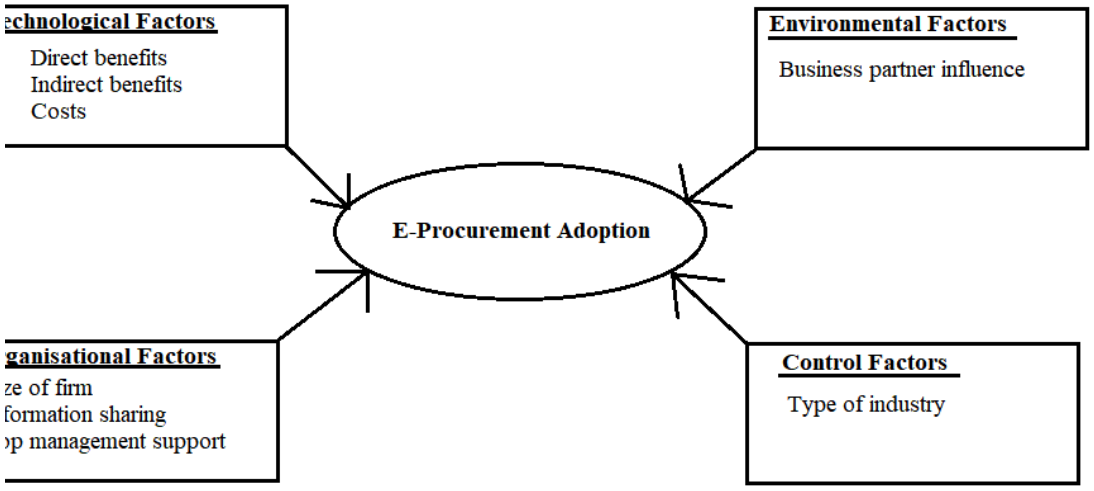
A variable is a measurable characteristic that assumes different values among the subjects (Mugenda, 2008). It is a variable that a researcher manipulates in order to determine its effect or influence on another variable. Independent variables are also called predictor variables

because they predict the amount of variation that occurs in another variable (Kothari, 2008). It is sometimes called the criterion variable, attempts to indicate the total influence arising from the effects of the independent variable. Dependent variable varies as a function of the independent variable (Kubicek, 2009). A conceptual framework is used in research to outline possible courses of action or to present a preferred approach to an idea or thought (Kubicek, 2009).

nderstanding of the benefits of the e-procurement has greatly influenced the adoption of ıcurement, largely among industries and public institutions (Gunasekaran & Ngai, 2009; Al-Hakim *et al.*, 2012; Eei, Husain & Mustaffa, 2012; Thompson Higgins & Howell,). An understanding of the benefits of e-procurement indicates the level of managerial echnological expertise and awareness of new technologies, including e-procurement. As l by Gunasekaran & Ngai (2009), real-time information, a flawless procurement process ın integrated chain are a few of the benefits associated with the e-procurement adoption.

nvestigation among national and international industries has revealed several other rs associated with the adoption of the e-procurement system. Particularly, the adoption of the e-procurement is influenced by: dependency, interaction between trust and dependency, and size of company (Latif Al-Hakim *et al.*, 2012); external barriers, technology, infrastructure and legislation (Eei *et al.*, 2012); trust on supplier, pressure of supplier and buyers, pressure from supplier and dependency on supplier (Bala Sendhil Kumar, *et al*., 2012) as well as top management support and business partner influence (Thompson *et al*., 1991).

Thompson *et al*. (1991) used a Technology-organization-environment (TOE) framework in their assessing the adoption of the e-procurement system. In their analysis, using e-procurement adoption as a dependent variable and the logistic regression model established that the key factors affecting the adoption of e-procurement in order of importance are perceived indirect benefits, firm size, business partner influence, and top management support. The pictorial summary of the framework is presented in Figure 2.4.4.

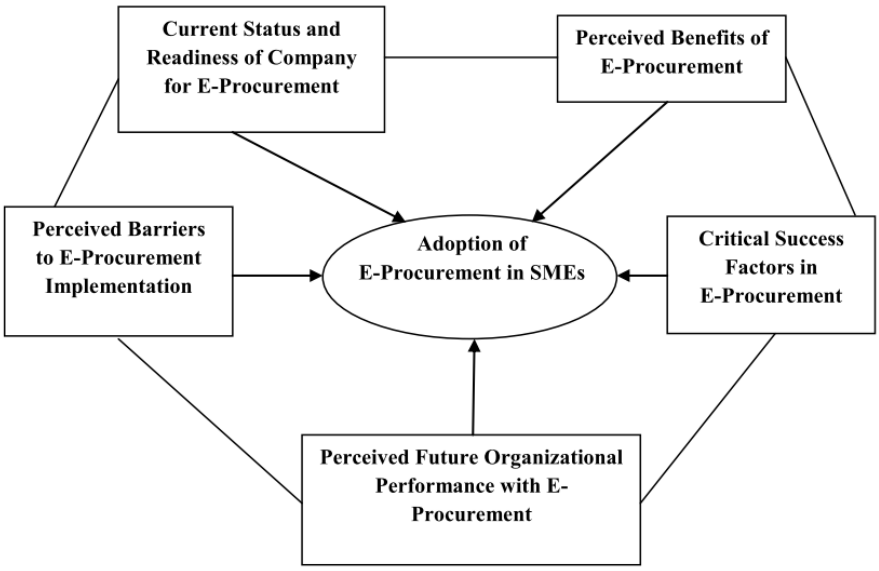


re 2.4: TOE framework research model for e-procurement adoption (Source: Thompson et

991)

Different frameworks have been employed by various authors in an attempt to fully understand the environmental variables, technological variables and supply side variables that are directly or indirectly associated with the adoption of the e-procurement system. Considering the e-procurement as the independent variable, Gunasekaran & Ngai (2009) carried out a survey among small and medium-sized enterprises (SMEs) to understand the current state of the e-procurement in the SMEs. The theoretical framework as employed by

Gunasekaran & Ngai (2009) is shown in Figure 2.5. On the other hand, Li. Yu-hui (2008) conducted an empirical investigation to identify the factors that impacted the adoption of the e-procurement system using the framework in figure 2.6.



:e 2.5: Theoretical framework for the adoption of e-procurement (Source: Gunasekaran & , 2009)

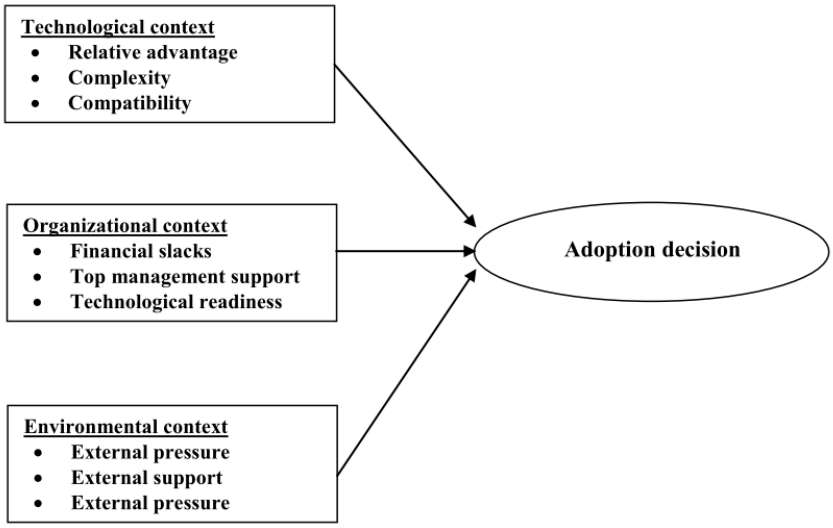


Figure 2.6: E-procurement adoption decisions (Source: LI. Yu-hui, 2008)

Sarkar (2009) provides a five level approach on how firms integrate e-procurement implementation: Level 1 - Website with just broad information about the company, level 2- Website with relevant information on products and services, level 3 - Website with support for selection and purchase decisions, level 4 - Website with online facility for placing orders and level 5 - Websites that allow actual financial transactions. The success in the e-procurement implementation in any of the indicated levels is a factor of several variables. The study on the implementation of e-procurement variables is guided by the conceptual bles based on the model developed in Sarkar (2009) below.

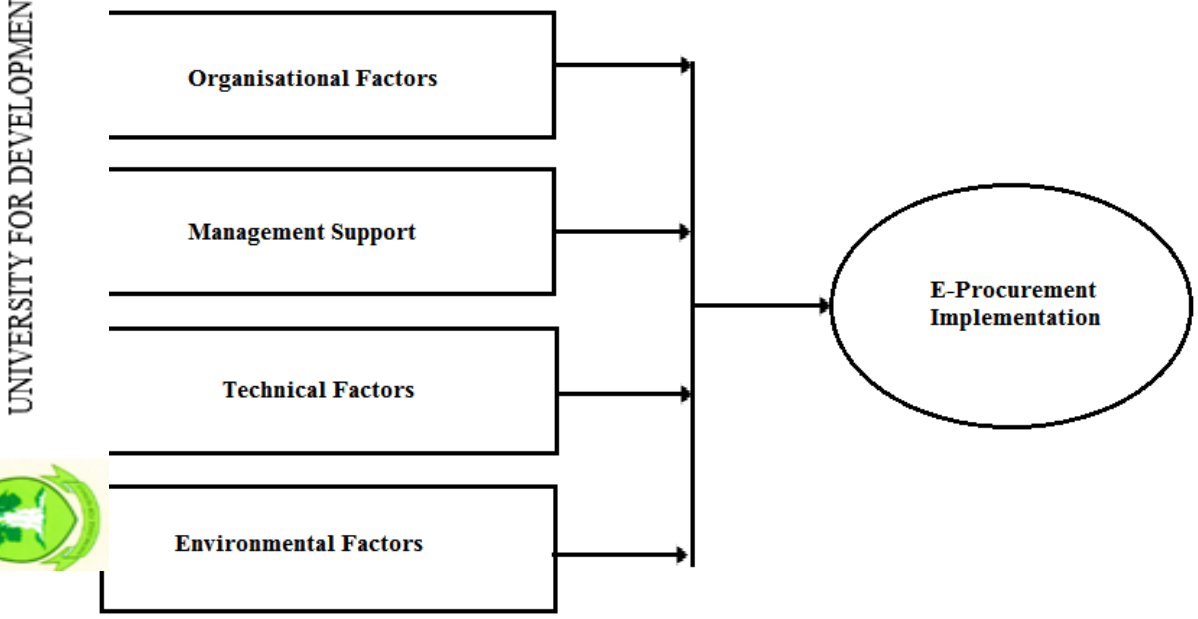


Figure 2.7: Conceptual relationship between variables (Sarkar, 2009)

It was discovered that the framework for the successful implementation of e-procurement provided value in e-interaction with customers and suppliers in the form of prompt feedback provided through web technology. The use of Web-based e-procurement system is thought to have implications for enhancing the capability in conducting the task of completing the

procurement, and in particular for reducing information asymmetries and changing inter-organizational relationships (Chin-Fu, Yi-Ming, Wen-Hsiung & Jau-Jeng, 2008). Operational benefits and strategic benefits are two major advantages of implementing Web-based e-procurement system (Chin-Fu *et al*, 2008). According to Chin-Fu *et al.* (2008), operational benefits arise from lowered transaction cost and heightened information transparency and examples include automating purchasing process, integrating the processes between procurement and engineering, and bringing joint benefits for both trading partners. In ast, strategic benefits arise through buyer organization positioning itself to take ntage of opportunities arising in the relationship (Chin-Fu *et al.*, 2008). These include advanced information sharing, tighter technology cooperation, and more enhanced y to recognize and respond to changes in the relationship (Chin-Fu *et al.*, 2008). The el presented by Chin-Fu *et al.* (2008) elucidates the benefits of implementing Web-based curement system. This framework is relevant to the e-procurement implementation it highlights the key inter relationships that determine its successful implementation.

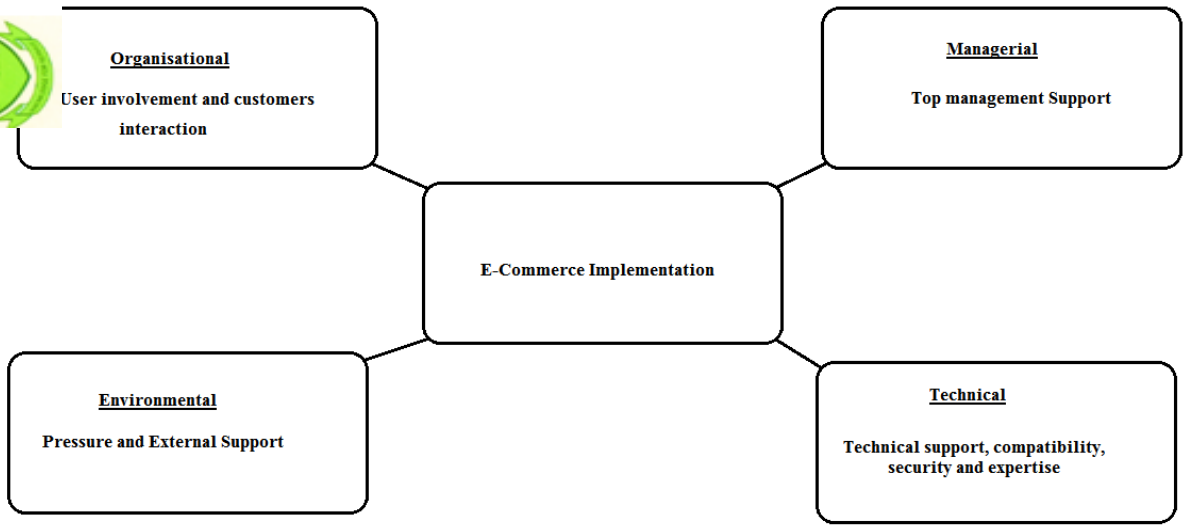


Figure 2.8: E-commerce Implementation Framework (Sarkar, 2009)

The e-procurement processes support the procurement and sourcing activities via internet technologies and enable an efficient negotiation between buyers and suppliers (Sarkar, 2009). According to Reddick (2004), e-procurement implementation is hampered by suppliers' providing inaccurate product data for its electronic catalogues. The automobile companies are frustrated by e-procurement technologies since the suppliers do not make easy-to-search catalogues (Reddick, 2004). The automobile electronic markets (e-markets) have product ·iptions that are incomplete and show inaccurate unit measures (Reddick, 2004). lick (2004) indicates that these glitches make it difficult for companies to fully ement e-procurement. E-procurement is also beset by the challenge of the digital divide ila, Gupta & Palmer, 2002). Not all suppliers have equal access to internet knowledge the different technology learner curves impede the seamless assimilation of e- urement operability (Reddick, 2004). Suppliers' knowledge gaps with respect to the e- urement technologies can be a significant handicap leading to insufficient catalogue es to satisfy the requirements of their customers (Davila, Gupta & Palmer, 2002). The of a critical mass of suppliers accessible through the organization's e-procurement system would limit the network effects that underlie these technologies. This could further hinder the acceptance and adoption of the technology (Davila *et al.*, 2002). The suppliers lack business models that support e-procurement technologies and this affects the willingness of players in the automobile industry to adopt the procurement technologies (Davila *et al.*, 2002).

2.4.2 Managerial Factors and E-procurement Implementation

According to Beauvallet, Boughzala and Assar (2011), the e-procurement's lack of user-friendliness and confidence affects its usability and service level agreements' drafting. The lack of governmental support for e-procurement as the default means of purchasing affects the confidence level among the players (European Commission, 2012). The European Commission (2002) identified several barriers affecting e-procurement: leadership failures, financial inhibitors, digital divides and choices, poor coordination, workplace and ıizational inflexibility, lack of trust and poor technical design. These failures have an ct on the purchasing contracting within the e-procurement platforms.

e-procurement implementation in the automobile industry is also affected by apparent of standardization in the electronically exchanged documents (Kubicek, Hansen & ınder, 2009). Such a challenge has a direct impact on the contracting process since the es must have a common and solid understanding before entering into contracts (Kubicek ., 2009). According to the World Bank (2004), the e-procurement implementation is affected by commonly low awareness, understanding, or skill in relation to evolving technologies. Several scholars have highlighted the linkage between the international regulatory environment and e-procurement implementation. Reddick (2004) states that companies and governments have to overcome existing legislative, regulatory and organizational barriers in order to succeed in the e-procurement implementation. Many countries have not made e-procurement laws part of the national legislative framework as is the case with Portugal (European Union, 2012).

According to Beauvallet, Boughzala & Assar (2011), public e-procurement is constantly progressing, although difficulties related to insufficient technical skills and the complexity of the juridical context hinder seriously its full adoption. Governments have not enacted laws that support e-procurement and this frustrates the usage of the technology in all industries (Beauvallet *et al*., 2011). There are legal barriers that impede participation in cross-border tenders and this breeds a fertile ground for discriminatory purchasing and hinders transparency (European Commission, 2012). There are no elaborate laws guiding digital ıtures as a principle of legal recognition and evidence value of electronic documents ɔpean Commission, 2012). The World Bank states that with regard to cross-border ronic procurement, companies point out that the most significant barriers to its lopment are: incompatible IT standards; inappropriate design of tendering systems; equate legal framework; and linguistic barriers (World Bank, 2004). Poor pre-existing ırement practice, legislation and regulation hinder procurement adoption (World Bank,).

Technical Factors and E-procurement Implementation

Technology has played pivotal role in the evolution of e-procurement (Mukhopadhyay & Kekre, 2002). Electronic procurement is frequently defined as the sourcing of goods and services via electronic means, usually through the internet (Seifert, Thonemann & Hausman, 2004). The precursors of e-procurement in the 1980s formed the basic technological trends. It began with the evolution of Material Requirement Planning (MRP), Manufacturing Resource Planning (MRP II), and then to Enterprise Resource Planning (ERP) systems in the mid-1990s (Seifert *et al.* 2004).

Most organizations adopting or planning to adopt the e-procurement software already have significant investments in the relevant technology systems; failure to integrate these technologies with existing platforms creates duplicative work steps and jeopardizes the reliability of e-procurement information (Davila *et al.* 2002). E-procurement implementation can suffer performance handicaps due to incomplete technological development of the virtualisation platforms (Beauvallet *et al.* 2011). The World Bank blames the inadequate access and connectivity to limited adoption and usage of e-procurement technologies (World , 2004).

ocurement implementation is affected by the lack of a widely accepted and standardised ion and this blocks the integration of different e-procurement software across the supply (Davila *et al.*, 2002). Without widely accepted standards for coding, technical, and ess specifications, e-procurement technology adoption will be slow and will fail to er much of the expected benefits expected (Davila *et al.*, 2002). Companies fear buying a "closed" technology that cannot communicate with other technologies and thus limits s to a broader network of supply chain constituencies (Davila *et al.*, 2002). The European Commission (EC) states that the level of information technology infrastructure and usage in developing countries still remains an impediment to a full integration of e-procurement (EC, 2012).

2.5 Empirical Evidence

Literature in the field of e-procurement discusses several benefits of e-procurement (Presutti, 2003). Previous literature (e.g., Edmiston, 2003; Panayiotou, Gayialis & Tatsiopoulos, 2004)

has identified major advantages with e-procurement, such as: reduction of supply costs, reduction of cost per tender, lead time savings, simpler ordering, reduced paperwork, decreased redundancy, less bureaucracy, standardization of processes and documentation, online reporting, clearer and more transparent processes, ensured compliance with procurement laws and regulations minimization of errors, and easier access to information. Previous research also indicates that e-procurement may lead to increased quality and more adequate purchasing (Engström *et al*., 2008). In addition, e-procurement has been found to tate decentralization of procurement and, thereby, enable purchasing professionals to more efforts on strategically important issues (Panayiotou *et al*., 2004).

eles & Nath (2005) conducted a study on the adoption of e-procurement. Another study ucci & Walter (1999) identified Redesigning affected business processes and User otance of new information system as some of the success factors of e-procurement tion. Information quality was also identified by Davis, Bagozzi & Warshaw (1989) as a ess factor. Trust is another critical success factor according to Mayer, Davis & orman (1995). The other critical success factors include Risk perception, Training of in procurement practices, Top management support and continuous measurement of the key benefits, best practices and actual selection of the system (Ring &Van de Ven, 1994; WB, 2003; ECOM, 2002; Birks *et al*., 2001).

Whenever a new information technology system is being adopted, there are a number of processes that are affected and there is the need to redesign them so that they can be in harmony with the new system. Redesigning affected business processes and consequently, influencing end-user/employee behaviours accordingly to conform to the new systems is

therefore important (Succi & Walter, 1999). The firm's actual selection of the e-procurement solution itself and the portfolio of catalogues it would need to support are also very essential. Using cost-benefit analysis, the firm should be able to identify and justify the different items that constitute the total cost of ownership: functionalities of the software package; technical architecture; installation costs; service and support; and other post-acquisition costs (Angeles & Nath, 2005).

hell (2000) states that, the introduction of e-procurement will influence the roles and
; required in the purchasing organization and will alter relationships with vendors and
liers. In a B2B setting, one study suggests that the buying centre may decrease in size,
ding fewer hierarchical levels, and contain fewer functional areas when e-procurement
plied (Oslomobekov *et al.,* 2002). Another study suggests that e-procurement leads to a
alized purchasing function and those employees will be more empowered to manage
own purchasing while adhering to the organization's rules (Kulp *et al*., 2006).

ıp exists on the factors that influence the success of e-procurement adoption among
ıfacturing firms, especially in developing countries. Most developing countries lag behind in terms of technology. It will be prudent to address the factors that influence e-procurement among manufacturing firms operating in developing countries such as Kenya.

Implementing e-procurement is a very expensive undertaking and requires heavy investments by organizations. Equipment in the manufacturing sector is also very expensive to automate

to make it possible for adoption of e-procurement. The studies have not clearly brought out the implication of e-procurement on the costs of automation for manufacturing plants.

Shalle *et al.* (2013) in their study, "Factors Affecting E-procurement Adoption in Minimizing Risks in the Supply Chain: A Survey of State Corporations in Kenya", they examine the optimization purchases through the use of Internet-based systems (electronic Procurement).

study focus on the impact of these systems on the supply chain structure and how they able to change the procurement function to a strategic operating resource for the nization. The empirical research information is based upon a study carried out that rsed the supply chain strategies being adopted by public organizations. A significant t from the study was that whilst a large number of organizations were e-procurement ters, less than half of them believed that procurement had a strategic function. The case ate corporations is used, as an example, illustrating the ability of state organizations with ategic capability in procurement, achieved through e-procurement systems, gaining ficant organizational benefits via cost and process reductions.

Mohammadi (2013) in his study "Ranking of Critical Success Factors of E-Procurement in Iranian Automotive Industry" he argues that the boost of Information and Communication Technology (ICT) has transformed economic activities regarding the increasing of accuracy, speed and transparency as well as reducing time and financial costs in any business communications. One of the most important ITC applications is electronic purchasing or e-procurement. In this regard, all organizations whether state or private are using e-

procurement with the purpose of decreasing costs. The study find out the most significant critical success factors (CSFs) and classifying them in car manufacturing industry of Iran which can lead e-procurement to success or failure in the mentioned area.

In their study of "The Critical Success Factors And Challenges in E-procurement Adoption Among Large Scale Manufacturing Firms in Nairobi, Kenya", Mose, *et al.* (2013) set out to: ascertain the extent to which large-scale manufacturers in Nairobi have adopted e-ɪrement; to determine the critical success factors influencing the success of e-ɪrement in large manufacturing firms in Nairobi and to establish the challenges that face ɔcurement adoption in large-scale manufacturing firms in Nairobi. The study revealed ɪajority of the large scale manufacturers in Nairobi, Kenya has adopted e-procurement the following e-procurement practices: online advertisement of tenders, receiving online ɪission of proposals for the tenders, and shortlisting suppliers online among others. The critical success factors identified by this study were: employees and management nitment to the success of adoption; reliability of information technology and supplier ɔrmance; monitoring the performance of e-procurement systems; user acceptance of e-procurement systems and top management support. The challenges established were identified as: resistance to change from employees, lack of e-procurement approval by company board, existence of old IT equipment among the firms that need overhaul and lack of managerial support.

Muriithi *et al.* (2015) also in their study entitled "Factors Affecting Performance of E-procurement System in the Energy Sector in Kenya: A Case Study of Kengen" assessed the

factors affecting performance of e-procurement system in the energy sector. The specific objectives were: establish the influence of user training and uptake on performance of e-procurement at KenGen, examine the influence of top management on performance of e-procurement at KenGen, determine the influence of stakeholder interest on performance of e-procurement at KenGen; establish the buyer/supplier integration on performance of e-procurement. The findings of the study revealed that user training and uptake, top management, buyer-supplier integration and stakeholder interest had 69.8% significance in ɪrmance of e-procurement system at KenGen. However, user training and uptake was l to have the least significance on performance of e-procurement at KenGen while holder interest had the strongest significance. The study recommended that the ıgement should formulate favourable policies, provide enough funds and equipment to ɔve e-procurement, involve all the stakeholders before, during and after implementation ·procurement system. Further, the organization should be open and give complete mation when dealing with suppliers and involve its employees and suppliers and train regularly.

Koroğlu (2016) in his study entitled, "Critical Success Factors and Their Ranking to Implement E-Procurement", indicated that the enhancement of ICT has changed economic activities on accuracy, increased transparency and speed in addition to reducing time and financial costs in any commercial communications. One of the most significant ICT applications is electronic transaction or e-procurement. In this connection, all corporations whether governmental or private are using e-procurement with the objective of costs reduction.

Fernandes & Vieira (2015) also looked at Public e-Procurement impact on small- and medium-enterprises. The European Union (EU) created directives to regulate the movement to full Public e-procurement (Pe-P) for all public purchases by 2016. Despite the undisputable benefits, member states are lagging behind on this paradigm shift. Also Pe-P's scholarly evaluation and theoretical knowledge behind it are still very limited. This study makes a contribution to the literature gap related to Pe-P's impact, providing preliminary evidence of its adoption in Portugal. Results provide relevant information regarding factors ting Pe-P's adoption forecasting implications for private firms, platform providers and y-makers in the 2016 full moving to Pe-P throughout the EU.

imulations of E-procurement Process

g a methodological approach to the measure the risks and benefits of implementing e-urement, Trkman *et al.* (2009) analyzed the benefits of both technological and ıizational changes related to e-procurement whilst Caballini & Revetria (2008) modelled ı-multi-echelon supply chain using system dynamics approach, to optimize the inventory s so to reduce the effect and consequently minimize the supply chain costs. The proposed supply chain consisted of five stages – customer, retailer, wholesaler, distributor and factory. The researchers tested the effect of two different kinds of delay; information processing delays and material delays. They concluded that increased delays require closer control of the inventories and Information distortion within the supply chain is a major internal cause of the effect.

In a similar vein, Kleijnen (2005) provided a survey of simulation in supply chain management and reviewed four types of simulations, namely spread sheet simulation, system dynamics, discreet event simulation, and business games. Kleijnen distinguished four simulation types for Supply Chain Management: Spread sheet simulation, System dynamics, Discrete-event dynamic systems (DEDS) simulation and Business games. In an attempt to establish an appropriate business model, Ho *et al*. (2002) proposed a framework to guide an organization on the selection process. Using system dynamics simulation Modelling ıique evaluated the benefit of deploying the e-business model(s) to the organization or ly chain.

j-Vuksic *et al*. (2002) studied how business process simulation can be used as a tool for rstanding how the process is executed and also, to identify the sources of the problems g the process execution. The researchers presented an example on how simulation elling can be used to understand procurement process and appraise the procurement rmance after electronic business had been introduced into the procurement process.

2.7 Summary of Literature Gap

In the technological aspect of e-procurement implementation, it has been identified that accuracy, reliability and accessibility are relevant in ensuring that the success of e-procurement implementation is realized. However, realization of these factors is only achieved if the alignment of the systems is achieved, hence the need for constant assessment of the overall e-procurement systems (Kagongo & Gakure, 2013; Reddick, 2004; Goo & Nam, 2007; Wong et al., 2007).

When assessing the factors affecting e-procurement adoption and its implementation, it was identified that knowledge or expertise and perception is directly linked to the success or failure of e-procurement adoption and implementation. Moreover, employees' lack of readiness to learn new technological skills and their resistance to change also hindered the implementation process (Davila et al., 2002; Mbeche et al., 2014, Mose et al., 2013, Eadie et al., 2006). These studies concurs that ICT acknowledgment is a cross-industry challenge. Thus, the degree through which ICT appropriation is used in acquisition procedures and its ɛquences for association execution is still not clear. For researchers, ICT and its tion in acquisition is an up and coming wonder in the business crew, and should be ally broke down. In addition, for researchers in this study field, ICT reception in irement applications makes a need to comprehend the effect of data innovation on the nplishment of competency on a reasonable level.

ɛ are no studies focusing on the factors affecting the adoption and implementation of ronic procurement in the health sector whether locally or globally. Majority of the es are focusing on the automotive, construction, education and the market industry (Kangongo and Gakure, 2013; Mohammadi, 2013). There the literature available on the factors affecting the electronic procurement adoption and implementation especially in the Ghanaian context is also limited. Most of the literatures have focused on the international scene and limited Ghanaian context (Bickerstaff, 2009; European Union, 2012). Although the relevant changes are focused on the general procurement arena, there are no specific laws handling electronic procurement.

It is noted that the overall legal framework in this area in Ghana especially, is now evolving at the same pace as the technological evolvement present in the health sector. Previous studies by Ateto, et al. (2013); Pani and Agrahari (2007) and Makau (2014) have focused on the challenges facing Electronic Procurement in the public sector. They have also focused on factors that influence successful implementation of Electronic Procurement as well as on the drivers of Electronic Procurement (Eadie et al., 2010). Additionally, there has been more focus on challenges facing Electronic Procurement in the public sector. There is, therefore, a

o be filled particularly in references to the driving forces and hindering factors in the tion and implementation of e-procurement in the Tamale Teaching Hospital. This study s to fill this gap by evaluating factors affecting e-procurement adoption and ementation in the health sector in Ghana.

CHAPTER THREE

METHODOLOGY

3.1 Introduction

This study section details the methodology the study employed in conducting the research, its design and the purpose for its adoption. Thus this study section starts with the study area profile, study design, target population, sample and sampling technique, data types and their sources, data gathering tools, data gathering procedure, methods of data gathering, data pre-data validity and its reliability, analysis of data, and the study ethical issues.

rofile of Study Area- Historical Background

February 2 1974, the then Ghana's Head of State Lt. Col. I.K Acheampong nissioned Tamale Teaching Hospital which was then Tamale Regional Hospital. This ital was and is still located in Tamale Metropolis at the eastern section with an aggregate area surface of 490,000 metres square out of which 122,500 metres square is developed. the catchment area where the hospital is located has an approximate population of 4.2 on. Tamale Teaching Hospital is established to serve the Northern, Upper West and Upper East Regions, northern section of Brong Ahafo including neighbouring nations such as Ivory Coast, Burkina Faso and Togo as medical referral hospital (centre).

In the latter part of 2000 and after twenty-six (26) years of the Tamale Regional hospital serving as the referral hospital for these regions and beyond, it was later upgraded in the year 2000 to the status of a Teaching hospital. At the end of 2008 year, an accreditation was secured for four rotations needed for the training of housemanship.

Over the past 40 years the catchment area, needs of communities, priorities, patient characteristics, financial landscape and the national health care environment have driven the need for the hospital to develop a strategic plan.

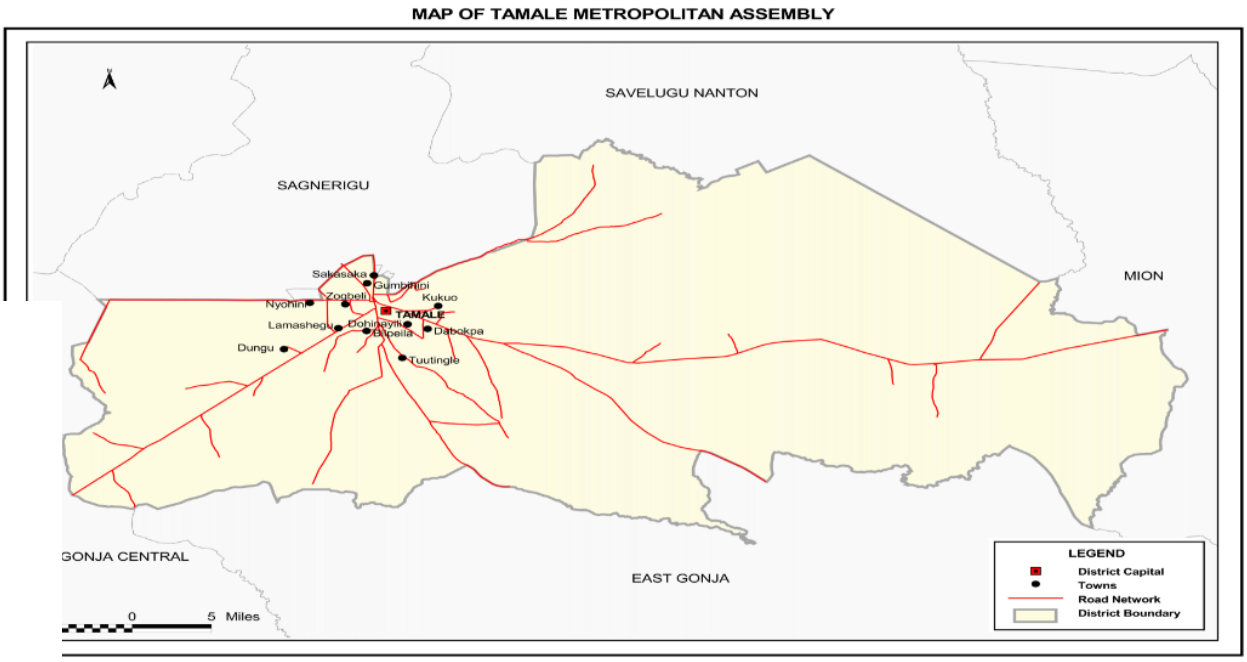
Currently, Tamale Teaching Hospital has a workforce of one-thousand five-hundred (1,597) and ninety seven and three hundred and thirty nine (339) bed capacity. Also the Teaching hospital was undergoing rehabilitation and expansion works and it was envisioned to have housand (1,000) beds when all the work would have been completed by the end of 2018.

achievements that have been chalked include accreditation as the first Ghana's Teaching ıital in the Northern section of the country, accreditation for the Obstetrics and ıecological Unit, organisation of continuous training programmes for doctors of the three ıern regions and the creation of an operational Human Resource Unit.

tionally the hospital serves as clinical teaching organization for:

1. University for Development Studies (School of Medicine and Health Sciences) – Tamale.
2. The Midwifery and Nursing Training College – Community College of Surgeons and Physicians – Tamale.
3. The Tamale Community Health Nursing Training School.
4. The Yendi, Nalerigu, Salaga, Kpembe and Damango Health Assistants Training School.
5. National Youth Employment Programme (Health Module).

Below is the map of the study area.



re 3.9: Map of Tamale Metropolitan Assembly (Ghana Statistical Service, 2014)

Research Design

udy design refers to the study procedural framework within which a study is conducted (Malhotra & Birks, 2007). This design framework includes the assembling of claims that are made on what constitutes specific methods, inquiry strategy, and knowledge (Creswell, 2002). To be able to draw a conclusion that is meaningful from this piece of study, the study framework procedure for data gathering was seen as relevant and appropriate. Additionally, Churchill and Iacobucci (2009) argue that not only does a research design facilitate the collection and analysis of data, but also helps to specify the details of the procedures necessary for obtaining the information needed to structure or solve marketing study

problems. Ideally, according to Kumar (2005), this is a plan which is employed by the study to answer the questions objectively, economically, accurately, and validly. Broadly, a study design could be divided into two parts: exploratory design and conclusive design. Whereas exploratory design can either be quantitative or qualitative in nature, conclusive research design constitutes either a descriptive or causal research.

In the context of the above discussions it is safe to posit that this study is undertaken with ivist's philosophical position. Furthermore, the current study is quantitative and tative in form and adopted a survey and interview guide approach in data collection fically via the utilization of a study questionnaire. The problem of the study was ulated on the basis of existing theory, and the intention is to create more knowledge t specific factors. For this reason, a deductive approach has been adopted in this study. research adopted a survey strategy and interview mainly because of the nature of the cross sectional and previous studies cross sectional which have mostly employed a y strategy (Robson, 2002; Easterby-Smith, Thorpe & Jackson 2012). Therefore the tion of this study design became significant not only as a result of exploratory nature but because it has been discovered to be the best for analysing problems, situations, issues, phenomenon or attitudes by looking at a cross section of the study population at a point in time (Yin, 2012; Robson, 2002; Litvin et al., 2008).

Inasmuch as the survey strategy and interview guide have pitfalls as inflexibility of the design and possible inappropriateness of questions, the merits of these design significantly outweighs its disadvantages. It has the tendency of delivering a high degree of overall

capability in indicating the larger population. Other advantages of the survey method include convenient data gathering, little or no observer subjectivity, the ability to produce precise results and less cost involved in the data collection process (Campbell & Katona, 1953), whilst the interview guide helps to solicit data that survey approach did not capture.

3.4 Study Population

In gathering data, it is important to look at the overall population within which a study is ucted. However, according to Miles & Huberman (1994), in going into s study of this a researcher cannot research everywhere and everybody. In this context the population e research means the totality or aggregate of every participant under study. The target lation for the study is made up of Engineers, Quantity Surveyors, Procurement Officers, ıce Officers, Planning Officers, Store Officers, Project Managers and heads of rtment in the Tamale Teaching Hospital. The reason for targeting officers mentioned e is to ascertain the depth of the challenges associated with the paper-based procurement m. Also, the group involves in various stages of the procurement processes and as such rich experience that would help them envisage the potential benefits of e-procurement as well as challenges that may be posed.

Table 1: Distribution of Target Population

Department	Total
Finance Staff	46
Supply Officers	22
Procurement Manager	2
Planning Officers	7
Estate Managers	16
ls of Department	8
l	**101**

ce (Fieldwork, 2017)

ample and Sampling Techniques

study sample design according to Pallant (2013) is a clearly stated plan for gathering rch sample from a given population. This involves a procedure the study uses to choose units which excluded or included from the population. In several social studies, rchers are usually met with the duty of gathering information from people who fall, within the study threshold. Therefore, it is relevant for a researcher to employ individuals who possess and fit into certain characteristics that is required by the researcher. As asserted by Salant and Dillman (1994) in a study sample selection, the major prerequisite is to state the population targeted as limited as possible in order to accomplish needed researcher's result. This is obvious because the overall population is not easy if not impossible for sampling; this then makes sense to narrowly consider and state a population for the reason of time savings, resources, and efforts as well.

Clearly stating the sample population further helps to focus on the study, so that, the study findings and recommendations can be put in a proper perspective, since it is not every finding that will be applicable to every situation. According to Keller (2009), "a sample is a set drawn from the population". Therefore, smaller chunks of a sample unit are chosen to represent the relevant attributes of the whole of the units (Graziano & Raulin, 1997).

s (2000) advises novice researchers to use large sample sizes as much as possible for the wing reasons: First, it maximizes the possibility that the mean, percentages and other tics reflect the true estimates of the population. Again large sample sizes give the effects ndomness the chance to work (Malhotra & Birks, 2007). Finally, the chances of errors educed as the sample size increases.

us, on the other hand, is a survey conducted on the full set of observation subjects nging to a given population. In some connection the term is associated with the data cted rather than the extent of the collection so that the term sample census has a distinct ning.

For some research, it might be possible to collect and analyse data from every possible case or member of the whole interested population if such research focuses on a small group. Sampling techniques are divided into two broad categories: probability and non-probability sampling. In probability sampling, each element in the sample frame has an equally known chance of being included in the sample, which allows for statistical inferences. This allows researchers to answer research questions and to achieve purposes that require them to

estimate statistically the characteristics of the population inferred from the sample. Probability sampling is often associated with survey and experimental research strategies. In contrast, in non-probability sampling, it is not possible to make valid inferences about the population. All non-probability samples rely on personal judgments somewhere in the process, which implies that such samples derived from non-probability sampling are not necessarily representative of the entire population. Researchers however, may still be able to generalize from non-probability samples about the population, but not from a statistical lpoint. Non-probability sampling is more generally used in case study research nders et al., 2011). In this study, data was obtained using a combination of purposive ling techniques.

selection of the respondents for the study was subjectively decided by the researcher. urpose of the study sampling technique was employed to select participants who best fit rincipal idea of the study. According to Barreiro and Albandoz (2001), purposive ling is a type of sampling technique in which the selection of the respondents is based ıe judgement of the researcher. It is not a probability sampling technique, hence the rcher moved from department to department administering the questionnaire to only staff who were directly involved in the procurement process in the hospital.

Meanwhile, the thirty respondents in the study were proportionately selected from the target population using the Thumb Rule. According to the Thumb Rule, if a population is less than 1,000 people, a sample ratio should be equal to 30% (SR =n/N). This procedure was therefore used to select the sample size for the study.

Table 2: Allocation of sample size to units or departments

Department	Population	Sample
Finance Officers	47	
Supply Officers	22	
Procurement Manager	2	
Planning Officers	7	
Estate Managers	16	
ls of Department	8	
l	**101**	**30**

ces (Fieldwork, 2017)

'ypes and Sources Study Data

research adopted both secondary and primary sources of information, and the primary :e was the questionnaire administered to respondents to solicit information on the bases likert scale. The research questionnaire was however structured and based on questions ıe research which also is a reflection of the study objectives; while the secondary information was obtained from journals, books and other students' publications that relate to the study in literature review.

Primary data according to Jankuwics (2002) consists of information that a researcher gathers by him/herself through systematic interviews, questionnaire results, archives information, and observations. The use of primary data was necessary to assess the current situation of the adoption and implementation of the e-procurement systems in the Tamale Teaching Hospital.

The information basically was taken from a primary source by questionnaire administration to various participants who were sampled and studied. Primary data is more reliable since they come from the original source and are collected especially for the purpose of the study. Secondary data collected essentially helped in developing the primary information collection tools and the results interpreted.

3.7 Instruments for Data Collection

data collection instruments employed in the study were the questionnaires and structured views as described below.

Questionnaires

set of questionnaire with five (5) subsections were used. These questions were structured way to elicit unambiguous information from the respondents to answer the research ions. The major sections of the questionnaire were personal data of the respondents, enges faced by staff of the Tamale Teaching Hospital in the electronic procurement m implementation, knowledge of staff about the electronic procurement implementation, perceived benefits of the implementation of the e-procurement and perceptions of staff of the hospital on the implementation of e-procurement.

3.8 Data Collection Procedure

As mentioned earlier in the study, the researcher used purposive sampling technique. The main instrument for the collection of data was the questionnaire. The interview method was also employed as it made it possible for the researcher to be flexible in the search for

information from the respondents. The use of diverse data collection methods is common in the research paradigm and the blending of interviews with the questionnaires ensured integrity by an information triangulation. By data triangulation it made it possible for the study to corroborate every given data in the interviews conducted with the observations. Though thirty (30) questionnaires were administered in total, some of them came back with missing values. This was however taken care of using methods of treating missing data as outlined in the next section.

enumerators were employed and given the needed training to administer the ionnaires. However, selected heads of department/units that were proposed to be ded in the study due to their likelihood of being part of the procurement process, were viewed by the researcher at their scheduled times. It took about one month to administer etrieve the questionnaires back from the respondents. Before the questionnaires were nistered, a pre-testing was done on some workers of the Tamale Teaching Hospital to k the appropriateness and ambiguity of the questions.

ering data using the questionnaire was inexpensive and offered an easy way to analyse the data without much knowledge in statistics. The anonymity of questionnaires enable the respondents to respond adequately and freely to the questions without fear of intimidation or victimisation. Most respondents do not have the patience to sit for long hours answering questions especially when they are always busy in their workplaces. The advantage of using a questionnaire in collecting data from respondents in the Tamale Teaching Hospital also includes the uniformity, less pressure on the respondents to answer the questions as well as the rapidity that it provides. Though the use of questionnaires in collecting data has its own

demerits, the study assumes the advantages of the questionnaire to outweigh the disadvantages.

The disadvantages of using a questionnaire are that it limits the responses to only respondents who have a considerable amount of knowledge of education. Once the study employed the services of an enumerator, this limitation was overcome. The use of questionnaires also fails most of the time to cover very busy and preoccupied persons among the respondents. Though uestions are uniform across all the respondents and the responses are well organised, the rcher loses a very important part of the answers provided in the questionnaire. tional expression of the respondents helps to determine the severity of an answer to a cular question. However, this emotional expression cannot be demonstrated in the ionnaires. The lack of personal contact partly influences the type of response that a respondent is likely to provide in the questionnaire.

Interviews

rding to Bjerke (2003), interviews have several different purposes as they can be used to nformation from respondents as well as serve as a way to thoroughly understand the opinions and beliefs of the respondents. The use of interviews in this study was greatly beneficial as it was used to attain knowledge of the participants' beliefs and attitudes towards the adoption and implementation of the e-procurement system in the Tamale Teaching Hospital.

There are different ways of structuring interviews. The three most common ways as discussed in literature are the structured interviews, unstructured interviews and semi-

structured interviews (Denscombe, 2014; Yin, 2003), which all serve different purposes. The semi-structured interview was adopted in order to keep the interviews flexible as well as allow the researcher to probe further where necessary. This method of interviews is closely related to the unstructured; which sometimes in literature is called the open-ended interview. Whereas the semi-structured interviews is guided and are made up of a couple of questions that have been obtained from theory to facilitate the study, the researcher was solely accountable for assisting the discussions in an unstructured interview (Yin, 2003). The tured interview on the other hand is sometimes called the formal survey involving more tured questions. The structured interviews are mostly used to produce quantitative data esearch environment.

use of the semi-structured interviews in the study was considered given its association qualitative research (Bryman & Bell, 2007). For the sake of consistency in questioning espondents, a predetermined list of specific questions was used accounting for the use of emi-structured interview. Whilst the objective of the interview was to allow respondents rovide an in-depth data regarding the e-procurement implementation system in the Tamale Teaching Hospital, the researcher intended to have control over the interviewing process.

3.9 Methods of Data Collection

With a letter of introduction, it was easier to establish a contact with the hospital's administration, specifically, staff of the Tamale Teaching Hospital procurement unit. After the initial introduction, the environment became conducive for the candidate. Questionnaires

were administered to individual respondents and later, a follow-up was done with the interviews with the respondents on times and at places convenient to them. These two methods of questionnaire and interview guide administration were done simultaneously. Thus, primary data was collected mainly through the administration of questionnaires and interview guide. The study sample frame was made up of officials within the procurement processes. Questionnaires facilitated the collection of data that ensured the best matching of concepts with reality; it provided the same responses from a given set of respondents and ed reduce inconvenience caused by unfavourable interview times and busy schedules. rding to Saunders *et al.* (2003), a questionnaire is one of the primary tools used to ct data and it is a device used for acquiring response to a predesigned subject matter ; a form which the respondent completes.

views were also conducted in an attempt to obtain more insight into the adoption and ementation of the e-procurement system in the Tamale Teaching Hospital. Different lars (Bjerke, 2003; Denscombe, 2014) in literature have indicated the usefulness of views in obtaining more understanding into the opinions and beliefs of the respondents. The procurement officer including top management and the IT correspondent were exclusively interviewed to get access to vital information which other staff might find it difficult to provide. It helped the researcher to obtain information that the questionnaire did not capture or did not provide space for details.

3.10 Pre-test

The questionnaires were pre-tested at the Bolgatanga branch of the Volta River Authority, where a sample size of 10 staff was focused with a considerable attention given to the constructing of unambiguous and clear questions. The Volta River Authority was chosen for the pre-testing due to the proximity of the area to the researcher and the fact that the establishment uses the e-procurement system. The instruments were refined based on feedback obtained and value loaded. Additionally, the pre-testing showed that subjects dered some of items that were included in the study scale to be redundant. For instance, ions on organisational performance with e-procurement were removed whereas general ions such as the use of on-site suppliers; use of spot-buying; extent of sourcing and lier selection criteria were refined. This is because the redundancy brought about ation and low rate of response; as such the study reduced the number of items and uctured the questionnaires into the likert type questions. Furthermore, pre-testing the ument was necessary based on the stance of Neuman (2007), noting that pre-testing of ument checks for glitches in wording of questions, lack of clarity of instructions, in fact, ning that could impede the instrument's ability to collect data in an economical and systematic fashion.

3.11 Validity and Reliability

Patton (2001) states that validity and reliability are the two features which any qualitative researcher should focus on while designing a study; in analysing the results and judging the quality of the study. Buchan (2004) shows the importance of ensuring validity and reliability of research instruments by saying that, quantitative research has a great investment in

reliability and validity. If the data is not reliable and valid, if the assessment techniques are not reliable and valid, if the design features do not create satisfactory internal and external validity, the research is worthless in scientific eyes.

This study therefore took into consideration these two key factors during the course of the research right from inception to completion. During the administration of questionnaires, the hand-delivery strategy was employed to ensure that the data was gathered from the target ›ndents. In the same way, interviews for the qualitative study were personally carried out .e researcher. While the interview was being conducted, notes were taken to serve as an ıative reference to audio records which were also utilized and later transcribed to avoid form of interviewer bias and the possibility of omitting any important data that might t the validity and reliability of the study.

ıg the analysis stage, data collected were presented and analysed just as provided in the ionnaires. In areas where editing was done, caution was taken to avoid any form of rcher bias.

To ensure the questionnaire consistently reflects the construct that it is measuring, the Cronbach's alpha was used. Though the acceptable cut point of the value of Cronbach's alpha of 0.7 or 0.8 is more acceptable (Kline, 1999), Cortina (1993) added that such general guidelines should be used with caution because the value of alpha depends on the number of items on the scale. The overall score of the Cronbach's alpha was 0.57 which is acceptable with an average correlation between items as 0.87.

3.12 Data Analysis

This section deals with the methods used to examine the data. Quantitative method was largely used whilst an aspect of qualitative approach was incorporated to analyse the data. The results were computed into percentages and subsequently presented in the form of pie, bar charts and tables. Computer data analyses software such as the Statistical Package for Social Sciences (SPSS) and Microsoft Excel were the main tools employed to analyse the in order to help interpret the results.

justification for the choices of these programmes was that, these techniques facilitated processing and data analysis as well as accurate pictorial presentations. The few open-d questions were considered and analysed based on their relevance to the study. They re-coded and categorised to capture the general representativeness before such data was ed into the SPSS software. Both the re-coded open-ended questions and the closed-d questions were coded and entered into the computer using the SPSS software. Also to tively analyse responses from the fieldwork, when there is split view, 50/50, to a yes/no question, it is assumed that Yes response represents a majority view.

3.12.1 Treatment of Missing Data

By default, most statistical analysis programmes make the incorrect assumption that data is missing completely at random. This assumption can lead to massively misleading results. Given the amount of missing data in the survey, many attempts were made to re-contact the respondents to get them filled but to no avail. Due to the limited time of the research, it was

deemed fit to replace missing values in the data with an appropriate statistical technique. The assumptions and patterns of missingness were used to determine the methods to be used to deal with the missing values.

Conventional methods such as the imputation method were used by replacing missing values with the mean of the non-missing values in the data. Due to the fact that this method leads to biased estimates of the variance and covariance, the conditional mean imputation was used to lement the marginal mean wherever necessary since literature asserts that estimating the el using weighted least squares or generalised least squares leads to better results nam, 2009; Allison, 2001; Briggs *et al.* 2003).

Ethical Issues

never we conduct research on people, the well-being of research participants must be our riority. Our actions and inactions as researchers must be guided so as not to compound ery problems we seek to solve.

research, therefore, was as a matter of principle and obligation guided by a number of ethical considerations. One major issue considered by the researcher was to eliminate interviewer bias and make the collected data truly reflect the views of the respondents. The strategy was a constant consciousness against being passionate, sentimental and pessimistic during the interview process and personal experiences and opinions were also avoided. Data was in all cases obtained with the consent of the respondents. This was achieved by explaining clearly the purpose of the research to the respondents and reminding them that

they had a choice whether to be involved or not to. Constantly the researcher reflected on, and checked the data to avoid the imposition of personal experiences in the analysis of data. In order to ensure and assure respondents that their responses were not disclosed to a third party, they were made to answer the questionnaires without indicating their identity on the questionnaire or any form of identification that might be linked to any kind of data presented, analysed and discussed in the study.

CHAPTER FOUR

DATA ANALYSIS AND DISCUSSIONS

4.1 Introduction

This chapter presents the results of the data analysed and key findings. Data was collected using questionnaires as the data collection instruments whose presentation and interpretation is given below through the use of a frequency distribution tables, bar and pie charts, and regression analysis. Discussions of the results in relation to literature are made where ›priate.

›escriptive Statistics

respondents were asked to indicate their gender. The findings are illustrated below in ›e 4.10.

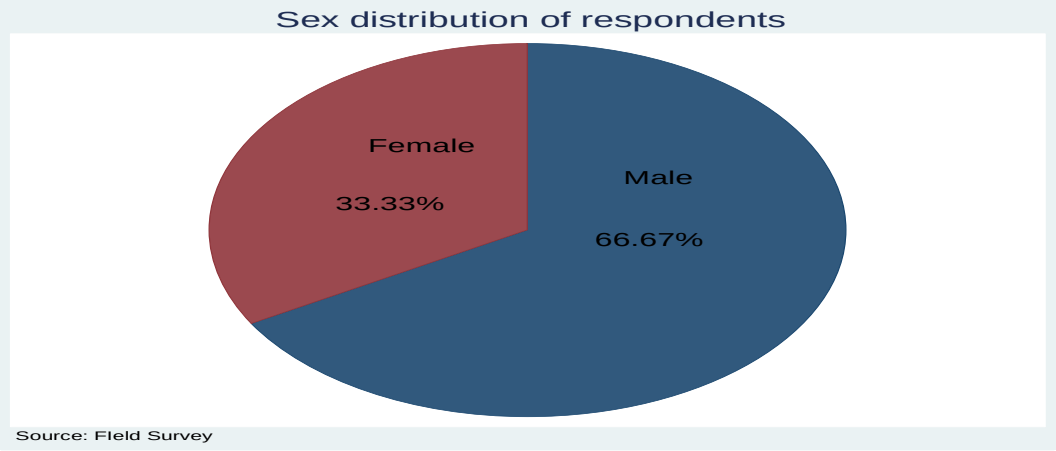


Figure 4.10: Sex distribution of respondents

Source: (Fieldwork, 2017)

Analysis of the data revealed that out of the total sample population of thirty respondents in the study, 66.67% were male whilst 33.33% constituted the female respondents.

Table 4.3: Demographic Characteristics of Respondents

		Number of Responses	Percentage (%)
Age distribution of respondents (years)			
	23 – 33	5	16.67
	34 – 44	10	33.33
	45 – 54	5	16.67
	55 – 60	10	33.33
ital Status			
	Single	5	16.67
	Married	20	66.67
	Divorced	5	16.67
l of education			
	Diploma/HND	5	16.67
	First Degree	5	16.67
	Master's	15	50.00
	PhD	5	16.67

Source: (Fieldwork, 2017)

Table 4.3 presents the demographic characteristics of the respondents after the imputation of missing values was performed. Age wise, most of the respondents in the study population (Engineers, quantity Surveyors, procurement Officers, Finance officers, planning Officers,

Stores and Project Managers) were between the age groups of 34 – 44 and 55 – 60 years respectively. The rest of the staff were distributed equally (16.67%) between the age groups 23 – 33 and 45 – 54. Whilst 66.67% of respondents were married, 16.67% respectively indicated that they were either single or divorced as at the time of the study.

On the level of education, it is required that personnel in charge of managing the procurement processes in any given institution obtain some degree of education before she is assigned. From the study, it was discovered that 50.0% of the respondents had ned their Masters' Degree whilst 16.67% were PhD holders. However, those with either oma or HND and Bachelor Degrees respectively constituted 16.67% of the study lation.

implies that most of the workers who are directly involved in the procurement process vell informed on the job since higher education is correlated with knowledge on the ı field. With educational levels above a first degree in relevant job-related fields, it is y likely that the employees of the hospital who form part of the procurement process get a better understanding of the e-procurement system to ensure its smooth operation.

4.3 General TTH Procurement Practices and Processes

Table 4: General TTH Procurement Practices and Processes

	Number of responses	Percentage (%)
Use of on-site supplier representative		
Yes	10	66.67
No	5	33.33
-buying		
Yes	10	66.67
No	5	33.33
ıs of communication		
Memos/Letters	10	100.0
lier selection criteria		
On-time delivery	5	50.00
Quality	5	50.00

ce: (Fieldwork, 2017)

It was discovered from the study that management of the hospital uses more of the expertise of on-site representatives for the purposes of procuring materials, goods and services. One reason that could be attributed to the use of on-site representatives is the spot-buying behaviour of the hospital as evidenced by 66.67% of the respondents. However, most of the communications and co-ordinations with suppliers were done basically through memos and letters. The major characteristics that management consider in the supplier selection criteria

was disclosed as the ability to supply the product(s) to meet the time demands of the hospital as well as the quality of the product(s) delivered.

The use of on-site supplier representatives by the Tamale Teaching Hospital can be viewed as a disadvantage to some extent. Management might not see the need to train more staff or educate them on the processes involved using the e-procurement system. They have the tendency to be influenced by suppliers if close supervision is not done by the appropriate rtments requiring the products to be procured. Spot-buying on the other hand may have a tive impact on inventory management since these are characterised by emergency buys w-complexity buys.

importance of communication within an organization cannot be overlooked. Whether n to up", "up to down", "horizontal" or "cross" form of communication (Boyaci, Aksu, an & Atilgan, 2000), memos are the most used means of communication within the rent units of an organisation (Boyaci *et al*., 2000). The results of the study, however, ort the findings of Boyaci *et al*. (2000).

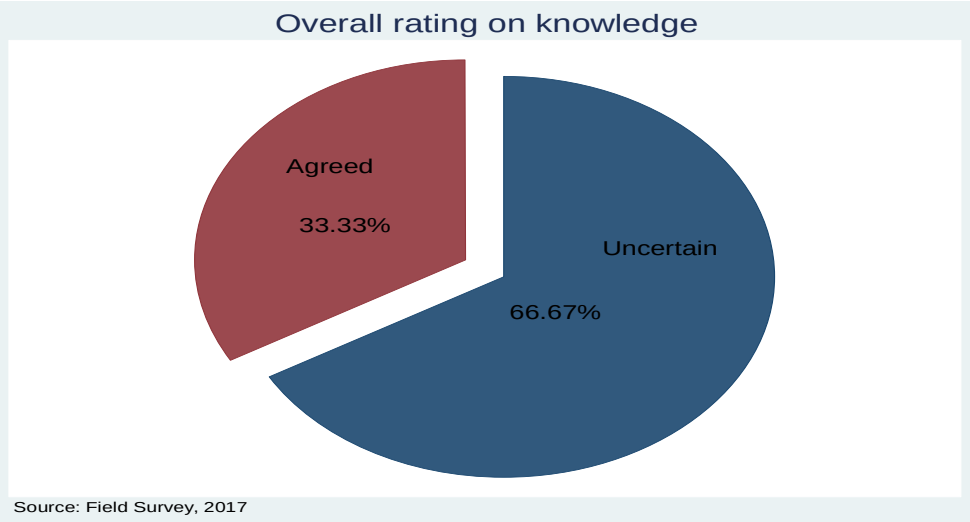
An examination of the general procurement commodity by many organizations classifies procurement characteristics into three categories such as product constraint, company constraint and service constraint (Kraig, Kellie, Whipple, Mollenkopf & Peterson, 2007). The procurement of goods and services within the hospital is closely related to the commodity market, hence the reason for spot-buying. The research findings is directly linked to the findings of Ferris (1997) and Seifert, Thonemann and Hausman (2004) who added that spot-

buying offers products at essentially negligible lead time but its flexibility comes at a greater cost and higher price uncertainty.

The purchasing function directly affects the competitive ability of a firm which mandate managers to periodically review the performance of their suppliers in order to make an informed decision on which supplier to retain. The importance of incorporating multiple attributes such as quality, on-time delivery, price, and service among others are well lished in literature (Talluri & Narasimhan, 2003; Lyn, Unni & Frank, 1994). According ɔx (1999), some of the factors firms consider in the selection of suppliers include trust commitment, adequate finance, quality, reliable delivery times and adequate logistic ıological capabilities.

Knowledge on the Implementation of the EPS

section explores the level of awareness of staff to the implementation of the e-ırement system. Respondents were made to rate themselves on the level of knowledge ıe e-procurement implementation in the institution based on the statements in the ionnaire item. The results are presented in the Figure 4.11.



:e 4.11: Overall Rating on Knowledge of E-Procurement Implementation

ce: (Fieldwork, 2017)

e was a vast difference between the number of workers in the study population who had /ledge on the implementation of the e-procurement system and those who either did not / or failed to disclose their knowledge on the implementation of the system as evidenced gure 4.11. Out of the thirty respondents, 66.67% were not certain whether or not the e-urement system was implemented in the Tamale Teaching Hospital. This could be as a t of miscommunication between the arms of the departments who are directly involved in the procurement process.

The results of this study could be connected to the findings of Egbu, Vines & Tookey (2004) who indicated that organizations were beginning to see the benefits of e-procurement and are starting to address its potentials. However, knowledge management, according to them offers opportunities for these organizations to increase their performance and efficient output in

implementing e-procurement initiatives. This presupposes that a complete and successful implementation of the e-procurement system cannot be achieved without knowledge in the e-procurement process.

The rating of the individual statements on the knowledge of e-procurement of the questionnaire is presented in the Table.

Table 4.5: Rating of Items on Staff Knowledge on Implementation of E-Procurement

cific Items Rating	SD	D	N	A	SA
vertising tenders online	33.33%	-	50.00%	-	16.67%
ine submission of proposals	16.67%	-	50.00%	-	33.33%
rt listing of suppliers online	-	-	66.67%	-	33.33%
npany staff make requisitions ne	-	-	50.00%	50.00%	-
for proposals done through pany website	-	-	100.00%	-	-
stence of functioning website	-	-	100.00%	-	-
ting item specifications on pany website	-	-	66.67%	33.33%	-
owledge of data management ugh e-procurement	-	16.67%	50.00%	33.33%	-
nforming/E-notification	-	-	50.00%	50.00%	-
ourcing	-	-	66.67%	33.33%	-
endering	-	16.67%	33.33%	50.00%	-
everse auctioning	-	-	83.33%	16.67%	-
E-Awarding	-	-	66.67%	33.33%	-
E-Contract Management	-	-	100.00%	-	-
E-Ordering	-	16.67%	66.67%	16.67%	-
E-Markets	-	-	83.33%	16.67%	-
E-Invoicing	-	-	50.00%	50.00%	-
Uses computers and other ICT gadgets	-	-	50.00%	50.00%	-
Auditable spend management data	-	-	50.00%	50.00%	-

Source: (Fieldwork, 2017)

The general observation from the results indicates that staff of the hospital had low knowledge on the e-procurement implementation as evidenced by Figure 4.11 with most of the responses centred on "Uncertain". It was disclosed by 50% of the respondents that staff of the hospital does make requisitions online, give or get notification through the internet and tendering was done online as well. Other tasks that were done online also included electronic invoicing, the use of computers and other ICT gadgets for transactions and the online management of auditable data.

gh the implementation of the e-procurement system in the Tamale Teaching Hospital not been long, it can be envisaged to have a great impact as most of the internal actions are done using the online system. Since the e-procurement process is done using mation communication and technology, basic knowledge of the staff in this area could ly improve the purpose for which the e-procurement system was established.

attempt to identify the e-procurement skills level of employees in the implementation ess, Ngari, Richu & Mbeche (2014) discovered computer competencies and skills as a quisite for the implementation of the e-procurement system. This presupposes that the organizations seeking to implement the e-procurement system lacks some amount of skills in the area of information communication technology and hence, the need for more education. As in the case of other authors (Mohammadi, 2013; Kahiu, 2015; Nasidai, 2016), their findings all relate to the knowledge of employees on the use of computers, IT infrastructure, supplier compatibility, cost of system infrastructure. Knowledge of a particular subject or situation is critical to the success of its implementation. As in the case of this study, several

other factors that staff of the Tamale Teaching Hospital needed to understand in order to fully appreciate the implementation process of the e-procurement system as in Table were not considered in literature.

4.5 Staff Perception on the Implementation of the EPS

This section considers the perception of the staff towards the implementation of the e-procurement system to improve the efficiency of the procurement processes in Tamale hing Hospital.

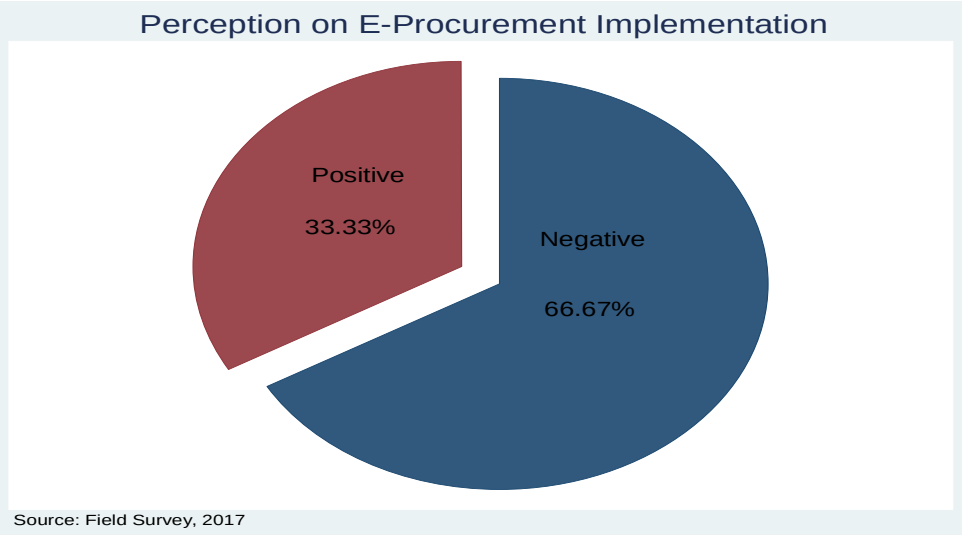


Figure 4.12: Perception of Staff of the Hospital towards the Implementation of the E-Procurement

Source: (Fieldwork, 2017)

Figure 4.12 shows the general average evaluation of the perception of staff towards the implementation of the e-procurement system in the Tamale Teaching Hospital. It was observed that majority (66.67%) of the staff either had a negative perception towards the e-

procurement implementation or was not certain whether the system was operational at the hospital. Staff that showed a positive perception towards the e-procurement system constituted only 33.33% of the population that responded to the perception questionnaire. The low perception on the e-procurement processes in the hospital was as a result of a low awareness or less involvement of the staff in the process. It was also that some respondents either were not trained to understand the usefulness of the e-procurement system or they failed to provide useful information to the researcher for fear of litigation issues.

general use of technological equipment in the daily activities has enforced the thinking aff of various organizations to lean on the shoulders of electronic transactions. There is normous amount of literature which indicates the potentials of the e-procurement system e daily business of both foreign and local organizations (Purchase & Dooley, 2010; ns, 2015; Azanlerigu & Akay 2015).

ever, the perception of staff of Ghanaian organizations with regard to the ementation of the process is a different issue (Ameyaw, Mensah & Osei-Tutu, 2012; n, 2012; Ujakpa, Arora, Fianko & Asirifi, 2016) largely due to factors such as splitting of contracts, lack of funds and the lack of cooperation from suppliers (Ameyaw, *et al*., 2012).

Table 4.5: Ratings of Items on Staff Perception towards E-procurement Implementation

Specific Items Ratings	SD	D	N	A	SA
Compliance with rules and regulations	-	-	33.33%	66.67%	-
Trust of system by buyers	-	-	83.33%	16.67%	-
v processes designed for automation	-	-	83.33%	16.67%	-
oloyee readiness to make e-procurement succeed	-	-	83.33%	16.67%	-
roving performance using performance reports	-	-	83.33%	16.67%	-
ervation of procurement guidelines	-	-	66.67%	33.33%	-
ilability of e-procurement operations instruction	-	16.67%	66.67%	16.67%	-
cient risk management	-	16.67%	50.00%	33.33%	-
ular e-procurement performance measurement	16.67%	-	50.00%	33.33%	-
Involving suppliers in e-procurement adoption	-	16.67%	50.00%	33.33%	-
Up-to-date procurement information	-	16.67%	50.00%	33.33%	-
Reliable information available on website	-	-	66.67%	33.33%	-

Source: (Fieldwork, 2017)

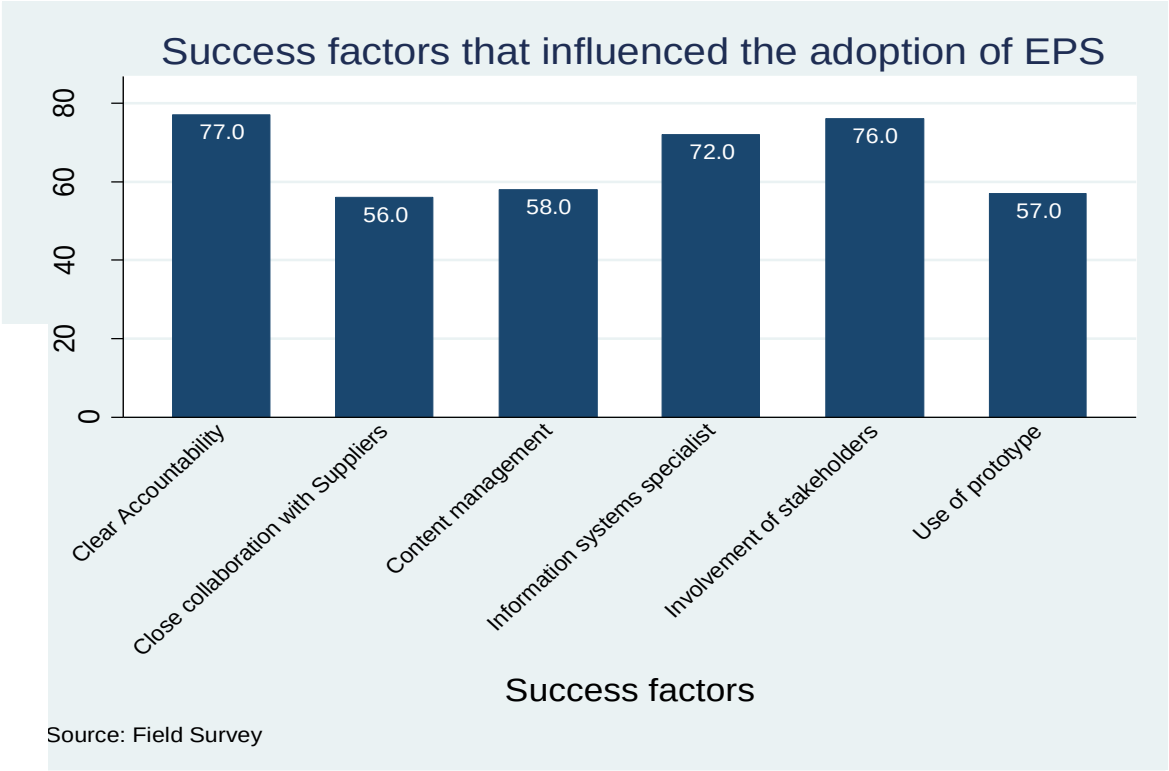
With regard to the perception of staff on the e-procurement implementation, almost all the items in Table 4.5 were scored low by the staff or they were not certain about the process of the implementation of the system. However, 66.67% of the respondents agreed that the implementation of the e-procurement system increases the compliance with rules and regulations in the procurement processes as well as awarded contracts.

The high neutral response given is an indication that either the respondents were not ortable disclosing the information procurement processes of the Tamale Teaching ital for the purpose of legality or they did not have enough knowledge and could not ree. Much education regarding the procurement procedure of the new process as well as volvement of staff is required.

g to the fact that the e-procurement system is managed independently to eliminate the n influence in the procurement system, it is assumed that its compliance with rules and ations is adhered. Though the perception of staff of the Tamale Teaching Hospital erning compliance was positive, Brandon-Jones & Carey (2011) indicated that there was ong relationship between user-perceived e-procurement. They indicated that compliance was strongly influenced by professionalism and content dimension. In attempt to explore the "early" and "late" adopters of e-procurement, Croom, & Brandon-Jones, (2005) identified compliance as one of the major concerns that workers of public sector organisations showed prior to the implementation of the e-procurement. However, they perceived that the adoption of the e-procurement had significantly improved compliance due to the ease of access for users to contracted supplies.

On the other hand, Kauppi, Brandon-Jones, Ronchi & van Raaij (2013) argued that the e-procurement may not in itself positively influence performance unless it is combined with absorptive capacity as a human interface to maximise its information and transactional improvement potential. Their argument can be related to the perceived trust of the system by buyers, the readiness of employees to make the e-procurement succeed, as well as the frequent measurement of the performance of the e-procurement system. Up-to-date mation as well as reliability of information on the website can be linked to the argument he e-procurement system should be blended with the absorptive capacity (Kauppi, *et al.*,).

4.6 Factors that Influenced the Adoption of the EPS



igure 4.13: Factors Influencing the Adoption of the E-procurement Implementation

ɔurce: (Fieldwork, 2017)

igure 4.13 presents the factors that influenced the successful adoption of the e-procurement system in the hospital. Though previous results indicated low knowledge in the e-procurement system, staff who were privy to the online procurement system revealed that the supporting factors for the implementation of the e-procurement system were the clarity in accountability for buying in the organizational structure, content management capabilities of the specialist personnel in the information system unit with internet skills, and the involvement of stakeholders in the procurement process. Close collaboration of the hospital

with potential suppliers and the use of prototype were not left out in the implementation process of the e-procurement system. Other driving forces for the implementation of the e-procurement system are outlined in section 4.7.

This result implies that any organisation that wishes to adopt the e-procurement system must have a strong culture of accountability as part of their core values. The involvement of all stakeholders in the e-procurement discourse cannot be overlooked. The e-procurement
m works with technological equipment and expertise; hence procurement team must
de information specialists for any organization to completely adopt the system.

success factors as available in literature extend from internal to external. Limiting their
rch to the small and medium enterprises, Altayyar & Beaumont-Kerridge (2016)
ified government support, own postal addresses and delivery services, providing secure
rustworthy online payment options, low cost and high speed internet connection, IT-
ed educational programmes as well as supplier's willingness and readiness to participate
me of the external factors likely to influence the adoption of the e-procurement system.
uch work is done in the western countries in trying to identify the critical success factors that influence the implementation of the e-procurement system.

However, in the Ghanaian context, the critical factors available in literature that are thought to affect the successful implementation of the e-procurement system includes the evolutionary approach to implementation, availability of IT infrastructure, user acceptance of new information system, information quality, trust and risk perception (Ujakpa, Arora, Mutalya & Namulo, 2017; Addison, 2017).

Different authors such as Prier & McCue, (2007); Vaidya, Sajeev & Callendar, (2006); Koorn, Smith, & Mueller, (2001); Croom & Brandon-Jones, (2005) presented several other internal and external success factors. These factors relate to security and authentication, end-user uptake and training, performance measurement, and technology standards. However, clarity in accountability, content management capabilities and the involvement of stakeholders as success factors uniquely identified the findings of this study.

Benefits of the Implementation of the EPS

section explores the perceived benefits that come with the implementation of the e-urement system. These benefits were considered the driving forces for the e-procurement ementation.

e 4.6: Perceived Benefits (Driving Forces) of the E-procurement Implementation

tement	D	N	A	SA
anced data quality	-	66.67%	33.33%	-
harmonization	-	66.67%	33.33%	-
Reliability of spending information	16.67%	50.00%	33.33%	-
Product standardization	-	66.67%	33.33%	-
Improved buyer/supplier relationship	16.67%	33.33%	50.00%	-
Reduced price	16.67%	33.33%	50.00%	-
Reduced administrative cost	-	66.67%	33.33%	-

Improved procurement lead time	-	33.33%	66.67%	-
Reduced human involvement	-	66.67%	33.33%	-
Improved citizen services/services to the populace	-	50.00%	50.00%	-
Increased public and supplier confidence	-	33.33%	66.67%	-
Enhanced professionalism	-	33.33%	50.00%	16.67%
roved contract compliance	-	33.33%	50.00%	16.67%
roved financial control	16.67%	33.33%	50.00%	-
roved strategic procurement	-	33.33%	66.67%	-
roved procurement planning	-	33.33%	66.67%	-
er utilization of staff	16.67%	16.67%	66.67%	-
o to achieve supply chain management	-	16.67%	83.33%	-
roved existing markets	-	16.67%	83.33%	-
Increased market share	-	33.33%	66.67%	-
Support for environmental tasks	-	16.67%	66.67%	16.67%
Reduction in operational tasks	-	33.33%	66.67%	-
Reduction in non-contractual buying	16.67%	33.33%	50.00%	-

Source: (Fieldwork, 2017)

The results in Table 4.7 indicate a significant number of items that received over 50% endorsement from the respondents of the study population. Prominent among the driving forces of the e-procurement implementation were the helpfulness of the system to achieve the desired supply chain management (83.33%), the improvement of existing markets (66.67%) and the provision of support for environmental issues (83.34%). Driving forces that also received over 60% rating from the respondents include the reduction of operational tasks, the increase in market share, the improvement in the procurement lead time, the increase in the dence level of the public and suppliers in general, the improvement of strategic urement planning as well as the efficient utilisation of staff in the procurement process. procurement involves two parties in a business, there must be a lot paper work bidding ontract. This does not only increase the operational task but also delays the procurement time. For the sake of transparency, improvement in the supply chain management of the ital, as well as the provision of support for environmental-related issues, the e-urement is a better option to the traditional manual process.

d on the results in Table 4.6, it is clear that the perceived benefits of the e-procurement as indicated by the respondents can be categorised into either direct or indirect benefits. For example, direct benefits include the financial control and the improvement of the procurement lead time whereas the improved citizen services, increased public and supplier confidence as well as an increase in the market share can be considered an indirect benefit to the Tamale Teaching Hospital. Though there is so much literature supporting the direct and indirect benefits of the e-procurement, the specific benefits as was identified differ from the findings of this study. Some of such direct benefits include the reduced inventory (Banerjee

& Golhar, 1994; Mukhopadhyay, 1995; Jimenez-martinez & Polo Redondo, 1998); improved information quality (Crum, Premkumar & Ramamurthy, 1996; Hansen & Hill, 1989; Scala & McGrath, 1993); reduced human work (Arunachalam, 1995; Wigand, 1997); improved cash flow (Arunachalam, 1995; Iacovou, Benbasat & Dexter, 1995; Wigand, 1997; Jimenez-martinez & Polo Redondo, 1998). On the other hand, the indirect benefits as spelt out by researchers include improved customer satisfaction (Hansen & Hill, 1989; O'callaghan, Kaufmann & Konsynski, 1992; Reekers & Smithson, 1994); reengineering procurement ess (O'callaghan *et al.*, 1992; Scala & McGrath, 1993) as well as enforcing better agerial strategies (Bergeron & Raymond, 1997; Udo & Pickett, 1994).

Challenges of the Implementation of the EPS

section explores the challenges of the implementation of the e-procurement system as eived by the respondents. These challenges are considered the hindrance or barriers that ate against the implementation of the e-procurement system.

e 4.7: Factors Hindering the Implementation of E-procurement

ement	SD	D	N	A	SA
Data system hacking and cracking	16.67%	16.67%	50.00%	16.67%	-
Unreliable energy supply	-	-	-	83.33%	16.67%
Unreliable internet services/internet jam	16.67%	-	-	83.33%	-
Technology incompatibility/integration with external platforms	-	-	-	100.00%	-
Unwillingness to re-engineer processes	-	-	33.33%	66.67%	-
Challenges of supplier adoption	-	-	-	83.33%	16.67%

Initial high cost of introducing e-procurement solutions	-	16.67%	33.33%	33.33%	16.67%
Issues of procurement transparency and accountability	33.33%	16.67%	16.67%	33.33%	-
Issues of professionalism	33.33%	16.67%	16.67%	33.33%	-
Training requirements	-	16.67%	16.67%	50.00%	16.67%
Availability of e-procurement experts	-	-	50.00%	33.33%	16.67%
Resistance to change/change ıgement	-	-	50.00%	50.00%	-
training legal and regulatory control	-	-	83.33%	16.67%	-
tive impact of public policy	-	-	100.00%	-	-
urement planning	16.67%	-	16.67%	66.67%	-
of local government interference	-	-	83.33%	16.67%	-
ng equipment compatible is nsive	-	-	33.33%	66.67%	-
of regular use by employees	16.67%	-	83.33%	-	-
cost of e-procurement adoption	-	-	16.67%	66.67%	16.67%
of finances	-	-	33.33%	50.00%	16.67%
T equipment that need overhaul	-	-	33.33%	66.67%	-
Resistance to change	-	16.67%	66.67%	16.67%	-
Lack of e-procurement implementation capacity by small suppliers	-	16.67%	-	66.67%	16.67%
Lack of internet access by small suppliers	-	-	-	83.33%	16.67%
Lack of company board approval	-	16.67%	66.67%	16.67%	-
Lack of managerial support	16.67%	16.67%	50.00%	16.67%	-

Source: (Field work, 2017)

One of the major requirements for the implementation of the e-procurement system is the availability of good technology with internet access. Among the several hindering factors that were disclosed by the respondents as a challenge that could prevent the complete implementation of the e-procurement system was the incompatibility of the existing technology and integration with external platforms, coupled with the unreliability of the energy (electricity) and internet supply. Supplier adoption to the paperless procurement system was also considered a challenge by almost all the respondents who attempted that

The unwillingness of departments to re-engineer the process was an evidence of their of commitment to the training needs of the e-procurement implementation. Respondents ated that the lack of finances in the hospital made it costly to invest in the e-procurement m and hence, the use of old IT equipment that need overhauling. The last but not least of hallenges as identified by the respondents was the lack of e-procurement capability by l suppliers in the procurement chain (Table 4.8).

y operating system is bound to have challenges and the e-procurement system, according e respondents of the study, has several challenges all of which are closely related to mation and communications technology. There is weak culture of maintenance in most of the state institutions in Ghana. Besides technological incompatibility to external platforms, the unreliable nature of the energy and internet service situations in the country, another challenge that might hinder the full adoption and implementation of the e-procurement system is the inevitable failure to advocate for locally produced products since small-scale enterprises in the Ghana do not have access to internet connectivity.

Different authors had different opinions and findings with regard to the challenges of the e-procurement system. As noted by Angeles & Nath (2007), the buyers have to deal with the technological immaturity and unpreparedness from the supplier's side. This is closely related to the findings of the study that discovered technological incompatibility or integration with external platforms as one of the major challenges facing the successful implementation of the e-procurement system in the Tamale Teaching Hospital. There is also a link to the supplier side; which has to deal with the technological adjustments of the hospital.

high cost of the implementation of the e-procurement was found to be consistent with ture, especially on the side of developmental cost (Croom, 2005) and the high cost of ology (Hawking *et al*., 2004). However, emphasis is also made in the literature which orms to the findings of this study in the areas of internet and technological access by l suppliers as well as training requirements and equipment compatibility (Hawking *et al*.,).

rary to the findings of the research, Liao, Cheng, Liao & Chen (2003) added that the enges associated with the successful implementation of the e-procurement include incorrect floor prices, improper alterable supplements, improper procedures in awarding contracts, information leaks as well as bribes-taking.

4.9 Regression Analysis on Knowledge and Benefits of E-Procurement

To determine the amount of variance in the general knowledge and perceived benefits of the implementation of the e-procurement system, the average rating of the general level of

knowledge of the implementation of the procurement system as well as the average ratings on the perceived benefits was regressed against the demographic characteristics of the respondents in the study.

The regression analysis was limited to knowledge and benefits since an analysis on the challenges and perception of the respondents indicated a violation of the regression assumptions and therefore not appropriate to be used for further analysis.

e 4.8: Regression Analysis on Knowledge and Benefits of E-Procurement

Parameters	**Knowledge Model** Estimates (Standard Errors)	**Benefits Model** Estimates (Standard Errors)
ıder	-0.773 (0.266) **	-1.591 (0.089) **
group	-0.068 (0.089)	-0.523 (0.030) **
ital status	0.386 (0.097) **	0.295 (0.032) **
el of education	-0.295 (0.081) **	0.068 (0.027) *
rcept	4.5 (0.783) **	6.5 (0.261) **
R^2	69.32%	95.35%
MSE	0.286	0.095

* p<0.05 ** p<0.01

The results indicate that about 69.32% of the variations in the level of knowledge on the implementation of the e-procurement system were explained by the gender, age distribution,

level of education as well as the marital status of the respondents. However, due to multicollinearity, the general questions on the use of on-site supplier representation, spot-buying, means of communication/coordination with suppliers and supplier selection criteria were not statistically significant in the analysis. The results further reveal that all but the age distribution was not statistically significant at the 5% level.

In the case of the perceived benefits of the e-procurement implementation, it was observed ıll the demographic variables are statistically significant, explaining about 95.35% of the tion in the response variable (benefits of the e-procurement implementation).

ıetter appreciate the full benefits of the e-procurement system, management of the ıle Teaching Hospital needs to consider the demographic features of their employees as : of these characteristics could either affect the knowledge base of the employees in ; of the implementation of the EPS, thereby increasing its desired output.

e is no known study that considered the relationship between the demographic features e respondents and the knowledge and/or benefits of the e-procurement system. However, various internal and external factors have been studied extensively relating to technology, knowledge base procurement as well as managerial strategies and transparency of both the buyer and the supplier (Prempeh and Nsiah Asare, 2017; Islam and Zhu, 2012; Chirchir, Ngeno and Chepkwony, 2015).

CHAPTER FIVE

SUMMARY OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

In this chapter, conclusions are derived from the key findings of the results which are based on the study objectives and recommendations made where appropriate.

5.2 Summary of Findings

study investigated the factors affecting the adoption and implementation of the e-ırement system in the Tamale Teaching Hospital. The research aimed at identifying the ng forces for the successful implementation of the EPS as well as the challenges that l hinder its implementation. The study identified success factors that led to the adoption implementation of the e-procurement system and the hindrances that could otherwise rmine its implementation in the Tamale Teaching Hospital. The results were presented oles and figures, with a regression model on the knowledge and perceived benefits of the ocurement system.

eview of literature indicates that the focus of researchers is mainly on the impact of the e-procurement system, best practices, and model development for empirical testing, the adoption and use of the e-procurement system ranging from supermarkets and private-owned businesses to the government sector. But little effort is made to identify the driving forces as well as the hindrances that could militate against the successful implementation of the e-procurement system focusing mainly on a single organization as a case study. In this study,

individual and organizational factors as well as hindrances that influenced the adoption of the e-procurement system or otherwise were the primary motivation.

Notwithstanding the fact that the adoption and implementation of the e-procurement system in Ghana is a new phenomenon, some of the organizations (mainly the private sector) have taken the bold step to implement it in their establishments. This is not the case for the public procurement process which is still largely done using the manual system. However, there are v of the public sector institutions including the Tamale Teaching Hospital which have ı the initiative to adopt and implement the e-procurement system.

Demographic Characteristics

ɔrocurement related staffs of the Tamale Teaching Hospital is mainly male-dominated as tudy indicated a higher percentage of inclusion of male over the female respondents. can be considered as matured since majority of the respondents were above the age of ears with over 66.67% married. Though there is no statistical evidence to back the onship between divorce and employee performance, the rate of divorce cases in the is alarming since the situation is mostly related to truthfulness. Marital status, gender, and level of education of the respondents were statistically found to have an influence on the level of knowledge of respondents on the e-procurement system.

On the overall procurement processes and practices, the study found that Tamale Teaching Hospital mostly used on-site supplier representatives and spot-buying whereas the means of communication is mainly through letters and memos. The supplier selection criteria were

found to be either on-time delivery or quality depending on the type of product advertised for.

5.2.2 Factors Hindering or Militating against EPS

There were challenging issues as far as the implementation process of the e-procurement system is concern. The major challenge was the unavailability of adequate technology and internet access by both the hospital and the suppliers. Besides the inability of small-scale liers and rural enterprises to access computer without internet capabilities, the iability of energy supply was a challenge as the e-procurement system uses both the net services and electricity. Most of the respondents also outlined the unwillingness of hospital to re-engineer the process due to the lack of commitment to the training rements of the e-procurement implementation. This lack of commitment is due to cial and budgetary constraints.

Success Factors and Benefits of the EPS

factors as the clear accountability of the procurement process and stakeholder involvement were a key in the adoption and implementation of the EPS. It was discovered that the institution derived the full benefits of supply chain management processes and the issues of environmental challenges relating to procurement issues were handled through the EPS. The hospital was noted for spot-buying and the reduction in the procurement lead time as disclosed by most of the respondents is an indication that the EPS is of utmost importance. There was also an improvement in the existing markets as well as an increase in the confidence level of both the public and suppliers in the procurement process of the hospital.

Other factors that were found to have influenced the successful adoption of the e-procurement system in the Tamale Teaching Hospital were the evidence of clear accountability, and the presence of information systems specialists.

5.2.4 Knowledge on the Implementation of the EPS

There was a huge gap between the number of respondents who had knowledge on the implementation and respondents who either did not know or failed to disclose their ɾledge to the researcher. Once the e-procurement is web-based, it was expected that ɔndents or had information on call for proposals but the study found that procurement-ɛd officials of the Tamale Teaching Hospital were not well-informed whether calls for ɔsals were done through the hospital's website. However, only half of the respondents ated that the hospital staffs make acquisitions online. The level of responses given by ɛspondents is an indication that education on the e-procurement processes in the Tamale hing Hospital is not enough hence; staffs are not well-informed about the system. ever, it is appropriate to state that whilst the hospital does not have organized seminars -procurement, individuals have attended seminars, conferences and workshops on e-procurement.

5.3 Conclusions

The following conclusions are drawn from the study:

1. There is no regular and efficient internet system at the Tamale Teaching Hospital, making the successful implementation of the e-procurement applications difficult.

2. Officials at the Tamale Teaching Hospital whose work are directly related to E-procurement are not trained on the technical know-how of the e-procurement.
3. There is no up to date infrastructure technology on e-procurement.
4. There is no regular training for hospital staff whose work border on IT and procurement.
5. Known suppliers to the hospital do not have training on the changing nature of contracts and procurement process.
6. Spot buying is still a common practice at the hospital.

n the nature of procurement that is mostly used by the hospital (spot-buying), the value e e-procurement would have a significant implication. Therefore, it is vital that the staff ell as potential suppliers of the hospital fully realize the drives of the hospital to adopt xploit the benefits of the e-procurement.

esults of this study can provide a better understanding of the success factors as well as actors that could hinder the complete implementation of the e-procurement system. As rime objective of every procurement system, the results revealed that the e-procurement m was instrumental in reducing the procurement lead time, providing support for environmental issues and reduce the operational tasks of the procurement process. Clear accountability for buying in the organizational structure and the use of prototype was significant factors that could increase value for money in the procurement process. In terms of close collaboration with suppliers, organizational competitiveness which in a way helps to procure quality products is guaranteed in the e-procurement process.

The major challenges that could undermine the successful implementation of the e-procurement system was inadequate technology with internet connectivity and its associated training requirements as well as the inability of small and local suppliers to adopt the e-procurement system.

5.4 Recommendations

Considering the findings and conclusion of the study, it is recommended that management of 'amale Teaching Hospital must equip the hospital with the technology and full internet ectivity to allow them access basic e-procurement applications.

agement of the hospital should consider the training needs of employees, especially who are directly involved in the procurement process in order to equip them with the nical knowledge on the e-procurement system and latest development in information nunication and technology. The hospital management also need to avail themselves of hance to fill the resource gap of small and local suppliers in order for them to fully porate into the e-procurement system.

The vast diversity of knowledge and innovations in the procurement sector, coupled with the quest for safeguarding the financial resources of the hospital necessitates a regular training session for both procurement-related staff and the IT experts in the hospital. This will enable them to fully manage and execute the procurement of goods and services of the Tamale Teaching Hospital electronically.

The study also recommends that the National Communications Authority should make available internet services accessible nationwide to allow local and small suppliers to enter into the competition process.

Knowledge on the processes involved in the procurement of goods and services electronically is critical not only to the hospital staff but also the suppliers. As supplier adoption of the e-procurement system was identified as a challenge, it is reasonable to nmend that management of the Tamale Teaching Hospital should identify its suppliers ı local and foreign) and provide training session for them as and when there are changes e contract documents as well as the procurement process.

e the Tamale Teaching hospital is noted for spot-buying, having an additional portal for e-procurement system where the processes are made simple for small suppliers is nmended without compromising the contract documents. This is as a result of the lack procurement implementation capability by small suppliers and the need to give all the liers the chance to bid.

The Tamale Teaching Hospital needs a maintenance routine for their IT infrastructure. This will allow the IT experts to constantly identify and solve the compatibility challenges that may arise as the system is being updated from time to time.

Further research could be carried out to compare an institution that has fully implemented the e-procurement system with another institution that is still using the manual procurement process to better appreciate the success factors and hindrances of the e-procurement system.

APPENDX A

REFERENCES

Aberdeen Group (2008). Global Supply Management (GSM): the 2008–2009 Aberdeen Agenda. [Online] http://www.aberdeen.com

Addison, D. (2017). Implementation and adoption of E-procurement in Ghana Public Sector: The way forward (Doctoral dissertation). Kwame Nkrumah University of Science and Technology: Kumasi.

n, I. (1991). The theory of planned behavior: Organizational behavior and human decision processes, 50(2), 179-211.

n, I. (1985). From intentions to actions: A theory of planned behavior. In Action control, 11-39

n, I. & Fishbein, M. (1988): Theory of reasoned action-Theory of planned behavior. University of South Florida.

n Development Bank (A.D.B.) (2013). E-Government Procurement Handbook, Mandaluyong City, Philippines: Available from http://www.adb.org/e-government-procurement-handbook.

Azanlerigu, J. A. & Akay, E. (2015) Prospects and Challenges of E-procurement in Some Selected Public Institutions in Ghana. Prospects, 7(29).

Barreiro, P. L. & Albandoz, J. P. (2001) Population and sample. Sampling techniques: Management Mathematics for European Schools MaMaEusch (994342-CP-1-2001-1-DECOMENIUS-C21.

Bhattacherjee, A. (1998). Managerial influences on intraorganizational information technology use: A Principal-agent model. Decision Sciences, 29(1), 139-162.

Bosilj-Vuksic, V., Stemberger, M. I., Jaklic, J. & Kovacic, A. (2002) Assessment of E-business transformation using simulation modelling. Simulation, 78(12), 731-744.

cheau, J. C. & Wetherbe, J. C. (1990) The adoption of spreadsheet software: Testing innovation diffusion theory in the context of end-user computing. Information systems research, 1(2), 115-143.

llini, C. & Revetria, R. (2008) A system dynamics model for the simulation of a non-multi-echelon supply chain: Analysis and optimization utilizing the Berkeley Madonna software. Int. journal of mathematical models and methods in applied sciences, 2, 503-512.

Campbell, A. & Katona, G. (1953) The sample survey: A technique for social-science research. Institute for Social Research.

Cortina, J. M. (1993). What is coefficient alpha? An examination of theory and applications: Journal of Applied Psychology, 78, 98–104.

Davis, F. (1989). Perceived Usefulness, Perceived Ease of Use and User Acceptance of Information Technology. MIS Quarterly (13:3), 319-340.

Davis, F. D., Bagozzi, R. P. & Warshaw, P. R (1989). User acceptance of computer technology: A comparison of two theoretical models. Management Science: 35(8), 982-1003.

De Boer, L., Harink, J. & Heijboer, G. (2002). A conceptual model for assessing the impact of electronic procurement. European Journal of Purchasing & Supply Management, 8(1), 25-33.

ırtment of Finance (DOF) (2001). Strategy for the Implementation of e-procurement in the Irish Public Sector. Dublin, Ireland.

combe, M. (2014).The good research guide: For small-scale social research projects. McGraw-Hill Education (UK).

gson, M., Gann, D. M. & Salter, A. (2008). The management of technological innovation: Strategy and practice. Oxford University Press on Demand.

, A., Maedler, M. & Liao, C. (2011). Technology in purchasing: Impacts on performance and future confidence. Working Paper WP-901: IESE Business School, University of Navarra.

Easterby-Smith, M., Thorpe, R. & Jackson, P. R. (2012). Management research. Sage.

Eei, K. S., Husain, W. & Mustaffa, N. (2012). Survey on benefits and barriers of e-procurement: Malaysian SMEs perspective. International Journal on Advanced Science, Engineering and Information Technology, 2(6), 424-429.

ECOM Group (2002). e-procurement in the UK Public Sector: A Guide to Developments and Best Practices (A CIPFA e-Government Forum Report). London, UK: Author.

Edmiston, K. (2003). State and local e-government: Prospects and challenges. The American Review of Public Administration, 33(1), 20-45.

Engström, A., Wallström, A & Salehi-Sangari, E. (2008). The evolution of e-procurement within Swedish municipalities from 2001 to 2008. In e-Challenges e-2008 Conference: 22/10/2008-24/10/2008 (Vol. 5, pp. 507-513). IOS Press.

pean Commission (2012). EU public procurement legislation: Delivering results. Summary of evaluation report: Brussels: EU

ett, S. J. & Hoekman, B. M. (2005). Government procurement: Market access, transparency, and multilateral trade rules. European Journal of Political Economy, 21(1), 163-183.

bach, R. T. & Schillewaert, N. (1999). Organizational innovation adoption: A multi-level framework of determinants and opportunities for future research. ISBM report, 29(1), 1-40.

Freeman, R.E. (1984). Strategic Management: A Stakeholder Approach. Pitman, Marshfield, MA.

Friedman, T.L (2006). The World is Flat (1st Edition). London: Penguin.

Frimpong, S. (2014) Ghana begins electronic procurement system, Ghana Business News, Daily Graphic. [Online] Available from https://www.ghanabusinessnews.com

Gates, B (2009). Business @ the Speed of Thought: London: Penguin Group.

Gilbert, A. (2000). E-Procurement: Problems behind the Promise, InformationWeek 48.

Graham, J. W. (2009). Missing data analysis: Making it work in the real world. Annual review of psychology, 60, 549-576.

iano, A. M., & Raulin, M. L. (1993): Research methods: A process of inquiry. Harper Collins College Publishers.

ısekaran, A. & Ngai, E. W. (2008). Adoption of e-procurement in Hong Kong: An empirical research. International Journal of Production Economics, 113(1), 159-175.

king, P., Stein, A., Wyld, D. C. & Foster, S. (2004). E-procurement: Is the ugly duckling actually a swan down under. Asia Pacific Journal of Marketing and Logistics, 16(1), 3-26.

Heywood, J. B., Barton, M. & Heywood, C. (2002): e-Procurement: Managing successful e-procurement implementation. Financial Times Prentice Hall.

Ho, C. F., Tai, Y. M., Wu, W. H. & Jou, J. J. (2008). Exploring the impacts of web-based e-procurement on organizational performance: PACIS 2008 Proceedings, 106.

Jankuwics, D. (2002). Business Research Project: (3rd Ed.). London: Thompson Learning.

Jawahar, I. M. & McLaughlin, G. L. (2001). Toward a descriptive stakeholder theory: An organizational life cycle approach. Academy of management review, 26(3), 397-414.

Lacobucci, D. & Churchill, G. (2009): Marketing research: Methodological foundations. Connecticut: Cengage South-Western Publishers.

Kalakota, R. & Robinson, M. (2001): e-Business 2.0: Roadmap for Success. Massachusetts: Addison Wesley Longman Inc.

D. J., Yue, K. B., Hall, S. P. & Gates, T. (2009). Global diffusion of the internet XV: Web 2.0 technologies, principles, and applications: A conceptual framework from technology push and demand pull perspective. Communications of the Association for Information Systems, 24(1), 38.

ɔong, S. (2008) A Comprehensive Framework for the Adoption of Techno-Relationship Innovations. Empirical Evidence from e-CRM in Manufacturing SMIs: Studies in Business Administration, Series B (65).

, D. R., Covin, J. G. & Hegarty, W. H. (2003). Complementary resources and the exploitation of technological innovations: Journal of Management, 29(4), 589-606.

King, J. L., Gurbaxani, V., Kraemer, K. L., McFarlan, F. W., Raman, K. S. & Yap, C. S. (1994). Institutional factors in information technology innovation. Information systems research, 5(2), 139-169.

Kleijnen, J. P. (2005). Supply chain simulation tools and techniques: A survey. International Journal of Simulation and Process Modelling, 1(1-2), 82-89.

Kline, P. (1999). The handbook of psychological testing (2nd Ed.): London: Routledge.

Koorn, R., Smith, D. & Müller, C. (2001) E-procurement and Online Marketplaces. The Netherlands: Compact.

Kothari, C. (2008). Research methodology: Methods and techniques. Delhi: New Age International.

K ˈic, P. (1983). Purchasing must become supply management. Harvard Business Review, 61(5), 109-117.

cek, H. (2010). Introduction: Conceptual framework and research design for a comparative analysis of national e-ID Management Systems in selected European countries. Identity in the Information Society, 3(1), 5-26.

, S. L., Randall, T., Brandyberry, G. & Potts, K. (2006). Using organizational control mechanisms to enhance procurement efficiency: How GlaxoSmithKline improved the effectiveness of e-procurement. Interfaces, 36(3), 209-219.

[G (2001). University of California Office of the President System-Wide E-procurement Assessment and Strategy Recommendation. Berkely, CA: PMG Consulting.

Knudsen, D. (2003). Improving procurement performance with e-business mechanisms: Department of Industrial Management and Logistics, Lund Institute of Technology.

Malhotra, N. K. & Birks, D. F. (2007) Marketing Research: An Applied Approach. Pearson Education. Limited.

Makau, J. K. (2014). Challenges facing adoption of electronic procurement in public sector in Kenya: A case of Nairobi Water and Sewerage Company. International Journal of Social Sciences and Entrepreneurship, 1(11), 267-286.

Matechak, J. P. (2002). Fighting corruption in public procurement: Center for International Private Enterprise CIPE: Feature Service Articles. Retrieved February 12 (2004), 1047-1055.

ɐr, R.C. Davis, J. H. & Schoorman, F. D. (1995). An Integrative Model of Organizational Trust. The Academy of Management Review: 20(3), 709 - 734.

onnell, D. J. (2009). An analysis into the factors affecting the uptake of applications of e-procurement, within the UK public sector (Doctoral dissertation, © Daniel J. McConnell).

Ianus, S. A. (2002). Understanding the incremental nature of e-procurement implementation at the state and local levels: Journal of Public Procurement: Vol 2(1). pp. 5-28.

Miles, M. B. & Huberman, A. M. (1994) Qualitative data analysis: An expanded sourcebook. Sage.

Mitchell, R. K., Agle, B. R. & Wood, D. J. (1997). Toward a theory of stakeholder identification and salience: Defining the principle of whom and what really counts. Academy of Management Review, 22(4), 853-886.

Mohammadi, M. R. (2013). Ranking of critical success factors of e-procurement in Iranian automotive industry: International Research Journal of Applied and Basic Sciences, 4(11), 3910-3918.

Mose, J. M., Njihia, J. M. & Magutu, P. O. (2013). The critical success factors and challenges in e-procurement adoption among large scale manufacturing firms in Nairobi, Kenya. European Scientific Journal, ESJ, 9(13).

enda, A. G. (2008). Social science research: Theory and Practice. Nairobi: Applied Research and Training Services.

ithi, Waiganjo & Chepngetich (2015). Factors affecting performance of e-procurement system in the energy sector in Kenya: A case study of Kengen. International Journal of Management and Commerce Innovations: 3(2), 155-164.

, D. (2001). E-Procurement: From strategy to implementation. FT press.

combe, R. (2003). From client to project stakeholders: A stakeholder mapping approach. Construction Management and Economics, 21(8), 841-848.

Office of Government Commerce (OGC) (2002). A guide to e-procurement for the public sector, Office of Government Commerce, London.

OGC (2005). Sustainable Procurement and Procurement Efficiency Implementation, Office of Government Commerce [online], http://www.ogc.gov.uk

Oslomobekov, T., Bello, D. C. & Gilliland, D. I. (2002) Adoption of electronic commerce tools in business procurement: Enhanced buying centred structure and processes. The Journal of Business & Industrial Marketing, 17(2/3), 151-166.

Pallant, J. (2013). SPSS survival manual: McGraw-Hill Education (UK).

Panayiotou & Gayialis, S. & Tatsiopoulos, I. (2004). "An e-procurement system for governmental purchasing," International Journal of Production Economics, no. 90, pp. 79-102.

A. K. (Ed.) (2007). E-procurement in Emerging Economies: Theory and Cases: Theory and Cases. IGI Global.

n, M. (2001). Qualitative Research and Evaluation Method, 3rd Edition. Thousand Oaks, CA: Sage.

ips, P. A. (2003). E-Business Strategy: Text and Cases, McGraw-Hill, Maidenhead, England.

ıtti, W. D. (2003). Supply management and e-procurement: Creating value added in the supply chain. Industrial marketing management, 32(3), 219-226:

Public Procurement Act, 2003.

https://www.ppaghana.org/documents/Public%20Procurement%20Act%202003%20Act%20663.pdf

Puschmann, T. & Alt, R. (2005). Successful use of e-procurement in supply chains: Supply Chain Management: An International Journal 10, 2, 122-133.

Quesada, G., González, M. E., Mueller, J. & Mueller, R. (2010). Impact of e-procurement on procurement practices and performance. Benchmarking: An International Journal, 17(4), 516-538.

Quinnox (2012). E-procurement: The Future of Supply Chain. Retrieved on April 2, 2012 from Tech Republic.

m, M. M. (2008). Identifying factors affecting acceptance of e-procurement systems: An initial qualitative study at an Australian City Council: Communications of the IBIMA, 3(1), 7-17.

umar, T. M. (2001). E-procurement: Business and technical issues. Information Systems Management, 18(4), 52-60.

lick, C. G. (2004). The growth of e-procurement in American state governments: A model and empirical evidence. Journal of Public Procurement, 4(2), 151.

Ring, P. S. & Van de Ven, A. H. (1994). Developmental processes of cooperative interorganizational relationships. Academy of Management Review, 19(1), 90-118.

Robson, C. (2002). Real world research: 2nd. Edition: Blackwell Publishing. Malden.

Rogers, E. M. (2003). Elements of diffusion: Diffusion of innovations (5th Ed). New York: Free Press.

Rogers, E. M. (1983). Diffusion of Innovations (3rd Ed.): New York: Free Press, Collier Macmillan Canada, Inc.

Salant, P., Dillman, I. & Don, A. (1994). How to conduct your own survey (No. 300.723 S3).

Santhanam, M. R. & Hartono, E. (2003). Issues in linking information technology capability to firm performance: MIS Quarterly, 27(1), 125-153.

ders, M. N. (2011). Research methods for business students, 5/e. Pearson Education, India.

ar A. (2009). Conceptual design of object oriented data warehouse: Graph semantic based model, INFOCOMP Journal of Computer Science.

ong A. C (2007). Procurement Management and its Associated Risks, Lecture Presented at Workshop for Committee of Internal Auditors, KNUST, & 12th April, 2007.

e, N. I., Guyo, W. & Amuhaya, I. M. (2013). Factors Affecting Implementation of E-procurement Practices in Public Service in Kenya: A Case of Ministry of Finance. International Journal of Science and Research: pp 308, 309.

Sheppard, B. H., Hartwick, J. & Warshaw, P. R. (1988). The theory of reasoned action: A meta-analysis of past research with recommendations for modifications and future research. Journal of Consumer Research, 15(3), 325-343.

Singh, G., Pathak, R. D., Naz, R. & Belwal, R. (2010). E-governance for improved public sector service delivery in India, Ethiopia and Fiji: International Journal of Public Sector Management, 23(3), 254-275.

Singh, I. & Punier, D. K. (2011). Employees' adoption of e-procurement system: An empirical study. ArXiv preprint arXiv: 1112.2699.

Smart, A. F. (2010). E-procurement and its impact on supply management–evidence from industrial case studies. International Journal of Logistics: Research and Applications, 13(6), 423-440.

ıing & Associates Pty Ltd (S & A) (2003). Final Report: Evaluation and Review of the E-procurement Pilot Project, Version 1.2, Hobart, Australia.

amaniam, C. & Shaw, M. J. (2002). A study on the value of B2B e-commerce: The case of Web-based procurement. E-Business Management, 439-461.

amaniam, C. & Shaw, M. J. (2004). The effects of process characteristics on the value of B2B e-procurement. Information Technology and Management, 5(1), 161-180.

Succi, M. J. & Walter, Z. D. (1999). Theory of user acceptance of information technologies: An examination of health care professionals. In Systems Sciences, 1999: HICSS-32. Proceedings of the 32nd Annual Hawaii International Conference on (pp. 7-pp): IEEE.

Szymanski, S. (2007). How to implement economic reforms: How to fight corruption effectively in public procurement in SEE countries. Paris: OECD Publishing. Retrieved March, 5, 2008.

Thai, K. V. (2001). Public procurement re-examined. Journal of public procurement, 1(1), 9.

Thompson, R. L., Higgins, C. A., & Howell, J. M. (1991). Personal computing: Toward a conceptual model of utilization. MIS quarterly, 125-143.

ya, K., Sajeev, A. S. M., & Callender, G. (2006). Critical factors that influence e-procurement implementation success in the public sector. Journal of public procurement, 6(1/2), 70.

atesh, V. Morris, M. G. Davis, G. B. & Davis, F. D. (2003). User acceptance of information technology: Toward a unified view. MIS quarterly, 425-478.

endaal, J. & Brinkkemper, S. (2003). Benefits and success factors of buyer-owned electronic trading exchanges: Procurement at Komatsu America Corporation. Journal of Information Technology Case and Application Research, 5(4), 39-52.

Ware, G. T, Moss, S. Campos, J. E & Noone, G.P (2012). 'Corruption in Procurement ', in A Graycar & R Smith (eds), Handbook of Global Research and Practice in Corruption, illustrated edn, Edward Elgar Publishing, UK.

Weele, A. J. V (2005). Purchasing and Supply Chain Management: Analysis, Strategy and Practice (4th Edition). London: Cengage Learning.

Wittig, W. A. (2003). Public procurement and the development agenda: Geneva, Switzerland: International Trade Centre.

World Bank (2003). Ghana 2003 Country Procurement Assessment Report, Washington, DC: Ghana Country Department. The World Bank.

World Bank (2003). Electronic Government Procurement (e-GP): World Bank Draft Strategy. Washington, DC: Author.

R. K. (2013). Case study research: Design and methods. Sage publications.

g, L., Lee, M. K., Zhang, Z. & Banerjee, P. (2003, January). Critical success factors of enterprise resource planning systems implementation success in China. In System Sciences, 2003: Proceedings of the 36th Annual Hawaii International Conference on (pp. 10-pp). IEEE.

APPENDIX B

UNIVERSITY FOR DEVELOPMENT STUDIES

WA CAMPUS

QUESTIONNAIRE:

Dear Respondent,

This questionnaire seeks to determine the driving forces and hindering factors in ɛmenting e-procurement in public sector organizations. I wish to assure you that this is :ademic study and all information provided shall strictly be used for academic purposes. are also assured of absolute confidentiality and anonymity. Please respond to the :ions by ticking [√] the answer that reflects your opinion.

on A: Bio Data

x: 1. Male [ ] 2. Female [ ]

ge: [ ] 22 and below [ ] 23 – 33years [ ] 34 - 44years [ ] 45 – 54years [ ] 55-60

arital status [ ] Single [ ] Married [ ] Divorced [ ] Widowed (Optional)

4. Certificate [ ] HND/Diploma [ ] First Degree [ ] Master's [ ] PhD [ ]

Section B – Explore the challenges faced by staff of Tamale Teaching Hospital in the implementation of E-procurement.

For the following questions, Please choose from the options provided below, what best suits your response to the questions. Please Tick [√] where appropriate. On a scale of 1 to 5, rate the challenges faced by staff of Volta River Authority in the implementation of E-procurement based on strongly disagree = 1 Disagree = 2 Uncertain = 3 to Agree = 4 and gly agree = 5.

	Questions	Response rating				
		1	2	3	4	5
	Data system hacking and cracking					
	Unreliable energy supply					
	Unreliable internet services/internet jam					
	Technology incompatibility/Integration with external platforms, etc.					
	Unwillingness to re-engineer processes					
	Challenges of supplier adoption					
7	Initial high cost of introducing e-procurement solutions					
8	Issues of procurement transparency and accountability					
9	Issues of professionalism					
10	Training requirements					
11	Availability of e-procurement experts					
12	Resistance to change/ Change management					

13	Constraining legal and regulatory control					
14	Negative impact of public policy					
15	Procurement planning					
16	State or local government interference					
17	Making equipment compatible is expensive					
18	Lack of regular use by employees					
19	High costs of e-procurement adoption					
	Lack of finances					
	Old IT equipment that need overhaul					
	Resistance to change					
	Lack of e-procurement implementation capacity by small suppliers					
	Lack of internet access by small suppliers					
	Lack of company board approval					
	Lack of managerial support					

on C: Staff of Tamale Teaching Hospital knowledge on the E-procurement implementation.

For the following questions, Please choose from the options provided below, what best suits your response to the questions. Please Tick [√] where appropriate. On a scale of 1 to 5, rate the knowledge on the E-procurement implementation based on strongly disagree = 1 Disagree = 2 Uncertain = 3 to Agree = 4 and strongly agree = 5.

No.	Questions	Response rating				
		1	2	3	4	5
1	Advertising tenders online					
2	Online submission of proposals					
3	Shortlisting of suppliers online					
	Company staff make requisitions online					
	Call for proposals done through company website					
	Existence of functioning website					
	Posting item specifications on company website					
	Knowledge of data management through e-procurement					
	E-Informing/E-notification					
	E-Sourcing					
	E-Tendering					
	E-Reverse auctioning					
13	E-Awarding					
14	E-Contract Management					
15	E-Ordering					
16	E-Markets					
17	E-Invoicing					
18	Uses computers and other ICT gadgets					
19	Auditable spend management data					

Section D: Determine the benefits of implementing E-procurement in Tamale Teaching Hospital.

For the following questions, Please choose from the options provided below, what best suits your response to the questions. Please Tick [√] where appropriate. On a scale of 1 to 5, rate the benefits of implementing E-procurement in Volta River Authority based on strongly disagree = 1 Disagree = 2 Uncertain = 3 to Agree = 4 and strongly agree = 5.

No.	Questions	Response rating				
		1	2	3	4	5
	Enhanced data quality					
	Data harmonization					
	Reliability of spending information					
	Product standardization					
	Improved buyer/supplier relationship					
	Reduced price					
	Reduced administrative cost					
	Improved procurement lead time					
	Reduced human involvement					
	Improved citizen services/services to the populace					
11	Increase public and supplier confidence					
12	Enhanced professionalism					
13	Improved contract compliance					
14	Improved financial control					
15	Improved strategic procurement					
16	Improved procurement planning					

Section E: Evaluate the perceptions of Staff towards implementation of the E-procurement in Tamale Teaching Hospital.

For the following questions, Please choose from the options provided below, what best suits your response to the questions. Please Tick [√] where appropriate. On a scale of 1 to 5, rate the perceptions of Staff towards implementation of the E-procurement in Volta River Authority based on strongly disagree = 1 Disagree = 2 Uncertain = 3 to Agree = 4 and strongly agree =5.

	Questions	Response rating				
		1	2	3	4	5
	Compliance with rules and regulations					
	Trust of system by buyers					
	New processes designed for automation					
	Employee readiness to make e-procurement succeed					
	Improving performance using performance reports					
	Observation of procurement guidelines					
	Availability of e-procurement operations instruction					
8	Efficient risk management					
9	Regular e-procurement performance measurement					
10	Involving suppliers in e-procurement adoption					
11	Up to date procurement information					
12	Reliable information available on website					

APPENDIX C

INTERVIEW GUIDE:

Section A: Factors Hindering Implementation of E-procurement

1. In your view, what are the factors hindering e-procurement implementation in TTH?

……

……

……

……

……

on B: Success Factors or Driving Forces to Adoption of the E-procurement system

hat do you think are the driving forces or factors to the adoption of e-procurement m?.....

.....

.....

*W*hat do you think about the approach of management on e-procurement m?.....

.....

.....

.....

Section C: Expert Knowledge & Perception of Staff on E-procurement Implementation

21. What is the knowledge base or expertise of staff on e-procurement?.....

.....

.....

.....

22. What is the perception of staff on e-procurement system?.....

.....

.....

THANK YOU

APPENDIX D

Legal Status of Tamale Teaching Hospital:

The Ghana Health Service and Teaching Hospitals Act 1996 (Act 525), accord the Tamale Teaching Hospital and other Teaching Hospitals "autonomous status" albeit subject to policy guidance and strategic direction of the Ministry of Health in relation to the country's health needs.

date

nandate of the hospital is to:

. Provide advanced clinical health services to support primary and secondary health care.

. Serve as training ground for undergraduate and postgraduate training for medical and other health professionals.

. Undertake research for the purpose of improving the conditions of people's health.

ɔn

The vision of the hospital is to become the centre of excellence for quality tertiary health care, medical education and research.

Mission

The mission of the hospital is to provide quality and affordable health care: delivered by well- trained, highly-motivated and client-friendly professional health staff.

Strategic Objectives

Tamale Teaching Hospital operates under five corporate objectives that reflect the complexity of the health care services and provide a framework to focus and assure service delivery. These are:

1. To strengthen and improve governance and efficiency of management systems.
2. To provide excellent quality maternal and child health service.
3. To provide excellent tertiary health care.
4. To attract and retain health staff.
5. To improve and promote Medical research.

identified **core values** that are fundamental to the efficient and effective operations of ospital are:

le-cent redness

ıealth delivery systems are carefully planned and designed to meet and satisfy the needs ır clients, external stakeholders with whom we share the common vision and our staff who deliver quality health care services. A people-centred, client-empowering approach to health care is therefore a relevant and essential value we uphold in helping us achieve sustainable quality health service delivery.

Professionalism

In order to achieve excellence in service delivery at TTH, we are committed to attracting and retaining the services of highly trained professionals in all fields in order to provide the required quality of medical care in terms of clinical outcomes, safety, and service.

We believe that patient satisfaction will be greatly improved if staff are continuously trained ... regard to skills, behaviours and attitudes.

eving excellence in our mandate areas can only be accomplished if all health team bers play their individual roles with professionalism.

vation

very area of service we provide at TTH, we are open to new ideas and cutting-edge ıologies and are committed to deploying them to enhance life expectancy, quality of life, ıostic and therapeutic options, as well as the efficiency and cost effectiveness of our h-care system.

Teamwork

At TTH, health professionals with different backgrounds in education, ideas, responsibilities and interests all work together to provide appropriate quality care.

Quality health care depends on every health care worker playing their part well. Well-coordinated teamwork across the health professions leads to efficient and cost-effective patient care, and that is what we are committed to achieving.

Integrity

In the provision of services, we ensure the professional and personal integrity of our staff ı dealing with each other and/or our clients and partners. It is the bedrock on which 's organizational culture is founded.

tionally, the hospital is guided by regional and sub-regional imperatives as defined by conventions and declarations of Regional and Sub-Regional bodies as well as global ensus and international declarations on health priorities such as the Millennium elopment Goals.

ocation of Tamale along the Trans-ECOWAS Highway and its prominence in economic ities within the Sub-Region also makes it an attractive destination for traders from neighbouring countries. This invariably has health provision implications.

Furthermore, the growth in membership of the NHIS will lead to an increase in utilization of hospital services countrywide and the Tamale Teaching Hospital will not be an exception.

Management Structure

Board of Directors

The Board of Directors of the Tamale Teaching Hospital is the highest decision-making body in the hospital. It has the overall responsibility and authority to provide strategic direction and guidance to the hospital and to ensure sound financial management of the hospital's f s. The Hospital's Board comprises four government appointees (including the rman), the Chief Executive Officer, five Executive Directors and the Dean of the School edicine and Health Sciences, University for Development Studies.

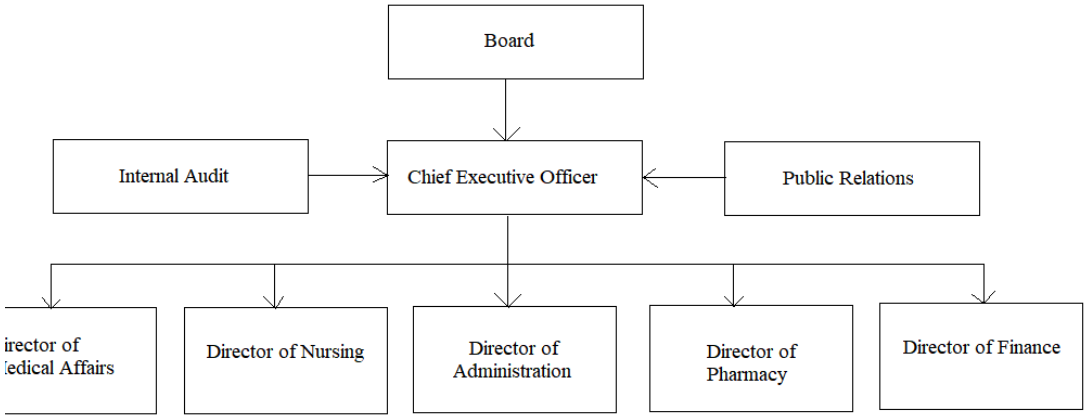
Hospital's Management

Teaching Hospital's management is headed by the Chief Executive Officer. He/She is ted by five (5) directors as prescribed by law. The Chief Executive Officer of the ital is appointed by the Board and is "responsible for the execution of the policies and ions of the Board and the day-to-day administration of the Teaching Hospital".

The five directorates providing support are:

1. **Directorate of Administration -** It is headed by the Director of Administration who coordinates and directs activities of the administration and the other support services.
2. **Directorate of Finance -** The Finance Directorate is headed by the Director of Finance. He is responsible for prudent management of the hospital's finances and preparation of periodic financial reports.

3. **Directorate of Pharmacy -** It is headed by the Director of Pharmacy who is responsible for all pharmaceutical services.
4. **Directorate of Medical Affairs -** It is headed by the Director of Medical Affairs who coordinates all clinical functions of the Hospital.
5. **Directorate of Nursing -** It is headed by the Director of Nursing who coordinates all nursing and midwifery services.



re 14: Organisational Structure of TTH

Chief Executive Officer

mittees

To ensure effective and client-friendly service delivery, the management of the Teaching Hospital operates through various committees. The statutory committees of the Board are:

1. Finance and Administration Committee
2. Technical and Planning Committee
3. Human Resource Management Committee

4. Disciplinary Committee
5. House Committee of the Teaching Hospital
6. Audit Response Implementation Committee

The Committees of Management are:

1. Accommodation/Housing Committee
2. Disciplinary Committee

. Procurement Committee

. Quality Assurance Committee