

SJAH Vol. 1, Issue 7, Page: 44-80, June 2019, ISSN: 2676-2803
Impact Factor (SJIF): 9.305
Journal DOI: 10.15373/22501991
International Peer Reviewed & Refereed Journal with Indexed Journal Platforms

web: www.damaacademia.com
email: editor@damaacademia.com
[Download from Journal site](https://damaacademia.com/sjah/)
<https://damaacademia.com/sjah/>

Author(s)

Suzzy Krist Addo

School of finance & Financial Mgt.
Business University of Costa Rica
Email: allagebeautyent@gmail.com

Correspondence

Suzzy Krist Addo

School of finance & Financial Mgt.
Business University of Costa Rica
Email: allagebeautyent@gmail.com

Challenges of E-Procurement Adoption in the Ghana Public Sector: A Survey of in the Ministry of Finance

Suzzy Krist Addo

Abstract

This study aimed to survey e-procurement in the Public Sector with a view to investigate the challenges in adoption of e-procurement. Current literature on Public Procurement indicates a shift towards adoption of new technologies in Supply Chain processes that include e-procurement. These technological changes in the external business environment are eliciting various responses from Supply Chain actors in the public sector. The level of public sector response is influenced by various factors posing as challenges to adoption of e-procurement. The existing literature indicates some of the challenges arising while responding to these technological changes include lack of employee competence, inadequate legal framework, inadequate technological infrastructure for integrating e-commerce with other systems and concerns about security of e-procurement business transaction data and information. These perceived challenges informed the purpose for this study. The study population included state corporations under the Ministry of Finance. Due to time and financial constraints, the researcher carried out a simple random selection of three respondents from the procurement departments of all the 16 corporations giving a sample size of 48. Both primary and secondary data was used for the study. The research study used a questionnaire as a key instrument for primary data collection. Qualitative data was analyzed through content analysis. Quantitative data was analyzed through the use of frequency distribution, mean scores and standard deviations. In addition, one-way analysis of variance (ANOVA) tests was carried out. From the study, it was revealed that employee competency, inadequate legal framework, inadequate technological infrastructure and security of procurement transaction data was a challenge to e-procurement adoption in the organizations under review. The study recommended that among others, due to continuous turnover of the employees', continuous training for the incoming staff is required on e-procurement. In addition, formal recognition backed by legislation of the electronic procurement transactions should be encouraged. Integration of the Organizations system and those of the suppliers, demonstration of the positive impact of the system, and installation of linkages between all Governments agencies should be encouraged.

Keywords: E-Procurement Adoption, Electronic Procurement, Public Procurement

1.0 INTRODUCTION

E-procurement refers to the use of electronic methods in every stage of the purchasing process from identification of requirements through payment and potentially to contract management (Davila et al., 2003), There are six forms of e-procurement: e-ordering/e-maintenance repair operate, web-based enterprise resource planning, e-sourcing, e-tendering, e-reverse auctioning/e-auctioning and e-informing (de Boer et al., 2002). Some of the benefits of adopting e-procurement include savings in purchasing transaction cost resulted from less paperwork, less mistakes and more efficient purchasing process (Croom and Brandon-Jones, 2007). Electronic procurement systems represent an important development for the purchasing process (Neef, 2001), offering benefits to the organization through purchase process efficiency gains and price reductions (de Boer et al, 2002), enhanced collaborative relationships and significant opportunity for improving the internal service and statues of the purchasing function (Croom & Johnston, 2003).

Some of the commonly used tools in the public sector are e-Tendering, e-RFQ, e-Auctions, e-Catalogues, and e-Invoicing. These tools, including complete marketplace technologies, have been developed by the key players

in the e-Procurement market such as Ariba, CommerceOne, Oracle, and SAP. Regardless of the various shapes and sizes of e-Procurement systems in the market, it has been argued that the basic procurement process is the same across the public sectors and can be addressed with straightforward technology to automate standard processes (NePP, 2007). E-procurement in the public sector is internationally emerging. Countries such as Denmark, Norway, Finland, Ireland, the United Kingdom, Spain, Germany, Portugal, Italy, Singapore, Brazil and the regions in the USA and Australia have embarked on e-procurement. Most or even all of the countries are still in the implementation stages. Not all countries diffuse e-procurement similarly; instead there are several diffusion patterns. For instance, the Danish central government has chosen a private emarket as the infrastructure for e-procurement (efkous 2003). The Spanish ministry of public administration has taken the role of defining functional, technical and organizational specifications (Juan, F. M. M 2002). The German government has invested 4.5 million Euro in developing a “flag ship” project e-vergabe, which it touts as the “model for public procurement in Europe” (Goerdeler, A. 2003).

Procurement may be defined as the acquisition of goods and services (i.e. purchasing) and hiring of contractors and consultants to carry out works and services. Public sector procurement refers to procurement by or on behalf of ministries, departments of central government, organs of local government and state corporations (Arrowsmith et al., 2000). Procurement in the public sector aims to achieve multiple objectives. These include: economy, efficiency, fairness (i.e. nondiscrimination among potential suppliers), accountability, transparency and, where more than one country is involved, respect for international obligations (Odhiambo & Kamau, 2003). Besides its business objectives, public procurement is an instrument for the attainment of broader national socio-economic objectives such as supporting employment of citizens and income creation through preference for local suppliers; promotion of indigenous small, medium and micro enterprises (SMMEs); and, enhancement of regional integration through improvement of cross-border trade.

The subject of public procurement in Ghana has never been far from controversy (Ikiara, 2000). Many allegations of unscrupulous behaviour in public financial management in central and municipal governments or in state enterprises have been linked to procurement (GOK, 2004). The following are among the most recurring controversies with which public procurement has been associated over the last three or so decades: Corruption, rent-seeking and underhandedness between public officials and the business community; Making procurement commitments without funds and/or just because funds are available; Wasteful usage of government supplies, including fleets, and inadequate maintenance of equipment; Poor implementation of donor-funded projects due to procurement related inefficiencies; and Lack of procurement planning and absence of procurement records, including data and statistics. Future reforms in Ghana's public procurement are expected to focus on four principle areas: further institutional restructuring, training and capacity building, upgrading of procurement systems, and strengthening of operational activities (Odhiambo & Kamau, 2003). However, upgrading of procurement systems may not be fully successful where use of Web technology and e-procurement are not adopted. According to e-government strategy paper 2004, e-procurement was one of the medium term objectives which were to be implemented by June 2007; however, implementation of e-procurement has not significantly been visible over the period. A number of Public Procurement and disposal entities may still be using manual procurement process and faces lack of system integration and standardization issues; end-user behavior and resistance; difficulty in integrating e-commerce with other systems, and e-procurement business processes; and information and e-procurement infrastructure.

There has been a broad analysis of benefits and disadvantages of e-procurement, within the literature. The advantages cited include lower purchasing costs, achieving compliance to contract, improved communication, enhanced planning, and reduction in transaction costs, faster cycle times and improvement in procurement personnel efficiency (Pressutti W., 2003). Similarly, there has been discussion of the barriers or disadvantages in implementing e-procurement, which include technology immaturity, problems in implementing change, potential conflicts with suppliers, inability of small and medium-sized enterprises to materialize savings, and cost of implementation (Quayle, M., 2005). Angeles and Nath (2007) in particular explore the challenges to e-procurement and identify three important issues, namely lack of system integration and standardization, immaturity of e-procurement market services and maverick buying/difficulty of integrating e-commerce with other systems. Other relevant issues to be explored include adoption of the new technologies (Gunasekeran and Ngai, 2008), and the impact on organization and costs (Brun, Corti, and Cozzini., 2004).

The applications which form the e-procurement landscape are designed to automate the buying cycle, optimize spend, improve process and workflow, support bidding and tendering and facilitate more effective search for products and services via the internet. It has also been suggested that such technologies will lead to closer collaboration and integration within the supply chain (Garcia-Dastugue and Lambert, 2003), although this is not necessarily an objective where applied to indirect or non-production spend. The Public procurement law (PPDA 2005) and regulations (PPDR 2006) may have not covered adequately the use of e-procurement in Public Procurement. The

entities therefore have not benefited from e-procurement. The adoption of e-procurement may have faced a number of challenges in its adoption and this study sought to find out some these challenges.

1.1 Background of the Study

From the late 1990s, a raft of new e-commerce technologies emerged which promised to revolutionize working practices, threaten existing businesses and potentially create new business models (Sinha, I.2000; Barua et al.,2001). Following this growth in use of e-commerce in business-to-business markets, there has been significant adoption of new supply chain-related technology and applications by organizations globally. The procurement function has been particularly affected by this trend with a predicted growth in e-procurement applications covering both transactional buying and strategic sourcing activities (Croom S, 2000). One of the factors behind this development has been the evolution of the procurement function towards a more strategic role in supporting both corporate goals and supply chain objectives. Procurement is an internal service provided by a dedicated team of professionals. It operates at the interface between the organizations, the external provider, marketplace and the organizations' operational processes (Knudsen D, 2003). This means that the procurement processes and information needs to be available to all actors in the supply chain to optimize the benefits of e procurement. The applications which form the e-procurement landscape are designed to automate the buying cycle, optimize spend, improve process and workflow, support bidding and tendering and facilitate more effective search for products and services via the internet. It has also been suggested that such technologies will lead to closer collaboration and integration within the supply chain (Garcia-Dastugue and Lambert, 2003), although this is not necessarily an objective where applied to indirect or non-production spend.

Indeed, Ghana's Public Procurement and Oversight Authority indicate that public procurement entities are different stages of implementation whilst many have no form of e-procurement. That most of the Public Procuring and Disposing Entities' (PDE) tender notices, evaluations and award notices are either not at all or not well published and not all records of the procurement process are kept. Procurement data storage and information dissemination can be improved by an e-procurement information system implemented on web technology which will allow data to be stored electronically. Since the internet is penetrating every corner of our society, an e-procurement information system will enable the public to have access to relevant information about public procurement on time and in a correct format at a minimum cost, providers will have access to the PDE's procurement plans and bidding documents through the internet hence competition among potential providers will increase. This will promote economic development (Tanner et al, 2008)

The Public procurement in the Ghana has been undergoing reforms starting with the Public Procurement and Disposal Act 2005 that saw the creation of Public Procurement Oversight Authority. The next step was the implementation of e-procurement for the public sector. According to e-government strategy paper 2004, e-procurement was one of the medium term objectives which were to be implemented by June 2007; however, implementation of e-procurement has not significantly been visible over the period. A number of Public Procurement and Disposal entities may still be using manual procurement process and therefore may have not benefited from e-procurement. The adoption of e-procurement may have faced a number of challenges in its adoption and this study sought to find out some these challenges.

1.2 Statement of the Problem

Despite the numerous benefits of e-procurement public procurement entities continue to face challenges. These challenges may exist at the organizational level while executing public procurement. Although these challenges may be addressed through e- procurement, however adoption of e-procurement itself may have been a challenge. There is emerging evidence on the realities of e-procurement and some of the difficulties which adoption entails (Angeles and Nath, 2007). Overall, it appears that e-procurement is still in its early stages of adoption in the corporate world. A recent Aberdeen Group (2001) study of spending analysis practices of 157 firms revealed that only a few firms truly know and understand how much they spend, on which products, and with which suppliers (Bushell, 2004).

Day, Fein, and Ruppertsberger, G. (2003) noted users' reluctance to be subjected to significant changes in business processes as a major barrier to the implementation of e-procurement systems. A number of recent studies have also looked into difficulties faced by firms in launching e-procurement. In a recent survey of 102 international active e-marketplaces and procurement service providers, Kheng and Al-Hawandeh (2002) investigated the adoption of e-procurement in Singapore and presented stumbling blocks to this initiative from the point of view of Singaporean firms. First, there were issues about security and privacy of procurement transaction data. Second, required significant investments in hardware, software, and personnel training to participate in e-procurement are prohibitive. Third, the laws governing B2B commerce, crossing over to e-procurement, are still undeveloped. For instance, questions concerning the legality and force of e-mail contracts, role of electronic signatures, and application of copyright laws

to electronically copied documents are still unresolved. Fourth, technical difficulties related to information and data exchange and conversion such as inefficiencies in locating information over the internet using search engines and the lack of common standards that get in the way of the easy integration of electronic catalogs from multiple suppliers.

Huber, Sweeney, and Smyth., (2004) found the following perceived barriers to electronic procurement: a “wait-and-see” attitude among firms in selecting e-marketplaces and procurement service providers; Concerns over security and confidentiality of the data needed to be exchanged in electronic environments; Reluctance to share data with trading partners; the “non-feasibility of custom-made products” for pooling initiatives; Lack of standardization; and Uncertainty over trust and commitment among trading partners.

In Ghana, research on e-procurement has focused on implementation rather than the adoption process of e-procurement. For instance, Metoh (2006) did a study on the factors affecting implementation of electronic procurement system in the public sector: a case of National Aids Control Council. This study did not conclusively address the underlying challenges in the adoption process of e-procurement. The current literature is mainly founded on the private sector and a few founded on the local public sector. The basis of this study is therefore primarily founded on the some of the challenges found in the existing literature seek to assess the actual and planned levels of e -procurement adoption, with a view of carrying out detailed study of challenges of adoption of e-procurement in the Public sector in Ghana and specifically State Corporations under the Ministry of Finance.

1.3 Primary Objective

The primary or general objective of this study was to investigate the perceived challenges of e-procurement adoption in the Ghana Public Sector.

1.4 Secondary Objectives

The secondary objectives of the study as follows:

- i. To determine whether lack of employee competency is a challenge in e-procurement adoption among Ministry of Finance State Corporations
- ii. To investigate whether inadequate legal framework is a challenge in e-procurement adoption among Ministry of Finance State Corporations
- iii. To establish whether inadequate technological infrastructure is a challenge in e-procurement adoption among Ministry of Finance State Corporations
- iv. To investigate whether concerns about security of procurement transaction data is a challenge in e-procurement adoption among Ministry of Finance State Corporations.

1.5 Limitations of study

This study was limited to the variables in this study which included employee competency, lack of legal framework, inadequate technological infrastructure and concern about security and privacy of procurement transaction data.

1.6 Design and Overview of Study

1.6.1 Scope of the study

This study focused on e-procurement challenges in the Ghana Government. The study was only limited to e-procurement adoption challenges and the rest of procurement processes and functions were not comprehensively dealt with. Due to the magnitude of this study only selected state corporations (under the Ministry of Finance) were looked into to represent the rest.

1.6.2 Research Questions

- i. Is lack of employee competency a challenge in e-procurement adoption among Ministry of Finance State Corporations?
- ii. Is inadequacy of legal framework a challenge in e-procurement adoption among Ministry of Finance State Corporations?
- iii. Is inadequate technological infrastructure a challenge in e-procurement adoption among Ministry of Finance State Corporations?
- iv. Is concern about security of procurement transaction data a challenge in e-procurement adoption among Ministry of Finance State Corporations?

1.6.3 Hypothesis

- H0₁. Employee competency on challenge in e-procurement adoption among Ministry of Finance and State Corporations
- H0₂. Legal framework on the challenge in e-procurement adoption among Ministry of Finance and State Corporations
- H0₃. The concern about security of procurement transaction data a challenge in e-procurement adoption among Ministry of Finance and State Corporations
- H0₄. Contract management has no significant predictor role on the performance of projects funded by District Assemblies' Common Fund (DAFC) in Ghana.

1.6.4 Organization of the Study

This research work is divided into five main chapters. Chapter One which is the introductory part of the research work contains the background, statement of the problem, objectives, research question, scope, significance, limitation, and organisation of the study. Chapter Two discusses the concepts in procurement and also review opinions, findings from different authors of books, journals, publications, and others. Chapter Three also deals with the methodology used for the study. It presents the methodological procedures and approaches used in conducting the research. It comprises the research design, population, sampling method, and data collection methods. Chapter Four discusses the results. It involves the use of tables and figures to explain and understand the data collected (responses) from respondents. Chapter five deals with summary, conclusion and recommendations. This section summarizes the major findings and draws conclusion base on the results and finally recommends appropriate interventions where necessary.

1.7 Summary

This study aimed at investigating the challenges of e-procurement adoption in the Ghana Public Sector. The study was necessitated by the perceived situation of the slow adoption of e-procurement by government ministries in Ghana despite the enormous benefits associated with e-procurement. This study will benefit the Government of the Republic of Ghana being the main user of the rules and processes of the procurement system. It will also help in minimize of the constant focus on transparency and visibility of all the operations in the procurement departments. The other beneficiary is the Procurement officers in various departments in the civil service since it will guide them on the way forward as far as the procurement of goods and services is concern thus reduce the possibility of under deals. Public Procurement Oversight Authority will also benefit from this study in that it will consolidate whatever comes out of the research to formulate policies & procedures that will enhance the transparency in the administration of the procurement dockets in the public sector. This will also contribute to the existing literature in the field of e-procurement. It will be a guide to further research in adoption of e-commerce and a basis for benchmarking with other institutions in other countries

2.0 LITERATURE REVIEW

This chapter presented the review of theoretical literature relating to technology adoption, empirical literature review, and conceptual framework of the study and critique of existing literature. The review provided a theoretical ground for the study through identification of the research gaps that needs to be address and a detailed outline of the underlying concepts and variables. According to Mawanya (2008), there exist considerable inefficiencies in the procurement processes in the public sector which to a greater extent affect the achievement of value for money in the procurement of public infrastructure as a result of corruption. Vee and Skitmore (2003) outlined some areas prevalent with corruption to be proprietary information infringements, collusive bidding during, cash inducements (bribery) for overvaluing work performed, negligence in the form of poor quality documents and fraudulent conduct by the parties involved procurement process.

These challenges have led to the introduction of the new e-Procurement process which ensures that all processes are carried out electronically and thus, devoid of all any manual process. Many public sector institutions have now identified electronic Procurement as a cardinal for cutting waste in government procurement and have put measures in place to implement and adopt e-Procurement in their various procurement stages. This new process according to Birks, et al. (2001) is blessed with some success factors that could serve as a driving force in championing the process if appropriately utilized in the adoption and implementation process. Procurement practices in Ghana have gone through several of development, with the main purpose of reducing or at paramount minimising corruption in public procurement, realizing value for money, potency in the procurement process, among others. A major change was the enactment of the Public Procurement Act (Act 663) in 2003. As much as the usage of Act 663 has restructured procurement processes in the country, as well as establishing a high level of sanity in the procurement environment,

its entirely manual base has compelled some procurement 2 practitioners calling for the formulation of e-Procurement in the country (PPA EBulletin, 2010). The traditional or manual processes are faced with certain challenges such as high cost and delay in the procurement process. Procurement and supply chain has the tendency of involving large quantities of paperwork in its operations, necessary for information communication with suppliers. The introduction of information technology and more integrated software systems has drastically the way business is contracted between parties. The advent of internet has facilitated the commencement and adoption of the new e-Procurement process in the area of procurement and supply chain management (Baily et al., 2008).

The internet has brought tremendous change in the way we do business in the world. It has increased the market shares, for example a wider customer reach and also reduces cost of its users. Another area where the introduction of internet and ICT tools has made significant impact is speed and efficiency which is the cardinal principle of any procurement organisations. The internet can be used for both purchasing and delivery of goods. The manifestations of e-procurement can be seen in the online auctions where contracts are won and assets bought. It also makes use of online catalogue where documents such as purchase orders, bills of lading, invoices and delivery confirmations are carried out electronically (Baddeley & Kopelman, 2015). Additionally, e-Procurement also improves the transparency and accessibility of tender opportunities in public procurement procedures, as well as challenging greater competition across the world which add to economic growth (Bausà et al., 2013). The significance of procurement in the business community cannot be overemphasized, as it contributes to almost one third of companies' overall budget for the purchase of goods and services (Zenz & Thompson, 1994). According to Asian Development Bank Report (2013), government and other public institutions which have adopted the e-Procurement process have enjoyed numerous targeted benefits such as improved transparency, contract award notices, online bid submission and better tenderers participation due to improved information and access to opportunities. Other benefits include, faster processing of procurement activities as a result of online system, enhanced tools to deal with corruption and fraud, as well as decrease in printing of hard copies for the purpose of documenting business transactions.

2.1 Development of the Study

2.1.1 Conceptual Framework

The changing technologies in the business environment demand a response from the public sector being one of the actors in the supply chain and. Among the strategic responses are changes to governance structures by the public sector strategic. Among the governance structures is the implementation/adoption e-procurement. The implementation of e-procurement requires a good roll out strategy. A good roll out strategy would require resources such as networks, data and hardware. When an organization has prepared a good roll strategy, implementation is the next step. The implementation management has to consider resources such as software, data and specifications of systems. Therefore, while responding to these technological changes the public sector is influenced by factors posing as challenges. The challenges that may manifest comes from organizational characteristics such as employee competency, legal framework technological infrastructure and concern about security and privacy of procurement transaction data. Therefore, the adoption process of e-procurement may be influenced by these factors posing as challenges and this study seeks to investigate these variables seek to understand how the factors influence e-procurement adoption in the Ghana's public sector.

2.1.2 Lack of Employee Competency

Procurement staff must be competent enough to use the applications of software that offers the organization management skills to manage their activities for example, distribution chain and value addition in a company (Beth et al. 2003). This technology is based on databases, which are easily reached on real time foundations. ERP systems perfectly provide the procurement management and the management itself with the opportunity to produce steadfast, consistent, and timely information necessary for attainment of organizational goals. In 2003, a note in Harvard Business Review indicated that "...despite years of process breakthroughs and elegant technology solutions, an agile, adaptive supply chain remains an elusive goal. Maybe it's the people who are getting in the way. (Beth et al. 2003). It is commonly believed that instead of considering the supply chain to be a 50/50 mix of infrastructure and information systems technology, rather any supply chain is more like 45/45/10 mix of human behaviour, systems technology and asset infrastructure (Gattorna 2006).

Andraski and Novack (1996) indicated that people are "... the most important element of the logistics marketing concept." Daugherty et al. (2000) noted: "To take supply chain performance to the next level, companies will have to tap into this human element more intensively. Many companies have pushed hard on technological and infrastructure improvements and investments. The next wave of improvements and investment should center on the people who manage and operate the supply chain."

As e-Procurement includes new technologies and changes in traditional procurement approaches, the need to train staff in procurement practices and the use of e-Procurement tools are critical to the success of an e-Procurement initiative (WB, 2003). End-users can realize the immediate benefits of the e-Procurement system once they understand the operational functionalities (CGEC, 2002). This means that training should be given a high priority, alongside the need for public sector agencies to identify the skills required by all those engaged in procurement (ECOM, 2002). It is evident that employees has a great role in adoption of e-procurement and their skills, competencies and training may influence to a large extent how e-procurement is adopted and implement in an organization. The human element in a business environment cannot be for overemphasized because without which, any organizational objectives such as e-procurement may not succeed.

2.1.3 Inadequacy of Legal Framework

Legal framework is a basis of any business transaction whether in Public sector or private businesses. It defines the obligations and responsibilities of the partners transacting business with the objectives of fulfilling each other's desired goals. Kheng and Al-Hawandeh (2002) found that the laws governing B2B commerce, crossing over to e-procurement, are still undeveloped. For instance, questions concerning the legality and force of e-mail contracts, role of electronic signatures, and application of copyright laws to electronically copied documents are still unresolved. The Public Procurement and Disposal Authority recognize that the existing PPDA 2005 and PPDR 2006 legal framework in Ghana may not have adequately covered aspects of e-procurement transaction. (PPOA., The long term policy framework for Public Procurement 2009) The weakness in this frame work therefore may inhibits the adoption and growth of e-procurement initiatives. Understanding the challenges and limitation of e-procurement adoption in the public sector is important due to complexities of government policies and bureaucracy. Without such understanding, government may not be able to achieve the benefits of e-procurement. This could assist in future planning and adoption of e-procurement.

In an effort to create order in public procurement, PPOA through the support of the Ghana Government and the Public Financial Management Reform (PFMR) Programme, has since its establishment in 2007 endeavored to implement a new legal and regulatory regime to guide public procurement. Key achievement towards implementing a new legal and regulatory framework in public procurement is evident in the many guidelines PPOA has developed to guide procurement practices and pricing of common user items. The guidelines include Public Procurement Market Price Index, General and Disposal Manual, Procurement Manual for Works, Procurement Manual for Information and Communication Technology, Procurement Manual for Insurance Services, Procurement Manual for Non- Intellectual Services, among others

Since coming into being, PPOA has conducted procurement assessments and reviews in about 100 major procuring entities. The principal goal of the reviews has been to help entities develop capacity building programs which enable them better apply the provisions of the Act and the Regulations. Procurement Assessments, on the other hand, have been carried out to check the level of performance of the procurement function in the selected entities to establish their strengths, weaknesses and areas that require assistance and improvement. The assessments focus on key indicators such as institutional arrangements or structures, procurement process, mandatory reporting requirements, stores, inventory control and management (R.O.K, 2012).

Furthermore, an important accomplishment by the PPOA can be seen in the Authority's action to develop and implement an e-procurement strategy. The strategy has made it possible to post tenders online thus ensuring transparency and accountability in public procurement. Moreover, e-procurement has also enhanced access to public procurement by vulnerable groups (R.O.K, 2012). The Authority has also enhanced access to public procurement information by developing a modern and interactive website which provides important information to the public and stakeholders on public procurement. In addition, stakeholders' consultative forums are held annually to share information on how to improve the public procurement system. Further, contract awards worth Ksh 5million and above reported by the procuring entities get posted on the Authority's website as are reports on finalized procurement reviews (R.O.K, 2012).

2.1.4 Inadequate Technological Infrastructure

Issues concerning information systems development and adoption are central to the e-procurement issue. Rajkumar (2001) identified systems integration as a critical success factor for e-procurement implementation, both with the customer's information infrastructure and in its links to suppliers. In an earlier study, Croom (2001) surveyed the adoption pattern of IOS. It was not surprising that email, web sites, funds transfer and EDI dominated the list. Email and web sites are dominant and ubiquitous systems, whilst major banks provide support for electronic funds transfer which provides a secure, low cost means of payment. EDI on the other hand is only cost effective for high volume transaction and communication between common trading hierarchies. Often, EDI is deployed for the

management of direct supply chains, i.e. for components and materials in manufacturing, or saleable products in retailing. The cost per unit is then relatively low, the benefits of high speed transmission and the sunk cost of investment are all factors which are seen as likely to sustain EDI, or at least integrate it into an Internet- EDI structure for the management of specific high frequency exchange supply chains. A recent commercial report by IDC (2003) demonstrated that there remained a slow uptake of e-procurement systems, emphasizing that system infrastructure-related issues such as software integration (including discussion of XML related opportunities) were inhibiting implementation. Kheng and Al-Hawandeh (2002) investigated the adoption of e-procurement in Singapore and presented stumbling blocks to this initiative from the point of view of Singaporean firms and that significant investment in hardware, software, and personnel training to participate in e-procurement are prohibitive.

Technological infrastructure plays a key role in adoption of e-procurement without which integration of public procurement entities will not materialize. Government departments have different levels of technological infrastructure, against this backdrop this study will seek to determine the role and impact of this factor in adoption of e-procurement. Suppliers on the other hand are at different levels of infrastructure development and this play a great role in understanding how this multiple level of technological infrastructure is integrated to facilitate adoption of e-procurement. Understanding of the different levels of infrastructure in public procurement entities and suppliers would help government to quantify the amount of investment in software and hardware to be channeled into adoption of e-procurement.

2.1.5 Security of Procurement Transaction Data

A number of recent studies have also looked into difficulties faced by firms in launching e-procurement. In a recent survey of 102 international active e-marketplaces and procurement service providers, Huber et al. (2004) found that concerns over security and confidentiality of the data needed to be exchanged in electronic environments was perceived as among the barriers to implementation of electronic procurement. Saeed and Leith (2003) examined buyers' perceptions of e-procurement risks and arrived at three dimensions: first transaction risks resulting from wrong products purchased due to incomplete or misleading information; Second security risks resulting from unauthorized penetration of trading platforms and failure to protect transaction related data while being transmitted or stored; and Third privacy risks arising from inappropriate information collection and information transparency. Yen and Ng (2002) found that both buyer and seller firms in their sample considered the lack of adequate security measures to protect data as one of the prohibitive and discouraging factors in implementation of e-procurement.

Individual end users and entire business units will naturally resist any change in business processes that poses uncertainty in security and privacy of their transactions. Organizations keep their business information secret as a protective mechanism to ward off competition and remain competitive in the business environment. Public sector organizations on the other have limits to the amount and nature of information to be shared with other third parties. The Public procurement legal framework in Ghana legislated on confidentiality of public procurement process. The balance between transparency, protection against unauthorized data disclosure, ensuring the authenticity of a data source and the impact of disclosure of procurement process remains hazy. The use of web technology has brought a myriad of data security challenges in internet tractions because of cybercrimes. The growth of internet has nevertheless brought serious challenges to business due data hacking, internet fraud, Cyber vandalism, and virus and malware attacks (Huber et al. 2004).

Procurement is well defined as the purchase of works, services and goods (Baily et al., 2008). Kidds (2013) defined Procurement as "the business supervision function that ensures the noticing, requisition, payment and administration of the external resources that an organization requirements or may need to meet its planned objectives". Procurement includes activities that precede as well as follows the signing of a contract between parties involved. Weele (2010) also defined Procurement as "the process of managing external resources in order to make sure that the supply of all goods, works services, functionality and knowledge which are essential for operating and sustaining the company's principal and support activities are safeguarded in all possible regards. Public procurement is the practice whereby public sector institutions purchase (procure) goods, services and works from contractors. (Office Government Commerce, 2007). Chartered Institutes of Purchasing and Supplying Australia (CIPSA) (2005) has outlined seven core benefit that any company is likely to gain in the procurement process. These, according to CIPSA (2005) include the security of supply, greater added value, improved quality, lower costs, reduced risk, increased efficiency and innovation.

2.1.6.1 Traditional Method of Procurement

Mathonsi and Thwala (2012) state that this method is called "traditional procurement" because it has been in existence for a long time and has been the only choice available for most institutions since time long-standing. The existing procurement process is for procurement entities necessitates procurement entities to put an advertisement or

notice in a daily newspaper or site a announcement on a notice board, or send a request to selected list of contractors registered with the firm. The contractors will then interact with the entity to obtain a tender document, attend a pre-tender meeting and then submit their tender proposal directly to the entity. Normally the government procedure is carried out in more regulated and organized procedure. It is also defined by laws and financial administrative processes (Asian Development Bank, 2013). It is the procurement entity that is in charge of all activities leading to the award of contract. This involves the creation of tender document for multiple interested tenderers, and also sending notices to tenderers of any changes to the tender document with answers to questions.

The newspaper announcements and the administration of the whole tender processes and resources can be very expensive and not always productive. In some developed countries, the procurement operation is consolidated in designated entity administrative outfits to present enhanced control and supervision of the process (Marco, 2010). The Chartered Institute of Building (CIOB) report, (2010) demonstrated that traditional method, has its flaws. Weaknesses with traditional are, however, apparent. This practice has inadequate entry to the opportunity and the use of a registered suppliers or outside suppliers impact the procurement operation. A long chain of internal authorization and scrutiny is required to complete the procurement process (Chomchaiya, 2014). According to Okuadjo (2010), entities that carry out procurement operations must make sure that they are governed by the following processes:

- **Planning** - This enables procurement requirements to be determined and indicated by the user client which are collated according to their similarities. It also embraces the procurement methods and rules to be followed;
- **Sourcing** - This is the pre-qualification stage where potential suppliers request for quotation (proposal), examination of responses and the selection of the successful tenderer. Negotiations take place at this stage;
- **Contract & Contract Management** - This is a stage allows the parties involved to draw up contract document using the agreed terms and conditions, and signing where applicable. The awarded contract is administered, to guarantee that both parties execute their obligations under the contract;
- **Storing** - This stage allows for unused supplies to be kept safely in order to prevent any damages in the course of the contract execution;
- **Distribution** – Stored goods are delivered to their ultimate destinations in accordance to what is stated in the condition of contract;
- **Disposal** – This stage involves the disposing of obsolete or surplus stocks either by selling to a public tender or auction, or by transferring the unused goods to another public organisation if need arises; and
- **Evaluation** - It is important to appraise the progress of the procurement operation at every stage so as to identify any weaknesses or shortfall and for appropriate remedies to be taken where necessary.

2.1.7 Challenges with the Traditional (Manual) Procurement Method

Procurement of contracts has been subjected to extensive of “criticisms” over the years, where the negative experiences significantly supersede the good practices. Some of these criticisms include:

- **Too cumbersome, expensive and bureaucratic processes involved:** Public procurement processes usually pursue a very complex and strict guide imposing high levels of bureaucracy, and its cumbersome nature, such as the Planning Sourcing Contracting Contract Management Storing Distribution Disposal Evaluation GOODS 11 submission of various statutory certificates and additional overhead charges. Tavares (2012) explained these effects to be particularly harmful to Small and Medium Enterprises;
- **Discrimination and delay in issue of tender schedules to suppliers:** Government sectors are responsible for regulating the issuance of tender documents to the prospective tenderers, after necessary verifications have been completed. There exists an element of discrimination and unfairness in this process, in addition to delays in the preparation of tender road map in the Government institutions. As a result, tender documents were not usually issued to tenderers on the announced dates (Tavares, 2012; Bikshapathi, 2006);
- **Tender Boxes at Multiple locations:** In an attempt to counter the threat of contractors’ alliances and physical threats to tenderers, some Government sectors keep the tender boxes at multiple locations for easy access. Instead of yielding the desired results, this practice rather exposed departmental officials who attend

to these boxes to various forms of risks in the course of their duties. Physical transportation of tender boxes with sealed tender documents from multiple locations to a central point also tends to be risky tasks to officials (Bikshapathi, 2006);

- **Tampering of tender files:** Due to the transportation of tender documents across various hierarchies, documents are exposed to the risk of manipulating or loss in the course of their transportation. The manual transportation of tender documents is also a cumbersome and time consuming process (Chomchaiya 2014);
- **Delays in finalization of tenders:** Lack of transparency, and manual movement of files across the administrative hierarchy leads to undue delays in the conclusion procedure. These delays contribute to cost and time overruns for the work (Chomchaiya 2014; Bikshapathi, 2006);
- **Human interface at every stage:** The manual system leads to the continuous face to face interaction of the parties involved at every stage of the process. Such repeated contact between bidders and departmental staff could result in partiality, favouritism and other detrimental practices (Costa, 2013); and
- **Lack of Transparency:** Government departments closely monitor and control the procurement process due to its sensitive nature to both the companies and the parties involved leading to a severe lack of transparency in the entire process. This lack of openness gives birth to misinformation and a lack of confidence in the entire system (Subramariam & Shaw, 2002; Bikshapathi, 2006).

2.1.8 Overview of E-Procurement

E-procurement involves an electronic data transfer in the process so as to support operations, planned procurement. Electronic procurement has been in operation years before the term itself, which came into operation in the 1990s. In the inception of 1960 to the 1990, electronic procurement principally was in the form of Electronic Data Interchange (EDI). Currently, electronic procurement is largely assisted by the introduction of which is taking the whole procurement process to a new level. Below is an illustration of the evolution of e-Procurement.

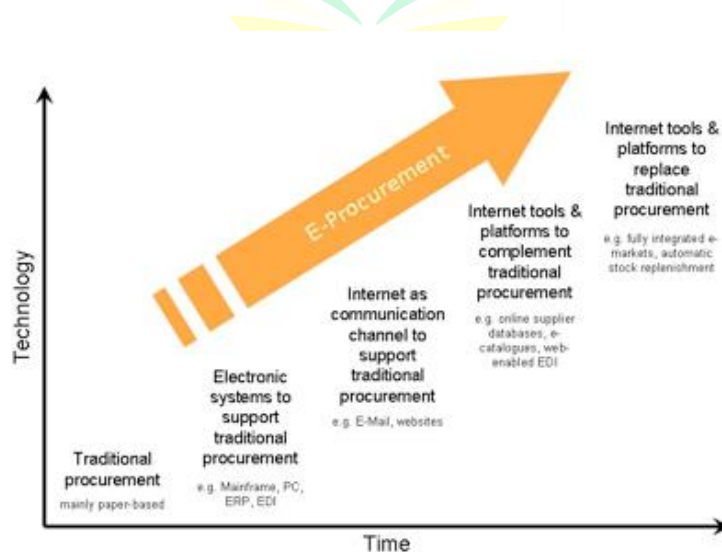


Figure 2.1.8: History of E-Procurement
Source: UN Procurement Handbook 2012

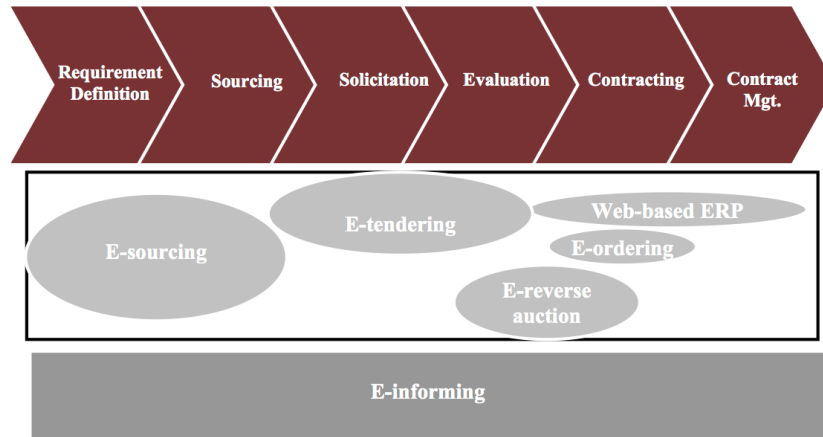
2.1.8.1 What is E-Procurement?

According to the World Bank (2003), Electronic Procurement is “the use of ICT in conducting procurement and supply chain relationships with contractors for the contract of works, goods and services. Baily et al. (2008) further define electronic procurement as “the deployment of electronic methods in every stage of the buying phase from identification of requirement through to payment, and potentially to contract management. It is also understood as the use of electronic communications and transaction processing by government institutions when buying goods and services or tendering public works (Bausa et al, 2013). Public e-procurement has been defined as the use of information

and communication technology such as internet by governments in the procurement relationship with bidders for the acquisition of goods, works, services required by the public sector (Davila et al., 2003).

2.1.8.2 E-Procurement Process

The figure below shows the six forms of e-procurement plotted in the procurement process



Each of these forms can be explained as follows:

- E-sourcing supports the specification phase; it identifies suppliers that can be used in the selection phase.
- E-tendering supports the selection phase; it facilitates the REOI and ITB/RFP activities, usually including support for the analysis and assessment activities.
- E-reverse auctioning supports the contract phase; it enables closing a deal with a supplier;
- E-ordering and web-based ERP is the process of creating and approving procurement requisitions, placing purchase orders, as well as receiving goods and services ordered, by using a software system based on the Internet.
- E-informing is not directly associated with a phase in the procurement process; it is the process of gathering and distributing procurement information both from and to internal and external parties using Internet technology.

2.1.8.3 E-procurement strategy – Costs, Benefits and Risks

Business cases aimed at adopting or enhancing e-procurement tools are often prepared by information technology and/or finance specialists. However, some of the most successful e-procurement implementations have been driven by those who best understand the procurement processes and outcomes to be achieved. Because of their understanding and proximity to procurement processes, those involved in the procurement function have a key role to play in identifying and assessing the costs and benefits of e-procurement tools and in providing input into how existing tools may be enhanced. The following costs and benefits as identified by de Boer, Harink et al. (2002), can be influenced by e-procurement:

- The cost of expenditure on goods/services related directly to the production/service delivery.
- The cost of non-production of goods and services.
- The cost of operational procurement activities – e.g., requisitioning, ordering, expediting and administrative support.
- The cost of tactical procurement activities – e.g., formulating specifications, selecting suppliers, negotiating with suppliers, contracting, disposals etc.
- The costs of strategic procurement activities – e.g., spend analysis, transaction analysis, market analysis, planning, developing procurement policies etc.
- Internal benefits arising from investments in particular inter-organizational relationships.
- The contribution of investments in particular inter-organizational relationships to revenues.

These costs and benefits should be assessed in relation to each e-procurement tool. While it is usually assumed that e-procurement will automatically deliver benefits, the actual benefits will depend on many factors including: cost of required investment, ability to convert associated savings to cash, nature of the procurement process being automated, particular supply market and the extent to which the organization supports its implementation.

2.1.8.4 E-Procurement Benefits

Particular benefits of e-procurement in the public sector are thought to include greater transparency in procurement through electronic publishing of tender notices and contract awards. This in turn is likely to enhance accountability and reduce the instances of corruption. When developing a business case for adopting or enhancing an e-procurement tool, it is important to assess the baseline benefits and costs associated with the process or processes to be automated in order to understand the probable outcomes of e-procurement adoption or enhancement. In essence, it is important to understand what will change and how it will change when an e-procurement tool is implemented.

2.1.8.5 E-Procurement Risks

The implementation of e-procurement tools carries certain risks. One of the primary risks is missing opportunities to implement strategies that improve procurement management without the need for investment in e-procurement. This is because many of the benefits ascribed to e-procurement may be achieved simply by improving procurement practice. For example, it is often said that e-procurement reduces “maverick buying”. However, other measures, including the implementation of corporate buying strategies that offer value for money, do not need electronic tools. Another risk is over-investment in e-procurement tools that do not deliver the expected benefits. This risk arises when there has been inadequate evaluation of the implications of the adoption or enhancement of e-procurement tools. The risk that users will not accept an e-procurement tool is another common risk. This risk often arises where users have not been adequately consulted about the adoption or enhancement of particular tools. On the supply side, there is a risk that suppliers will not cooperate with the use of e-procurement tools. For example, some suppliers are sufficiently powerful to insist on the use of paper-based systems. Others may not have access to affordable internet based technology that would give them access to the e-procurement tools of purchasers. In markets that are already competitive with low profit margins, suppliers may choose not to participate in e-reverse auctions. Normal methods of risk assessment and management should be applied during the development of business cases for e-procurement development or enhancement.

2.1.8.7 Legal aspects of e-procurement

The accepted legal framework guiding e-procurement is the UNCITRAL Model Law on Electronic Commerce which states: “In the context of contract formation, unless otherwise agreed by the parties, an offer and the acceptance of an offer may be expressed by means of data messages.” “Where a data message is used in the formation of a contract, that contract should not be denied validity or enforceability on the sole ground that a data message was used for that purpose.” Good practice in the UN system adopts this approach, for example, the UN revised FRR take into account the feasibility of electronic contracting. As per UN Financial Rule 105.18 (b) which states: “The requirement for written procurement contracts shall not be interpreted to restrict the use of any electronic means of data interchange. Before any electronic means of data interchange is used, the Under-Secretary General for Management shall ensure that the electronic data interchange system is capable of ensuring authentication and confidentiality of the information”. In the UN Secretariat, this authority has been delegated to the UN controller, who determines whether in a particular case, electronic contracting may be possible, for example by an electronic exchange of information without the need to issue a traditional purchase order. Electronic contracting may only be agreed with a supplier in specific cases where prior written authorisation has been obtained. In adopting or adapting any e-procurement systems, the practical issues around these legal aspects need to be taken into consideration during the planning and implementation stages.

2.1.8.8 Objectives of E-Procurements

The key objectives of e-procurement are as follows: **Economy:** There is a lot of savings in the price of goods and services purchased. This is largely due to the escalation in competition of tenders for government projects procured by means of an Electronic Government Procurement platform. The display of notification of award information in an Electronic Government Procurement platform has helped prevent the overpricing of projects and also modifying cost for goods, works, or services in accordance with prevailing market cost (World Bank, 2006).

Efficiency: Electronic workflows have helped to reduce operational or transactional costs related to transaction processing as a result of e-Procurement, and thereby serving as a significant way of cost savings for public contracts. Aberdeen Group (2008) reported that the performance of the government corporations has greatly enhanced, because of e-procurement method with less transaction costs, and also few transaction cycle times. Automating of the requisition to payment cycle has led to decrease in manual processing (man handling) of procedural error-prone tasks, allowing procurement practitioners to focus on more productive operations (ADB, 2013).

Effectiveness: Through e-Procurement, data from electronic businesses are stored automatically and also the generation of reports in the procurement process. Enhancing the quality of the data management will give better opportunities in driving supplier performance and in managing their acceptance levels and benefit. (ADB, 2013). One important function of this publication strength is the central purchasing bodies (CPBs) can now negotiate additional competitive pricing. With e-Procurement, CPBs gain easy access to data leading to a more effective negotiation with the parties consented.

Increased Accessibility: Effort put in by suppliers in identifying tender opportunities is minimal as a result of online publication which is lacking in the traditional procurement process. Tender documents are now made available over the internet and can be downloaded anytime and anywhere by interested parties without any necessary human interface. Government institutions are patching the initial role to make information's on procurement opportunities accessible in a centralized internet platform where suppliers can electronically lodge their bids over the web site by means of the e-tender software. The implementation of this program has eliminated some form of coercion in some countries where competitors are physically prevented from bidding or dropping a tender into the tender box (Biskhapathi et al., 2006).

Improved Transparency and Accountability: Public officers, Contractors and the citizenry each have the opportunity to follow and check all procurement operations at every phase of the procurement procedure. This is the ability to receive up-to-date policies, information on Tendering programs, status of tender evaluation, and notification of the results. An e-Procurement method turns as a vehicle for standardization of files documentation and improves suppliers and allow the supervision of procurement procedure. For expensive operation, accountability and transparency are primarily reinforced through public disclosure at every steps of 17 procurement operation. For small procurement, accountability and transparency is achieved through improved audit competences. Overall, achievement of openness and accountability coming from implementation and adoption of the e-GP greatly enhances the situations of corruption in public procurement.

Economic Development: The implementation of e-commerce in the government sector will enhance the cost of business for both the public sector and the contractors and even communities alike. The principles and the guideline set out for such contracts have the lot to gain. For examples, contractors are required to prepare catalogue of their items to meet the existing catalogue standard. Contractors will then make effort to leverage their money in catalogue developed by the e-catalogue in their B2B contract as well. Public procurement can consequently be used to catalyse the high value principles of e-catalogue as well as the implementation of e-commerce. Equitable and Inclusive: The online display of tender announcement, electronic-bidding, and electronic-payment brings about some of equity for some micro business and SMEs when contending with big firms for government jobs. Dutra et al. (2006) in their study concluded that the usage of electronic procurement has reduced the "bureaucratic and also costs of doing business with government agencies", which tends to bring SMEs into the. According to Chomchaiya (2014) the objectives of e-procurement are as follows:

- Reduce Procurement cycle;
- Increase supplier Access;
- Reduces the cost of procurement competitive bidding;
- Remove Cartelisation and centralization of reverse Auctioning;
- Increase visibility and transparency; and
- Complete elimination of paperwork;

2.1.8.9 Stage of E-Procurement

Tavares (2011) outlined some major stages that is the process. It results in equitable treatment to all suppliers as it creates transparency in the selection process, and enhances time management of tendering procedures. Some UN organizations such as UNDP-IAPSO and UNHCR have used E-tendering to formulate long-term agreements for vehicles, motorcycles and pharmaceuticals through an in-house established tendering website (UN Procurement, 2012);

- **E-Evaluation:** Electronic data of shortlisted applicants are extracted from tenders and evaluated using by a committee using appropriate software to obtain the details of each contractor in terms of the statutory and commercial requirement and award criteria (Maia & Tavares, 2013). E-Platform thus, supports all these tasks completely getting rid of the frequent paperwork which is prevalent in the traditional process;
- **E-award and e-contract:** The Public Contracting Authorities then awards the contract through the electronic platform and the e-contract will be easily recorded and store into a central procurement platform, this help in rescuing agencies from limitless and disordered heaps of paperwork in the contract process;

- **E-executing of the Contract:** The execution of the contract should follow the contract award complete with the e-platform, conducting the key tasked of all the electronic processes involved in the successful execution of the project (Ferreira & Spinola, 2013); and
- **E-evaluation and auditing:** The ex-post evaluation and auditing is an important task, particularly in public procurement because the outcomes achieved through the allocation of public resources have to be explicitly determined.

2.1.8.10 Status of E-Procurement in Ghana

According to PPA Procurement E-Bulletin 2010, the public sector in Ghana is currently putting measures in place to enhance the use of technology in government's dealings with the public through the e-Ghana project. Therefore, to ensure the successful implementation of this project, e-Procurement process is one of the necessary tools that have to be incorporated into the project, so as to increase transparency, nondiscrimination, open competition, accountability and security of process in the procurement process. Nonetheless, incorporating e-Procurement would mean the alteration in a number of areas that affect the procuring landscape, such as Legislation Infrastructure and the Current Procurement Act (Act 663) which does not take electronic transactions in the procurement process into consideration. It therefore calls for the amendment of Act 663 to make provision for electronic transactions. Such effort will create the opportunity for various bodies to advertise their tenders online, suppliers submitting their bids online, and the conducting of the contract award process online.

(Bondzi, 2010). It is observed that any successful e-procurement process requires strategic planning to carefully address all the processes involved. Government leadership also plays an important role in at the bureaucratic and policy levels at every stage of the implementation process. Though the country happens not to be ready and well equipped for implementing this system, evidence indicates that efforts are being exerted by government in preparing the country towards this new revolution in the procurement process. Some of these efforts include the e-Ghana project to establish internet infrastructure for all government offices in the country; establishment of Community Information Centers by the Ministry of Communications to enable the public easy access to the internet; as well as budgetary support of two million US Dollars voted by the World Bank for the establishment of e-Procurement under the e-Ghana project (PPA, Procurement E-Bulletin, 2010).

2.1.8.11 Benefits of E-Procurement to the Public Sector

E-Procurement offers specific benefits to the Public Sector after its adoption and implementation. Among these are:

Improved Efficiency and Transparency: E-procurement provides an effective and efficient way of improving procurement and helping the government reduce overhead costs of assigning contracts by the public sectors. Use of online procurement, according to Bondzi (2010) provides the avenue for increased participation of service providers and thus, increased in healthy competition. It also speeds delivery time in a more continual practice operating business for government. Transparency is ensured as both examination and award process is conducted online (Baily et al, 2008). Easy access to information through e-procurement enables interested parties to directly acquire information associated with each tender and award process (PPA E-Bulletin, 2010).

Reduced Administrative Procedures: Invitation to tenders or proposals can be published on the internet or send by email to service providers, reducing the need for a traditional post delivery system which is time consuming and consequently delays the whole process. E-Procurement will also rationalize the purchase order ensuing in less repetition of effort and enhanced precision. Tenderers are then given immediate notification by email (Bakos, 2009 & Baily, 2008); 2.7.3 Shortened Procurement cycle times According to National Electronic Commerce Coordinating Council (NECCC), 2002, e-procurement helps to reduce resources involved in the traditional procurement processes through improved payment processes and decreased cycle time. Workflow - from producing a purchase request through to payment - can be managed electronically by e-procurement processes, reducing errors and processing time. These efficiencies enable a reduced cycle time from requisition to payment. These time saving allow reduced inventory levels, resulting in additional cost savings through better cash flow and lessened inventory carrying costs.

Reduced Transaction Cost: There are a number of expenses that connected to the traditional procurement method such as; placing of advert in newspapers, Cost of Printing of tender documents, cost in Printing and copying of Contract Award documents, Costs connected with evaluation committee meetings and other costs. These expenses will be eradicated at the establishment of e-procurement since the whole processes will be carried out online (Bakos, 2008; Subramarian & Shaw, 2002). E-procurement can also drastically shrink the cost of materials and goods.

Increased Supplier Based: Through the implementation of e-Procurement, the government is able to reach a larger market rather than a small local market and thus, unbiased in the process where interested parties get equal

opportunities of applying. Internet usage also provides multiple opportunities for companies in the business of supplying government needs to participate, thus leading to a broadening of the supplier database and lower prices as a result of the increased competition (Pasrija, 2004). Government institutions can easily discover the best value when they have access to more contractors. Using online reverse auctions, buyers and sellers can quickly exchange information and bids, which often results in significant savings (PPA E-Bulletin, 2010).

Sharing of Information: E-Procurement allows the use of single portal where government registered agencies can share common information among them related to the procurement process. Additionally, e-Procurement allows greater visibility into nationwide procurement information, providing the nation with the opportunity to negotiate better terms of contract. Purchase orders are also processed and sent to vendors in a fraction of the time facilitating the sharing and dissemination of information between parties. Computerized transactions present an inclusive, and far more precise assessment and audit that allows supervisor to follow the status of orders, and remedy circumstances as and when they occur (Bakos, 2009; Baily et al., 2008).

2.1.8.12. The Challenges of E-Procurement in Ghana

Although e-procurement is growing in terms of supplier adaptation, research has shown that there still challenges to its acceptance (Baily et al., 2008). According to Kannan (2014), although e-Procurement carries a lot of targeted benefits, it has very low patronage among European firms. Though a number of public sector institutions are vigorously adopting e-Procurement in their operations, data still reveal that most efforts are below original expectations, and for that matter becomes a challenge in its successful implementation. The implementation rate of e-procurement is actually reported to be slow though many government agencies do not provide a true reflection of the eProcurement activities in their sectors (MacManus, 2002). 2.8.1 Availability of Financial Resources According to Price Water House Coopers (2007), the high cost of technology is indeed a barrier to adoption of e-procurement. Effectiveness of the e-procurement system is dependent on availability of financial resources in order to meet such technological costs as software and hardware. Other costs include the payments for the various services offered by suppliers and maintenance of the same;

- **Human Resource Capacity:** The Lack of e-procurement knowledge as reported by the Aberdeen Group (2002), serves as a major obstacle to successful adoption and implementation of e-procurement. There is thus need to build capacity of the staff in the e-procurement area.
- **Support from all Stakeholders:** In order for e-procurement adoption to be effective, the support of all stakeholders is a prerequisite. These include the top executives of the organization, the rest of the employees and the suppliers. According to Price Water HouseCoppers (2007), lack of business relationship with suppliers is a barrier to adoption of e-procurement. Wyld (2006) further argued that upper management support was required if an e-procurement system is to succeed;
- **Availability of supporting infrastructure and facilities:** The Effectiveness of an e-procurement system is dependent on availability of infrastructure to support the process. These include computers and servers. According to David Wyld, (2006) adoption of e-procurement is hampered by inadequate technical infrastructure of partners;
- **Technology Adoption:** Lack of technical expertise, according to Price WaterHouse Coopers 2007, is a barrier to adoption of e-procurement. Indeed, the technology keeps on changing and those implementing e-procurement have to continually undergo relevant training in order to keep up with the pace. In addition, there is a need for conformity between the technologies of the user and supplier organizations;
- **Resistance to Adoption:** Resistance to adoption is one of the conventional attitude usually seen among the senior procurement officers who are resolute in their old traditional ways, and thus, unwilling to accept the new ways of doing things. The e-Procurement process has therefore served as a major stumbling block to their manual processing which they have grown so accustomed to. Such people are more likely to fight the new system in an attempt to prevent its successful implementation.
- **Security and Authentication issues:** In order for the new e-Procurement process to be successful, stakeholders have to be convinced beyond reasonable doubt that all information provided on the platform is secured. They must be assured of great confidentiality in relation to all information provided so as to stimulate activities on the platform, otherwise they are less likely to patronize the service for fear that information may leak. Information such as the identity of the interested tenderers, and the quotations that the tenderers make,

are very susceptible tendering process and must thus, be treated with much care. The e-procurement solution is created with protected security features to help ensure that all sensitive data is encrypted to prevent unauthorized persons from accessing such information. When all these systems are in place, stakeholders are assured of the authenticity of the platform which can help in successful adoption and implementation of the process (Bikshapathi, 2006).

2.2 Different Theories

According to Panda and Sahu (2012), many studies have underlined that for ensuring faster adoption of e-procurement requires considering and addressing politico-legal structural factors that are specific to a particular political and administrative context. It requires political will power to ensure administrative and legal interventions (Henriksen and Mahnke, 2005; Kierkegaard, 2006; Carayannis & Popescu, 2005; Panda & Sahu, 2011).

2.2.1 Theoretical Framework

This study's theoretical framework draws on Croom and Brandon-Jones (2007), which is found useful to understand key challenges of e-procurement implementation in government sector. Their work presents evaluation of e-procurement implementation and operation from an 18-month study of e-procurement deployment across nine UK public sector organizations. The article explores key themes in e-procurement, namely system specification and implementation management. They explore the dynamic of e-procurement process in an organization and the transformational effect of e-procurement deployment. It is from this theoretical framework that this project explored a comparative approach, Comparative analysis model, to link how the system specification and implementation management in the 18-month study of e-procurement deployment across nine UK public sector organizations with perceived challenges in adoption of e-procurement in the public sector under in this project.

Comparative analysis model assimilates best practices in areas of governance and uses the as benchmark for evaluating other government practices. The results from such evaluations are used for proposing positive changes to the desired government practices. Comparisons in these model can be used over a period to get a view of the past and present situation and compare two similar situations. This model is applicable for comparing the 18-month study of e-procurement deployment across nine UK public sector organizations and the perceived challenges in adoption of e-procurement in this study



2.2.2 System Specification

Croom and Brandon-Jones (2007) indicated that the challenges in system specifications are related to software integration and data management. According to him, software integration refers to the customer's information infrastructure and its links to suppliers, while data management refers to data entry and the coding schema employed. Issues in system specification include hardware resources, network resources and web server, while issues in data management include are limited levels of management information about expenditure, product and service specifications the main issues in system specification. It is from this understanding that technological infrastructure that is made up of hardware and network resources may influence the use of e-procurement in organizations. E-procurement in itself requires resources such as computers, software and networks, additionally management of data required as input to the e-procurement system. Arising from this understanding this study sort to find out whether employees in the organization under the study had the competency to utilize the resources for data management in E-procurement. Similarly, Lin and Hsieh (2000) found that data management is often troubled by multiple entry points and inconsistent product coding. It is from this perspective in this project that E-procurement involves a great deal of data input and exchange between organizations and its suppliers. To achieve success in these exchange it requires management of data. It is from this background that it is necessary to find out whether employees in the organizations under the study if they have the competency to engage in the data management (data entry, analysis, confidentially and other forms of processing)

Despite that, Subramaniam and Shaw (2002) indicate legal and administration procedures as key challenges in system specification due to multiple legacy system, different data formats and complex processes. In addition, Scholl and Klischewski (2007) highlight that legal, policy, economic foundations and long-term funding are the main barriers in e-government project. Both studies are supported by recent study in Malaysia e-government that shows how tight legal and administration procedures contribute to system incompatibility with the existing online procurement legal requirements (Kassim and Hussin, 2010). In addition, another study in Malaysia e-government (Kaliannan and Awang, 2008) found that most of small size suppliers face problems with weak bandwidth support, poor computing and information systems architecture. Thus, this study posit that in addition to software integration

and data management, legal and administration procedures as well as information technology (IT) infrastructure may contribute to challenges in system specification.

2.2.3 Ethics in Procurement

There are two definitions of ethics as follows: the moral principles governing or influencing conduct and the branch of knowledge concerned with moral principles (The concise Oxford dictionary of current English). Ethics is the basis on which most of the procurement related principles, such as fairness, integrity, and transparency, are based. Professional standards of ethical conduct, no matter what the organization, contain typical characteristics, including commitments to:

- Behave honourably in all aspects of work and professional activity.
- Conduct oneself in such a manner as to maintain trust and confidence in the integrity of the acquisition process.
- Avoid “clever” practices intended to take undue advantage of others or the system.
- Uphold the organization’s standards and policies and all relevant legislation.
- Avoid conflicts of interest.

2.2.3.1 Codes of Conduct

Organizations and professions often seek to address standards of conduct through the adoption of codes of conduct. Professional codes of conduct generally are written in broad conceptual terms rather than in specific situational or descriptive terms. They leave room for interpretation and often may seem ambiguous. Procurement professionals cannot abide merely by the letter of the law or the specific words in any code, but rather, they are guided by the spirit of the law or the broader concept that the code is intended to express. One reason why many procuring organizations avoid detailed and specific codes is these may give the impression that anything not prohibited is permitted or that anything not specifically addressed is not important. People in other professions who have not been trained in or are not appreciative of procurement ethics may not realize that a situation not specifically identified in the code may still be vitally important. Those who do not understand the foundation of a general requirement may not be able to apply a code in a specific situation.

No matter how hard policy-makers try, they will never specify in law, code, regulation, rule, or other written requirement everything that a procurement officer needs to know regarding what is allowed or appropriate and what is prohibited or shunned. It is necessary for procurement officers to understand what the law or rule is intended to accomplish. The primary UN system regulations and rules on ethics and behavioural standards are contained in the Secretary-General’s Bulletin, “Status, Basic Rights and Duties of United Nations Staff Members,” ST/SGB/2002/13, as well as in the “Standards of Conduct for the International Civil Service” (Jan 2002). The United Nations Oath of Office clearly expresses the UN’s values, principles, rules and regulations and how procurement officers should regulate their conduct and perform their duties within the interests of the UN. The respective FRR guiding the procurement process of the UN organizations also address several ethical values such as fairness, integrity, transparency and equal treatment.

2.2.3.2 Stewardship

According to the concise Oxford dictionary of current English, a steward is “a person employed to manage another’s property.” When the steward is a UN staff member, the “person” whose property the steward is managing consists of the entire world’s population - an immense responsibility. Spending money that comes from all Member States and a variety of other public sources is a special kind of stewardship with which international procurement officers are entrusted. They must spend UN money only in the way that it is meant to be spent and must not deviate from the procedures to suit their own convenience.

All UN officials are required to display the utmost loyalty to the United Nations, its Charter, rules and regulations over their respective personal preferences and gains. This requirement is straightforward and unbending. However, exercising the high standards of professional responsibility expected of UN staff members is not always easy. It requires UN staff members to exercise clear judgments every day in conforming their professional practices and outside relationships with the spirit and letter of prescribed rules and regulations as well as broader and harder to define ethical standards.

UN procurement officers can face highly competing pressures. The pressure to satisfy the demands for quicker turnarounds, better quality, and lower prices in procurement can compete with the pressure to fulfil their duties with the utmost responsibility and ethical standards. It is therefore the main role of each UN procurement officer to execute their procurement function according to the highest standards of professionalism and in the respect of the values, objectives and interests of the organization. This implies the procurement officer must adhere to the principles

of fairness, impartiality, transparency, stewardship, to avoid conflict of interest and any impropriety, and to respect and apply the organization's relevant policies, rules and procedures.

2.2.3.3 Ethical concepts and principles

Some ethical concepts and principles that relate to the procurement process are: loyalty and respect for rules and regulations, integrity, impartiality and fairness, transparency, confidentiality, avoidance of appearance of impropriety and due diligence.

Loyalty and respect for rules and regulations: UN procurement officers are charged with the highest standards of loyalty and discretion. When undersigning the 'Oath of Office', UN staff members promise: ". . . to exercise in all loyalty, discretion and conscience the functions entrusted to me as an international civil servant of the United Nations, to discharge these functions and regulate my conduct with the interests of the United Nations only in view, and not to seek or accept instructions in regard to the performance of my duties from any Government or other authority external to the organization." Article 100 of the United Nations Charter requires UN staff members to, "refrain from any action which might reflect on their position as international officials responsible only to the organization." Article 101, Para. 3, of the United Nations Charter states: "the paramount consideration in the employment of the staff and its determination of the conditions of service shall be the necessity of securing the highest standards of efficiency, competency, and integrity...." In summary, the UN procurement officer should:

- Stand by decisions that are in the organization's interest even if they are unpopular.
- Understand the rules and regulations pertaining to his or her profession and organization.
- Know why the rules and regulations are necessary.
- Know what caused the rules and regulations to be enacted.
- Respect the need for the formality of rules and regulations.
- Interpret and apply rules in accordance with their intent.
- Be able to perform procurement responsibilities effectively and efficiently and still abide by the pertinent rules.

Permitted exceptions to requirements should be kept to a minimum and be fully justified and documented. If a rule or regulation must be reconsidered or changed, the procurement officer should pursue the appropriate process to submit the recommended revision through established channels and include complete documentation to explain and justify the proposed change. During this process, the existing regulations, rules and procedures must be followed. The procurement officer must perform regulated tasks consistently according to the specified procedures and take a leadership role to help co-workers and stakeholders understand and follow them as well.

Integrity: UN procurement officers are expected to maintain superior standards of integrity and moral values. The International Civil Service Advisory Board identifies integrity as, "one of the fundamental, if not paramount, standards of conduct" which is, "underlined in Article 101 of the United Nations Charter and explicit or implicit in corresponding articles of the basic instruments of the specialized agencies." Their report explains: "Integrity, while perhaps not subject to exhaustive and precise definition, must be judged on the basis of the total behaviour of the person concerned. Such elementary personal or private qualities as honesty, truthfulness, fidelity, probity and freedom from corrupting influences, are clearly included. For the international official, however, the Charter also requires integrity as a public official, and especially as an international public official. Perhaps the clearest expression of this is the fact that he has dedicated himself to regulate his conduct with the interests of the international organization only in view. It follows that he must subordinate his private interests and avoid placing himself in a position where those interests would conflict with the interests of the organization he serves." "The concept of integrity enshrined in the Charter of the United Nations embraces all aspects of behaviour of an international civil servant, including such qualities as honesty, truthfulness, impartiality, and incorruptibility. These qualities are as basic as those of competence and efficiency, also enshrined in the Charter..."

Cultural differences including nationality, ethnicity, industry or profession, must be set aside. Generic principles of integrity that extend beyond and rise above such differences must be allowed to prevail, especially in connection with the business transactions conducted by UN procurement officers.

Integrity, to a procurement officer in the international marketplace, means believing that the public trust is so important that it cannot be compromised. A procurement officer should therefore demonstrate integrity by:

- Upholding the principles of the United Nations Charter.
- Demonstrating the values of the UN, including impartiality, fairness, honesty, and truthfulness, in daily activities and behaviours.
- Acting without consideration of personal gain.
- Resisting undue political pressure in decision making.

- Not abusing power or authority.
- Taking prompt action in cases of unprofessional or unethical behaviour.

Impartiality and fairness: In a report by the International Civil Service Advisory Board ‘impartiality’ features as a key requirement. The report states: “Impartiality implies objectivity, lack of bias, tolerance, restraint - particularly when political or religious disputes or differences arise. The staff member’s personal views and convictions remain inviolate, but he has not the freedom of a private person to “take sides,” to enter a dispute as a partisan, or publicly to express his convictions on matters of a controversial nature, either singly or as a member of a group. Just as the practice of impartiality will strengthen the secretariat, repeated instances of partiality, or bias, will do serious harm to the organization”. According to the concise Oxford dictionary of current English, “fair” is defined as “just, unbiased, and equitable; in accordance with the rules”. In the context of impartiality and fairness and accordance with the definition above, the procurement officer should:

- Set aside all personal and organizational biases.
- Apply the same standards of evaluation to all the suppliers (equal treatment).

For example, if one supplier requests additional information, all suppliers should receive that information at the same time. Or, if one offer is disqualified in the evaluation process and the award placed with the next highest priced offer, the reason for disqualifying the lower offer must be applied to all evaluations uniformly.

Fairness implies being reasonable as well as impartial, and treating the UN’s trading partners with professional, businesslike courtesy, as well as with strict adherence to the policies and procedures for conducting the transaction.

Transparency: Transparency means unimpeded visibility. Because public procurement involves the use of and accountability for public funds, transparency is, perhaps, paramount in all procurement activities. All transactions are subject to scrutiny but not all organizations experience such scrutiny to the degree of the UN. Therefore, procurement officers and assistants must always conduct themselves in such a way that any scrutiny would not damage the UN or its leaders, member organizations, staff, or programmes.

There are two degrees of transparency:

- Internal scrutiny
- External scrutiny.

Internal scrutiny: Internal scrutiny is transparency within the UN, such as examination conducted by internal auditors. It seeks to ascertain compliance with the UN’s own standards by the UN’s own compliance officers.

External scrutiny: External scrutiny is transparency outside the UN, such as examination by Member States, the press, external auditors, or other outside observers. It refers to the notion that almost anyone can observe UN activities and watch how the UN conducts its business.

Only when something is truly of a confidential nature, such as proprietary data belonging to a supplier, or proposals being evaluated prior to contract award, should confidentiality be given a higher priority over transparency while still maintaining an overall transparent process. Even though details of pricing data or trade secrets may be held confidential, procurement officers should always assume that how they do their work is available to the public.

Confidentiality: Confidentiality needs extra consideration in UN procurement, due to the delicate nature of the information that is handled in procurement processes, such as pricing of products, marketing strategies, etc. A breach in the confidentiality of the data handled in the procurement process could result in discredit of the UN and distrust from governments, partners or suppliers.

The concept of confidentiality is repeated in several instances in the Code of Conduct documented in the Standards of Conduct in the International Civil Service 2001; ST/SGB/2002/13, Regulation 1.2 (i) and V, 35. It states that: “Staff members shall exercise the utmost discretion with regard to all matters of official business. They shall not communicate to any Government, model, person or any other source of information known to them by reason of their official position that they know or ought to have known has not been made public except as appropriate in the normal course of their duties or by authorisation of the Secretary General. These obligations do not cease upon separation from service.” “The disclosure of information may seriously jeopardise the efficiency and credibility of the organization. International Civil Servants are responsible for exercising discretion in all matters of official business. They must not divulge confidential information without authorisation. Nor should international civil servants use information that has not been made public and is known to them by virtue of their official position to private advantage. These obligations do not cease upon separation from service.” Confidentiality might seem in contradiction with transparency, but what this means is, the way the overall procurement process is conducted needs to be clear and transparent, while truly proprietary data needs to remain confidential.

Avoidance of the appearance of impropriety: In the private sector, appearances are tempered by the wishes or standards of the organization's leadership. Employee behaviour is judged according to legality and the satisfaction of owners or customers. However, international public-sector procurement officers must adhere to more conservative standards. UN procurement officers must be constantly aware of how their actions appear to outside observers. Observers may not understand the pressures of their profession. UN procurement officers should always behave in such a way that observers could not misconstrue their actions as improper. This added dimension of the appearance of impropriety places an extra responsibility on procurement professionals. What people think on observing a UN staff member is not trivial. What people think of the procurement officer's behaviour can be the basis of major scandals based on misunderstandings and erroneous information that can damage an organization's effectiveness in achieving its mission. In an international arena, the damage can be immense and even unthinkable.

Acting properly in a "technical" sense is not enough; avoiding even the appearance of impropriety is also necessary. This appearance must be anticipated in the most conservative terms considering how varied the cultures are of those who observe UN activities. UN staff members in almost all environments are strongly advised to avoid such appearances. The newspapers are full of stories about people who did not avoid appearances of impropriety. Not all societies have the same standards or traditions about what is proper and what is not. It is important to recognise cultural differences in appearances and to anticipate, in the most conservative terms, what might be perceived as improper conduct ("conservative" does not mean the same thing to staff from different cultures).

Due diligence: Due diligence in the context of UN procurement refers to carrying out duties carefully and thoroughly and avoiding careless practices or techniques. Due diligence requires that all activities by procurement officers be pursued in a manner that goes beyond the minimum effort. For example, diligent UN procurement officers should:

- check the references of potential suppliers
- develop impartial evaluation criteria
- carefully analyse the offers received
- not cut corners for the sake of convenience.

2.2.4 Sustainable Procurement

Sustainable procurement (SP) is about taking social and environmental factors into consideration alongside financial factors in making procurement decisions. It involves looking beyond the traditional economic parameters and making decisions based on the whole life cost, the associated risks, measures of success and implications for society and the environment. Making decisions in this way requires setting procurement into the broader strategic context including value for money, performance management, corporate and community priorities. Sustainable procurement is the process by which organizations buy assets, supplies or services by taking into account a number of factors including:

- Value for money considerations such as, price, quality, availability, functionality.
- The entire life cycle of products.
- Environmental aspects; the effects on the environment that the assets, supplies and/or services have over the whole lifecycle ("green procurement").
- Social aspects: effects on issues such as poverty eradication, inequality in the distribution of resources, labour conditions, human rights, Fair-trade.
- Sustainable or recycled materials/products.

2.2.4.1 Aim and challenge

Traditional procurement has focused upon value for money considerations. The aim and challenge of sustainable procurement is to integrate environmental and social considerations into the procurement process, with the goal of reducing adverse impacts upon health, social conditions and the environment, thereby saving valuable costs for public sector organizations and the community at large. Sustainable procurement forms a key part of an overall push for sustainable development by governments and UN organizations.

2.2.4.2 Potential benefits

Potential benefits of sustainable procurement include:

- Long-term efficiency savings
- More efficient and effective use of natural resources
- Reducing the harmful impact of pollution and waste
- Reducing the impact of hazardous substances on human health and the environment

- Encouraging innovation
- Providing strong signals to the sustainable products market
- Practical expression of organizations' commitment to sustainable development.

2.2.4.3 Procurement as a mechanism to further economic, social and environmental development

Procurement can be used as a mechanism to further the economic, social and environmental development of recipient countries and/or regions. As such, sustainable procurement should incorporate a number of safeguards and checks in the procurement process to positively assist in the following areas:

- Human rights
- Labour rights
- Environmental impacts
- Local entrepreneurship
- Empowerment women
- Poverty eradication
- Governance.

2.3 Historical Thinking

The empirical study of literature attracts the contribution of particularly authors in the areas of reception and audience studies and in study when it is concerned with questions of reading. In these two areas research and studies based on the framework are steadily growing. Further fields where the framework in various revised and expanded versions attracts scholarship is (comparative) cultural studies and pedagogy. One of several dictionary definitions of the field is as follows: "Movement within the study of literature concerned with the study of literature as a social system of [inter]actions. The main question is what happens to literature: it is written, published, distributed, read, censored, imitated, etc. The empirical study of literature originated as a reaction to, and an attempt at, solving the basic problem of hermeneutics; that is, how the validation of literary interpretation can be demonstrated. From reception theory it had already become clear that interpretations are not only tied to the text, but also, and even to a great extent, to the reader both in terms of the individual and of social conventions.

This led to the theory of radical (cognitive) constructivism, based on the thesis that the subject largely construes its empirical world itself. The logical consequence of all this, to be seen in the work of Siegfried J. Schmidt, is the separation of interpretation and the strictly scientific study of literature based on radical constructivism. The literary system of actions is observed from the outside not experienced and roughly characterized as depending on two conventions (hypotheses) that are tested continually. These conventions are the aesthetic convention (as opposed to the convention of facts in the daily language of reference) and the polyvalence convention (as opposed to the monovalency in the daily empirical world). Thus, the object of study of the empirical study of literature is not only the text in itself, but the roles of action within the literary system, namely, production, distribution, reception, and the processing of texts.

The methods used are primarily taken from the social sciences, reception theory, cognitive science, psychology, etc. In general, the steps to be taken in empirical research are the formation of a hypothesis, putting it into practice, testing, and evaluation. More concretely, for the study of reader response a wide array of techniques are used, ranging from protocol techniques and thinking aloud protocol to pre-structured techniques, such as the semantic seven point scale (C. Osgood) and the classification technique (card sorting), and forms of content analysis, discourse analysis, association techniques, etc. Some objections often raised to the empirical study of literature are the triviality of many of its research results such as confirmation of what was already known or suspected or its reductionism (artificiality of the framework and set-up, and limitation to reader response instead of the study of the text). It is clear, however, that the empirical study of literature by its specific approach of the object and its focus on methodology is an outstanding way to explore the socio-cultural aspects of the literary system. It makes an irreplaceable contribution to the development of a more rational, scientific, and socially relevant study of literature.

2.3.1 Empirical Review

Research into the uptake and application of e-procurement has focused on a number of themes, as identified by Schoenherr & Tummala (2007) who noted that early research into e-procurement focused on EDI (Ramasehan, 1997), the automation of formerly manual to automated processes and the impact on the business environment (Orr, 2000). Articles appearing in 2001 dealt primarily with market transformation issues inherent in the electronic revolution, advantages of e-procurement, and recommendations and advice on successful implementations (Rajkumar, 2001). From a sector perspective, Schoenherr & Tummala & Tummala (2007) noted that a diverse range of sectors

have been researched, however, it is interesting to note that only 13% of articles relate to the government sector. Alongside these general inhibitors a number of specific inhibitors have been identified which relate to a specific sector. For example, Panayiotou et al (2004) has noted that the inhibiting factors affecting the adoption of e-procurement in the Greek public sector includes the complexity of goods/services procured, the need for transparency in procurement, the challenges posed by public policy and the regulatory and legal constraints faced by public sector organizations.

The literature (Henriksen & Mahnke, 2005) reveals that these barriers and requirements tend to increase within the public sector, mainly due the impact of different economic and social factors, which influence the public domain with respect to the private sector (Gichoya, 2005). These differences have resulted in a number of specific regulations and standards that have been developed for public e-Procurement: which requires that a bureaucratic procedure be followed due to the nature of the institutions involved (Leukel & Maniatopoulos, 2005) and embraces audit, accountability and compliance standards with national and international rules to ensure supply competition and transparency in the awarding of contracts (OGC, 2005). Croom & Johnston (2003), in their research of e-procurement in the UK public sector estimate that savings of the order of 5 – 20% are achievable in the cost of materials, with savings of the order of 50 – 70% can be achieved in relation to administration. More recent research by Puschmann & Alt (2005), in the private sector, noted that the introduction of e-procurement resulted in administrative savings of the order of 50 – 80%, however, they conclude that this range of potential savings may not be applicable to other sectors (e.g. the public sector) given the difficulties in reducing staff numbers.

Another example of the diversity of opinions regarding the scale of potential e-procurement cost savings relates to inventory. For example, Min & Galle (2002) estimated that inventory could be reduced by 20 – 25% and that order cycle times could be reduced to 5 days. Presutti (2003) concurs with this level of potential savings by noting that sourcing cycle times could be reduced by 25 – 30%. However, Croom & Johnston (2003) suggest even greater savings in this area with processing times reduced from 5 days to 2 hours through the use of e-procurement.

2.3.2 Summary and Critique of the Literature

The literature reviewed and discussed above, which is primarily focused on the private sector, identifies a number of potential factors that might affect the adoption of e-procurement within the public sector. However, it has become apparent from this review, that there are a number of significant gaps in the current literature in relation to the uptake and adoption of e-procurement. More specifically, the following important gaps have been identified: Current studies of e-procurement have tended to adopt rather narrow definitions and conceptualizations of e-procurement; There have been few, if any studies which explicitly focus on the public sector, in general, nor the adoption of e-procurement by Ghana public sector organizations, in particular; There are a number of studies that identify factors that might affect the adoption of e-procurement, but they tend not to be empirically tested. Moreover, such studies do not provide complete and coherent taxonomies of the problems with traditional procurement, or the potential benefits of, and inhibitors / facilitators of e-procurement adoption; Where empirical studies of the adoption of e-procurement, have been conducted, they tend to be questionnaire-based, private sector-oriented, focusing on a restricted set of adoption factors and a narrow conceptualization of e-procurement.

In particular, it is important that more case studies are conducted, so that the issue of causality can be more explicitly addressed. The existing empirical literature tends not to explicitly draw upon theory, to help interpret their results. Consequently, the extent to which an organization's adoption practices might be explained through the use of an appropriate theoretical lens, such as Institutional Theory, have not been widely explored. Against this backdrop, a study was initiated to investigate the challenges in the adoption of e-procurement within a survey of state corporations under the Ministry of Finance in Ghana. Whilst this study was explicitly built upon the factors identified in prior studies, it was envisaged that it would provide a far deeper and richer data set, upon which to draw conclusions.

3.0 METHODOLOGY

This chapter is aimed at concerned with the various steps that were used to facilitate execution of the study to satisfy the study objectives. These steps included research design, study Population, sample and sampling techniques, data collection instruments, validity and reliability of research instruments, data collection procedures, data analysis techniques and ethical considerations.

3.1 Research Design

Research design is a plan outlining how information is collected for evaluation. The research adopted descriptive design to collect the quantitative and qualitative data that described the challenges to the adoption of e-procurement in Ghana public sector. This research study considered gathering of consistent and accurate data, as such, the study adopted a descriptive survey design. According to Merriam (1998) descriptive research is used to obtain information concerning the current status of the phenomena to describe what exists with respect to variables. Further,

Kothari, (2006) also highlights that case study is a way of organizing data and looking at the object to be studied as a whole. Descriptive case study aims at collecting information about people's attitudes, opinion, and behavior (Orodho 2002).

3.2 Ethical Considerations

Research study philosophy is an over-arching term that relates to the development of knowledge and the nature of that knowledge (Saunders et al., 2009). The study was guided by a positivism research philosophy which is part of epistemological viewpoint. In positivism research belief, the research is carried out in a value-free way. The researcher is external to the process of data collection in the sense that there is little which can be done to alter the substance of the data collected. The researcher is independent of and not afflicted by the subject of the research (Saunders et al., 2009).

The basis of applying the positivism paradigm was that it's directly associated with the idea of objectivism. In this type of philosophical approach, the researchers give their viewpoint to evaluate social world with the aid of objectivity in place of subjectivity (Cooper & Schindler 2008). With this approach, a researcher's own beliefs have no value to influence the research study. Positivism asserts that not only objective reality can be observed and tested without bias using standardised instruments. In the positivist paradigm, the researchers see themselves as neutral recorders. Different researchers using the same tools should reach the same conclusions (Cohen et al., 2007).

Relating to Kasi (2009), positivism paradigms seek to develop standardised instruments that specifically tap just one reality. Relating to Cooper and Schindler (2011) assertions, positivism is indicated by a belief in theory before research and statistical justification of findings from empirically testable speculation, the core of tenets of social science. Positivism helps to test thinking and examines the possible relationship between several variables (Sekeran & Bougie 2010).

3.3 Research Methods

Ngechu (2006) points out that, the target population is a well-defined or specified set of people, group of things, households, firms, services, elements or events to be investigated. This means the target population should fit a particular set of the specification which the researcher will be studying, and it should be homogenous. Greener (2008) further says that the study population is the full universe of people or things from which the sample is selected.

3.3.1 Population

Target population represents all cases of people or organizations which possess certain characteristics; it is the larger group from which a sample is taken (Mugenda and Mugenda 2003). The target population for this study was the public sector in Ghana. However, the study was limited to the Ministry of Finance in Ghana. The Ministry of Finance was of interest to this study since according to the report by Central bureau of statistics (2010) the Ministry has made great efforts to comply with e-government initiatives among them e-procurement. The total population of the study consisted of all the 16 state corporations under the Ministry of Finance (appendix I).

3.3.2 Sampling Frame

A sampling frame describes a list of all population from which a sample is selected (Cooper & Schindler, 2003). The study population was state corporations under the Ministry of Finance. Due to time and financial constraints, the researcher carried out a simple random selection of three respondents from the procurement departments of all the 16 corporations giving a sample size of 48. The sampling frame for this study was from the list containing the names of the respondents that was sourced from the respective Human Resource Departments of the corporations. The research focused on the employees who were in the procurement departments in these corporations (Table 3.1).

3.3.3 Sample Size and Sampling Technique

Chandran, (2003) defines a sample as a small proportion of an entire population; a selection from the population. "Sampling is the process of selecting a number of individuals for a study in such a way that the individual selected represents the large group from which they are selected." (Mugenda & Mugenda, 2003: 260). Probability sampling occurs when the population has equal chance of being selected. This includes simple random, stratified random sampling and cluster sampling. This study adopted a stratified sampling technique where the study population was stratified into management and non-management strata. Then simple random was used to select a sample of three from each corporation's department of procurement. One from management and two non-management staff was selected. Due to time and financial constraints, the researcher carried out a simple random selection of three respondents from the procurement departments of all the 16 corporations giving a sample size of 48.

Table 3.1 Distribution of Total Population

| State Corporations | Total |
|---|--------------|
| National Board of Professional & Technical Examinations Board (NABPTEX) | 3 |
| Privatization Commission | 3 |
| National Investment & Promotion Authority | 3 |
| Insurance Regulatory Authority | 3 |
| Public Procurement Oversight Authority (PPA) | 3 |
| State Corporations Appeals Tribunal | 3 |
| Ghana National Assurance Commission | 3 |
| Capital Market Authority Deposit Protection Fund Board | 3 |
| National Investment Bank | 3 |
| Retirements Benefit Authority | 3 |
| Ghana Reinsurance Corporation | 3 |
| Ghana Revenue Authority | 3 |
| Ghana Trade Network Agency | 3 |
| Consumer Authority of Ghana | 3 |
| Consolidated Bank of Ghana | 3 |
| Ghana Post Office Service | 3 |
| Total | 48 |

3.3.4 Result

Both primary and secondary data was used for the study. The research study used a questionnaire as a key instrument for primary data collection. Secondary data was obtained from relevant literature like journals, internet and books. The use of questionnaires will be preferred as it will ensure confidentiality is upheld, save on time, and will be easy to administer (Bell 1993). The questionnaire was ideal because the researcher was able to collect information from a larger sample. It also gave a greater feeling of anonymity hence encourage open responses to sensitive questions and was free from bias and so accurate and valid data was gathered. The questionnaire used was structured (close ended) and unstructured (open ended) to elicit specific responses for quantitative and qualitative analysis respectively. Some of the close ended questions required a response on a five point Likert scale, showing to what extent each factor influences adoption of internet banking. The questionnaire was organized into six sections. The first section of the questionnaire dealt with demographic statistics such as name, age, years of service of the employees. The other sections included questions from the four objectives. A covering letter was provided for the first page. One hundred and forty-three questionnaires were distributed to respondents. To make high response rate, the researcher delivered questionnaires individually by making an appointment. As a strategy aimed at minimising the time it may take to carry out this exercise, the researcher proposed to adopt both self-administered and drop and pick strategies in questionnaire administration.

3.3.5 Questionnaires

According to Sekeran (2003) a pilot test is necessary for testing the reliability of data collection instruments. Pilot study is thus conducted to test weaknesses in design and instrumentation to provide proxy data for selection of a sample. Reliability refers to the consistency of a measure. A test is considered reliable if the same result is got repeatedly (Cooper and Schindler, 2003). The pilot study was done by selecting five respondents from the population and issuing them with the questionnaire. The data obtained was evaluated to ensure that questions were properly answered. However, the findings from the pilot test were not included in the final results.

3.3.6 Reliability of Data

Cronbach's alpha a coefficient of reliability that gives an unbiased estimate of data generalizability was used to test reliability of the answered questionnaires. According to Zinbarg (2005), Cronbach's alpha is a coefficient of reliability that gives an unbiased estimate of data generalizability. An alpha coefficient higher than 0.75 indicates that the gathered data has a relatively high internal consistency and could be generalized to reflect opinions of all respondents in the target population.

3.3.7 Interviews

The questionnaires were first edited then coded to facilitate statistical analysis. Data collected was both qualitative and quantitative. Qualitative data was analyzed through content analysis. Quantitative data was analyzed

through the use of frequency distribution, mean scores and standard deviations. These analyses were used to address specific objectives I to IV. With the help of Statistical Package for Social Science (SPSS) the findings were presented in form of frequency distribution tables, bar charts and pie charts. The data was summarized according to the study's specific objectives.

In addition, to determine the level of significance between the independent variables and the dependent variable, thus one-way analysis of variance (ANOVA) tests were carried out. The study also adopted a Fixed-effects model which assumed that the data came from normal populations which may differ only in their means. ANOVA is a data analysis procedure used to determine whether there is significant difference between two or more groups or samples at a selected probability level, (Hinkelmann, Klaus and Kempthorne, 2008).

DATA ANALYSIS

This chapter presents the data analysis and interpretations of the findings. Data is presented appropriately by use of pie charts, graphs and percentages. The general objective was to investigate the challenges of e-procurement adoption in the Ghana Public Sector.

4.0.1 Response Rate

Table 4.0.1. Illustrates the response rate of the respondents that participated in the study. The field responses were that out of the 48 respondents surveyed, 39 questionnaires administered were filled and returned giving a response rate of 81%. This good response rate can be attributed to the data collection procedure, where the researcher personally administered questionnaires and waited for the respondents to fill, and picked the filled questionnaires. The response rate demonstrated willingness to respond to the study. This response rate was good and representative and conforms to Mugenda and Mugenda (2003) stipulation that a response rate of 50% is adequate for analysis and reporting; a rate of 60% is good and a response rate of 70% and over is excellent. This survey can therefore be said to be successful.



Table 4.0.1 Response Rate

| Banks | Management Staff | Non-Management Staff | Total |
|---|-------------------------|-----------------------------|--------------|
| National Board of Professional & Technical Examinations Board (NABPTEX) | 1 | 1 | 2 |
| Privatization Commission | 1 | 2 | 3 |
| National Investment & Promotion Authority | | | 0 |
| Insurance Regulatory Authority | 1 | 2 | 3 |
| Public Procurement Oversight Authority (PPA) | 1 | 2 | 3 |
| State Corporations Appeals Tribunal | 1 | 2 | 3 |
| Ghana National Assurance Commission | 1 | 1 | 2 |
| Capital Market Authority Deposit Protection Fund Board | 1 | 2 | 3 |
| National Investment Bank | 1 | 2 | 3 |
| Retirements Benefit Authority | | | 0 |
| Ghana Reinsurance Corporation | 1 | 2 | 3 |
| Ghana Revenue Authority | 1 | 2 | 3 |
| Ghana Trade Network Agency | 1 | 2 | 3 |
| Consumer Authority of Ghana | 1 | 1 | 2 |
| Consolidated Bank of Ghana | 1 | 2 | 3 |
| Ghana Post Office Service | 1 | 2 | 3 |
| Total | 14 | 25 | 39 |

4.0.2. Pilot Study (Reliability)

Before large scale administration of the instrument, the researcher conducted a pretest to determine the reliability of the instrument. This was done by administering the questionnaires to an identified pilot unit. Five respondents who would not be included in the final sample were randomly selected for the purpose of pre-testing the questionnaire. The feedback from the study enabled the researcher to make the necessary adjustments on the items in the research instrument. The variables of the study were found to be sufficient because all the constructs and composite reliability based on Cronbach's Alpha were above 0.75 set as the acceptable minimum by Nunnally, (1978) as shown below in table 4.0.2

Table 4.0.2 Reliability Results

| Constructs | No. of Items | Cronbach Value |
|--|---------------------|-----------------------|
| Lack of Employee Competency | 4 | 0.821 |
| Inadequate legal framework | 7 | 0.765 |
| Inadequate Technological Infrastructure | 6 | 0.812 |
| Security of Procurement Transaction Data | 5 | 0.723 |

4.0.3 Background**4.0.3.1 Gender**

Respondents were asked about their gender. From the results, majority (58%) were male while 42% were female.

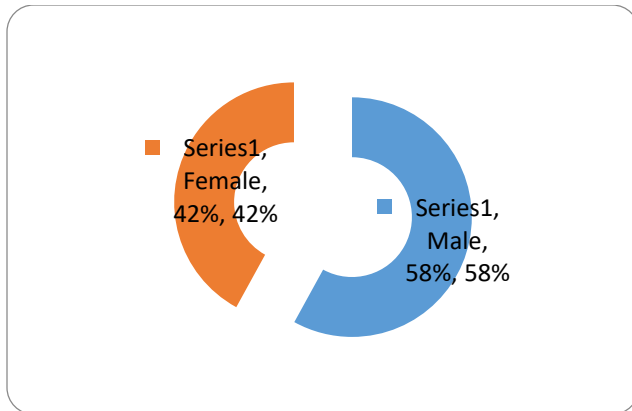


Figure 4.0.3.1 Respondents' Gender

4.0.3.2 Highest Academic Qualification

The rationale behind the question was to know the respondents highest level of education. Most (47%) of respondents had undergraduate degrees while 30% had master's degree and 23% had diplomas as their highest level of education. The interpretation of this is that the workforce is well qualified and knowledgeable in their various functions and was therefore in a position to offer credible information necessary for this study. This could also mean that respondents were competent enough to implement e-procurement. This is in line with Stafford, (2006) who says that respondents' knowledge is critical to the subject content. In this case, little of this can be accomplished if the respondents are not knowledgeable of the subject. This is shown in figure 4.0.3.2 below.

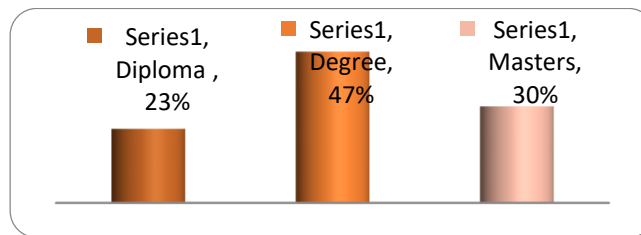


Figure 4.0.3.2 Highest Academic Qualifications

4.0.4.1 Duration Worked in the Organization

This question intended to determine from the respondents how long they had worked in their respective institutions. Majority (67%) of the respondents had worked for between 6 and 10 years in their institutions while 33% had worked for between 11 and 20 years. The respondents have been in the organization long enough and therefore would be in position to provide actual information for this study. In addition, the experience provided a rich history about the individual institutions. This is in line with Holbrough, (2008) who noted that work experience is related to positive view of the learning experience. This is shown by figure 4.0.4.1 below.

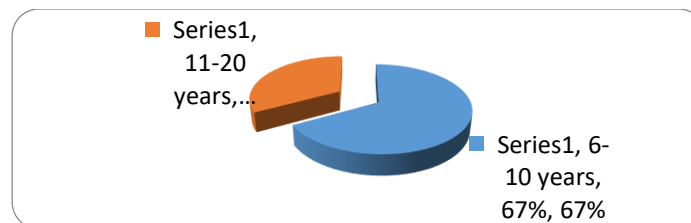


Figure 4.0.4.1 Duration Worked in the Organization

4.0.4.2 Position in the Organization

The question sought respondents' current job role. Majority (63%) of the respondents were in non-management functions, while 37% were in managerial functions. The interpretation here is that all the respondents were from the right target group thus understood the questions in the questionnaire well thus providing credible responses as shown by figure 4.0.4.2 below.

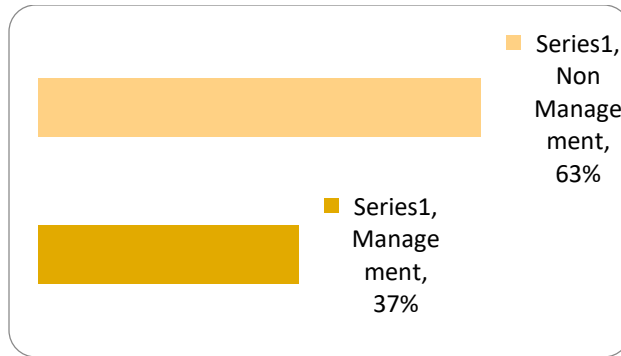


Figure 4.0.4.2 Position in the Organization

4.1 Context of Research Site

4.1.1 Adoption of E-Procurement

This question sought to determine whether institutions represented by the respondents had already adopted e-procurement. From the results, 89% of these organizations had adopted e-procurement while 11% had not adopted. This is shown by figure 4.5 below. According to e-government strategy paper 2004, e-procurement was one of the medium term objectives which were to be implemented by June 2007; however, implementation of e-procurement has not significantly been visible over the period. A number of Public Procurement and disposal entities still use manual procurement process and faces lack of system integration and standardization issues; end-user behavior and resistance; and difficulty in integrating e-commerce with other systems, and e-procurement business processes; and information and e-procurement infrastructure.

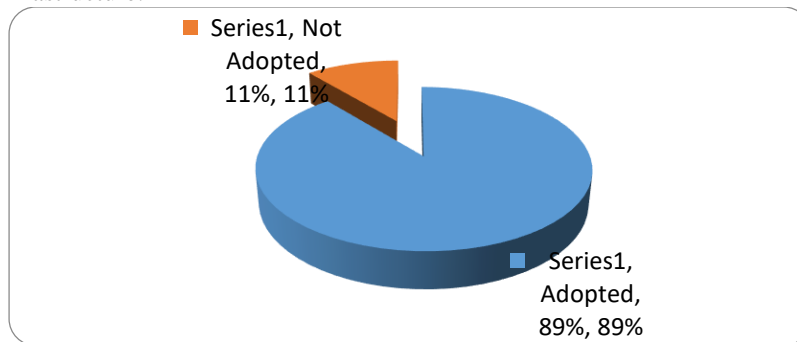


Figure 4.1.1 Adoption of E-Procurement

4.1.2 Employee Competency in E-Procurement

4.1.2.1 Attendance of any Training Related to E-Procurement

This question sought to establish whether respondents had attended any form of training related to e-procurement. From the results, majority (57%) of the respondents had attended e-procurement related training while 43% had not attended any training. For those who had attended training, all said that the training helped in improving their skills on e-procurement. These findings are in line with World Bank survey which argued that since e-Procurement includes new technologies and changes in traditional procurement approaches, the need to train staff in procurement practices and the use of e-Procurement tools are critical to the success of an e-Procurement initiative (WB, 2003).

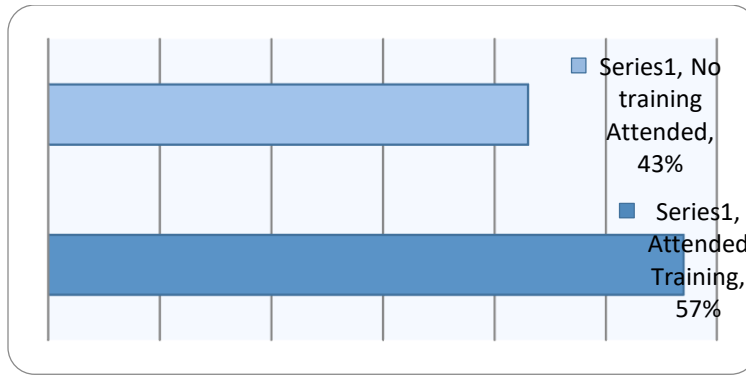


Figure 4.1.2.1 Attendance of any Training Related to E-Procurement

4.1.2.2 Commitment by the organization to provide e-procurement competencies

The intent of this question was to determine whether these organizations were committed to providing their staff with the necessary competencies and skills to ensure the success of e-procurement. The results showed that 88% of respondents saying that their organizations were committed while 12% saying there was no commitment to e-procurement skills development. According to CGEC, (2002), end-users can realize the immediate benefits of the e-procurement system once they understand the operational functionalities. This means that training should be given a high priority, alongside the need for public sector agencies to identify the skills required by all those engaged in procurement

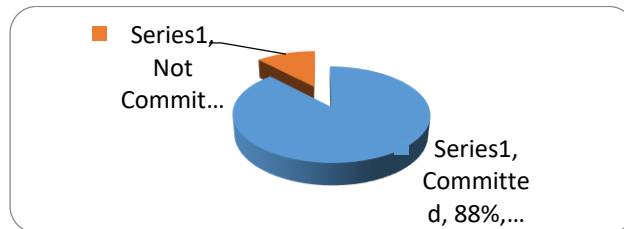


Figure 4.1.2.2 Commitment by the organization to provide e-procurement competencies

4.1.2.3 Extent to which staff competencies are a challenge to e-procurement adoption

This question was intended to determine from the respondents their opinion on the extent to which they think staff competencies have been a hindrance to e-procurement adoption in their organizations. From the results, most (41%) respondents said that staff competencies hindered e-procurement adoption to a small extent, 36% said it was to a moderate extent while 23% said it was to a great extent.

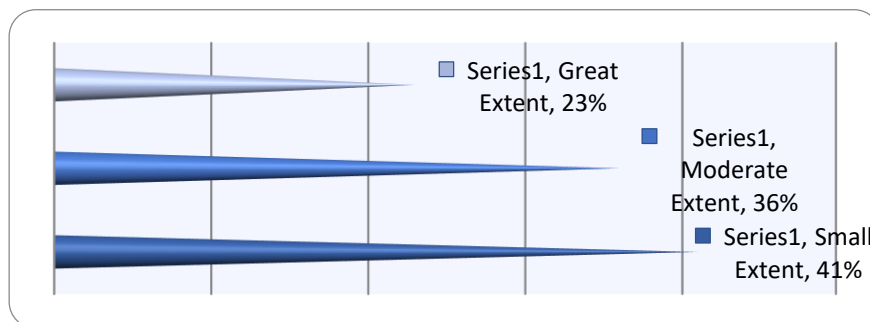


Figure 4.1.2.3 Extent to which staff competencies are a challenge to e-procurement adoption

4.1.3 Inadequate Legal Framework in E-Procurement Adoption

4.1.3.1 Legal Framework Governing E-Procurement in Ghana

This section sought to establish from the respondents their opinions on the legal frameworks governing e-procurement in Ghana. In this section a scale of 1-5 was used. The scores “strongly disagreed” and “disagreed” were represented by mean score, equivalent to 1 to 2.5 on the continuous Likert scale ($1 \leq \text{disagree} \leq 2.5$). The scores of

‘neutral’ represented in decision by the respondents. This was equivalent to 2.6 to 3.5 on the Likert scale ($2.6 \leq \text{neutral} \leq 3.5$). The score of “agree” and “strongly agree” represented ‘agree’ with the statements provided. This was equivalent to 3.6 to 5.0 on the Likert Scale ($3.6 \leq \text{agree} \leq 5.0$). Data was presented in means and standard deviation.

Table 4.1.3.1 below indicates that majority respondents disagreed (mean=1.9855) that email contracts were legal in their organizations. In addition, majority respondents also disagreed (mean=1.2391) that electronic signatures were enforceable in their organization. Majority of respondents also disagreed (mean=1.2754) that electronic signatures were enforceable in the organizations. Finally, majority disagreed (mean=2.2319) that PPOA had adequately addressed the legality of e procurement in the public sector. This is in line with Kheng and Al-Hawandeh (2002) who found that the laws governing B2B commerce, crossing over to e-procurement, are still undeveloped. For instance, questions concerning the legality and force of e-mail contracts, role of electronic signatures, and application of copyright laws to electronically copied documents are still unresolved.

Table 4.1.3.1 Legal Framework Governing E-Procurement in Ghana

| | N | Mean | Std. Deviation |
|--|----|--------|----------------|
| E-mail contracts are legal | 39 | 1.9855 | 1.12039 |
| Electronic signatures are enforceable in the ministry | 39 | 1.2391 | .42811 |
| Electronically copied documents are covered by the copyright laws | 39 | 1.2754 | .44832 |
| PPOA has adequately addressed the legality of e procurement in the public sector | 39 | 2.2319 | .93035 |

4.1.3.2 Extent to which inadequacy of legal framework is a challenge to e-procurement adoption

This question intended to establish the extent to which inadequacy of legal framework was a challenge to e-procurement adoption. From the results, majority (63%) of respondents said that inadequacy of a legal framework was to a great extent a challenge to e-procurement adoption in their organizations, with 20% saying it was to a very great extent. The Public Procurement and Disposal Authority recognize that the existing PPDA 2005 and PPDR 2006 legal framework in Ghana may not have adequately covered aspects of e-procurement transaction.

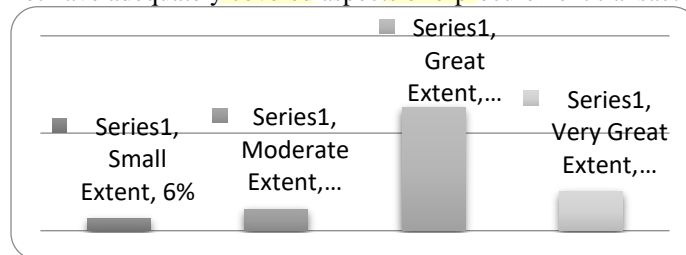


Figure 4.1.3.2 Extent to which inadequacy of legal framework is a challenge to e-procurement adoption

4.1.4 Inadequate Technological Infrastructure and E-Procurement Adoption

4.1.4.1 Sufficiency of Infrastructure Supporting E-Procurement

This question sought to establish whether respondents considered the infrastructure supporting e-procurement in their organization as sufficient. From the findings, majority (73%) considered the infrastructure supporting e-procurement insufficient, while 27% said they were sufficient. For those who considered the infrastructure insufficient, majority cited lack of fast internet speeds as well as compatibility issues with other departments, especially finance department. Respondents also cited non commitment from the management to embrace e-procurement. These findings are in line with those of a commercial report by IDC (2003) who demonstrated that there remained a slow uptake of e-procurement systems, emphasizing that system infrastructure-related issues such as software integration were inhibiting implementation. In addition, Kheng and Al-Hawandeh (2002) also found out that significant investment in hardware, software, and personnel training to participate in e-procurement are prohibitive.

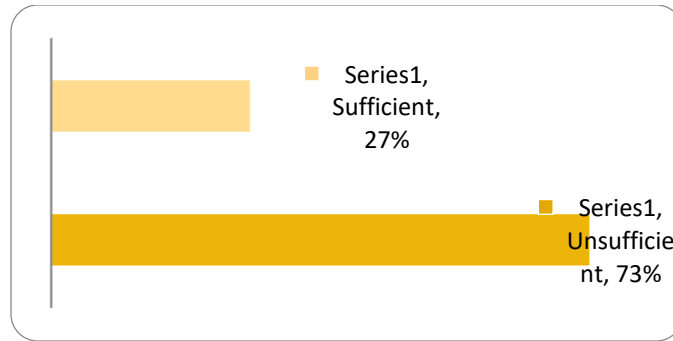


Figure 4.1.4.1 Sufficiency of Infrastructure Supporting E-Procurement

4.1.4.2 Extent to which Inadequate Technological Infrastructure is a challenge to E-Procurement Adoption

This question sought to determine from the respondents the extent to which Inadequate Technological Infrastructure was a challenge to E-Procurement Adoption in their organizations. From the findings, majority (77%) of the respondents said that Inadequate Technological Infrastructure, to a great extent, hindered E-Procurement Adoption in their organizations. However, 18% said the challenge was to a moderate extent.

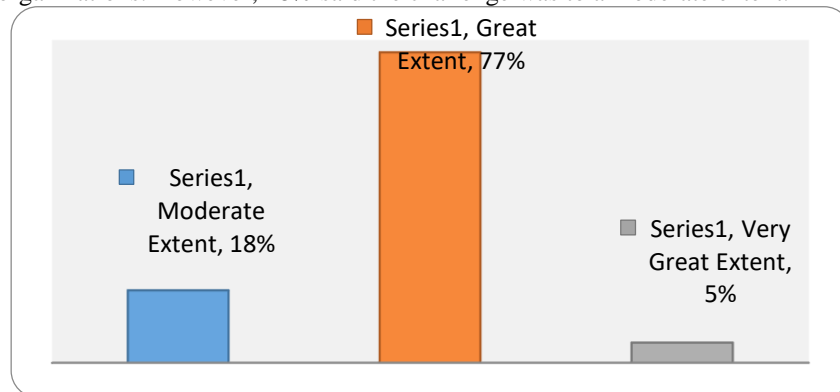


Figure 4.1.4.2 Extent to which Inadequate Technological Infrastructure is a challenge to E-Procurement Adoption

4.1.5 Security of Procurement Transaction Data and E-procurement

4.1.5.1 Extent to which various factors Influence E-Procurement Adoption

This section sought to establish from the respondents the extent to which various factors Influenced E-Procurement Adoption. In this section a scale of 1-5 was used. The scores “very great extent” and “great extent” were represented by mean score, equivalent to 1 to 2.5 on the continuous Likert scale ($1 \leq \text{great extent} \leq 2.5$). The scores of ‘neutral’ represented in decision by the respondents. This was equivalent to 2.6 to 3.5 on the Likert scale ($2.6 \leq \text{neutral} \leq 3.5$). The score of “low extent” and “very low extent” represented ‘low extent’ with the statements provided. This was equivalent to 3.6 to 5.0 on the Likert Scale ($3.6 \leq \text{low extent} \leq 5.0$). Data was presented in means and standard deviation.

From the results, majority of respondents said that transaction risks resulting from wrong products purchased due to incomplete or misleading information had a moderate effect (mean=2.6362) to e-procurement adoption. In addition, Security risks resulting from unauthorized penetration of trading platforms and failure to protect transaction related data while being transmitted or stored (mean=2.7899); Privacy risks arising from inappropriate information collection and information transparency (mean=3.087); Uncertainty over trust and commitment among trading partners (mean=3.2754) and; Lack of standardization (mean=2.6618), all had a moderate effect on e-procurement adoption. These findings are in line with those of Huber et al. (2004) who found that concerns over security and confidentiality of the data needed to be exchanged in electronic environments was perceived as among the barriers to implementation of electronic procurement.

In addition, Saeed and Leith (2003) examined buyers’ perceptions of e-procurement risks and arrived at three dimensions: first transaction risks resulting from wrong products purchased due to incomplete or misleading information; Second security risks resulting from unauthorized penetration of trading platforms and failure to protect

transaction related data while being transmitted or stored; and Third privacy risks arising from inappropriate information collection and information transparency.

Table 4.1.5.1 Extent to which various factors Influence E-Procurement Adoption

| | N | Mean | Std. Deviation |
|---|----|--------|----------------|
| Transaction risks resulting from wrong products purchased due to incomplete or misleading information | 39 | 2.6362 | .50050 |
| Security risks resulting from unauthorized penetration of trading platforms and failure to protect transaction related data while being transmitted or stored | 39 | 2.7899 | 1.16802 |
| Privacy risks arising from inappropriate information collection and information transparency | 39 | 3.0870 | .68857 |
| Uncertainty over trust and commitment among trading partners. | 39 | 3.2754 | 1.26010 |
| Lack of standardization | 39 | 2.6618 | 1.04539 |

4.1.5.2 Extent to which Security of Procurement Transaction Data was a challenge in E-procurement Adoption

This question sought to determine from the respondents, the extent to which Security of Procurement Transaction Data was a challenge in E-procurement Adoption in their organizations. From the results, majority (51%) of the respondents said Security of Procurement Transaction Data was to a great extent a challenge to e-procurement adoption. However, 43% said it was to a moderate extent. Stenning and Associates (2003) highlight the need for transactions between different systems to be exchanged in secure ways with absolute assurances regarding the identities of the buyers and suppliers. In order to encourage buyers and suppliers to engage in e-Procurement, it is critical that both parties have complete confidence and trust in the underlying security infrastructure.

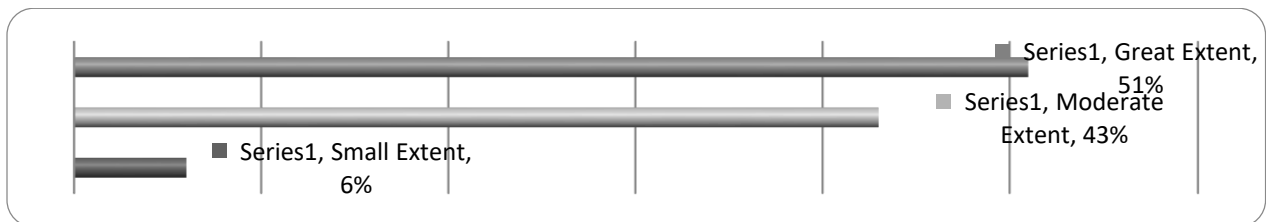


Figure 4.1.5.2 Extent to which Security of Procurement Transaction Data was a challenge in E-procurement Adoption

4.1.6 Inferential Analysis

4.1.6.1 ANOVA

The descriptives table 4.5 below provides some descriptive statistics including the mean, standard deviation and 95% confidence intervals for the dependent variable (E-procurement Adoption), for each separate group (employee competency, inadequate legal framework, inadequate technological infrastructure and security of procurement data) as well as when all groups are combined (Total). From the results below, inadequate technological infrastructure came out as the greatest factor hindering e-procurement adoption (mean= 1.8264). The other factors in descending order were as follows; inadequate legal framework, Security of procurement transactions data and employee competence with means of 1.6324, 1.5312 and 1.4014 respectively. Issues concerning information systems development and adoption are central to the e-procurement issue. Rajkumar (2001) identified systems integration as a critical success factor for e-procurement implementation, both with the customer’s information infrastructure and in its links to suppliers. Table 4.6 below shows the output of the ANOVA analysis and whether there was statistically significant difference between the group means. The significance level is 0.198, which is greater than 0.05. Therefore, statistically there is no significant difference in the mean between the dependent and the independent variables. In a summary, there was no statistically significant difference between groups as determined by one-way ANOVA (p = .198).

Table 4.1.6.1 Descriptive Table Internet Procurement Adoption

| | N | Mean | Std. Deviation | Std. Error | 95% Confidence Interval for Mean | |
|--|---|------|----------------|------------|----------------------------------|-------------|
| | | | | | Lower Bound | Upper Bound |
| | | | | | | |

| | | | | | | |
|---|-----------|---------------|---------------|---------------|---------------|---------------|
| Inadequate technological infrastructure | 15 | 1.8264 | .48038 | .09245 | 1.4766 | 1.8567 |
| Inadequate legal framework | 10 | 1.6324 | .3985 | .07542 | 1.5421 | 1.8623 |
| Security of procurement transactions data | 8 | 1.5312 | .50730 | .12304 | 1.1509 | 1.6726 |
| Employee competence | 6 | 1.4014 | .51355 | .13725 | 1.2749 | 1.8679 |
| Total | 39 | 1.5793 | .50285 | .06098 | 1.4077 | 1.6511 |

Table 4.1.6.2 ANOVA Table Internet Procurement Adoption

| | Sum of Squares | df | Mean Square | F | Sig. |
|----------------|----------------|-----------|-------------|-------|------|
| Between Groups | 1.315 | 3 | .432 | 1.766 | .198 |
| Within Groups | 16.746 | 36 | .244 | | |
| Total | 16.941 | 39 | | | |

5.0 EVALUATION OF THE RESEARCH

This chapter provides a summary of the findings of the research, the conclusions and recommendations of the study which sought to investigate the challenges of e-procurement adoption in the Ghana Public Sector. From the study, it was revealed that employee competency, inadequate legal framework, inadequate technological infrastructure and security of procurement transaction data was a challenge to e-procurement adoption in the organizations under review.

5.1 Findings & Discovery

5.1.1 To Determine Whether Lack of Employee Competency is a Challenge in E-Procurement Adoption among Ministry of Finance and State Corporations

From the results, majority of the respondents had attended e-procurement related training. For those who had attended training, all said that the training helped in improving their skills on e-procurement. The results showed that majority of respondents saying that their organizations were committed to e-procurement skills development. From the results, most respondents said that staff competencies hindered e-procurement adoption to a small extent, while others thought it was to a moderate extent.

5.1.2 To Investigate Whether Inadequate Legal Framework Is a Challenge in E-Procurement Adoption among Ministry of Finance and State Corporations

Results indicated that majority respondents disagreed that email contracts were legal in their organizations. In addition, majority respondents also disagreed that electronic signatures were enforceable in their organization. Majority of respondents also disagreed that electronic signatures were enforceable in the organizations. Finally, majority disagreed that PPOA had adequately addressed the legality of e procurement in the public sector. From the results, majority of respondents said that inadequacy of a legal framework was to a great extent a challenge to e-procurement adoption in their organizations.

5.1.3 To establish whether Inadequate Technological Infrastructure Is a Challenge in E-Procurement Adoption among Ministry of Finance and State Corporations

From the findings, majority considered the infrastructure supporting e-procurement insufficient. For those who considered the infrastructure insufficient, majority cited lack of fast internet speeds as well as compatibility issues with other departments, especially finance department. Respondents also cited non commitment from the management to embrace e-procurement. From the findings, majority of the respondents said that Inadequate Technological Infrastructure, to a great extent, hindered E-Procurement Adoption in their organizations.

5.1.4 To investigate whether Concerns about Security of Procurement Transaction Data Is a Challenge in E-Procurement Adoption among Ministry of Finance and State Corporations

From the results, majority of respondents said that transaction risks resulting from wrong products purchased due to incomplete or misleading information had a moderate effect to e-procurement adoption. In addition, Security

risks resulting from unauthorized penetration of trading platforms and failure to protect transaction related data while being transmitted or stored; Privacy risks arising from inappropriate information collection and information transparency; Uncertainty over trust and commitment among trading partners and; Lack of standardization all had a moderate effect on e-procurement adoption. From the results, majority of the respondents said Security of Procurement Transaction Data was to a great extent a challenge to e-procurement adoption.

5.2 Limitations

This study was limited to the variables in this study which included employee competency, lack of legal framework, inadequate technological infrastructure and concern about security and privacy of procurement transaction data.

5.3 Recommendations

On the extent to which employee competency was a challenge in E-Procurement adoption, this study recommends that due to continuous turnover of the employees', continuous training for the incoming staff is required. In addition, for those organizations that have already been ISO accredited, training is compulsory and should be implemented. This should cover e-procurement and therefore mitigate the effects of this barrier. On the extent to which inadequate legal framework was a challenge to e-procurement adoption, formal recognition backed by legislation of the electronic procurement transactions should be encouraged to accelerate the rate of Implementation of the System within the public sector.

On the extent to which inadequate technological infrastructure was a challenge to e-procurement adoption, the study recommended that Integration of the Organizations system and those of the suppliers, demonstration of the positive impact of the system, and installation of linkages between all Governments agencies should be encouraged for faster Implementation of the e- procurement system in the public sector. In addition, the ability to 'punch out' procurement order data into financial control systems is regarded as a critical requirement for the success of an e-procurement system and thus close integration with finance systems is recommended. On security of procurement transactions data, the study recommends that due to 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 fulfill the order.



5.4 Further Study and Research

This study was carried out in the Ministry of Finance State Corporations. There is need to carry out further studies in other state corporations in other ministries to compare the results with those found in this study. In addition, there is need to determine other factors that pose a challenge in e-procurement adoption other than those covered in this study.

5.5 Conclusions

From the findings of this study, it is concluded that lack of employee competency hinders smooth adoption of e-procurement in the public sector. Although majority of organizations were committed to e-procurement skills development, training is still not at 100%. It is evident that employees have a great role in adoption of e-procurement and their skills, competencies and training may influence to a large extent how e-procurement is adopted and implement in an organization. In addition, inadequate legal framework is also a challenge in the implementation of e-procurement in the public sector. Although a new legal and regulatory framework in public procurement in Kenya has been developed, it has done little to enhance uptake of e-procurement in the public sector. In general, PPOA has not so far adequately addressed the legality of e procurement in the public sector. It can also be concluded that inadequate technological infrastructure has also been a hindrance to e-procurement adoption in Kenya's public sector. Technological infrastructure plays a key role in adoption of e-procurement without which integration of public procurement entities will not materialize.

Finally, Security of Procurement Transaction Data is also a major factor inhibiting the adoption of e-procurement by the public sector. Individual end users and entire business units will naturally resist any change in business processes that poses uncertainty in security and privacy of their transactions. Organizations keep their business information secret as a protective mechanism to ward off competition and remain competitive in the business environment. Public sector organizations on the other have limits to the amount and nature of information to be shared with other third parties. The balance between transparency, protection against unauthorized data disclosure, ensuring the authenticity of a data source and the impact of disclosure of procurement process remains hazy.

References

- Aberdeen Group (2001), Best Practices in E-procurement: The Abridged Report, Aberdeen Group, Boston, MA.
- Andraski, J.C. and Novack, R.A., 1996, Marketing logistics value: managing the 5P's, *Journal of Business Logistics*, 17 (1), 23-34.
- Angeles, R., Nath, R. (2007), "Business-to-business e-procurement: success factors and challenges to implementation", *Supply Chain Management: An International Journal*, Vol. 12 pp.104-15.
- Arrowsmith, S., Lineralli, J., & Wallace, D. (2000). *Regulating Public Procurement: National and International Perspectives*. Kluwer Law International: Netherlands
- Auriol, E., Picard, P.M. (2009), "Government outsourcing: public contracting with private monopoly", *The Economic Journal*, Vol. 119 pp.1464-93.
- Barua, A., Konana, P., Whinston, A. and Yin, F. (2001), "Driving e-business excellence", *Sloan Management Review*, Fall, pp. 36-44.
- Beth, S., Burt, D.N., Copacino, W., Gopal, Ch., Lee, H.L., Lynch, R.P., Morris S., 2003, Supply Chain Challenges: Building Relationships, *The Harvard Business Review*, July.
- Brun, A., Corti, D. and Cozzini, S. (2004), "Value assessment of e-procurement projects: a modular methodology", *Production Planning & Control*, Vol. 15 No. 7, pp. 742-60.
- Bushell, S. (2004), "Getting a grip on spending", *CIO Magazine*, June 2, available at: www.cio.com
- Consortium for Global Electronic Commerce (CGEC) (2002, October). *Measuring and Improving Value of E-procurement Initiatives*. Madison, WI: University of Wisconsin-Madison, Consortium for Global Electronic Commerce.
- Cooper, D. and Schindler, A. (2003), *Business Research Methods*, Irwin, Boston, MA.
- Corini, J. (2000), "Integrating e-procurement and strategic sourcing", *Supply Chain Management Review*, March/April, pp. 70-5.
- Croom, S. (2000), "The impact of web-based procurement on the management of operating resources supply", *The Journal of Supply Chain Management*, Winter, pp. 4-13.
- Croom, S.R. (2001), "The dyadic capabilities concept: examining the processes of key supplier involvement in collaborative product development", *European Journal of Purchasing and Supply Management*, Vol. 7 No. 1.
- Croom, S. (2001b). *Supply Chain Management in the E-Business Era*. Coventry, UK: University of Warwick.
- Croom, S., Brandon-Jones, A. (2007), "Impact of e-procurement: experiences from implementation in the UK public sector", *Journal of Purchasing & Supply Management*, Vol. 13 pp.294-303.
- Croom, S., & Johnston, R. (2003). "E-Service: Enhancing internal customer service through e-procurement." *International Journal of Service Industries Management*, 14 (5): 539-555
- Daugherty, P.J., Lusch, R.F., Myers, M.B. and Griffith, D.A.(2000). Linking compensation and retention, *Supply Chain Management Review*, 4 (4), 64-72.
- Davila, A., Gupta, M., Palmer, R. (2003), "Moving procurement systems to the internet: the adoption and use of e-procurement technology models", *European Management Journal*, Vol. 21 No.1, pp.11-23.
- Day, G.S., Fein, A.J. and Ruppertsberger, G. (2003), "Shakeouts in digital markets lessons from B2B exchanges", *California Management Review*, Vol. 45 No. 2, pp. 131-50.
- de Boer, L., Harink, J., Heijboer, G. (2002), "A conceptual model for assessing the impact of electronic procurement", *European Journal of Purchasing & Supply Management*, Vol. 8 No.1, pp.25-33.
- ECOM Group (2002, February). *e-Procurement in the UK Public Sector: A Guide to Developments and Best Practices* (A CIPFA e-Government Forum Report). London, UK:
- efkous (2003). Baggrundsmateriale - DOIP, <http://www.efokus.dk/>.
- Garcia-Dastugue, S. and Lambert, D.(2003), "Internet-enabled coordination in the supply chain", *Industrial Marketing Management*, No. 32, pp. 251-63.
- Gattorna, J., 2006, *Living Supply Chains*, Prentice Hall, London
- Gichoya D (2005) "Factors Affecting the Successful Implementation of ICT Projects in Government" *The Electronic Journal of e-Government* Volume 3 Issue 4, pp 175-184, available online at www.ejeg.com
- Goerdeler, A. (2003), *Electronic Public Procurement in Germany*. Business Briefing: Global Purchasing & Supply Chain Strategies
- Government of Kenya (2004), *E-government Strategy Paper* (2004), Nairobi
- Government of Kenya (2004), *Report on the Development and Performance of the Public Procurement System* (1960-2004), Nairobi.
- Gunasekeran, A. and Ngai, E. (2008), "Adoption of e-procurement in Hong Kong: an empirical research", *International Journal of Production Economics*, Vol. 113, pp. 159-175

- Henriksen, H.Z., Mahnke, V. and Hansen, J.M., (2004). *Public eProcurement adoption: Economic and political rationality*, Proceedings of the 37 Hawaii International Conference on System Sciences.
- Huber, B., Sweeney, E. and Smyth, A. (2004), "Purchasing consortia and electronic markets – a procurement direction in integrated supply chain management", *Electronic Markets*, Vol. 14 No. 4, pp. 284-94.
- IDC (2003). *Easing into the Tub: Results of the 2002 Procurement Manager Survey*. (www.idc.com)
- Ikiara, G., (2000) "Corruption in procurement", in Mullei, A., (ed). *The link between corruption and poverty: Lessons from Kenya case studies*. Nairobi: African Center for Economic Growth.
- Juan, F. M. M. (2002). Expert Meeting on the Context of the Study on Trans Border Public Procurement. Presentation
- Kaliannan, M., Awang, H. (2008), "Implementing electronic procurement in government: a case study on e-Perolehan in Malaysia", *Public Sector ICT Management Review*, Vol. 2 No.1, pp.25-33.
- Kassim, E.S., Hussin, H. (2010), "Public e-procurement: a research synthesis", *Proceeding of the International Conference on e-Education, e-Business, e-Management and e-Learning, IC4E, Hong Kong*, pp.150-4
- Kheng, C.B. and Al-Hawandeh, S. (2002), "The adoption of electronic procurement in Singapore", *Electronic Commerce Research*, Vol. 2 Nos 1/2, pp. 61-73.
- Knudsen, D. (2003). Aligning corporate strategy, procurement strategy and e-procurement tools. *International Journal of Physical Distribution & Logistics Management*, 33(8), 720-734.
- Kothari, T., Hu, C. and Roehl, W. (2005), "E-procurement: an emerging tool for the hotel supply chain management", *Hospitality Management*, Vol. 24, pp. 369-89.
- Lin, B., Hsieh, C.-T. (2000), "Online procurement: implementation and managerial implications", *Human Systems Management*, Vol. 19 pp.105-10.
- Merriam, S. (1998). *Qualitative research and case study: Applications in education*. San Francisco: Jossey-Bass Publishers.
- Metoh, Isaac Kipyego (2006). *Factors affecting implementation of electronic procurement system in the public sector: a case of National Aids Control Council*.
- Min, H. & Galle, W. (2002). E-purchasing: profiles of adopters and nonadopters. *Industrial Marketing Management*, 32, 227 – 233.
- Mugwe, M.K (2010). *Factors Affecting the Adoption of E-Procurement in Public Organizations in Kenya: A Survey of State Corporations in the Ministry of Education*.
- Neef, D. (2001). *E-procurement: From Strategy to Implementation*. Add Upper Saddle River, NJ: Prentice-Hall/Financial Times.
- Odhiambo, W., and Kamau, P. (2003), "Public procurement: Lessons from Kenya, Tanzania and Uganda", OECD Development Centre Working Paper No. 208, March 2003.
- Orodho(2003), *Essentials of Educational and Social Research Methods*. Nairobi: Masola Publishers.
- Orr, B. (2002), "The case for web-based procurement", *ABA Banking Journal*, Vol. 94 No. 4, p.59ff.
- Panayiotou, N.A., Gayialis, S.P. And Tatsiopolous, I.P., (2004). An e- procurement system for government purchasing. *International Journal of Production Economics*, 90, pp 79-102.
- PPOA,(2009), The long term Policy Framework for Public Procurement in Kenya
- Pressutti, W. (2003), "Supply management and e-procurement: creating value added in the supply chain", *Industrial marketing Management*, Vol. 32, pp. 219-26.
- Puschmann, T., Alt, R. (2005), "Successful use of e-procurement in supply chains", *Supply Chain Management: an International Journal*, Vol. 10 No.2, pp.122-33
- Quayle, M. (2005), "The (real) management implications of e-procurement", *Journal of General Management*, Vol. 31 No. 1, pp. 25-39.
- Rajkumar, T.M. (2001), "E-procurement business and technical issues", *Information Systems Management*, Vol. 18No. 4, pp. 52-61.
- Ramasehan, B. (1997), "Attitudes towards use of electronic data interchange in industrial buying: some Australian evidence", *Supply Chain Management*, Vol. 2 No.4, pp.149-57.
- Saeed, K.A. and Leith, R.A. (2003), "Controlling sourcing risk in electronic marketplaces", *Electronic Markets*, Vol. 13 No. 2, pp. 163-72.
- Schoenherr, T. And Tummala, V.M.R., (2007). Electronic Procurement: a structured literature review and directions for future research. *International Journal of Procurement Management*, Volume 1, Number 1/2.
- Scholl, H.J., Klischewski, R. (2007), "E-government integration and interoperability: framing the research agenda", *International Journal of Public Administration*, Vol. 30 pp.1-32.
- Sekaran, U. (2003). *Research methods for business a skill building approach* (4th ed.). New York, NY: John Wiley & Sons, Inc.

- Sinha, I. (2000), "Cost transparency: the net's real threat to prices and brands", *Harvard Business Review*, March-April, pp. 43-50.
- Subramaniam, C., Shaw, M.J. (2002), "A study on the value and impact of B2B e-commerce: the case of web-based procurement", *Procurement International Journal of Electronic Commerce*, Vol. 6 No.4, pp.19-40.
- Tanner, C., Woelfle, R., Schubert, P., Quade, M. (2008), "Current trends and challenges in electronic procurement: an empirical study", *Electronic Markets*, Vol. 18 No.1, pp.6-18.
- Wanyika, J.W (2010). *Factors Influencing the Effective Implementation of E-Procurement in the Kenya Government Ministries*. An Unpublished MBA Thesis, University of Nairobi.
- World Bank (WB) (2003). *Electronic Government Procurement (e-GP): World Bank Draft Strategy*. Washington, DC Author.
- Yen, B.P.C. and Ng, E.O.S. (2002), "Migrating procurement onto the internet", *Electronic Commerce Research*, Vol. 2, pp. 113-34.
- Zinbarg, R.E., Revelle, W., Yovel, I., & Li. W. (2005). Cronbach's Alpha, Revelle's Beta, McDonald's Omega: Their relations with each other and two alternative conceptualizations of reliability. *Psychometrika*. 70, 123- 133. doi: 10.1007/s11336-003-0974-7

