KWAME NKRUMAH UNIVERSITY OF SCIENCE AND TECHNOLOGY, KUMASI, GHANA

A Framework for setting up effective procurement units in the MMDA, Ghana.

by

Sitsofe Kwame Yevu

(BSc. Building Technology)

A Thesis submitted to the Department of Building Technology,
College of Art and Built Environment
in partial fulfilment of the requirements for the degree of

MASTER OF PHILOSOPHY

MAY 2018

DECLARATION

I hereby declare that this thesis is my own work towards the award of MPhil. Procurement Management and to my best of knowledge it contains no material previously published by another researcher, nor material which have been accepted for the award of any degree of the University except where due acknowledgement has been made in the text.

SITSOFE KWAME YEVU (PG5826116)
Students Name and ID

……...…….
Signature

…….
Date

Certified by:
DR. GABRIEL NANI
Supervisor

……
Signature

…….
Date

Certified by:
DR. THEOPHILUS ADJEI-KUMI
Head of Department (Building Technology)

……..
Signature

.....……..
Date

ABSTRACT

Procurement in the public sector has garnered sufficient attention in public sector due to its magnitude on a country's economic expenditure and this has led to attempts by stakeholders to drive efforts at making it effective. In Ghana, public procurement has been improved with the formulation of procurement laws and regulations which were recently reformed. The reform produced the Public Procurement Amendment which stipulated the formation of procurement units within the public entity to cater for the organizations procurement operations. The formation of procurement units is a good management strategy but the absence of guideline for setting up procurement units for it to be effective may cause the procurement unit to fail in its operations. The research study sought to answer the question of what factors are needed in setting up procurement units. This leads to the development of aim of the study thus developing a guideline for setting up effective procurement units in the MMDA in Ghana. To attain this aim three objectives were formulated and a mixed methodology approach was adopted in two stages. A review of germane literature was initially conducted to identify the factors required for procurement units to be effective. The first stage involved interviewing experts in public procurement which were purposively selected concerning information gathered from literature and were consequently used to guide the questionnaire for the survey at the second stage. The questionnaire were distributed to MMDAs in Ghana which were subsequently analysed using the confirmatory factor analysis, exploratory factor analysis, mean index score and one sample t-test. The first objective sought to identify the factors for setting up effective procurement units. The confirmatory factor analysis and the mean index score was used to identify the dynamics of the procurement structure with high levels of specialization, configuration and hybrid (de)centralization and this indicated that the procurement unit size should be large to accommodate its operations. Exploratory factor analysis using principal component analysis was used to identify the key requirements needed for setting up effective procurement units thus resource and operations management requirement, top management requirement, organizational structure alignment requirement and procurement law and regulations

requirement. The second objective sought to identify the factors that influence the performance of the procurement units. The one sample t-test was used to produce eleven factors that influence the procurement units in public organizations. Subsequently the success factors needed for the procurement units to be successful and effective in the public entity were also identified using one sample t-test. To attain the third objective, a framework was developed using the findings from the study to provide a clearer view of these factors and their influence on the procurement units. Further studies is suggested in the areas of assessing the impact of these requirements on the performance of these procurement units.

Keywords: Procurement unit, public procurement, procurement performance, procurement success, effectiveness, Ghana.

TABLE OF CONTENT

Content **Page**

LIST OF TABLES

Table **Page**

LIST OF FIGURES

Figure **Page**

LIST OF ABBREVIATIONS

CEO	-	Chief Executive Officer
CFA	-	Confirmatory Factor Analysis
CPO	-	Chief Procurement Officer

CSF	-	Critical Success Factor
EFA	-	Exploratory Factor Analysis
EU	-	European Union
FAI	-	Federal Acquisition Institute
GATT	-	General Agreement on Tariffs and Trade
GDP	-	Gross Domestic Product
GPA	-	Agreement on Government Procurement
MMDAs	-	Metropolitan, Municipal and District Assemblies
PC	-	Principal Component
PCA	-	Principal Component Analysis
PH	-	Procurement Head
PMBOK	-	Project Management Body Of Knowledge
PU	-	Procurement Unit
SEM	-	Structural Equation Modelling
SF	-	Success Factor
SQM	-	Supplier Quality Management
TPA	-	Traditional Procurement Approach
UNPCDC	-	United Nations Procurement Capacity Development Centre
WTO	-	World Trade Organization

ACKNOWLEDGEMENTS

I give praise, honour and thanks to God Almighty for giving me strength, wisdom and capacity to complete my thesis as part of fulfilling the requirements for the MPhil study. Indeed all things were made by Him and without Him was not anything made that was made.

I would like to thank my supervisor Dr. Gabriel Nani for his guidance, ideas and support for this research. I am grateful for the valuable efforts you gave me throughout the process. Further I would like to express my profound appreciation to the Staff at the Department of Building Technology for their support during the course of the study.

A special appreciation to my wife Mrs Mary Yevu for all the understanding and support you gave me during my course of study. I owe a debt of gratitude to you and the family.

To all my MPhil colleagues at the Department of Building Technology, colleagues from my MSc. Procurement Management class, field assistants and all my friends, I say a big thank you for your support.

DEDICATION

I specially dedicate this work to my family and loved ones. Special feeling of gratitude to my loving wife Mrs Mary Yevu for her support. I also dedicate this work to my family.

CHAPTER ONE

INTRODUCTION

1.1 BACKGROUND

Public procurement is the purchase of goods, services and works by governments and state organisations in order for these public institutions to fulfil their duties and responsibilities (OECD, 2016). Public procurement in African countries is responsible for 15% or more of the gross domestic product (GDP) in the continent (World Bank, 2013). A study by World Bank (2015), indicated that over 50% of total government expenditure goes in to public procurement and between 60 - 70% of government expenditure in fragile economies is procurement related. Due to this magnitude on a country's economy, efficient handling of procurement disbursement is a challenge to policy, management and procurement managers (Thai, 2004).

However, Ghana has made much improvement in the formulation of policies and guidelines towards public procurements such as Public Procurement Act, 2003 (Act 663) which was currently revised to Public Procurement (Amendment) Act, 2016 (Act 914), Guidelines, Regulations and Manuals for practice by public procurement officers. Nonetheless the management of the procurement undertakings by the procurement officer in the supply chain of the procurement process is one that the procurement practitioner should master for a successful delivery of projects. Over the last decade, the role of public procurement as a means to stimulate private sector innovation has been emphasised increasingly (Edler et al, 2005) and this presents various opportunities that will help economic growth since public procurement is a crucial function of government that impacts directly on the achievements of government policies (UNPCDC, 2014).

In view of this, various governments have increased the attention to the whole procurement processes by their public institution and agencies. In Ghana, the government has taken great

steps in reforming the systems of public procurement to ensure the procurement system is active (World Bank, 2013). One of the highlight of the reform was the introduction of the Procurement unit into the public institution to be in charge of the procurement process (PPA Amendment, 914). These procurement units of the procurement entities are engaged in plethora of activities to achieve a project outcome.

1.2 PROBLEM STATEMENT

The Public Procurement (Amendment) Act, 2016 (ACT 914) since its introduction enjoins procurement entities to establish a procurement unit for the public institution which will be responsible for procurement activities of these institutions, Meanwhile the guidelines for establishing an effective procurement unit have not been critically defined by the Public Procurement (Amendment) Act, 2016 (ACT 914) and the Manual. The formation of a procurement unit in the procurement entity is a good management strategy (Carter and Narasimhan, 1996) but the absence of a guideline for establishing a procurement unit is a recipe for the procurement unit to fail in its objectives since the Law only tasks the head of entity to appoint a head of the procurement unit. Despite the improvement of procurement in the public sector with the introduction of the procurement law and its regulations in Ghana, procurement function in these district assemblies are still being plagued with challenges of weak procurement and stores management, weak contract management, misprocurement, unethical procurement behaviours, indebtedness to suppliers and inefficiencies in project finances (Auditor General Report, 2015).

In establishing a procurement unit certain considerations such as the location of the procurement unit within the organization structure, relationship network, scope of corporate involvement and required resources must be analysed thoroughly before forming the procurement unit in order for it to be effective and efficient (Baily et al, 2008). Procurement

unit has gained ascending prominence over the past decades due to its activities being a determinant for the organizations success (Kioko and Were, 2014) and this emphasises that its strategic importance cannot be denied (Brandmeier and Rupp, 2010). Despite procurement's importance of delivering high quality of goods, works and services, organising a procurement department in the public institution has scarcely been analysed in the past (Glock and Broens, 2013). The procurement unit usually is the huge spender of organisations revenue hence it becomes an expensive task for numerous companies and if it is set up wrongly could lead to significant regret by the institution (Segev et al, 1998; Leung et al, 2003). The ineffectiveness and inefficiency of procurement units in public institutions contributes to loss of huge sums of monies (PPOA, 2010). Procurement expenditure can be optimized through effective procurement units and practices (Victor, 2012). Public institutions are mostly characterised by ineffectiveness and inefficiencies as far as public procurement execution is concerned (Chebet and Kwasira, 2016) and this has resulted in lots of pressure on the public institutions to decrease the cost of delivery for goods, works and services. Marimo (2010), in his findings stated that one of the major setbacks in public procurement is poor management of the procurement unit (Kakwezi and Nyeko, 2010). Kabaj (2003) advocates that efficient and effective public procurement unit is vital for the progress of a country and shows the nations commitment to optimal use of public resources.

1.3 RESEARCH QUESTIONS

- What are the factors needed for establishing an effective procurement unit?
- What are the factors that would influence the performance of procurement units?
- What measures could enhance the effectiveness of procurement units?

1.4 AIM

The aim of study is to develop a framework for setting up an effective procurement unit in Metropolitan, Municipal and District Assemblies (MMDAs) in Ghana.

1.5 OBJECTIVES

1. To identify factors in establishing effective procurement units in the MMDA.
2. To identify factors that influence the procurement unit performance in the MMDA.
3. To develop a framework for setting up an effective procurement unit in the MMDA.

1.6 JUSTIFICATION OF THE STUDY

The establishment of the procurement function for public institutions as mandated by the Public Procurement Amendment (Act 914) makes it a requirement for all public institutions to set up a procurement unit within the organisation. The procurement structure within the district assemblies are characterized with challenges such as poor procurement management, weak contract management and poor management of project finances has made the procurement function ineffective and inefficient. This has led to the establishment of the procurement unit which is left at the discretion of the Head of Entity to execute hence there is no guided approach to this establishment which makes this current practice a billowing case for an upcoming cost and management crisis in the MMDA's. Furtherance to this, the procurement unit is a key determinant in the success of the state institution because it's a high spending organ of the institution (Schapper et al., 2006). Johnson et al. 1998 stated that the decisions taken concerning organizing the procurement unit and its staff have huge influence on the effective performance for its functions. In view of this a strategies are needed to direct the decisions being made in forming procurement units in the MMDA's so that the procurement unit can be geared towards effectiveness and efficiency in its functions.

This study seeks to develop guide for establishing an effective procurement unit.

1.7 SCOPE OF THE STUDY

The scope of the research was procurement units within the MMDA in Ghana. The focus of the research is limited to people in charge of the procurement functions of the MMDA. The research studies the parameters for setting up an effective procurement unit.

1.8 RESEARCH METHODOLOGY

The research requires that general overview of practices used by the MMDA's to set up the procurement unit. In view of this, data collection was both from secondary and primary sources. The secondary data was gathered from relevant literature both published and unpublished data bases for setting up a procurement unit. The primary data employed both the qualitative and quantitative methods in a two-stage data gathering approach. The first stage involved semistructured interviews with experts in public procurement to gather information of how MMDA's set up their procurement units. The second stage involved administering questionnaires to participants in the MMDA's. The focal recipients of questionnaire administration was the people in the procurement function such as head of procurement, Coordinating Directors and members with greater involvement in the decision making of procurement in the MMDA's. Sampling procedures and statistical techniques was used to organize data (Bryman, 2008). Statistical Package for Social Sciences version 20 (SPSS) was used to analysis the data gathered.

1.9 LIMITATIONS OF THE STUDY

There were some limitations in conducting this research. The challenges identified were:

- The sample size of 113 is relatively small considering the total number of district assemblies and other public institutions who have procurement units within their organizations. This then has significant influence on the generalization of the findings of the study.

- There was difficulty in retrieving questionnaires from the participants. Some participants failed to submit their questionnaires for the survey which resulted in the relatively low response rate for the survey.
- Some challenges were encountered with experts availability for the interviews.

1.10 ORGANIZATION OF THE STUDY

The research comprised of five chapters, thus introduction of study, review of literature, research methodology, analysis of data and conclusions and recommendation.

Chapter one begins with the background study of the research and the problem statement defining the lack of guidelines for establishing a procurement unit. The aim and objectives of research are identified and then followed by the justification of the study addressing the relevance of establishing a guideline for setting up an effective procurement unit. Subsequently the research methodology for the research is elaborated and finally the organisational structure for the research is outlined.

Chapter two presents the literature review for the conceptual and theoretical overview of procurement units in public institutions and relevant literature on parameters for setting up an effective procurement unit

Chapter three involves the description of research methods that were used in conducting the research, which involves the sources of data, population for the study, sampling technique and analytical methods to be used. It also entails the framework for the research and the research design.

Chapter four illustrates how the data was collected from survey respondents from the field and how these data were analysed and discussed in various formats addressing the focal points of the research objectives.

Chapter five concludes on the findings of the research and conclusion drawn for the research. Recommendations from the study were made and further areas of research study were highlighted.

CHAPTER TWO

LITERATURE REVIEW

2.1 INTRODUCTION

The chapter reviews literature in reference to public procurement unit's organization. It entails the ooverview of procurement in public sector, public procurement in Ghana, comparison of public and private procurement, theoretical concepts of organizing procurement units, requirement for procurement units and the factors influencing the procurement unit performance.

2.2 OVERVIEW OF PROCUREMENT

The term procurement as defined by Russel and Thukal (2003) is the engagement of the transactional function of purchasing services and goods at the minimum possible price, subsequently this process comprises the material management of goods and services, in addition to the management of procurement transactions. Bodnar and Hopwood (2004) defined procurement as "the business process of selecting a source, ordering and acquiring goods and services". Bodnar and Hopwood (2004) further emphasized the general steps of the procurement process thus requirement determination, source selection, request for quotation, selection of vendors, issuance of a purchase order, receipt of the goods, works or services, invoice verification and contractor payment as part of the definition for procurement. The definition of procurement according to PMBOK (2013) includes the processes necessary to purchase or acquire products, services, or results needed from outside the project team.

Procurement and contract management have gain ascending importance both the commercial industry and in the government circles. As best management practices encourages institutions to continually focus on core competencies and outsource non-core, yet critical functions, the

organization's reliance on procurement processes is critical for the organization to have competitive advantage (Quinn, 2005; Patel, 2006).

2.3 PUBLIC PROCUREMENT

The purchase of works, goods and services from an external source of the public institution is termed public procurement (von Oelreich and Philip 2013; European Commission, 2014).

Cooper (1980) in his study elaborated on the challenges public procurement faces by balancing political, financial and bureaucratic demands on public procurement which has made its position in the public administration problematic. MacManus and Watson (1990) highlighted the absence of procurement research in main stream public administration studies whiles Thai (2001) in his research exhibited the neglect of public procurement in the higher levels of studies in academic institutions even though government and practitioners have made efforts to improve public procurement practices. Governments all over the world constantly increase their public spending on goods, works and services each year (Rendon, 2008), with public procurements in Ghana accounting for 50-70 percent of the state's budget after personal emoluments (World Bank, 2003).

This magnitude of public procurement is one of major factors that influenced the European Union (EU) to be one of the founding parties of Agreement on Government Procurement (GPA) in the World Trade Organization (WTO) to provide non-discrimination to goods, works and services suppliers of other member countries through detailed process and a real chance to compete for government contracts. This led to the liberalization of the public procurement from biases and has some objectives of multilateral treaties focused on it e.g. during the Tokyo Round of GATT negotiation in 1978, Governmen1t Procurement Agreement and Uruguay round in 1994 by 22 countries (Brulhart and Trionfetti, 2001). Dufek (2015) in his study showed the extent and the need for laws governing public procurement although it should be

liberalise. Quinot and Arrowsmith (2013) in their study showed how the WTO agreement on liberalization of procurement is seeking to gain grounds in Africa.

2.3.1 Public Procurement in Ghana

From the time Ghana gained independence from the colonial era, traditional procurement approach (TPA) as embraced from the British has still been the means of procurement of goods, services and works in Ghana which has resulted in termination of contracts, non-performance of contracts and outrageous delay in payment to contractors (Ren et al., 2012; Singh, 2010; Amoatey and Ankrah, 2017). The World Bank (2003) indicated that the procedure for payment to vendors/suppliers consist of over thirty stages, thus from invoicing to receiving the payments. This practice indicates the flaws in the public sector concerning its duties (Ofori, 2007) which demands for a proactive management approach to procurement.

Ghana was beleaguered from the World Bank (major development partner in Ghana) and other donors, to improve its procurement system by reforming the procurement system to curb shortfalls in procurement financed by both the state and donors which mostly fails at attaining project objectives (Ren et al, 2012). This reform subsequently led to the enactment of the Public Procurement Act (Act 663) in 2003 by parliament with the aim of harmonising the processes of public procurement in the public sector, to secure a judicious, economic and efficient use of state resources in public procurement and ensure that public procurement is carried out in a fair, transparent and non-discriminatory manner.

However, before the formulation of the Public Procurement Act 2003 (Act 663), the procurement of goods, services and construction works were controlled predominantly through circulars from Finance Ministry, then the central, regional and district tender boards administered and awarded contracts within the permissible limits set by the Finance Ministry

(Anvuur et al., 2006). This system had inefficiencies such as the lack of a mainstream for managing public procurement, feeble procurement organizational structure; inadequate procurement monitoring mechanism; insufficient integration of procurement function within output-oriented perspectives of public management, a deficiency of knowledge both international and national standards, procedures and practices; bidding documents of substandard quality; delays in the procurement chain of activities; dearth of negotiation skills; recurrent reports of practices related to corruption; and lack of sufficient levels of equity and transparency (Lengwiler and Wolfstetter, 2006).

In the quest to attain national targets of development, reforms of institutions and effective use of suitable development framework to the prevailing infrastructure and the upcoming ones are indisputably essential (Mensah et al., 2003). Along this goal, the Public Procurement Act 2003 (Act 663) was promulgated to regulate procurement processes and reduce corruption (Ren et al., 2012).

After twelve years of operation of the PPA (Act 663) in public procurement, the law was later amended into Public Procurement (Amendment) Act 2016 (Act 914). Some highlights of the amendment include; the setting of procurement units in the procurement entities, the head of procurement as secretary to the entity tender committees, increase in approval thresholds, recategorization of committees etc.

2.4 PUBLIC PROCUREMENT AND PRIVATE PROCUREMENT

Procurement both in the public private sector has its purpose to manage the delivery of goods, works and services in a cost-effective method through the process of procurement. Contrarily public procurement is known to have some unique attributes. A typical setup of procurement in the public sector is accustomed with high levels of public transparency and major

dependence on the processes of procurement as compared to the private sector procurement (Osborne and Plastrik, 1997).

One subject of considerable research interest in the public is the investigation of organizational issues in the supply area meanwhile the private sector has receive a lot or research works. The first wide range research in reference to private sector organizing procurement was conducted by Fearon (1988), who research on a number of large American companies. Furthermore Cavinato (1991), Telgen et al. (1997), Johnson et al. (1998), Pooley and Dunn (1994), Harland et al. (2000) and Leenders and Johnson (2000) have explored a number of procurement organizational features in the private sector. Fearon (1988) in his work, submitted the reasons for a longitudinal assessment of the patterns and variations in large American procurement establishments (Fearon and Leenders, 1995).

2.4.1 Comparison of public and private sector procurement

The two sectors (public and private) have the demand to procure goods, works and services for their activities and with these procurements there is the requirement to go for the best deal in satisfying the need. However, despite the resemblance of its demands, it is an acknowledged fact that procurement is the public sector is relatively dissimilar to procurement in the private sector (Erridge, 1996; Thai *et al.*, 2004; Thai, 2001).

Muller (1991) in his research identified some little differences between the public and the private sectors with the exemption of three areas: management of inventory, flow of materials, and distinctive attentions for improving the performance of procurement. He showed that procurement managers in the public sector had lower levels of involvement in these aspects in comparison to their private counterparts. Nonetheless Harland et al. (2000) underlined these factors separate the public and private sectors thus: the nature of the specific public sector under consideration; the setting of the inter-organizational network; the setting of the public

service rendered; factors in reference to the service receivers; the trends of the market supply; the level of accessibility of private sector alternatives; the scope of accountability; government regulation, and investment cycles; and influence of governmental goals. Harland et al. (2000) brought an outline that proposed that the macro environment and the sector environment contributed to disparity between public and private establishments organizing procurement. Johnson et al. (2009) also highlighted the difference between the public and private sectors in five areas: organizational structure, supply chain responsibilities, the Chief Procurement Officer (CPO) and reporting line, teaming, and involvement in major organizational activities.

It is convincingly evident that requirements placed on public procurement from numerous sources define its characteristics. These characteristics tend to be extra requirements to those requirements placed on sector procurement which consequentially define public procurement's complexity (Telgen et al., 2007). An alternate perspective to this complication and the attributes of public procurement is stressed by the innumerable stakes that have to be managed in the procurement. Analyses of these interest according to Telgen et al. (2007) concluded that procedural interest often overpower the other interests in public procurement.

2.4.2 Characteristics of public procurement

The approach to analysing these characteristic of public procurement varies across several literature. Some of the research work consider how the procurement execution has different influences from public and private areas. Covington (2006) looked at the variations in approaches in reference to the practitioners in the private and public sectors. Wang and Bunn (2004) gives attention to the buyer–seller relations that alternates along the procedures and regulations imposed in the public sector. Other researches give the rationale causing the variances between procurement in the public and private sectors. The International Trade

Center (ITC) public procurement training manual defines value in public procurement differently from that of the private sector in regard to accountability, professionalism, responsiveness, competition, transparency and appeal rights.

Murray (1999) studied procurement in local government circles, and listed several variations with respect to both operational issues and objectives. Public procurement demands is larger and more diverse compared to private sector (Neill and Batchelor, 1999). PIA (the Dutch government procurement organization) approximates about 80 percent of similarity between both sectors and 20 percent difference due to the unique requirements of public sector (Murray, 1999). These numerous requirements and demands that make the public sector unique in its feature than the private sector are outlined below combining literature (Murray, 1999; Arrowsmith and Trybus, 2003; Leenders *et al.*, 1997; Burt *et al.*, 2003; Davis, 2005; McIlroy, 1998; Thai *et al.*, 2004). These additional demands on public procurement characterize the nature of public procurement and were grouped under the following for clarity:

1. External demands:
   (a) Transparency denotes to process by which all concerned parties can know and understand the processes when it comes to contract award and management. It also speaks of equal opportunities for all tenderers and a clear procedure.
   (b) It is expected that public sector perform their task with integrity thus to perform what they what they assured the public promised to do, avoid inappropriate behaviour and avoid corrupt or wasteful and fraudulent practices.
   (c) Accountability: procurement institutions and their procurement officials are liable to account for the efficiency, legal, effectiveness, and ethical manner they carry out their procurements. An explanation can be inquired of them concerning their operations and activities and they have to respond appropriately.

(d) Exemplary behaviour: it is an expected output of good governance to be exemplary in terms of ethical standards, efficiency and effectiveness in their activities.

2. Internal demands:

(a) Public institutions have to satisfy many goals at the same time (Murray, 1999). These institutions have internal targets e.g. delivery of services, cost efficiency etc. to achieve alongside the numerous but diverse interest of the general public have to be satisfied as well. This situation creates a conflicting standpoint for the public institution in achieving all the goals (Schapper *et al.*, 2006; Callender and Matthews, 2002).

(b) Consideration to Political goals. Public officers may be appointed based on those political goals, henceforth their inclusion if important. Further it worth noting that political goals tend to target public procurement outlook for their political aims which are not well defined. In effect a political objective can have many numerous elucidations which may not be clear to use and even be measured against (Premchand, 1993).

(c) Many stakeholders in public procurement: clearly the numerous stakeholders (e.g. citizens, electorate, taxpayers, procurement officials, elected officials, management etc.) essentially have myriad and diverse objectives (Murray, 1999). In circumstances that they harbour the same goal their stakes may conflict. An example is the location of an unbearable facility: everyone desires that sewage water be treated, but certainly not within their vicinity.

3. Demands originating from the peculiar situation:

(a) Public procurement is determined by budget: it is the budget that guides what has to be procured. The organization spending capacity is limited to scope of the budget thus

it is more difficult to go over the budget. Making budget changes causes a major organizational disorientation to the plans and target of the organization. It is important to note that the budget for the following year of the public institution is determined the previous year.

(b) Openness of Procurement activities: the suppliers and the public can have access to procurement activities and upcoming activities: this event regulates the interactions between the procurement officers and the suppliers significantly (Covington, 2006).

(c) The department in the public sector work are in mutually dependent budget situations (e.g. departments and institutions depend on same sources for budget funds).

(d) Public establishments have a particular cultural/environmental setting: lots of workers in the public sector have concerns about public interest and the perceptions of the public (Johnson *et al.*, 2003).

4. Process and procedure requirements:

(a) Public procurement is operated within strict confines enforced by legal rules and organizational processes at several stages, be it foreign regulations or local regulations (Murray, 1999). There are circumstances where rules and regulations combine e.g international, national, industry specify or they contradict each other to a certain degree. A number of these rules are substantially demanding. These legal process requirement often outshine the happenings and undertakings in public procurement and tend to be the façade of public procurement, this dominance has caused some authors to perceive this legal procedure requirement as the defining attributes to public procurement (Telgen et al., 2007).

(b) Establishing and involving in longer term relations with vendors in public procurement is forbidden due to the rules and regulations guiding the procurement (Covington,

2006). This issue is problematic since the public sector by its setting handles long term investment (e.g. industrial development or infrastructure).

(c) Public procurement has competition as one of its key principles so cooperating with other public entities to enhance competition among suppliers is not disallowed. So far as anti-trust rules are obliged there are no commercial or legal reasons against cooperation (Schotanus and Telgen, 2005).

5. Multiple roles for the public organization itself:

(a) Public institutions normally find themselves in the position of being large buyers. They procure works, services and goods for the public institution but indirectly that procurement is for the public they are supposed to serve. The portion public procurement take out of government's revenue is very high in some developing countries (Ssennoga, 2006).

(b) Public entities by description are also governing organisations, so the supplier that supplies their procurement needs are the same people doubling up as citizens/taxpayers/electorate. This interaction of supplier and citizen position causes the supplier to have a different and additional task towards the public entity. Nevertheless the public entities have to factor these additional demands into their activities. This scenario brings the concept of reciprocity in purchasing: where you buy from a supplier who buys from you. It is established that well known that this complex relationship system poses additional requirements on the buyer–supplier interface at both the operational and policy level.

(c) Finally, the inherent setting of the public sector to some level decide the rules and regulations it has to operate with (e.g. access of international contractors to local markets). Subsequently a portion of the public sector controls and checks the usage of

these rules and procedures. This places the public sector in the framework of both a player and a decision maker and as well as a referee.

In summary it is convincing to mention that public sector is more multifaceted and complex than private sector procurement (Ahlstrom and Brege, 1999): all demands and requirements aforementioned above are encountered by public procurement department and its officials in addition to the ones common to both the private and the public sector. Public procurement as a subject is difficult area and should be developed further to manage the complexities (Telgen, 2002; Vadiya *et al.*, 2004).

Table 2.1: Summary of characteristics of public procurement.

Classification	**Characteristics of public procurement**
External demands	Transparency Integrity Accountability Exemplary behaviour
Internal demands	Many goals at the same time Political goals Many stakeholders
Demands originating from the context	Budget driven Procurement activities are open Mutually dependent budget situations Cultural/environmental setting
Demands on the process	Legal rules and organizational procedures Long-term relationships Cooperating with other public entities with Background of competition
Multiple roles for the public organization itself	Large buyers Reciprocity Determines the rules and regulations

Source: Telgen and Lenselink, 1998; McIlroy, 1998; Arrowsmith and Trybus, 2003; Thai *et al.*, 2004; Burt *et al.*,2003; Davis, 2005; Leenders *et al.*, 1997; Murray, 1999.

2.5 PROCUREMENT UNIT

Kotabe and Murray (2004) defined procurement unit by its function which is the management of procurement processes, products, services and other stakeholders internal or external to the

organization. Trent and Monczka (2003) also defined the procurement unit as a unit that coordinates the entire procurement processes in the organization. The procurement unit is characterized by procurement planning, implementation, evaluating and controlling procurement decisions by directing activities of procurement to achieve organizational goals (Carr and Smeltzer, 1997). Procurement unit is also involved in the supplier selection and contracting of suppliers for various goods, works and services (Rozemeijer, 2008). This makes the procurement unit have a collective role of coordination and managing procurement decisions right from the procurement planning through to supplier selection and the lifecycle of the product, works and services.

2.6 TOWARDS STRATEGIC PROCUREMENT IN PUBLIC PROCUREMENT

Public procurement generally is a crucial function of all governments because it entails the procurement of all goods, services, and works needed by the public (Thai, 2001). Robinson (2009) agreed to the fact that the absence of public procurement would render government inadequate to operate or provided its services.

Public companies in the advanced countries have adopted strategic approaches to their procurement in order to have competitive advantage in the local and global markets. Attributes of strategic procurement such as improving savings, supply strategy integration, maximizing competitive bidding and life cycle maintenance are used to describe this modern and professional approach to public procurement (Thai, 2004). Public procurement in previous years operated as “clerical gatekeeper” and was mostly involved in activities of minor national importance (Thai, 2004). During the improvement of public procurement in the United States, it lacked procurement professionals in its formative years.

The clerical gatekeeper was tasked with monitoring fraud in the organisation and sourcing for the lowest tender. This task of the procurement unit does not promote the strategic plans and

aims of government. The Federal Acquisition Institute (FAI) in their study of the education, career information and training of public procurement labour force was able to help improve the acquisition of labour for the public procurement office (FAI, 2005). Currently strategic procurement is a tool entities used to exploit the attainment of their corporate goals because any interference of supply will disengage government operations (Thai, 2004). The use of the clerical gatekeeper often results in maintain efficiency and transparency in procurement operations.

'Strategic procurement' has its structure described as the procedure of planning, implementing, evaluating, and controlling strategic and operative procurement decisions for guiding all resources and processes of the procurement towards things attributable to the company's abilities and competence to attain its objectives (Ellram and Carr, 1994; Carr and Smeltzer, 1997; Zheng et al., 2007).

2.7 STRUCTURAL CHARACTERISTICS OF THE PROCUREMENT ORGANIZATION

The structure of a firm outlines the authorities and responsibilities and also governs the roles delegated to the people in the institution and the available resources for attaining the institutional objectives (Robbins, 1990; Jones, 1998). Previously, authors have attempted to detect significant features of companies and came out with structural variables to serve as the foundational structure of procurement organizations for identifying the procurement organization in detail (Pugh et al., 1963; Pugh et al., 1968; Price, 1972; Mintzberg, 1979; Robbins, 1990). A general view of these various structural variables that has been identified in previous literature for setting up a procurement unit are outlined below:

2.7.1 Standardization

Standardization, relates to the degree to which organizations define their activities and routines (Garrido-Samaniego and Gutierrez- Cillan, 2004). Quintens et al. (2006) gave the distinctions between product, process and personnel standardization as elements of an object that can be standardized. To standardize products to be procured means that the will be reduction in variances of different items that has to be procured and therefore the volume of items will increase enhancing better procurement bargain, while standardizing processes improves the effectiveness and accuracy of the procurement process (Sanchez-Rodriguez et al., 2006). Additional, the use of standardization in procurement insist that activates should be able to be carried out in a routinely style, which will help reduce variances and uncertainty in procurement. Trautmann et al. (2009) however argue that standardization restricts the entity's ability in information processing so it should be employed as a design tool in procurement that situations that the need for information processing is low.

2.7.2 Specialization

Specialization, simply relates to sharing of labour in the institution (Klebba and Dwyer, 1981; Garrido-Samaniego and Gutierrez-Cillan, 2004). From literature, authors distinguished the two types of specialization and stated that work task may be aggregated either by function or by objects (Robbins, 1990; Germain and Droge, 1998). The aspect of functional allocation means that tasks are broken into very simple and repetitive assignments which can be performed competently (Daft, 1992; Robbins, 1990).

The aspect of object specialization promotes reduction of interface issues because employees become liable for various assignments which are reasonably interrelated. Subsequently specialization by function in procurement is helpful in scenarios where only small interdependencies exist between different task and the efficiency expectations on small set

activities are high, whereas an object turned specialization is advantageous in the opposite case of functional specialization (Galbraith, 1971; Daft, 1992). Juha and Pentti (2008) and Spekman and Stern (1979) additionally stated that specialization is a cardinal step to reducing risk in the procurement procedure because it promotes people to respond more swiftly to environmental changes. Lau et al. (1999) also did a further discussion on this variable.

2.7.3 Configuration

Configuration relates to how authority structure is designed in the organization and how dimensions e.g. vertical and lateral spans of control, segmentation criteria and number of positions in various segments (Pugh et al., 1963; Pugh et al., 1968). A high level of degree in configuration in procurement affects the procurement office such that it increases the number of different design elements e.g. formal communications patterns, positions, departments and control structures that will be suitable for the that procurement situation (Glock and Hochrein, 2011).

A careful study of literature shows that configuration has mostly been focused on developing ideas for organizing the procurement function and others also focus on the application of various design elements in procurement which has impact of the configuration level (Glock and Hochrien, 2011). Giunipero and Monczka (1990, 1997), Narasimhan and Carter (1990) and Cavinato (1992), for instance, stated diverse structural options for procurement, such as geographic area divisions or product line divisions and defined hierarchical relationships for the procurement function as well as requirements for employing these various structural alternatives.

One important design element of configuration is the hierarchical position of the procurement unit in the organizational structure (Glock and Hochrein, 2011). Bloom and Nardone (1984) in their study showed that the position of the department within the organization enables one to

assess the status the department enjoys within the organization. Additionally, Fearon (1988) exhibited the level of influence the procurement unit has on decisions from the tactical and strategic levels.

Johnson et al., 1998, 2006; Johnson and Leenders, 2006 in their study identified the likelihood of Procurement Heads (PH) increasingly reporting to one of the top executives positions and this might indicate the level of importance procurement has in those institutions. Trent (2004) also added that an upper-level placement of the procurement official is crucial to the effectiveness of organizational design. Conclusively, the qualities of the procurement head are part of the configuration variable in a general view (Glock and Hocrein, 2011). Glock and Hochrein (2011) stated the PH qualities influences the personnel management of the procurement unit through hiring and firing of workers, training of procurement officers to attain certain qualifications. Johnson et al. (1998, 2006) and Johnson and Leenders (2006) in their research, studied the title, responsibilities and education of the PH across a wide range of institutions and came to a conclusion that the qualities of the PH reflects the significance and importance that procurement has in those institutions.

A comparative investigation of diverse research showed that PHs became better educated with time and that resulted in additional roles been transferred to the procurement unit. Pooley and Dunn (1994) conducted a study a study on the evolution of professional procurement positions from inclusion of management, computer information systems, procurement strategy to procurement quality, international sourcing and negotiations. Johnson and Leenders (2006) in their study showed that higher skills of management and experience were needed from chief procurement officers in order for them to contribute to top management decisions. Johnson et al. 1998 in their study indicated that the more experience the chief procurement officer had the more involved he was in procurement related decisions. Johnson et al. (2009) elaborated that more chief procurement officers spend much more time in these procurement functions which

makes them gain more experience in these procurement related matters. Garrido-Samaniego and Gutierrez-Cillan (2004) additionally indicated that the person's experience involved in the procurement decision procedure is related positively to his participation in the procedure for decisons. This development makes it evident that an increase in experience or education of the procurement officer decreases the requirement to involve other people in the procurement process (Glock and Hochrein, 2011). Another side of this phenomenon is the focal role of the procurement manager thus the impact of the procurement manager on the decisions of procurement (Johnston and Bonoma, 1981).

2.7.4 Involvement

Involvement can be segmented into vertical and lateral involvement and also embraces the size/extensity of the procurement unit. Lateral involvement assesses the number of different divisions, units or functional divisions engaging in the procurement decision whereas vertical involvement assesses the hierarchical system involved (Johnston and Bonoma, 1981). Dawes et al. (1992) in his study realised that an increase in the number of units engaged in the procurement procedure makes information more available resulting in uncertainty reduction, this meant that as procurement decision is deemed to be risky and more uncertainty lateral involvement increases in the procurement. Mattson (1988) further stated that lateral involvement has positive correlation with number of people influencing procurement decision because an increase in lateral involvement increases the number of people influencing the procurement decision and this normally reduces he influence of the procurement department on the procurement.

On the contrary, when people in top hierarchy spot play the role of making decisions in the procurement process, resources and information needed for the procurement are available (Gronhaug, 1976). Consequently organizations with vertical involvement at higher levels are

often prone to encountering complexities or uncertainties in their procurement decisions (Johnston and Bonoma, 1981; Mattson, 1988; Dawes et al., 1992). Laing et al. (1998) in his research illustrated an example of buying decisions in hospitals are heavily reliant on the involvement of medical officers while Schiele (2005) on the other hand revealed that procurement managers in public agencies have weak involvement in the earlier stages of the procurement process and even in the supervising stage.

The size or extensivity of the procurement unit evaluates quantity of individuals engaged in the procurement process but the affiliation of these persons are not indicated. Studies from empirical investigation indicate that there is a positive relation between increasing the size of the procurement unit and higher quality of decision in the procurement process (Johnston and Bonoma 1981), whereby an approach of increasing the procurement department size has often been engaged as a check to reduce uncertainty or the risk perception associated with the procurement. Even though some studies have pointed out that the influence of a person on procurement decisions might decrease when extensivity is high, McCabe (1987) stated that when the size of the procurement unit is increased it does not automatically result in the diffusion of authority, since the authority of decisions may still be practiced by a lesser company of persons. It means that having an efficient and adequate size of people for the procurement department is the best practice.

Finally, the number of communication networks in the procurement unit can be viewed as a pointer of involvement. Glock and Hochrein (2011) stated that when communication networks in the procurement unit are high employees have easy access to influence the procurement decision. A study on the number of communication channels in the procurement unit by Johnston and Bonoma (1981) showed that communication channels are high in centralize and low level formalized environments.

2.7.5 Formalization

Formalization – it is one of the commonly used variable and it describes the level at which an organization relies on procedures and rules to regulate the conduct of its employees (Pugh et al., 1968; Price, 1972; Robbins, 1990; Hall et al., 1967; Germain and Droge, 1998). When an organization is highly formalized the task to be done has very little room for discretion concerning how task can be completed. For an organization to be formalized it has to define the roles and authority relationships or establish directions that should control the procedure, employee communication, or information processing in the organization (Hall et al., 1967). The main reason institutions formalize conduct of their employees is to lower variability, to enable them foresee and regulate it (Robbins, 1990), although Hartmann et al. (2008) stated that higher degrees of formalization can decrease the motivation for innovation within the members of the organization. Formalization has been used as a tool to guard against uncertainty or to control circumstances of the procurement situation. Aside the reduction to variability to workers conduct, formalization helps in work standardization by setting up rules and procedure which makes assures that tasks completed be workers are the same (Hall et al., 1967; Robbins, 1990).

2.7.6 Centralization/Decentralization

The variable of centralization or decentralization procurement unit is the mostly and widely used variable in procurement research (Glock and Hochrein, 2011). A careful study of literature shows that two descriptions are mostly adopted in assessing the level of decentralization or centralization.

First definition speaks of where the decision making authority is concentrated and assesses the level to how one organizational unit has aggregated authority (Price, 1972; Pugh et al., 1963; McCue and Pitzer, 2000; Germain and Droge, 1998). In this context the position of the

procurement unit within the overall hierarchy is not relevant therefore organizations with high central units can be found with lower hierarchical levels.

The second definition relates to the hierarchical structure of the organization with reference to the position of the decision making entity, whereby those organizations are said to be centralized if the concentration of authority is on high hierarchical positions (Hickson et. al., 1969; Robbins, 1990; Jennergren, 1981; Gianakis and Wang, 2000; Quintens et al., 2006).

An appreciable amount to research work has been done on centralization or decentralization of the procurement, Glock and Hochrein (2011) grouped them into three research themes. First theme was for developing concepts for centralized/decentralized/hybrid PU and stated the criteria to implement these concepts and their impact on the efficiency of the procurement procedure (Arnold, 1999; Cavinato 1992). It is obvious that organizations have to assess the benefits of decentralization such as improved service to customers and better flexibility against that of centralized procurement departments. Secondly, researchers have studied the factors associated with centralization/decentralization and examined these factors whether within or outside of the organization to ascertain which of them should be used by the procurement unit.

Thirdly authors studied different industries to assess the usage of centralized, decentralized and hybrid PUs in these companies and attempted to understand those variations in the organizational structure of the procurement. The outcome of the study shows that Hybrid PUs are highly employed in lots of companies and that a trend towards higher usage of hybrid PUs has been realized over time. In the public sector especially, highly centralized PUs are predominant as compared to highly decentralized (Giunipero and Monczka, 1997; Fearon, 1988; Johnson et al., 1998, 2006; Johnson and Leenders, 2004, 2006; Johnson et al., 2003).

Numerous researchers have suggested combining these structural variables for analysis in procurement. Laios and Xideas (1994), Kotteaku et al., (1995) and Xideas and Moschuris,

(1998), for example, explained depth of analysis as the complexity of record management in procurement records and the degree to which financial and technical tools are used for analytical purposes in the procurement procedure. Articulation looks at the degree at which procurement tasks are carried out by specialized groups and skilled personnel and the level at which procurement activities are undertaken in repetitive approach.

When degree of depth of analysis is high it is affiliated with transparent and documented processes which makes relevant information accessible which in the end reduces uncertainty. Articulation, on the other hand involves specialization and formalization which ultimately aids organizing the procurement process and lower variability. Quintens et al. (2006) in his study merged these two variables thus standardization and de(centralization) by presenting the concept of global procurement strategy.

2.8 DETERMINANTS OF THE PROCUREMENT UNIT ORGANIZATION

Aside the description of the structural variables of procurement organizations, another vital assignment of organizational theory is to detect the contextual or situational variables and elucidate their influence on the procurement structure of the organization. In this setting, contingency theory has the assumption that the structure of a firm is moulded by features inside and outside of the structure (Lawrence and Lorsch, 1967; Ford and Slocum, 1977).

A number of contextual factors has been studied previously in the area of organizational theory, such as ownership, size, technology, control, location, and resources (Pugh et al., 1963; Inkson et al., 1970; Hickson et. al., 1969; Child and Mansfield, 1972). Research in the field of procurement has employed lots of the ideas used in the organization theory and established connections between variables has been identified thus internal and external to the procurement structure. Glock and Hochrein (2011) in Table 2.2 shows the contextual factors that have been employed to explain the structure of the PUs and were subsequently classified into four groups.

2.8.1 Organizational characteristics

Organizational characteristics are a set of variables that describe the organization as a whole. In this situation, the effect of organizational strategy on the procurement structure was analysed by several authors. Gianakis and Wang (2000), in their study illustrated that customer orientation of the company suits decentralization in procurement as a result of higher flexibility and short lead times. Also, Corey (1978) is of the view that companies with close cooperation with contractors in developing products should implement a decentralised PU to be assure that procurement competence is in close contact with supplier. Mattson (1988) further noticed that the role assigned the procurement officer by superior staff is likewise crucial for the procurement structure.

Lewin (2001) showed that attempts to reduce staff in the PU leads to the organization to adopt a higher mechanistic structure which is skewed towards higher centralization and lower degrees of involvement. Even though personnel management and employee characteristics can influence procurement units, organizations of the PU has to be shaped by the competences of the procurement officer. Crow and Lindquist (1985) and Garrido-Samaniego and GutierrezCillan (2004) researched on the procurement officer characteristics influence on the procurement unit and revealed that knowledge and education of persons engaged in the procedure of procurement has negative correlation to the size of the procurement unit (see Laing et al., 1998). Dawes et al., (1992) also hypothesized the same relationship, but could not establish it empirically. Johnson et al. (1998) additionally revealed that organizations with PH on hierarchical levels use more complicated procurement techniques than firms with the PH on lower ranked echelons, which connotes to the resources available to the procurement unit in both cases.

A second contextual variable refers to the size of the procurement institution. In view of the size of the procurement organization, big organizations have the potential to acquire more available resources and provide a broader spectrum of goods, works and services than smaller institutions which may influence the PU (Trent, 2004).

Blau (1970) in his study showed that there is positive relationship between increasing organizational size and increase in divisional groups which resolutely raises the degrees of specialization higher. This suggest that when the size of the organization is increased the procurement unit also increases (Gronhaug, 1975; Lynn, 1987; Crow and Lindquist, 1985; Wood, 2005; Dawes et al., 1992). Trent (2004) in his study revealed that bigger firms have multifaceted procurement structure than small organizations.

Gianakis and Wang (2000), Stanley (1993), Dawes et al., (1992) and Wood (2005) further exhibited that the specialization, formalization and centralization of the organization have direct influences on the specialization, formalization and centralization of the procurement unit. Gianakis and Wang (2000) exhibited that the system of measuring performance promoted decentralization. This is obvious because employees are responsible for their performance therefore they have greater decision authority (Lynn, 1987).

2.8.2 Product characteristics

This category of variables consists of characteristics of the goods, works and services acquired by the company. Corey (1978) have said that an increase in procurement volume extends to a higher tendency of savings and becomes of importance to the company. Lynn (1987), from their study showed that procurement volume increases the size of the procurement unit, while Crow and Lindquist (1985) were inept to validate this relationship. Corey (1978) suggested that volume of procurement is high it corresponds to increased levels of centralization. Mattson (1988), subsequently noticed that greater procurement volume corresponds to more

involvements from top-management which may be a sign of the significance and importance of the procurement to the institution.

Noticeably, when procurement volume increases within the organizations, organizations are liable to be concerned about efficient use of resources to avoid wasting funds which makes them engage more control mechanisms and techniques e.g. involving management, or centralizing processes. Secondly, procurement complexity has been labelled as another contextual variable which looks at the product technical complexity or the procurement decision complexity (McCabe, 1987; Lewin and Donthu, 2005).

Complexity is an attribute that is presumed to introduce uncertainty in procurement decision making which in turn heightens the necessity for engaging external sources of information (McQuiston 1989). Various researches show that an increase in the complexity of procurement causes more individuals to be involved in the procurement process for the benefit of using their expertise which resolvedly increases the procurement unit size. Garrido-Samaniego and Gutierrez-Cillan (2004) and Johnston and Bonoma (1981) in their studies supported this assertion with their findings from the research, McQuiston (1989) and Dawes et al. (1992) in their research were not able to find empirical support for this relationship between this variables. Further, additional finding from McCabe (1987) supported the relationship between the complexity of procurement and the procurement structure of the procurement function and subsequently illustrated the positive relationship between the increase in procurement complexity and higher centralization degrees. This may be explained as a result of an effort to ensure long term resource availability and increase the task of technical specialist and management in the decisions of procurement. Kotteaku et al. (1995) also found evidence for this connection and continued to show the level of influence rests on process phase of the procurement. Lau et al. (1999), on the other hand could not establish these relationships structural complexity, formalization and centralization in his study.

Product type is the third product characteristics which have received considerable attention from previous research. According many authors classification of products into various categories have been employed thus with reference to their function in the production process or product properties influence procurement structure. Johnston and Bonoma (1981), Gronhaug (1975) and Mattson (1988), for example, did grouping of products by how they affect the company's goals and targets and exposed that greater influence on the company's objectives often results in larger procurement units with high involvement of top level management in the decisions of procurement. This could be explained as a result attempts to escape procurement and supply chain breakdown. Additionally, technical characteristics of the products could activate engaging technical experts in the procurement procedure which in turn increases the procurement unit size.

A number of authors investigated the influence of the type of product on the level of specialization, centralization and formalization. In Laios and Xideas (1994) and Xideas and Moschuris (1998) study, they found out that goods, services or works that were attributed with great importance were likened to high levels of centralization, formalization and specialization meanwhile Trautmann et al. (2009) posited a contrary relationship. Trautmann et al. (2009) in his study proposed a model for product classification with respect to their synergy potential and strategic importance. The model further stated that it can be used to structure PUs. Naumann and Kim (1986) in their research focused on the influence of technology adopted in producing a product and it was found that non-routine technology in the procedure of production of a product is linked to decentralized and low levels of formalization in the procurement structure. The authors further claimed that non-routine technology demands speed in decision making which only works in the environment of low hierarchical level for decisions and flexible rules and policies that are dynamic to the changing conditions of the procurement environs.

2.8.3 Procurement situation

Another collection of contextual variables which was referred in previous research related to the characteristics of the situation surround the purchase. In this sphere, authors hypothesised that in circumstances where procurement workers experience great time pressure with the work, the structure of the procurement unit is aligned to promote faster decision making (Glock and Hochrein, 2011). Lau et al. (1999), in his study exhibited that an upsurge in time pressure for procurement tends to decrease the levels of formalization of the PU activities while concurrently raising the degrees of centralization.

Lau et al. (1999), Garrido-Samaniego and Gutierrez-Cillan (2004), Juha and Pentti (2008), McWilliams et al. (1992) are of the view that procurement decisions can be accelerated by engaging specialized departments on moderately high hierarchical levels as a necessity such that information required executing the procurement tasks are made accessible and the complying formal regulations are decreased to save time expedited on procurement. GarridoSamaniego and Gutierrez-Cillan (2004) also stated that the pressure of time has a negative relationship with the procurement unit size, which can be elucidated by the fact that when there is a decrease in the number of workers partaking in the procurement decision there is also a decrease in the time demanded to accomplish the procurement process. Dawes et al. (1992) was also of the same view but could not establish it empirically from his study.

Another characteristic is the perceived risk around the procurement decision by members of the company. Garrido-Samaniego and Gutierrez-Cillan (2004) revealed that when the risk perceived of procurement it high it results in having larger procurement function, this could be explained as an attempt to make additional sources of information available and also decrease the perceived risk linked to the procurement decision. Dawes et al. (1992) hypothesized similar relationship but could establish it in his findings. Juha and Pentti (2008) also focused their

study on the influence of the extent of risk perceived on these structural variables of the procurement structure and noticed that there was a relationship between high levels of perceived risk and high levels of centralization and low levels of specialization and formalization.

This could be as a result of attempts to increase flexibility of the company and make knowledge readily available which is more crucial in risk prone situation as compared to specialist skills. Additionally the importance of the procurement to the organization is another feature that aligns the structure of the procurement function. Procurement importance could be described as the effect the procurement has on diverse functional areas or persons in the entity, or other items procured, or productivity and profitability of the organization (Dawes et al., 1992). Numerous researchers did their work on the relations between procurement importance and the size of procurement and it revealed that there was a positive relationship procurement importance and procurement unit size (McQuiston, 1989; Johnston and Bonoma, 1981; Garrido-Samaniego and Gutierrez-Cillan 2004; Dawes et al., 1992). These researches stated that in circumstances that the procurement is regarded as vital by the institution, more technical and specialist are engaged in the PU which in turn increases the procurement unit size. Johnston and Bonoma (1981) and Lau et al. (1999) in their study exposed that when the is an increase in the level of importance attached to the procurement it also increases the complexity, increases formalization, and centralization because in situations like that increasing formalization and centralization are mechanisms used to ensure the attainment of the company objectives and also make sure necessary information is available and accessible.

Another contextual variable in this category is the phase of procurement. This is defined as the various stages through which procurement decisions are made from need solicitation through intermediary stages i.e. supplier selection, award of contract, post contract stages to the

delivery of items and usage of items (Mattson, 1988). As proposed by Juha and Pentti (2008), uncertainty and risk perception increase in the sequence of the procurement procedure and therefore it is probable that the PU structure and operations might vary along the stages of the procurement procedure.

McWilliams et al. (1992 and Lynn (1987), from their study showed that more persons are engaged the early stages of the procurement procedure meanwhile Johnson and Bonoma (1981) could not find the variations in the PU size along the processes of the procurement procedure. Laios and Xideas (1994) and Juha and Pentti (2008) took a careful study at the characteristics of the numerous structural variables with respect to the procurement stages of the process. Laios and Xideas (1994) identified that centralization was at a low level at the end of the procurement process whiles formalization and specialization were at a low level at the beginning of the process. Meanwhile Juha and Pentti (2008) from their findings in the study concluded in opposite directions of the relationships as stated by Laios and Xideas (1994).

The findings of these researches highlight the insights of contingency views and the constriction of authority view which herald diverse ways of mitigating uncertainty through organizational design (McCabe, 1987). One more feature of procurement situation which was researched by researchers was the level of novelty of the procurement. Many researchers adopted the buyclass framework of Robinson et al. (1967), which posits that when a purchase is repeated the problems associated with it becomes more known and easier to manage compared to the situation of new procurement which has unfamiliarity and uncertainty. Crow and Lindquist (1985), Gronhaug (1975), McQuiston (1989), McWilliams et al. (1992) and Garrido-Samaniego and Gutierrez-Cillan (2004) found that the PU is larger in size in circumstances of new procurement situations as compared to circumstances where

procurements are repeated. This may be as a result of making required experience and additional information available to decrease uncertainty linked to the procurement.

Lynn (1987), Johnston and Bonoma (1981) and Dawes et al. (1992) postulated similar relationship but were futile in their effort to establish this relationship. Lau et al. (1999) and Juha and Pentti (2008) also examined the connection between various structural variables and the novelty of the procurement. Juha and Pentti (2008) detected positive connections between complexity and novelty and level of centralization of the PU whiles Lau et al. (1999) found out that the was a negative relationship between formalization and novelty. Juha and Pentti (2008) also in their study acknowledged a positive relationship between these variables. This could be explained by reason of the fact that efforts of companies are to implore pertinent competence and knowledge to decrease associated uncertainty with the procurement.

2.8.4 Company-external (environmental) factors

Quintens et al. (2005) focused their study on the effect of the origin of a firm on the procurement structure by paralleling firms originating from USA and Belgium as a case study. He found that companies form the USA had strong affiliation towards individualism and were more prone to price than their Belgian counterparts, which often depend on power structures and put their aim on availability and quality. Also he asserted that the country of origin impacts the PU organization which he later revealed that both companies from USA and Belgium have similar PUs hence there Pus were not significantly different. Many researchers studied the effect of the industry structure on the procurement structure of the organization.

Within this setting, many researchers assessed difference and similarities between the PU in the private and public sectors and realised that public entities had larger PUs and used high levels of specialization and complexity in PU organization (Crow and Lindquist 1985; Laios and Xideas 1994). Additionally, public entities are likely to employ high levels of involvement and formalization of supervising and monitoring agencies (Laios and Xideas 1994). The reason

for variations can be from legal regulations which demand that transparency and formal processes to be followed and complied in using public funds.

Johnson et al. (1998) and Johnson et al. (2002) conducted a study in the manufacturing and service companies and noted that manufacturing companies were less centralized as compared to service companies that were more centralized. Procurement teams that engage customers are dominant in the service sector whiles manufacturing companies tend to have a partially decentralized system towards procurement activities and they only use procurement teams made up of members of the organization. The reason the researchers gave for this outcome could reflect the importance the two sectors placed on procurement since procurement is a major factor in manufacturing than service sectors and with the good practice of involving customer service in the procurement decision in section companies.

These findings are contrary to the findings of Gronhaug (1976), who identified no variation in the configuration of the PU in product-independent and product-dependent companies. Juha and Pentti (2008) researched into the variations in the structure of procurement within hightech firms and firms not functioning in a high-technology environment and revealed that hightech firm have the tendency to ne less specialized and formalized than less technology – based firms, which they attribute it to a high flexibility needed for the high-tech sector. Moreover, many researched assessed the relationship between variables thus environmental uncertainty. Organizations tend to be more flexible and reduce bureaucratic systems to promote and enhance information flow (Spekman and Stern 1979). This findings are contrary to the findings of some researchers who found a negative correlation between the levels of formalization and the levels of environmental uncertainty in procurement (Klebba and Dwyer, 1981; Lau et al., 1999). Their study also studied the reported the relationships between other structural variables i.e. specialization, centralization and environmental uncertainty.

McCabe (1987) stated that the variations seen could be due to how these constructs are operationalized and therefore proposed that there should be separation between perceived and objective uncertainty. In his work, he noted that the link between perceived uncertainty and centralization was positive and the link between perceived uncertainty and PU size was negative meanwhile he could not confirm the relationship between formalization and uncertainty empirically.

Table 2.2: Summary of Contextual variables for organising procurement unit

Contextual factors	**Contextual factors variables**
Company-external factors	Country of origin Environmental uncertainty Industry sector
Procurement situation	Time pressure Procurement phase Procurement importance Perceived risk Buyclass
Product characteristics	Procurement volume Complexity of Procurement Product type
Organizational characteristics	Organizational strategy Procurement officer characteristics Size of the procurement organization Structure of the organization

Source: Glock and Hochrein (2011)

2.9 FACTORS TO CONSIDER IN CREATING AN EFFICIENT PROCUREMENT UNIT

There are various approaches to organising PU, some countries adopt a central procurement office for the entire country such as Uganda, Kenya, etc. whiles in other countries, the structure of public procurement is very complex. In the United States, at the federal level, although procurement regulations are applied to all federal agencies, the General Services Administration is a central procurement office for civilian agencies, except the Department of Defence that does have its dependent procurement office (Baily et al., 2008).

Choi and Hong (2002) stated that private sector managers encounter three various levels of structural complexity simultaneously in their network of supply, thus spatial, vertical and horizontal. Horizontal complexity is related to the amount of diverse parties in the same level of the network of supply whiles vertical complexity denotes to the number of hierarchical stages in the structure and spatial complexity refers to the average distance of location between operations. This assertion is relevant in the structure of government entities. A critical factor of the role of the procurement department in a public entity is the place the procurement department occupies within the authority of the public entity.

Centralization happens when all the powers, duties, rights and authority in respect to the public procurement are conferred in the central procurement officer (CPO). This operates such that the focal authority assigns part of these authority to others resolvedly it is the central figure that has the power and authority (Lewin and Donthu, 2005). These powers delegated are usually executed within the scope of regulation and the framework of policies by means of formal procedures to those recipients of such powers and authority. These powers or authorities are vividly described stating the limits and extent of them such that central units are those who approve and award contracts (Juha and Pentti, 2008). Decentralization is when procurement function from various procurement entities can decide independently on the suppliers for their procurement and do negotiations directly with suppliers on contracts (Dobler and Burt, 1996). It is a seldom occurrence for a procurement entity to be solely centralized or fully decentralized in the public sector. Often these public entities employ a balance between centralization and decentralization with some exemptions to specific cases such as specialized services procurements.

It is essential to acknowledge that procurement of low values for works, services and goods by customers using blanket orders, procurement orders or standing offers is not classified as decentralization because they are controlled and monitored by mechanisms established by the

procurement system. Also automating these processes via electronic medium or applications using electronic data interchange denotes a type of virtual centralization. The benefits derived from engaging these end-user tools enhances improved planning and monitoring of procurement. . The Model Procurement Code (Article 2-201) provides guidance to address the necessity for a centralized procurement structure through the setting up of an office for the chief procurement officer (CPO).

OECD-DAC (2006) reported that for a procurement system to be sound, the system must have competent professional workforce furnished with required skills and knowledge for the specified procurement job. The procurement labour force infuses their efforts through virtually everything within the entity including acquisition of services and goods and performing works contracts (Government Accountability Office, 2005).

Public procurement has been deserted in the part of education et al. Baily et al. (2008) revealed the fact that not much attention was given to public procurement education in the academic institutions so most personnel learn it on the job which poses a big challenge to the procurement in the public sector looking at the job turnover and retirement, which could generate an unfair balance with reference to the skills and experience needed for procurement.

Thus, the public organization is challenged with the duty of choosing the appropriate personnel in their appropriate numbers with the requisite skills to execute the job task effectively and efficiently. Setting up a labour force for procurement with the needed capabilities and competences can be a hindering challenge looking at the processes of procurement, the dynamic expansion or introduction of alternative contracting approaches and the increasing reliance on private sector services (Government Accountability Office, 2005).

Thus, state institutions must have a complete workforce strategic plan to monitor and profile the present workers and projects staffing requirements for the future, develop, to hire, and

retain talent. Robinson (2009) emphasises that in the United States procurement entities gave critical consideration to placement of the central procurement officer (CPO) in order to drive their procurement to the strategic level.

Baily et al (2008) in their research outlined the factors to consider in setting up a procurement department thus; the size of the organization, the nature of business the organizations executes, the location of the procurement department within the organizational structure, the scope of work of the procurement unit and its involvement in the corporate processes and the human capital force it requires to function effectively.

2.10 FACTORS THAT AFFECT THE PERFORMANCE OF PROCUREMENT UNIT

The evaluation of procurement performance has always been a vexing problem for procurement professionals in the public practice (Odhiambo and Kamau 2003). Procurement performance is considered to be the result of two elements: procurement effectiveness and procurement performance.

Performance provides the basis to assess how well public entities are progressing towards predetermined objectives and decides on future initiatives with the goal of initiating performance improvements (Gelderman, et al 2006). Kirai and Kwasira (2016) classified the factors that influence the performance of the procurement unit into four; resource allocation, staff competence, stakeholder influence and procurement planning.

2.10.1 Influence of Resource Allocation on Procurement Unit Performance

Thompson and Strickland (2007) stated that to adopt any strategy, essential adequate resources must be made available whether physical, financial, technological or human. The limited nature of resources creates an environment for competition among other projects of the firm. Employing strategic management enhances distribution of resources with respect to their priorities determined regularly by a set of goals within the firm.

Budgetary allocation of resources which is done periodically is aimed achieving the firm's goals is a good signal of the commitment of management to the strategic plan achievement. Therefore, the absence of a typical budgetary allocation indicates the non-commitment of management to the strategy and this would resolvedly affect the implementation of this strategy in the firm. Similarly, Johnson and Scholes (2002) noted that when resources are not adequately allocated, it hinders motivation and misdirects efforts and attitudes of workers in implementing this strategy hence the strategy will fail.

The resource dependency view is the purpose for which organizations conduct pooling (collaborating needs together) in order to achieve more purchasing power for the buyer to secure supply form suppliers in a scarce market and also improve on some skills from other organizations the public entity does not have (Kamann et al., 2004). The theory of resource based considers a wider look at resources, narrowing down to the competencies of the company and their capability of coordinating resources productively.

With resource perspective, management and transaction cost are reliant on diverse capabilities and resources of the company (Tsang, 2000).

2.10.2 Influence of Staff Competence on Procurement Unit Performance

According to Banda (2009), many procuring organizations do not have staff with the right competence critical to good procurement management. The study notes that there is need for authorities to give much greater emphasis to developing such competence and to adopt best practice more widely.

A procurement unit that carries out its procurement function professionally is the heart of delivery of any service on value for money principle (Berger and Humphrey, 2007). Berger and Humphrey (2007) in their study noted that most of personnel carrying out procurement functions in the local authorities in Kenya have are not properly and professionally trained on

procurement matters. In the study, it was noted that there were serious challenges regarding the staffing of procurement professionals in the government organizations locally. Some of the workers executing these procurement activities did not have any qualification in procurement and majority of them had never been trained and they had low knowledge of the procurement. To be able to sustain economic progress and perform effectively, it is crucial to improve the input of these workers towards the goals and objectives of these firms (Sultana, 2012).

The study further shows that there are beneficial gains in ensuring that workers who manage suppliers have good professional approaches (Boyan, 2003). Boyan (2003) further noted that the competence of workers can enable the gains of new products and services being brought to the notice of right individual in the firm. This in effect can keep task to the minimum, avoid bad relationships, protect the organization and add to the firm's goodwill enhancing efficiency and good management.

2.10.3 Stakeholder Influence on Procurement Performance

Stakeholder theory has emerged as an essential portion of literature in management practices (Donaldson and Preston, 1995). They grouped stakeholders into external, internal, key, and secondary ones, with each one having their corresponding influence levels in the companies.

From the assessing the social network of a firm, one realises that the firm does not engage with only one stakeholder at a time but rather engages multiple stakeholders simultaneously with interconnected relations among these stakeholders and their interest. Subsequently, this relationship between companies and their stakeholders present a complex situation and also complex management approaches. The basis of stakeholder theory is that companies are exposed to conflicts by their reason of their engagements with many stakeholders. The focus of several researches in stakeholder theory is how to mitigate these conflicts.

Frooman (1999) undertook a study understanding the actions of stakeholders and proposed a stakeholder influence strategy from the perspective of resource dependence. Frooman (1999) stated that the type of resource relations between the stakeholder and the company determines the power interplay among them. The extent to which there is dependence on resource relies on the characteristics of the resource and the criticality of the resource. A typical example is when a company relies on the stakeholder for a crucial resource to survive, that stakeholder will poses total power over the company and the same in the reverse. Additionally the sharing of power will ascertain the stakeholders decisions in influencing strategy.

Stakeholder's influence on company strategies has two features thus the approach stakeholders take to influence supply resources and the manner they control resources (Frooman, 1999). For instance if the resources a company needs are owned by a particular stakeholder, the stakeholder have the tendencies of controlling the amount of resources the company gets. It would thus be prudent to understand the role of stakeholder influence in procurement since the procurement processes have a number of players whose influence differ and whose objectives and interests sometime s are in conflict with those of the organization.

2.10.4 Influence of Procurement Planning on Procurement Performance

A procurement system that is efficient is very important for the progress of countries which serves as sign of commitment from the state to making best use of public resources (Kabaj, 2003).

Currently there has been a growing interest in the procurement planning and its management has been the attention of researchers, academics and policy makers. Poor procurement planning has been one of the main challenge Africa's economic development and it has been clear that a number of African countries have not paid adequate attention to the proper management of public resources (Basheka, 2009). Procurement planning is one of the fundamental functions

of procurement with a good possibility of contributing to the success of the public firm's operations and improve service delivery (Basheka, 2009).

In spite of this importance, not much research has gone into examining the extent to which efforts in planning procurement can have an input to the effective performance of the public organization. Kavua and Ngugi (2014) stated that procurement planning contribution in facilitating an effective and efficient delivery of service in the public organization is undeniable as seen in the developed countries. This contribution can be at the local and central levels of government in the public sector.

Their study revealed a significant positive relationship between procurement planning and performance in local government procurement systems. In Ghana, procurement planning is a fundamental function that impacts on effective or ineffective service delivery. There is no part of the government service delivery that does not depend on procurement planning; and yet the area has low research to its regard.

Brandmeier and Rupp (2010) in their study discussed other classification of factors that influence the performance of the procurement unit thus:

- Strategy- Development and timeliness of a superordinate procurement strategy, content and level of detail of product group strategies, application of the superordinate procurement strategy, application of procurement levers.
- Organization- Structure of the procurement department, position of procurement within the company organizational structure, organizational changes, interaction with other divisions in the company, company-wide coordination of procurement activities, interface to suppliers and supplier quality management (SQM)
- Processes- Early incorporation of procurement and supplier quality, order processes, logistics processes, supply security, and make or buy decisions.
- Methods and tools- Information management, e-procurement.

- Human resources (HRs) - Setting and controlling of targets, employee level of education, employee development and level of satisfaction, and internationality.
- Supplier/Contract management. Supplier portfolio, supplier selection, supplier controlling, contract management, and supplier integration.

2.11 SUCCESS FACTORS FOR PROCUREMENT UNIT PERFORMANCE.

Success factors are inputs in a project that requires careful management since they have influential impacts on the success of the project (Cooke-Davies, 2002). The attainment of these success indicators provides the management and implementers with better understanding on how to enhance outcomes (Tsiga et al., 2017). These success indicators help small and new entrants to improve performance ensuring efficient resource allocation (Bullen and Rockart, 1981). CSFs has been adopted by various sectors to align the success of projects for the past decades (Berssaneti and Carvalho, 2015). Previous studies has identified various factors which are sometimes separated or interwoven that need to be reinforced in order to gain overall procurement department success. Although the procurement function is required to be perfect in all its task operation it is essential to identify the critical factors needed for its success (Brandmeier and Rupp, 2010). Table 1.0 shows the success factors and their various categories to promote procurement department to greater performance.

Table 2.3: Success factors for the procurement unit

Factors	Sources
Defined and communicated strategy, senior management, early involvement of procurement, suppliers and stakeholders in projects, key performance indices, cost cutting methods/levers, risk management, corporate thinking and crossfunctional responsibility, global sourcing for total cost of ownership and lifecycle cost.	Aberdeen Group (2006), Kearney (2004), Yu et al. (2005), Hughes (1986), Chua et al. (1999), Nguyen et al. (2004), and Nicolini (2002), Pinto and Slevin (1988).

Central coordination and local execution	Brandmeier and Rupp, (2010), Nicolini (2002), Nguyen et al. (2004), Cooke-Davies (2002), Belout and Gauvreau (2004)
Standardized procurement processes	Nguyen et al. (2004), Phua (2004)
Procurement handbook Intranet as procurement knowledge base, continuous establishment of data transparency, E-procurement and e-platform and methods for forecasting, inventory and pooling of needs	Aberdeen Group (2006), Fortune and White (2006), Belout and Gauvreau (2004)
Highly qualified procurement personnel, personnel interaction and specialized procurement roles	Fortune and White (2006), Belout and Gauvreau (2004)
Structured supplier portfolio, supplier evaluation, cost reduction by supplier development, supplier value integration, negotiation concepts and management of sub-suppliers	Kearney (2004), Nguyen et al. (2004), Phua (2004), Fortune and White (2006)

2.11.1 Indicators for procurement best practice

Defining reliable/tangible measures for outstanding performance in complex economic situations is a tough topic (Kaplan and Norton, 1996). Brandmeier and Rupp (2010) used procurement levers as performance indicators. The procurement levers are a set/toolbox of different methods to strategically classify procurement activities. Thus, their degree or implementation serves as a good guideline of how successful the overall procurement function should be and were grouped by three themes:

Commercial levers:

- Pooling (bundle between different departments and use economies of scale).
- Negotiation concepts (lead negotiations, follow a specific methodology, use of eprocurement).
- Global sourcing (use request for information/request for quotation (often in combination with a request for proposal), optimize sourcing process, and transfer

volume to emerging procurement markets).Supplier portfolio (introduce controlling tools for procurement activities and savings, focus on core suppliers).

- Target costing (break down the costs, view the life cycle costs, and total cost of ownership, make or buy decision).

(1) Technical levers:

- Supplier development (reduce waste, develop optimization approaches at supplier sites, supplier risk management and contract management).
- Standardization (set up cross-functional teams, eliminate over-variety).
- Redesign to cost (conduct function and value analyses, redesign the specification of the product).
- Simplifying technical specifications (reduce over-specifications, implement standards, and define functional specifications).

(2) Supply and procurement chain process levers:

- Supply chain integration (optimize material flow, warehousing, procurement systems, implement IT-solutions).
- Procurement processes (accelerate the order process, standardize procurement process, long-term procurement, and simultaneous procurement).
- Supplier value integration (decide the level of outsourced process steps, cooperate and integrate suppliers).

2.12 Towards E-Procurement in the Organization of the Procurement Unit

The emphasis of procurement on government functions and operations cannot be overstated (Thai and Grimm, 2000), it's for this reason that the application of Information Communication Technology (ICT) is adopted in procurement to improve the process (Bof and Previtali, 2010).

Electronic-Procurement (E-procurement) in the public sector is a generic term for the series of different ICT's that can be used to automate the internal and external procedures associated

with procurement of goods, works and services (Bof and Previtali, 2010). E-procurement technologies is an improved development for the procurement processes (Neef, 2001) which has benefits of increasing the efficiency of procurement process and price reduction (Croom, 2000; Essig and Arnold, 2001; de Boer et al., 2002), notwithstanding it promotes collaborative relationships (Holland, 1995; Dyer, 2000; Tang et al., 2001). Some of the attributes to eprocurement that stimulate organizations and governments to adopt it are reducing transactional cost, making better decisions and getting more value (Panayiotou, 2004). Eprocurement is currently one of the major issues procurement managers are dealing with and will deal with in the future since its gaining roots in the advanced countries (Dooley and Purchase, 2008).

In view of the revolution in public sector gearing towards e-procurement, it is expedient that the public procurement unit within the organization is set up to accommodate the operations of the e-procurement. In their research, Osmonbekov et al. (2002) identified the areas that are affected by the adoption of e-procurement into the public procurement unit thus; procurement unit size, hierarchical levels, specialization of work areas and participation of members.

Additional, Osmonbekov et al. (2002) stated that e-procurement; increases the influence of technical personnel on the procurement task, decreases conflict among procurement unit members and other members of the other organization, increases the coordination among procurement unit members and Kalakota and Robinson (1999) spoke of increase in efficiency and effectiveness of the process. Osmonbekov et al. (2002) concluded due to the various implications of e-procurement on the procurement unit size, participation and influence it is recommended that employees are carefully selected with requisite e-procurement skills to enjoy the benefits of e-procurement.

2.13 CONCEPTUAL FRAMEWORK

A conceptual framework was developed (see Figure 2.1) after the review of germane literature. In order to identify the procurement structure of the organization using the six structural variables, the contextual factors that influence these structural variables has to be assessed. This gives understanding to the dynamics of factors influencing the procurement structure of the organization. This procurement structure with its contextual factors gives an understanding of the kind of system being operated in the organization. The key requirements needed to create the environment for procurement units to be effective was added as prerequisite to the formation of the procurement units within the organization. This will enable the right conditions to be set in place to promote the operation of the procurement function. Furthermore, the factors that influence the performance of the procurement units was assessed to ascertain their magnitude of their influence on procurement unit performance within the organization. In order to monitor the progress of the procurement units, success factors which would aid the procurement unit to be successful in its operations was used as the environment through which the procurement unit should operate.

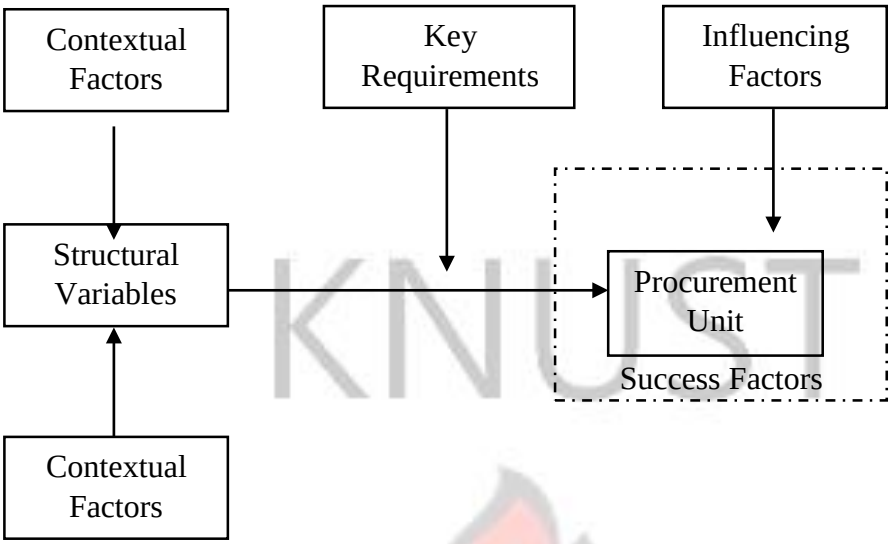

Figure 2.1 Conceptual Framework for the study.

CHAPTER THREE

METHODOLOGY

3.1 INTRODUCTION

This chapter expounds on the processes executed to achieve the aim and objectives of the project. The next level in the study after identifying the research question and review of literature is selecting the methodology that is most appropriate in addressing the issues in the research (Blumberg et al., 2002). Collis and Hussey, (2003) has emphasised that design process from hypothetical testing to data collection and data analysis is the overall approach to research methodology, therefore methodology employs the tactics of discovery how to go about finding out what we believe is true (Christou *et al.*, 2008). This chapter focus on the framework of the study, research design instrument, data collection and data analysis.

3.2 PHILOSOPHICAL POINT OF THE RESEARCH

Various factors influence the philosophical disposition of any research. These philosophical patterns have to examine as to the research instrument to employ for the research (Christou et al, 2008). These philosophical patterns are defined as an approach to viewing natural phenomena that comprises a set of philosophical assumptions that guide one's tactics to inquiry (Polit and Beck, 2004). Research philosophy entails development of knowledge and the characteristics of that knowledge.

Accordingly, philosophical paradigms such as ontology, epistemology, axiology and methodology assumptions needs to be accessed in detail since the shape the choice of the research (Christou et al, 2008). Focal concerns for social research is on ontological and epistemological stand points of view and are discussed below.

Ontology refers to what constitutes the 'real' world and understanding its existence which is sovereign to our knowledge (Marsh and Stoker, 2002). Fitzgerald and Howcroft (1998) states

that ontology has two positions thus relativist and realist positions. Realist believe that outside world consists of pre-existing hard and tangible structures and these structures exist independently of one's capacity to acquire knowledge. Realist position is practical and not abstract or idealist views. The relativist tailors to multiple existence of realities by an individual's mind construct (Fitzgerald and Howcroft, 1998). The realist position is adopted for the knowing the factor and requirements for organizing a procurement unit and its influencing factors.

Epistemology refers to valid knowledge constituents and how these can be achieved. This position can be either positivist (objective) or intepretivist (subjective) as referred by Streubert and Carpenter (1999). Positivist are of the view that the social world exist as an external entity and its attributes objectively accessed with scientific methods rather than being concluded subjectively through intuitive activities (Easterby-Smith et al, 2008; Saunders et al, 2012). Positivists claim that the facts can be presented independently of the observer so that research is totally objective and accurate (Fellows and Liu, 2008).

Intepretivist position holds the ideology that a person's reality is deduced from observations, perceptions and modified by socialization is likely to be different from the other person (Fellows and Liu, 2008). This position believes that people description of reality is based on the language they understand (subjective) and not what exist objectively. Intepretivist do not obviate the objectivity of reality rather their assertion is that reality cannot be understood outside the spheres of culture and values. According to Creswell (2007), in interpretative research the opinions of participants are mostly depended on for the situation under study. At the epistemological level the positivist position is employed for the research to understand what factors was considered in setting up the procurement unit and this will enable the researcher appreciate the considerations and influences in setting up the procurement unit.

Positivism adopts a clear quantitative approach to investigating phenomena (Creswell, 2009;

Greener, 2008). Positivist argue that this research based on this approach can be "value free and objective" rather than subjective and value-laden (Greener, 2008).

3.3 RESEARCH STRATEGY

Considering the philosophical position of this study thus positivist on one hand, and the nature of the problem identified in literature as well as the pilot interview on the other hand, survey strategy emerges as more appropriate. Creswell (2005) defined a survey research as an orderly gathering of information for the purpose of understanding and/or predicting some aspect of the behaviour of the population of interest. Surveys are classified under longitudinal and crosssectional studies. Questionnaires or structured interviews are used for data collection, with the intent of generalizing the outcome (Babbie, 2008; Creswell, 2005). A number of studies for qualifications are generally cross-sectional due to the limited time allocated to complete the study (Greener, 2008), hence a cross-sectional survey was used.

Survey was appropriate for this study because of the following reasons : i) it allows researcher to solicit for data about situations, practices or views at a particular time frame through questionnaires or interviews; ii) it also permits a researcher to study more variables at one time; iii) survey allows the use of quantitative analytical techniques to draw conclusions. Furthermore, survey is the strategy that responds suitably to all the research questions which are of the type of what, who, what, where, how much and how many (Saunders, et al., 2012). Before the selection of data collection instruments, there is a need to understand qualitative and quantitative research approaches. Considering the epistemological and positivist stance of this study, a mixed strategy was adopted.

The concept of mixed methodology probably originated in 1959, when it was used to study the validity of psychological traits by Campbell and Fiske (Creswell, 2003). Recognizing limitations of all methods, biases inherent in any single method could be neutralize or cancel

the biases of other methods. The mixed method is increasingly used in business research (Greener, 2008). It also involves in the use of multiple data collection methods, either quantitative or qualitative or both and for analysis methods.

In view of attaining the research aim and objectives the survey method will be employed thus, semi-structured interviews and questionnaires will be used to gather data for the research in a two stage approach. A survey is a very old research technique commonly used method in social science research (Babbie, 2008). It purposes is to realize underlying relationships or to create accurate quantitative description of one or more aspect of a subject (Pinsonneault and Kraemer, 1993; Simon and Burstein, 1985; Saunders et al., 2012). According to Babbie (2008), survey can be used for either descriptive, explanatory or exploratory purposes. Also, Simon and Burstein (1985) claim that survey is either by observing or asking questions about people or things.

Furthermore, surveys are excellent vehicles for measuring attitudes and orientation (Babbie, 2001) as well as opinions, beliefs and interests of a large population (Saunders et al., 2012). Surveys can be conducted using different methods like questionnaire, interview and observation. A questionnaire survey was the main approach. This was complemented with a pilot interview to constitute the mixed method approach in this study. Babbie (2001) confirms questionnaire to be frequently used in surveys. Simon and Burstein (1985) opined that, the choice between observing and questioning is a matter of convenience and feasibility of the researcher. However, a poorly designed and executed survey research is of little or no value (Malhotra and Grover, 1998).

3.4 DESIGN OF RESEARCH INSTRUMENT

3.4.1 Stage One

This stage comprised of interviews which were used to collect primary data from eight experts in public procurement. According to Saunders et al. (2012), research interviews have the purpose appreciating a subject from the participant's viewpoint and to discover meaning to their experiences. Saunders et al. (2012) also emphasized that interviews provide a multiperspective understanding of issues under study and have the tendency to reveal multiple and sometimes conflicting attitudes about a matter. Subsequently interviews provides the freedom of expression of situation form the participant's personal standpoint and vocabulary. According to Darmer, (1995) the semi-structured interview is neither a free conversation nor a highly structured questionnaire rather they give the avenue to regulate the order of the questions and the respondent have the ability to expand the ideas on diverse subjects into detail. Semistructured interview is more flexible in comparison with structured interviews.

The interviews were conducted face-to-face between researcher and participants. The interviews will be mechanically recorded and subsequently transcribed. The duration for the interview is a maximum of one hour. The questions for the interview will be structured around the following themes from the desk survey;

- The organizational position of the procurement unit within the institution
- The organizational structure in view of procurement unit
- The factors considered for setting up the procurement unit
- The factors influencing the performance of the procurement units
- The success factors for a procurement unit

3.4.2 Stage Two

Close-ended questionnaires will be administered to participants for appropriate responses and this will help the research to analyse the data easily. Creswell (2009) and Salant et al. (1994)

are also of the view that closed-ended questions with unordered choices, for example the multiple choice questions are useful for ranking items in order of preference. For this research the closed-ended questionnaire are generated from the semi-structured interview and the desk study. Fowler et al. (1995) indicated that close-ended questionnaires are used to measure respondents ability to provide informed responses. McIntyre (1999), Fowler et al. (1995) and Salant et al. (1994) further stated must eschew questions that ask respondents for data could not have or do not have, this comprises of questions that presume that the respondent is knows everything about the subject and more so questions that very personal. Objectionable statements that mirror the researcher's bias and questions that require difficult calculations should similarly be avoided in the case of wording of questionnaires. They observed that questions with predisposition type, either for or against a particular perspective should be avoided, because such questions may be leading or may include assumptions that may not be true.

3.5 DATA COLLECTION

Data gathering is crucial in research, as the data is meant to contribute to a better understanding of a theoretical framework (Bernard, 2002). Also data collection for the survey involved visiting a research location and conducting an interview (Creswell, 2009). This section entails the methods that were used in the collection of data for the study, sampling technique, population size, ethical considerations and validity and reliability of the data.

3.5.1 Sampling Techniques and Sample Frame

The sample frame of the research were bounded to people in charge of the procurement function in the MMDA'S in Ghana.

The probability and non-probability sampling techniques were used in the study. The first stage which involved semi-structured interviews with experts in public procurement was done with

the purposive sampling technique. The second stage which involved questionnaire administration with the stratified random sampling technique so that a good representation of various Metropolitan, Municipal and District Assembly entities are well represented in the sample. This technique makes the sample to be of greater tendencies of representing the population. The population for the study was all procurement units of MMDA in Ghana. The total number of procurement units in the MMDA was 216, hence the population for the study was 216 procurement units. The number of entities classified as Metropolitan, Municipal and District Assemblies are 6, 49 and 161 respectively.

Saunders et al., (2012) opine probability sampling to be most normally related with survey based research strategies, where interpretations were made from the sample about a population to answer your research question(s) or to meet the objectives

3.5.1.1 Sample Size Determination

The sample size was influenced by the analytical tool employed in the study. In using Confirmatory Factor Analysis, sample size has substantial influence on the models fit indices (Tong, 2007). Several researchers have recommended various ways of determining sample size for confirmatory factor analysis with the popular notion of larger sample size is better for model fit indices (Bentler, 2005; Kenny and McCoach, 2003; Jackson, 2003). Empirical investigation from Wolf et al. (2013) and Kenny et al. (2014) revealed that larger sample size requirement does not fit all research scenarios and this finding corroborates MacCallum et al. (1999) assertion that not all scenarios require large sample size. However if the variables are reliable, effects strong and model is simple, smaller sample sizes can used (Bearden et al., 1982; Bollen, 1990). Gerbing and Anderson (1985) empirically provided evidence of using three or more indicators per factor to eliminate bias in parameter estimates. Iacobucci (2010) added SEM can perform well with smaller samples with consideration to the number of variables in the model

contrary to the popular notion that sample size should be above 200 as rule of thumb. Variable ratios was used to determine appropriate sample size from numerous studies and serves as a convenient guide (Curran et al., 2004; Hair et al., 2013; Kwofie et al., 2014). The variable ratio should be at least 5:1 as indicated by Tong (2007). Considering the 18 variables to tested using the 5:1 ratio, a minimum of sample size of 90 was considered.

With Kline (1979; 2010), Gorsuch (1983) and McCallum et al., (1999) recommending that sample size should not be below 100, a total sample of 113 was received from respondents. A total of 221 questionnaires were sent to the various MMDA to participate in the study. Although the population was 216, 5 of the participants misplaced their initial questionnaires and it was subsequently replaced. Out of the 221 questionnaires sent out to participants, 113 were retrieved from the field representing a response rate of 51.13%. From the sample derived from the field, 4 for metropolitan assemblies, 22 for municipal assemblies and 87 for 161 district assemblies were obtained as the sample data. The field results for the sample indicates a good representation of the various proportions in the population.

3.5.1.2 Data Collection Instruments

These are tools used to collect and structure data and hence transforming into usable information. There are a lot of instruments for data collection, but people transcribe to such instruments as interviews and questionnaire (Leedy and Ormrod, 2010). The objectives of the research and the nature of the data needed to conduct the study determines which of the methods and strategies to combine. The surveys comprised a number of questions concerning general practice details, information technology, utilisation and future directions of the profession (Smith, 2009).

The data was collected with the aid of interview and structured questionnaire. As a working rule of thumb, unstructured questionnaire which is mostly appropriate in qualitative research

and it enable in the development of structured questions which best suite survey and quantitative research. The benefits of structured questionnaires in terms of speed of completion and analysis, accuracy and comparability of data are self-evident. Structured questionnaires are preferable in self-administration and self-completion. The respondent has a clear indication of the scope of possible answers to the question which helps to ensure that they are on the same wavelength as the researcher (Baker, 2003).

3.6 Ethical considerations

The interviewees and participants from the survey will be assured that information gathered from the data collection will purely be for academic purposes and treated as confidential with anonymity of participants.

3.7 Reliability and Validity

Validity refers to the degree which a test or an instrument measures or performs the assignment it's meant for. For qualitative study i.e. semi-structured interviews no set standards exist for evaluating the validity or authenticity of conclusions but there is the urgency of careful consideration to evidence and methods on which conclusions are based in this research. Criteria for assessing individual information can be based on three (Becker, 1958):

- How creditable the informant is
- Were the statements made in response to the researchers or were they spontaneous
- How does the presence or absence of the researcher or the researcher's informant influence the actions and statements of the other groups.

All these criteria will be carefully considered and observed for the interview process to help validate the data collected. The information that are gathered will be transcribed and returned to the respondents for concurrent confirmation on the accuracy and precision of the content as interviewed.

3.8 DATA ANALYSIS

The data analyses is in two sections thus the qualitative and quantitative. The qualitative involved inducting insights from the interview data, and processing the data further in order to gain more in-depth understanding of the phenomenon under study.

According to Atherton and Elsmore (2007), organising the research data for analysis demands a huge effort when doing qualitative data analysis and hence once crucial error in qualitative research is to combine data without interpretation and analysis. Qualitative data can be analysed in three strategies; categorising (such as coding and thematic analysis), connecting strategies (narrative analysis and individual analysis case studies) and memos and displays (Saunders, 2012). In order to use qualitative research for this study, the transcriptions of the rich text interviews were categorised and coded. This software links the elements of data and developing memos and annotating of the contents of responses and documents allowed themes to emerge. This will unearth all the elements as structured in the interview guide to address the objectives of the project.

The interview transcripts were coded based on what was discussed and what the key findings from the specific interviews were. The key findings were then classified and arranged into categories that developed from the data. Furthermore, the interview transcripts were crossreferenced to identify relevant information that complemented some of the participants. Notwithstanding, notes and documents from the field were analysed and interpreted in the light of the interview reports. Different data were then examined for corroborating evidences and contradictions

The data collected from respondents of the questionnaire administered will be analysed with the aid of Confirmatory Factor analysis, Exploratory Factor Analysis (Principal Component

Analysis), Mean Item Score and Relative Importance Index (RII), One Sample t-test and descriptive statistics. The Confirmatory Factor Analysis was used to identify the procurement structure using the structural variables which are used to identify procurement structures of an organization. The Exploratory Factor Analysis was adopted to reduce the large number of variables to a smaller set of underlying factors required for procurement units to be effective (Saunders et al., 2009). The One Sample T-Test was used as a hypothetical test for factors respondents regarded as important and significant to the procurement unit. The RII is an index that tells how each of the variables asked are faring in relation to the others in terms of weight or importance. This helped in comparison among given options, within pairs of options by cardinality of importance or that score items one at a time using a common scale; and to determine the importance of that variable (Fowler, 1995). This tool was used to determine which factors influence the procurement structure of the organization.

The returned completed questionnaires will be edited to ensure completeness, consistency and readability. Statistics will help condense an overwhelming body of data into an amount of information that the mind can more readily comprehend and deal with (Leedy and Ormrod, 2010).

3.9 SUMMARY

As observed the chapter outlined the key elements that are very fundamental in choosing the appropriate research methodology to the target the aim. The research philosophical standpoint was stated, the research strategy, sampling technique and data analysis.

Table 3.1 Summary of Objectives and the data collection.

Objective	Data collection
1. To identify factors in establishing effective procurement units in MMDA's.	Semi-structured interviews and questionnaire survey.
2. To identify factors that influence the procurement unit performance in MMDA's.	
3. To develop a framework for setting up an effective procurement unit in MMDA's.	Data analysis

CHAPTER FOUR

DATA ANALYSIS, RESULTS AND DISCUSSION

4.1 INTRODUCTION

This chapter presents the analysis of data collected from the survey and the discussion of the results obtained from the analysis. The data analysis consist of profile of respondents, descriptive statistics of responses, identifying the procurement structure using the structural factors, identifying relevant requirement for procurement units, factors influencing the procurement unit and success indicators for the procurement unit. These were achieved by the use of confirmatory factor analysis and exploratory factor analysis.

Study of existing literature reveals that six variables are used to identify the procurement structure of an organization and 16 factors were identified as key requirements for procurement unit. 17 factors were identified as factors influencing procurement unit performance and 15 factors were identified as indicators of success for the procurement unit performance.

Two hundred and twenty two questionnaires were distributed to various districts assemblies in Ghana.

4.2 QUALITATIVE DATA ANALYSIS

The preliminary interview with experts was analysed based on findings from literature on these subjects; procurement structure, key requirements, influencing factors of performance and success indicators. Interviewees acknowledged the factors identified within the themes above as relevant. Eight public procurement experts were interviewed.

4.2.1 Background of respondents

From the survey, 6 of the experts interviewed had a professional background of quantity surveying and 2 has engineering background with each of them being members of Ghana Institution of Surveyors and Ghana Institution of Engineers respectively.

All experts had postgraduate degree in fields of Construction Management, Logistics and Supply Chain Management and Procurement Management as their current level of education. The years of experience in public sector procurement ranged from a minimum of 8 years to a maximum of 26 years.

4.2.2 Factors considered for establishing procurement units

Experts elaborated *competent procurement personnel, procurement and organizational structure, procurement law and regulations, logistical resources for the procurement unit and competent procurement head* as factors that are considered in establishing procurement units.

4.2.3 Location of procurement unit within the organizational structure

The experts indicated that the *procurement unit was positioned with the top hierarchy of the organization and the head of procurement was part of top level management decisions*.

4.2.4 Procurement structure

They illustrated that there is high degree of the structural variables which are used to identify the procurement hence standardization, formalization, centralization, specialization, configuration were all high in their procurement operations. Experts indicated the high levels to the *strict compliance with the procurement law and regulations.*

4.2.5 Successful strategies

From the survey, experts stated *employing competent head of procurement and competent procurement staff, compliance with the procurement law and regulation, positioning*

procurement at top level management, periodic internal procurement audit and effective record keeping.

4.2.6 Factors influencing procurement units

Factors such as *inadequate procurement personnel, availability of funding, supplier performance and organizational structure* were identified as factors influencing the performance of the procurement units.

4.2.7 Success indicators for procurement unit performance

Experts highlighted *delivery of right products based of quality, time, value for money for projects, compliance to procurement law, procurement staff competence, transparency and availability of funds* as the success indicators for procurement unit success.

4.3 QUANTITATIVE DATA ANALYSIS

Results from the first stage thus the interview with experts was incorporated into the questionnaire that was administered to the MMDA. This second stage discusses the outcomes from the survey conducted using descriptive statistics and factor analysis to achieve the objectives of the research.

4.3.1 Demographic Data

4.3.1.1 Position in organization

This shows the position of respondents within their organizations. It was observed from Figure 4.1 that majority of respondents were quantity surveyors, engineers and procurement unit officers having a cumulative of 83.1% which confirms the assertion that these positions are those to manage the procurement of goods works and services. However quantity surveyors and engineers had top two proportion of respondents thus 41% and 27% respectively which could be as a result of these positions handling procurement related activities prior to the

procurement law instructing the formation of a procurement unit. However coordinating officers, planning officer and architect had low representation. Head of procurement had 3% which could be an indicator that only few districts have formed a procurement unit or the heads in most districts were unavailable to respond to the survey. **Position in organization**

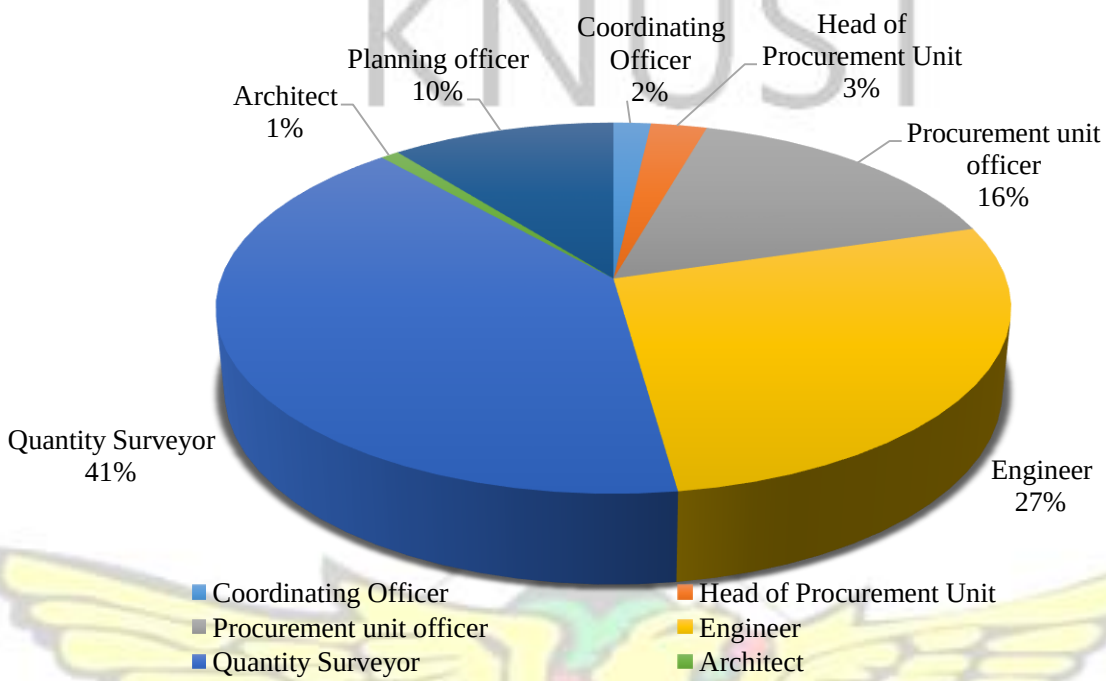

Figure 4.1 Position respondents within the organization

4.3.1.2 Profession

From Figure 4.2 it was observed that quantity surveying and engineering professions with 40% and 33% respective proportions, had greater majority representing 73%. This could be explained by the fact that quantity surveyors and engineers contribute a lot to the cost of project planning and execution. The other professions such as finance, purchasing and supply, architect and planning had 27% play more coordinating roles within the district assemblies in relation to procurement. This shows the conventional professions with direct relation to procurement such as quantity surveyors, engineering and purchasing and supply are those engaging in procurement in the district assembles.

PROFESSION

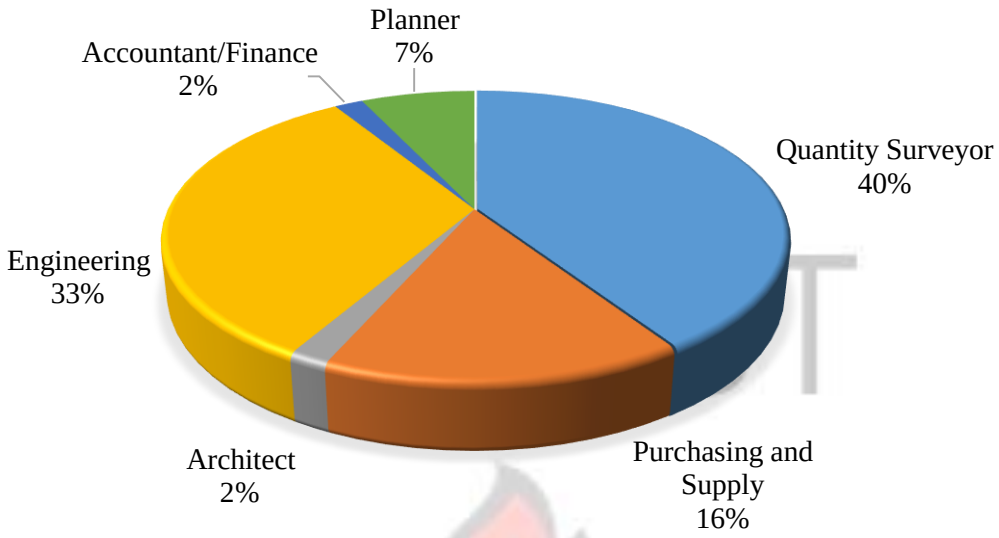

Figure 4.2 Professional background of respondents

4.3.1.3 Educational Level

From Figure 4.3 it is observed that 62% of respondents had attained graduate level of education and 29% having masters. This could be as a result of service of scheme employment requirement prior appointing people into senior offices within the procurement function. This compels employees of the procurement function to attain higher educational status to enable them to be promoted to senior offices positions. However 9% of respondents have Higher National Diploma (HND).

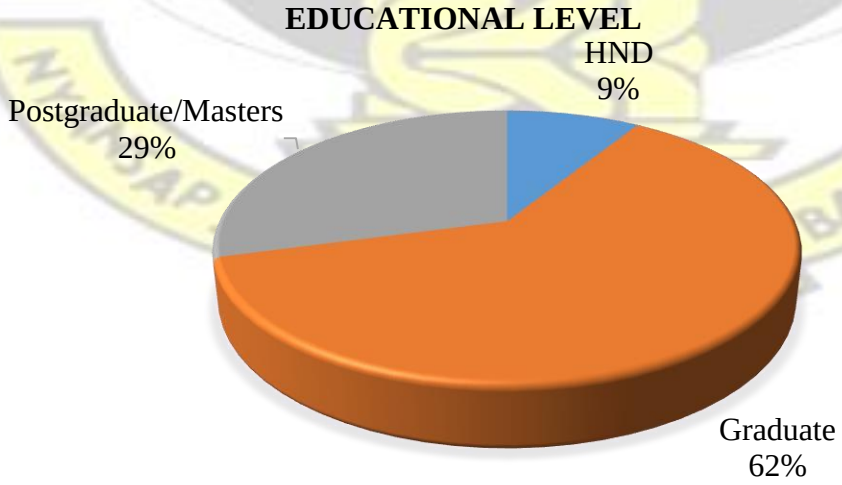

Figure 4.3 Educational level of respondents

4.3.1.4 Industry experience and Public procurement experience

From Table 4.1 It is seen that public sector is not attractive to those in the procurement industry. Out of 113 only 13 has experienced procurement in the private sector. This corroborates the point that the public procurement is not enticing to practitioners with its peculiar characteristics. 51.33% of respondents have experience of 2-6 years and 35.40% have 6-10 years experience in the public sector. 13.27% have above 10 years experience in public sector.

Table 4.1 Showing the Relationship between Years of Industry Experience and Public Sector Experience.

		Public Sector Experience					Total
		2-6	6-10	10-14	14-18	>18	
Industry Experience	2-6	51	0	0	0	0	51
	6-10	7	34	0	0	0	41
	10-14	0	6	13	0	0	19
	14-18	0	0	0	1	0	1
	>18	0	0	0	0	1	1
Total		58	40	13	1	1	113

4.3.1.5 Procurement Volumes

From Figure 4.4 It is revealed that 56% from the volume of services procured by respondents was <5, whiles 44% of goods procured was 5-10 and 37% of works procured was above >20. These values were the highest volumes of items procured from the various categories of services, goods and work respectively.

From Figure 4.5, it is seen that procurement for works has highest total volume of items procured with a mean value of 2.841 followed by procurement of goods with a mean value of 2.239 and lastly was procurement of services with a mean value of 1.752. This could be as a result of majority of respondents being quantity surveyors and engineers who are

predominantly involved in the procurement of works. However procurement volume for goods is relatively high which could indicate that quantity surveyors and engineers could have involved in the procurement of goods. Generally procurement of services in the district assemblies are not many as compared to the procurement of goods and works.

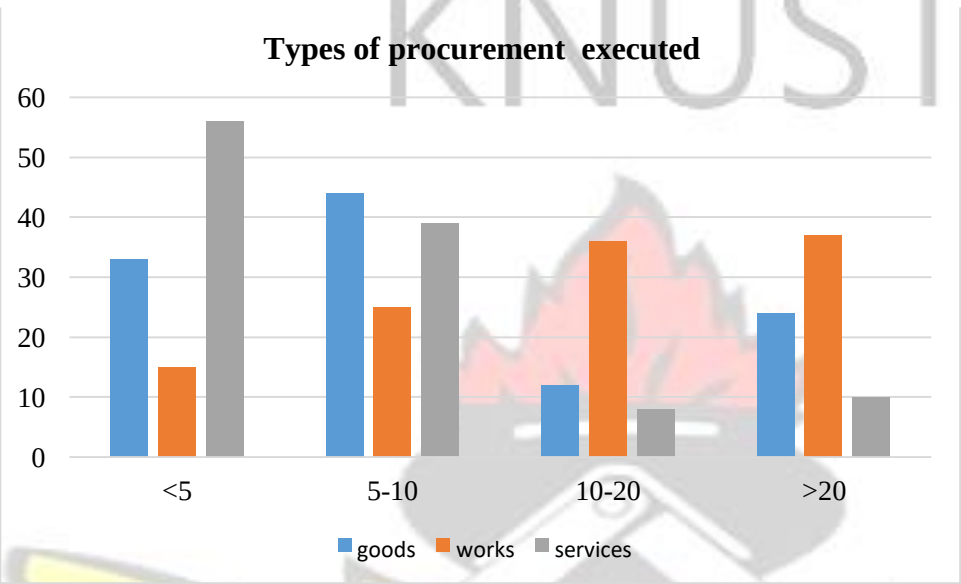

Figure 4.4 Volume Of Goods, Works And Services Procured Under These Categories.

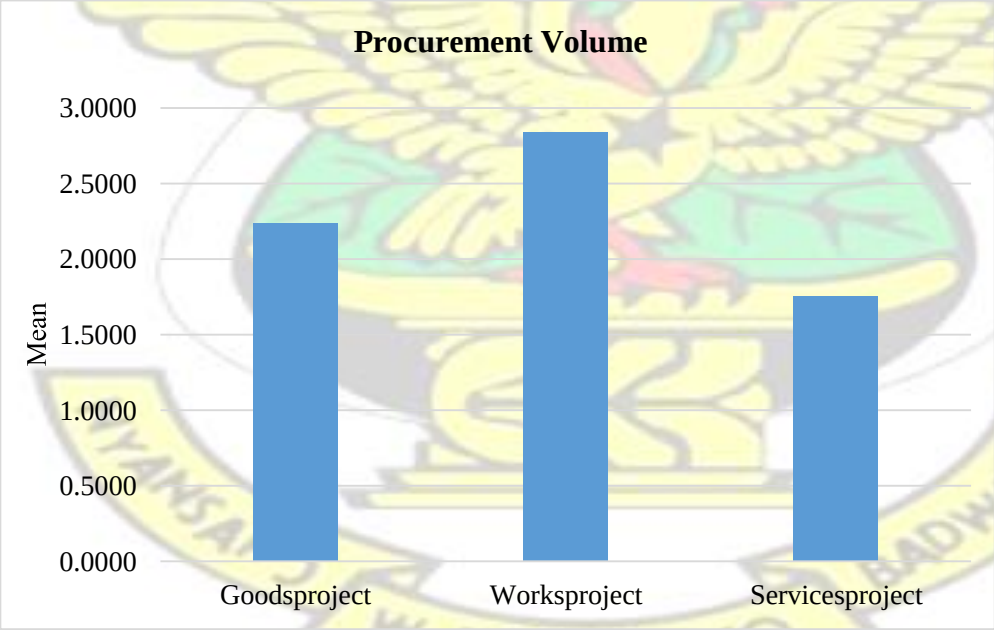

Figure 4.5 Total Value Of Goods, Works And Services Procured Based On Mean Values.

4.3.2 Procurement Structure of the Organization

From the literature review, six structural variables thus standardization, specialization, configuration, involvement, formalization and (De) Centralization were identified as the components constituting the procurement structure of the organization. The confirmatory factor analysis (CFA) was used to analyse these structural components within the organization. The structural variables serve as the latent variables under which various indicators were assigned to them. The CFA was adopted to identify the important indicators which make up the procurement structure. Byrne (2006) indicated that, with structural equation modelling the measurement error can be effectively dealt with explicitly considered in the theoretical models improving the models.

4.3.2.1 Confirmatory Factor Analysis Model for the Structural Variables

This section develops a model showing the relationships between the structural variables of the procurement structure and their indicators. In developing the model some preliminary assessment has to be made. The outcome of the analysis were discussed to inform procurement practitioners about the procurement structure. The focus when applying CFA is based on theoretical concepts and constructs. The visual diagram produced from CFA tends to show the path of various indicators with respect to their latent variables. In addressing the suitability of the sample size for the study, Bentler and Chou (1987) suggested a minimum ratio of five subjects to variable (5:1) where the latent variable has multiple indicators would be sufficient for SEM. Also Anderson and Gerbing (1988) agreed that 100 to 150 subjects is the minimum satisfactory sample size when carrying out SEM. With a sample size of 113, the minimum requirement of 100 subjects and the ratio of 5:1 is satisfied.

4.3.2.2 Assessment of Goodness-of-Fit Statistic

Model fit assessment should have criteria from both indexes of incremental and absolute form which includes chi-square test (Hair *et al.*, 2013; Kline, 2010; Byrne 2006). The Comparative Fit Index (CFI) and Root Mean-Square of Error of Approximation (RMSEA) were used for the incremental and absolute indices respectively where the CFI measures the improvement of noncentrality in the model (Schumacker and Lomax, 2010). The purpose of ascertain the goodness-of-fit is to obtain an index which is independent of sample size and data distribution. The criteria for the CFI scales from 0-1, with the value approaching 1 interpreted as perfect fit of model. Mostly a value of 0.9 is require to accept the model whiles a value ≥0.95 is classified as a good fit of the model (Hox, 1995). According to Lei and Wu (2008), the RMSEA value for the model should be ≤0.1, with ≤0.08 defined as accepted and ≤0.05 defined as close fit (Schumacker and Lomax, 2010).

Table 4.2: Comparison of goodness-of-fit measures of proposed model

Goodness-of-fit measure	Acceptable Criteria	Value obtained	Interpretation
CFI	x≥0.90 (acceptable), x≥0.95 (good fit)	0.908	Acceptable
RMSEA	x≤ 0.08 (acceptable) x≤ 0.05 (good fit)	0.077	Acceptable
p-value	x≤ 0.05 (good fit)	0.006	Good Fit
(Statistical Significance at 5% level) **NOTES**: RMSEA, Root Mean Square Error of approximation; CFI, Comparative Fit Index			

From Table 4.2, the CFI value of 0.908 is accepted as good fit and the RMSEA value 0.075 also accepted as a good fit (Lei and Wu, 2008; Bentler, 2005; Schumacker and Lomax, 2010). The Table also indicates that the p-value 0.002 ≤0.05 shows that the variables considered has significance with the procurement structure.

4.3.2.3 Factor Loadings of Observed Variable on Structural Variables

In explaining the significance of these parameters in the model, the standardized coefficients loadings for observed variables on latent variables were adopted (Jackson et al., 2009). The coefficient of determination (R^2) which defines the predictive precision will also be used to interpret the results (Bentler, 2005). The scale of measurement for R^2 ranges from 0 to 1, with ≥0.75 rated substantial, ≥0.50 rated moderate and ≤ 0.25 rated weak (Kline, 2010; Henseler, 2010).

Table 4.3: Factor loadings and variance accounted in the latent variables.

Indicator Variable	Standard Coefficients	z-values	R squared	Cronbach's Alpha	Significant level at 0.05
STD1	0.568	6.660	0.323		0.004
STD2	0.629	6.253	0.396		0.000
STD3	0.588	6.545	0.346		0.000
SPL1	0.641	5.638	0.411		0.001
SPL2	0.559	6.349	0.312		0.000
SPL3	0.534	6.499	0.285		0.000
CFG1	0.726	6.036	0.527		0.000
CFG2	0.765 0.470	5.066 6.908	0.585 0.221		0.000 0.000
CFG3	0.634	5.954	0.402		0.000
INV1				0.880	
INV2	0.642	5.855	0.412		0.000
INV3	0.623	5.635	0.389		0.000
FML1	0.635	5.189	0.403		0.000
FML2	0.520	6.668	0.270		0.000
FML3	0.595	5.178	0.354		0.000
CTL1	0.338	6.799	0.114		0.010
CTL2	0.243	7.232	0.059		0.065
CTL3	0.836	6.959	0.699		0.041

From Table 4.3, the Cronbach's Alpha was reported. The Cronbach's Alpha value was 0.880 which is above the recommended value of 0.70 (Hair et al., 2014). This suggests the model has internal consistency and reliability thus these indicators measure the procurement structure (Kline, 2010). The z-values were recorded to aid with the feasibility of the factor structure. Bryne (2006) suggested that z-values should be above 1.96 to indicate reasonability and statistical significance of the variable. From Table 4.3 , all variables obtained z-values above 1.96 and had p-values ≤0.05 except for CT2 with p-value (0.065) which was above 0.05 hence was considered insignificant.

4.3.2.4 Results and Discussion of Structural Model

Figure 4.6 depicts the graphical representation of the structural model showing the loadings estimates of various indicators on their respective latent variables.

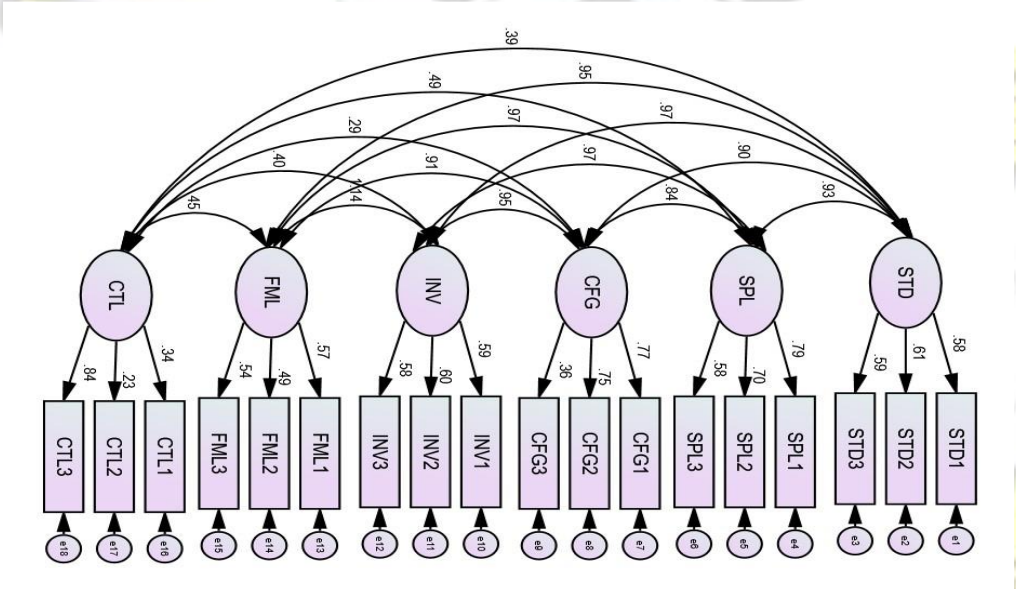

Figure 4.6: The Model resulting from the indicator variables on the structural variables.

NOTES: STD, Standardization; SPL, Specialization; INV, Involvement; FML, Formalization; CTL, Centralization; STD1-STD3, measurement items for Standardization; SPL1-SPL3, measurement items for Specialization; INV1-INV3, measurement items for Involvement; FML1-FML3, measurement items for Formalization; CTL1-CTL3, measurement items for Centralization.

4.3.2.4.1 Standardization

From Table 4.3 and Figure 4.6, shows the loading estimate of indicators thus *clearly defined activities (STD1)* 0.58; *Make uniform product features across various requisitions (STD2)* 0.61 and *Are procurement activities done in routinely manner for each project (STD3)* 0.59. All indicators showed significantly substantial correlation to the latent variable however the R^2 values of these observed variable range from 0.34 – 0.37 meaning that these variables contribute a respectable amount of variance and lower average prediction in the latent variable. This indicates that other unobserved variables not measured in this study might account for variance with latent variable. This shows that procurement activities are defined in the organization and also aggregating products into uniform features from procurement requests are engaged within the organization. Another activity within the procurement structure is routine manner of executing projects. This three indicators could be as a result of compliance to the public procurement laws and regulations.

4.3.2.4.2 Specialization

As shown in Table 4.3 and Figure 4.6, depicts good loading estimates of indicators such as *Task are assigned based on the specialist function assigned to the employee(s) in the procurement unit (SPL1)* had 0.79, *Task are assigned to the employee(s) based on the object/project to be procured (SPL2)* had 0.70 and *Task are assigned to a mixed group of object and functional specialist to produce outcome (SPL3)* had 0.58. Their respective R^2 values of 0.62, 0.49 and 0.33 suggest that SPL1 contributes 79% and SPL2 contributes 70% of total variance in specialization and has substantial predictive accuracy with the latent variable. This shows that the hybrid form of assigning task where employees can be assigned jobs based on functions or based on the project are adopted within the procurement function for executing projects.

4.3.2.4.3 Configuration

Indicators such as *Reporting procurement activities to higher authorities (CFG1)* 0.77 and *Seeking approval from higher authorities before proceeding on procurement projects (CFG2)* 0.75 had high correlation loading to the configuration variable with corresponding moderate R^2 of 0.59 and 0.56 as shown in Table 4.3 and Figure 4.6. This suggests that CFG1 and CFG2 contributes substantially to variance in the configuration variable. However, *Procurement decisions influenced by procurement unit* (CFG1) with loading estimates of 0.58 and R^2 of 0.33 indicates that this variable has respectable contribution to the variance in the latent variable. Reporting procurement activities to higher authorities and approval from higher authorities is not novel to public procurement law and regulatory authorities in Ghana. Public procurement law and regulations advocate strict compliance with procurement laws and regulations however it is surprising to see that the influence of procurement unit of procurement decisions is low. This could be as a result of procurement being approved by higher authorities or persons who in turn use their power to influence procurement decisions.

4.3.2.4.4 Involvement

From Table 4.3 and Figure 4.6, all indicators of the involvement variable had significant loading estimates thus *User departments are involved in the procurement process (INV1)* 0.59, *Higher authorities/officers are involved in the procurement process (INV2)* 0.60 and *All members of the procurement unit are involved in every procurement project (INV3)* 0.58. Their respective coefficient of determination ranges from 0.33-0.38 which suggest that these variables contribute a respectable amount of variance in the latent variable and also suggest that other variables not measured under the involvement variable could be associated with the involvement variable. However the substantial correlation of INV1, INV2 and INV3 coupled with their respected contribution to variance in the latent variable shows that user departments,

approval authorities and procurement employees are significantly involved in the procurement process of the organization.

4.3.2.4.5 Formalization

Table 4.3 and Figure 4.6, depicts that *Relying on public procurement rules and regulations (FML1)* with loading estimate of 0.59 and *Supervision of employees for compliance to rules and regulations of public procurement (FML3)* with 0.54 had higher loading compared to *Detailed job description for each employee of the procurement unit (FML2)* with loading of 0.49. The R^2 values of FML1, FML2 and FML3 are 0.34, 0.39 and 0.42 respectively shows that FML1, FML2 and FML3 contributes respectable amount of variance in the formalization variable. This means that is substantial reliance on public procurement rules and regulations accompanied by compliance supervision of employees to follow the procurement regulations.

4.3.2.4.6 Centralization

As shown in Table 4.3 and Figure 4.6, only *Items of lower value within threshold are purchased by various departments and higher values are purchased by centralized units (CTL3)* had high loading estimates of 0.84. Variables such as *All departments in the organization have their budget and can purchase low-value products independently (CTL1)* and *All department requirements are sent to a central unit (CTL2)* had low loadings of 0.34 and 0.23 respectively with very weak coefficient of determination as well. From Table CTL2 was considered not significant to the centralization variable. CTL3 had a significantly substantial coefficient of determination of 0.71 which suggests that CTL3 contributes immensely to the amount of variance within the centralization variable. This indicates that the hybrid system which combines both decentralization and centralization in the procurement structure. This practice supports the findings of Baily et al. (2008) that most public organizations adopt the hybrid system to allow for balance between flexibility and control. In the Ghanaian context the procurement unit and organization has some level of flexibility in procurement threshold but

ultimately the higher authorities have control over their procurement activities. This explains why both the CTL1 and CTL2 which measure decentralization and centralization respectively were considered weak predictors for the centralization variable.

4.3.3 Influence of Contextual Factors on Procurement Structure

From literature a twelve contextual factors that influence the procurement structure in organizations. These factors span from internal to external factors (Ford and Slocum, 1977). From Table 4.4, the statistics of these various variables are displayed. Considering that the rating adopted assigned high ratings of 3, 4 and 5 to high, higher and highest attributes respectively, the mean was set to 3.0 as the average factor that influence the procurement structure. The highest mean score of 3.6283 agreed the importance of the project to the MMDA influenced the procurement structure and mean score of 2.8142 for environmental uncertainty of procurement activities. Other variables with relatively high mean score are procurement volume (3.5487), time pressure on procurement activities (3.5221), chief procurement officer qualifications and complex nature of project to be procured (3.5133). In case two variables had the same mean value, the one with a lower standard deviation will have priority over the other.

Table 4.4: Summary of Descriptive Statistics for Contextual Factors

Contextual Factors	N	Sum	Mean	Std. Error	Std. Deviation
Location of MMDA in Ghana with reference to the capital city.	113	354.00	3.1327	.10252	1.08976
The procurement unit situated in the MMDA.	113	385.00	3.4071	.09626	1.02328
Environmental uncertainty of the procurement activities	113	318.00	2.8142	.10021	1.06527
Time pressure on procurement activities	113	398.00	3.5221	.09664	1.02728
The importance of the project to the MMDA	113	410.00	3.6283	.09834	1.04535

The perceived risk involved in the procurement	113	363.00	3.2124	.10170	1.08110
Procurement volume	113	401.00	3.5487	.09737	1.03502
Complex nature project to be procured	113	397.00	3.5133	.09987	1.06163
Type of project whether goods, works or services	113	371.00	3.2832	.11485	1.22087
Organizational strategy for procurement	113	376.00	3.3274	.10400	1.10553
Chief procurement officer qualifications	113	398.00	3.5221	.11390	1.21079
Size of the organization	113	377.00	3.3363	.10785	1.14651

Table 4.5: Ranking the Influence of Contextual Factors

Contextual factors	N	Sum	RII	Ranking
The importance of procurement to the MMDA	113	410	72.57	1
Procurement volume	113	401	70.97	2
Time pressure on procurement activities	113	398	70.44	3
Chief procurement officer qualifications	113	398	70.44	3
Complex nature of project to be procured	113	397	70.27	5
The procurement unit situated in the MMDA.	113	385	68.14	6
Size of the organization	113	377	66.73	7
Organizational strategy for procurement	113	376	66.55	8
Type of project whether goods, works or services	113	371	65.66	9
The perceived risk involved in the procurement	113	363	64.25	10
Location of MMDA in Ghana with reference to the capital city.	113	354	62.65	11
Environmental uncertainty of the procurement activities	113	318	56.28	12

From table 4.5, the first five ranked contextual variables obtained an index above 70.00 and the location of the MMDA within Ghana with reference to the capital city and environmental uncertainty of the procurement activities were the least ranked with index of 62.65 and 56.28 respectively.

The first ranked variable thus the importance of the project to the MMDA is no surprise because this different weights of importance are attached various procurements in the organization with each having different levels of preference. This variable is such that it impacts the functional areas or individual of the organization and may further affect functional productivity (Dawes et al., 1992). This supports the assertion of Garrido-Samaniego and Gutierrez-Cillan 2004 that the importance placed on the procurement within an organization influences the decisions of the size of the procurement unit and the kinds of skills needed for the procurement unit. This means that when procurement importance is a major influence on the procurement unit size and skills required within the procurement structure.

The second ranked variable procurement volume supports the proposition of Corey (1978) that the volume of procurement is linked the importance of procurement within the organization. This suggests that the magnitude of procurement carried out by the organization has its association with the level of importance attached to it within the procurement structure. These volumes have substantial financial consequences when it incurs losses which eventually affects the achievement of organizational goals and objectives. This prompts involvement of top management of the organization and increases the control measures within the procurement structure for the organization. The third place variables are time pressure for procurement activities and chief procurement officer qualifications. Time pressure of procurement activities changes the procurement structure to quicken decision making in the organization (Glock and Hochrein, 2011).

This changes the strict dependence on long procedures and process within the procurement structure. The chief procurement officer qualification variable as one of the major factors influencing procurement structure is not different from the findings of other researchers (Robinsson, 2009; Johnson et al., 2009). The qualification is an indication of the placement of

the CPO within the organizational structure and also indicates the influence of the CPO on procurement decisions.

The fifth ranked variable complex nature of projects to be procured, shows that organizations assess the complexity of the projects they procure as a consideration structuring their procurement. This variable influences the procurement structure by increasing the individuals involved in the procurement to reduce the complexity of the project (Lewin and Donthu, 2005). This can be achieved by engaging more technical and specialist skills and also increasing the approval authorities. The procurement unit situated within the MMDA as the sixth ranked variable suggests the position of the procurement unit within the organizational structure has a relatively considerable amount of influence on the procurement structure. This could be as a result of emphasis on relying on public procurement rules and regulations by the regulatory authority hence not much attention is paid to the relevance of the position of the procurement unit within the organizational structure as expressed by Glock and Hochrein (2011) and Monezka (2002).

The seventh variable, size of the organization as shown in Table 4.8 has an average level of influence on the procurement structure. The district assemblies in Ghana have almost the same organizational structure across all MMDA under the supervision of the Local Government Service hence the size of these organizations have similar sizes which could be the reason why its influence is average. The eighth ranked variable, organizational strategy for procurement have also have average influence on the procurement structure. Since the MMDA is a public entity, its organizational strategy for procurement is regulated by the procurement regulatory authorities and it is evident in Table 4.8 that organizational strategy has average influence on the procurement structure.

The ninth ranked variable, type of project whether goods works or services also correspondingly has an average influence on the procurement structure. This could be as a result of the public procurement laws and regulations making provisions for the procurement of goods, works and services hence these MMDA has necessity to follow those procedures which has already been incorporated into the public organizations procurement structure. The tenth variable, the perceived risk involved in the procurement also has an average influence in the procurement structure of the organization. These perceived risks of procurement might be incorporated into procurement volume which has various approval thresholds as stated by the Public Procurement Authority Manual and Regulations.

The procurement manual and regulations attaches various monetary thresholds to various levels of approval authorities. Unsurprisingly these thresholds are in an ascending order starting from the approving authority within the organization to the approving authorities outside the organizations. The eleventh variable, the location of the MMDA in Ghana with respect to the capital city has a relatively low influence on the procurement structure as shown in Table 4.8. Public procurement authorities in Ghana ensuring strict compliance with the procurement laws nationwide with regional monitoring approach of procurement activities.

The twelfth ranked variable from Table 4.8 is environmental uncertainties of procurement activities which has the lowest influence on the procurement structure. Due to the advocacy of strict compliance to procurement laws and regulations in the public sector, external uncertainties and variations are reduced to the minimum. This approach does not rule out the existence of environmental uncertainty in procurement but the strict adherence to regulations was adopted to curb variation and irregularities (Lau et al., 1999).

4.3.4 Key Requirements For Setting Up Procurement Structure

4.3.4.1 Factor Analysis (Principal Component Analysis, PCA)

Field (2005) encouraged the use of factor analysis in finding clusters of related variables which would result in reducing the large number of variables to a more simplified framework. Principal component analysis was embraced because it is suited in identifying underlying dimensions and complex structure such that large number of variables can be understood (Badu et al., 2012; Ahadzie, 2007).

Befor proceeding with the use of factor analysis preliminary test were undertaken to ascertain the appropriateness of the sample size for the study and the reliability of the factor analysis. The Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy and Bartlett's test of sphericity were used to assess the adequacy of the sample size. A KMO value greater than 0.50 supports the proposition that an adequate sample size was used (Child, 1990; Field, 2005). From Table 1, a KMO measure for the study achieved a value of 0.855 indicating that an adequate sample size was used for the factor analysis. The Bartlett's test of sphericity was significant with a value of 0.000 indicating the population was not an identity matrix. Next the test of reliability for the variables was performed according to Field (2005).

In this test, variables should consistently reflect the contruct being assessed and the Cronbach's alpha was used. Cronbach's alpha of 0.79 was achieve which is greater than the recommended value of 0.5 (George and Mallery, 2003).

Table 4.6: KMO and Bartlett's test.

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.855
Bartlett's Test of Sphericity	Approximate χ^2	1029.534
	df	120
	Sig.	.000

After achieving suitable results from the preliminary tests of adequacy of sample size and reliability, the data was used for factor analysis using PCA with varimax rotation. Prior to PCA, the communalities of variables were determined as shown in Table 4.7. The average communalities extracted was 0.686 which is above the conventional rule about extraction values (eigenvalues) should be greater than 0.50 at the initial iteraction which is an indication that the variable is significant. This indicates that these variable should be include in the data for further studies (Field, 2005). The eigenvalues and factor loadings were set at 1 and 0.5. The extraction suggests that four components should be extracted as their eigenvalues are > 1.

As illustrated in Table 4.8, these four components with eigenvalues >1 accounted for 68.604% of variance explained which satisfies the criteria of cumulative proportion of variance thus cumulative percentage should be greater than 50%. The respective variance explained by extracted components are stated as follows: the first principal component (component 1) accounted for 22.91% of variance explained, second component (component 2) accounted for 20.08% of variance not explained by the first component, third component (component 3) accounted for 18.21% of the variance not explained by early components and four component (component 4) explained 7.41% of variance not explained by the previous components.

To enhance the ability of interpreting the results, PCA components were rotated. Table 4.9 shows the results from the rotation of components using varimax rotation. The interpretation of these results are enlisted in the discussion. It is imperative to note that the 16 variables that were clustered in four new uncorrelated variable explained 68.60% of total variance of variables included on the components.

Table 4.7 Communalities

	Initial	Extraction
Chief procurement officer educational qualification	1.000	.806
Chief procurement officer practical procurement experiences	1.000	.651
Position of the chief procurement officer in the organizational structure	1.000	.653
Position of the procurement unit in the organization structure	1.000	.814
Chief procurement officer reporting line is to the CEO or head of administration directly	1.000	.700
The number of staff in the procurement unit	1.000	.627
Job allocation to staff of the procurement unit	1.000	.591
Procurement skills and competence of procurement unit staff	1.000	.697
Procurement unit staff experience with procurement tasks	1.000	.615
Logistics such as furniture, tender boxes, cabinets etc.	1.000	.583
Information technology systems such as software systems, computers, printers, photocopiers and communication devices	1.000	.745
Public procurement law and regulations framework	1.000	.836
Compliance of the procurement unit to the public procurement laws	1.000	.589
Internal rules regulation the decision making process communication among employees	1.000	.624
Centralizing or decentralizing the decision making process of procurement	1.000	.698
Record management system of procurement activities	1.000	.747

Note: Extraction Method: Principal Component Analysis.

4.3.4.2 Discussion of Results

Giving a critical examination of inherent relationships of factors grouped under each component, the following deduction and interpretation was given to the underlying dimensions for each component. For example component 1 without difficult was labelled resources and operations management requirement, component 2 was named top management requirement, component 3 was branded organizational structure alignment requirement and component four

was called procurement law and regulations requirements. The names were deduced from combinations and interrelations of the variables.

Table 4.8 Total Variance Explained

	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
Comp	Total	% of Var.	Cum. %	Total	% of Var.	Cum. %	Total	% of Var.	Cum. %
1	7.144	44.652	44.652	7.144	44.652	44.652	3.666	22.911	22.911
2	1.618	10.112	54.765	1.618	10.112	54.765	3.213	20.080	42.991
3	1.169	7.308	62.072	1.169	7.308	62.072	2.913	18.208	61.199
4	1.045	6.531	68.604	1.045	6.531	68.604	1.185	7.405	68.604
5	.872	5.449	74.053						
6	.772	4.826	78.879						
7	.745	4.653	83.532						
8	.508	3.174	86.706						
9	.410	2.564	89.269						
10	.329	2.055	91.324						
11	.321	2.005	93.329						
12	.288	1.797	95.126						
13	.250	1.562	96.688						
14	.207	1.295	97.983						
15	.179	1.116	99.099						
16	.144	.901	100.000						

Note: ɔd: Principal Analysis.

Component 1: Resource and operations management requirement.

The first principal component (PC1) in Table 4.9, reported high factor loadings from variables such as *Information technology systems* (0.845), *Logistics* (0.675), *Internal rules regulation the decision making process communication among employees* (0.669), *Procurement unit staff experience with procurement tasks* (0.626), *Compliance of the procurement unit to the public procurement laws* (0.580), *Procurement skills and competence of procurement unit staff*

(0.547) and *Job allocation to staff of the procurement unit* (0.545).

The factor loadings of the various variables are indicated in the brackets and cumulatively, all these variables in component 1 accounted for 22.91% of variance explained as shown in Table 4.8. Without doubt this variable was named resource and operations management requirement. This supports the assertion of Baily et al. (2008) for the need for appropriate human capital resources for effective functioning of procurement units. The requirement for procurement staff competence and experience coupled with their job allocation connotes to proper management of human resources as reported. OECD-DAC (2006) made it clear that a sound procurement system must have professional workers that are competent with the required skills in executing procurement activities.

This procurement workforce is crucial in the effective operations of procurement unit because they permeate virtually every aspect of procurement from procurement planning to managing of contracts (Government Accountability Office, 2005). The influence of technology and logistics on workflow cannot be overstated hence this variables are needed as part of the resources for efficient running of the procurement units (Hickson et al., 1969). But the ability of these technologies and logistics to be efficiently used relies on the skills and competences of the human personnel using them (Malhotra and Glover, 1998). Benson et al., (2002) stated emphasized in their study the use of technology improves job performance.

This brings to light the role of resource management in the operating an effective procurement unit. Strict compliance to the rules and regulations is a major attribute of public procurement and various governmental institutions use it to control procurement operations. This makes it clear that resources are required to be managed to comply with rules and regulations.

Table 4.9 Rotated Component Matrix

	Component

Variable	1	2	3	4
Job allocation to staff of the procurement unit	.545			
Procurement skills and competence of procurement unit staff	.547			
Procurement unit staff experience with procurement tasks	.626			
Logistics such as furniture, tender boxes, cabinets etc	.675			
Information technology systems such as software systems, computers, printers, photocopiers and communication devices	.845			
Compliance of the procurement unit to the public procurement laws	.580			
Internal rules regulation the decision making process.669 communication among employees				
Chief procurement officer educational qualification		.868		
Chief procurement officer practical procurement experiences		.794		
Position of the chief procurement officer in the organizational structure		.621		
The number of staff in the procurement unit		.618		
Position of the procurement unit in the organization structure			.812	
Centralizing or decentralizing the decision making process of procurement			.689	
Record management system of procurement activities			.617	
Chief procurement officer reporting line is to the CEO or head of administration directly			0.743	
Public procurement law and regulations framework				.913

Notes: Extraction method: principal component analysis. Rotation method: varimax with Kaiser normalization

Component 2: Top management requirement

The second principal component (PC2) as seen in Table 4.9, recorded factor loadings from variables such as *Chief procurement officer educational qualification* (0.868), *Chief procurement officer practical procurement experiences* (0.794), *Position of the chief*

procurement officer in the organizational structure (0.621) and *The number of staff in the procurement unit* (0.618).

All these variables in component 2 accounted for 20.08% of variance explained as shown in Table 4.8 which made it acquire the name top management requirement. This component highlights the relevance of the chief procurement officer or the procurement head in the organization and their influence on decisions. These supports the proposition of Robinson (2009) and Johnson et al. (2009) that the chief procurement officer competences and position within the organization is indicates whether the procurement unit is engaging clerical activities or making strategic procurement decisions in the organization.

This also indicates the chief procurement officer characteristics must be clearly defined for efficient performance of tasks. The underlying characteristics of these variables is attributed to top management decisions and activities. As asserted by Johnson et al. (2009) high educational and competency skills are usually required in recruiting employees into such top management positions for productivity because they are required to make strategic decisions on behalf of the organization, such decisions influence the number of employees recruited into the procurement unit. Due to the importance procurement has on achieving organizational goals its leader should of top management capabilities for the procurement unit to function effectively.

Component 3: organizational structure alignment requirement

As illustrated in Table 4.9, component 3 (PC3) comprises of variables with factor loadings such as *Position of the procurement unit in the organization structure* (0.812), *Chief procurement officer reporting line is to the CEO or head of administration directly* (0.743), *Centralizing or decentralizing the decision making process of procurement* (0.689) and *Record management system of procurement activities* (0.617). Without hesitation this component was branded

organizational structure alignment requirement which accounted for 18.21% of variance explained as shown in Table 4.8.

This supports the claim by Baily et al., (2008) that organizational structure is paramount to the effective functioning of procurement units. This organizational structure has influences of the performance of procurement units in executing their activities hence organizational structures must have details in relation to the procurement unit. The reporting line and position of the procurement unit in the organization indicates the level of importance attached to the procurement unit and decisions whether to centralize or decentralize the decision process of procurement has to be clearly stated (Johnson et al., 2009). This organizational structure allows the procurement units to have some level of independence in view of the volumes of transactions it carries.

Component 4: Procurement law and regulations requirement

Interestingly, this last component (PC4) accounted for 7.41% of variance explained as shown in Table 4.8. The only variable that loaded onto component 4 was *Public procurement law and regulations framework* with high factor loading of (0.913). This relates to governments using established institutions to regulate and control public procurement in various agencies across the country. This procurement laws and regulations are necessary to control uncertainty and ensure proper procurement practices are executed (Telgen et al., 2007). Murray (1999) spoke of the meeting the legal rules and regulatory demands on public procurement by the procurement units.

This requirement ensures that there are less variation in the procurement activities and procedures which on the contrary does not promote flexibility in procurement. In this context the procurement laws and regulations should be able to address the plethora of procurement process outcomes by providing detailed guides for execution in most circumstances. The laws

and regulations ensures that the procurement units have standard guide for their procurement activities which enhance their effectiveness in conduction procurement operations.

4.3.5 Factors Influencing Performance of Procurement Units

The one sample t-test was used to establish the relative influence of these factors on the performance of procurement units within the organization. The one sample t-test was employed to ascertain if the sample mean is significantly different from the hypothesised mean. The hypothesis for the test was described as;

Ho: U = Uo

Ha: U <, > Uo

Where Ho represents the null hypothesis

Ha represents the alternative hypothesis

Uo represents the hypothesised or population mean

The statistics for a one sample t-test normally reports the mean, degrees of freedom (df), the tvalue and the p-value of the test (Field, 2005). The sample size of 113 is suitable for this test since it is more the 50, this suggests that an assumption of normal distribution can be made concerning the sample for the study hence statistical inference can be made (Field, 2005; Hair et al., 1998). Further the one sample t-test was carried out to ascertain whether respondents considered any factor to have major influence on the performance of the procurement units. The results is reported in Tables 4.10 and 4.12.

Table 4.10 reports the total number of respondents, mean, standard deviation and standard error for each variable factor. For each variable the null hypothesis was set that the variable does not influence performance (Ho: U = Uo) and the alternative hypothesis was that the variable influences performance (Ha: U > Uo) where Uo denotes the population mean as described earlier. This Uo sets the rating criteria above which the variable is considered as influencing

performance of procurement units. Using a rating scale of 1-5 for each variable, with 4 and 5 being rated as higher and highest, the Uo criteria was set at 3.5 to ensure that variable obtained from the results have good influence on performance. The significance level was also set at 95% with respect to similar studies. In cases where two variables have the same mean value, the variable with a lower standard deviation will be given the priority (Field, 2005).

According to Field (2005), when the standard error is large it means there are lots of variability between means of different samples and when the standard error is small it suggests that most sample means is similar to population mean. From Table 4.12, the standard error variable is relatively close to zero which suggests that the sample is an accurate reflection of the population.

Table 4.10 Results of T-Test Showing One Sample Statistics

Factors	N	Mean	Std. Deviation	Std. Error Mean
Budget allocation to organization	113	3.8673	1.08976	.10252
Availability of funds	113	4.1239	1.00118	.09418
Staff competence and procurement experience	113	3.9823	1.05206	.09897
Availability of technological systems	113	3.7168	.97714	.09192
Internal stakeholders of the organization	113	3.4513	1.00881	.09490
External stakeholders of the organization	113	3.5575	1.06014	.09973
Proper procurement planning	113	3.9912	.95894	.09021
Adequate needs assessment from user departments	113	3.7788	1.09979	.10346
Lack of procurement strategy in organization	113	3.2478	1.19919	.11281
Lack of supplier relationship management for project	113	3.6018	1.25028	.11762
Position of procurement unit with it organizational structure	113	3.3628	1.18066	.11107
Interaction of procurement unit with other departments/units	113	3.5133	1.15816	.10895
Coordination of company-wide procurement activities	113	3.4602	1.12627	.10595
Contract management process	113	3.8850	1.04157	.09798
Information management	113	3.7788	1.12388	.10573
Transparency and fairness of procurement practices	113	4.2301	1.00897	.09492
Supplier evaluation/tender evaluation	113	3.7345	1.27488	.11993

The p-value (significance) for each variable is shown in Table 4.11. The p-value reported is the two-tailored test meanwhile the interest of the study is one-tailored as illustrated by the hypothesis test (U > Uo). Furthermore the “sig” value has been divided into two to obtain onetailored results as shown in Table 4.12.

Table 4.11 Results of One Sample Test Showing Test Significance.

Factors	Test Value = 3.5					
	t	df	Sig. (2tailed)	Mean Diff.	95% Confidence Interval of the Difference	
					Lower	Upper
Budget allocation to organization	3.582	112	.001	.36726	.1641	.5704
Availability of funds	6.624	112	.000	.62389	.4373	.8105
Staff competence and procurement experience	4.873	112	.000	.48230	.2862	.6784
Availability of technological systems	2.359	112	.020	.21681	.0347	.3989
Internal stakeholders of the organization	-.513	112	.609	-.04867	-.2367	.1394
External stakeholders of the organization	.577	112	.565	.05752	-.1401	.2551
Proper procurement planning	5.445	112	.000	.49115	.3124	.6699
Adequate needs assessment from user departments	2.694	112	.008	.27876	.0738	.4838
Lack procurement strategy in organization	-2.236	112	.027	-.25221	-.4757	-.0287
Lack of supplier relationship management for project	.865	112	.389	.10177	-.1313	.3348
Position of procurement unit with it organizational structure	-1.235	112	.219	-.13717	-.3572	.0829
Interaction of procurement unit with other departments/units	.122	112	.903	.01327	-.2026	.2291
Coordination of companywide procurement activities	-.376	112	.708	-.03982	-.2498	.1701
Contract management process	3.929	112	.000	.38496	.1908	.5791
Information management	2.637	112	.010	.27876	.0693	.4882
Transparency and fairness of procurement practices	7.692	112	.000	.73009	.5420	.9182
Supplier evaluation/tender evaluation	1.955	112	.053	.23451	-.0031	.4721

The t-value from Table 4.11 indicates that all variables obtained a t-value that is not equal to zero which suggests that variables alternative hypothesis to the null hypothesis (Dancey and Reidy, 2011).

Table 4.12 Summary Showing Mean Rankings And 1-Tailored Results.

Factors	Mean	Sig 1-tailored	Std Deviation	Ranking
Transparency and fairness of procurement practices	4.2301	0.0000	1.00897	1
Availability of funds	4.1239	0.0000	1.00118	2
Proper procurement planning	3.9912	0.0000	0.95894	3
Staff competence and procurement experience	3.9823	0.0000	1.05206	4
Contract management process	3.885	0.0000	1.04157	5
Budget allocation to organization	3.8673	0.0005	1.08976	6
Adequate needs assessment from user departments	3.7788	0.004	1.09979	7
Information management	3.7788	0.005	1.12388	8
Supplier evaluation/tender evaluation	3.7345	0.0265	1.27488	9
Availability of technological systems	3.7168	0.01	0.97714	10
Lack of supplier relationship management for project	3.6018	0.1945	1.25028	11
External stakeholders of the organization	3.5575	0.2825	1.06014	12
Interaction of procurement unit with other departments/units	3.5133	0.4515	1.15816	13
Coordination of company-wide procurement activities	3.4602	0.354	1.12627	14
Internal stakeholders of the organization	3.4513	0.3045	1.00881	15
Position of procurement unit with it organizational structure	3.3628	0.1095	1.18066	16
Lack of procurement strategy in organization	3.2478	0.0135	1.19919	17

Summary from Table 4.12 shows that *transparency and fairness of procurement practices* was ranked the highest factor whiles *lack procurement strategy in organization* was ranked the lowest from the total of 17 variables.

It is no surprise that *transparency and fairness of procurement practices* with mean and significant values indicated in Table 4.12 was ranked the highest because transparency fairness is one of the major foundational blocks of public procurement which is used to relatively curb

procurement malpractices (Johnson et al., 2003; Thai, 2004). Especially in the Ghanaian context, transparency and fairness is one tool that is used to measure the sound ethical procurement practices and also ensure accountability of the public institution. In the wake of curbing corrupt practices in Ghana transparency and fairness in procurement dealings is one of the major instruments used to make the public institutions accountable for the country for the use of resources.

Surprisingly, *external stakeholders of the organization* with mean value (3.558) and p-value (0.2825) is seen as a factor that influences performance as its mean is above the hypothetical mean but is influence is not considered significant by respondents. This could be as result of public entities controlling the influence of external pressure on their procurements to ensure the procurements are done properly and effective.

However, *availability of funds* with mean value (4.1239) and p-value (0.0000) which is ranked second indicates that this variable influences performance of procurement units largely. This supports the argument that public institutions pay more attention to their immediate and contractual stakeholders because these stakeholders such as government and donors are the entities providing the funding for various procurement projects in the public organization.

With *proper procurement planning* ranking third from Table 4.12 with mean value (3.9912) and p-value (0.0000), *budget allocation to organization and adequate needs assessment from user department* ranked sixth and seventh with their respective mean and p-values as (3.8673, 0.0005) and (3.7788, 0.004). It is startling to see proper procurement planning in third place whiles budget allocation and adequate needs assessments from user department ranked sixth and seventh. This is because in the Ghanaian context, needs assessments are performed prior to preparing of procurement planning by public institutions and the procurement plan is what produces the budget for the organization. Hence any cut in budget allocation to the organization

by higher government authority affects the procurement plan of the organization which would resulted affect performance.

However an explanation can be given to this occurrence thus most public organizations revised their procurement plans to suit the budget allocated to them hence the reason proper procurement planning is ranked higher than budget allocation and needs assessment. From Table 4.12, respondents acknowledged the influence of skills and capacity of employees as significant on performance such as *staff competence and procurement experience* ranking third (p=0.0000), *contract management process* ranking fourth (p=0.0000).

This supports the proposition of Berger and Humphrey (2007) that staff competence is a huge influence in the execution of procurement activities. Respondents considered Internal management of the organization and the procurement unit as a good influence on the performance of the procurement unit with variables such as *information management* (p=0.0050), *supplier evaluation/tender evaluation* (p=0.0265), *availability of technology systems* (0.0100) and *lack of procurement strategy in organization* (0.0135) although lack of procurement strategy (with mean of 3.2) which was below the hypothesised mean of 3.5, it indicates that respondents considered it as to have a moderate influence which is significant to the performance of the procurement unit.

On the contrary, *Lack of supplier relationship management for project* (p=0.1945) *and interaction of procurement unit with other departments/units* (p=0.4515) were not considered as significant although their influence on the performance of procurement unit is substantial since their obtained mean is above the hypothetical mean. *Coordination of company-wide procurement activities* (p=0.354), *internal stakeholders of the organization* (p=0.3045) and *position of procurement unit with it organizational structure* (p=0.1095) are factor respondents

considered to have relatively moderate influence on the performance of the procurement unit but these influences were considered insignificant by respondents.

4.3.6 Success Indicators For Effective Procurement Units

The one sample t-test was used to establish the relative importance of these success indicators on making the procurement units effective. The one sample t-test is employed to ascertain if the sample mean is significantly different from the hypothesised mean. The hypothesis for the test was described as;

Ho: $U_2 = U_1$

Ha: $U_2 <, > U_1$

Where Ho represents the null hypothesis

Ha represents the alternative hypothesis

U_1 represents the hypothesised or population mean

The statistics for a one sample t-test normally reports the mean, degrees of freedom (df), the tvalue and the p-value of the test (Field, 2005). The sample size of 113 is suitable for this test since it is more the 50, this suggests that an assumption of normal distribution can be made concerning the sample for the study hence statistical inference can be made (Field, 2005; Hair et al., 1998). Further the one sample t-test was carried out to ascertain whether respondents considered any success indicator to be of importance for effective function of the procurement units. The results is reported from Tables 4.13 to 4.15.

Table 4.13 reports the total number of respondents, mean, standard deviation and standard error for each variable factor. For each variable the null hypothesis was set that the variable does not important as a success indicator for the procurement unit (Ho: $U_2 = U_1$) and the alternative hypothesis was that the variable is important as a success indicator for the procurement unit

(Ha: $U_2 > U_1$) where U_1 denotes the population mean as described earlier. This U_1 sets the rating criteria above which the variable is considered as important success indicator for procurement units. Using a rating scale of 1-5 for each variable, with 4 and 5 being rated as higher and highest, the U_1 criteria was set at 3.5 to ensure that variable obtained from the results have strong importance as a success indicator.

The significance level was also set at 95% with respect to similar studies. In cases where two variables have the same mean value, the variable with a lower standard deviation will be given the priority (Field, 2005).

According to Field (2005), when the standard error is large it means there are lots of variability between means of different samples and when the standard error is small it suggests that most sample means is similar to population mean. From Table 4.13, the standard error variable is relatively close to zero which suggests that the sample is an accurate reflection of the population.

Table 4.1

3 Results of One Sample Test Showing Test Significance

Success Indicators	N	Mean	Std. Dev.	Std. Error Mean
Precisely defined and communicated standardized procurement processes	113	4.0885	.97795	.09200
Support of senior management for procurement	113	3.9823	1.06051	.09976
Early involvement of procurement and key stakeholders in the development of projects	113	3.9292	1.06668	.10034
Right key performance indices for projects	113	4.0354	1.05161	.09893
Risk management of future evolution possibilities of suppliers	113	3.6903	1.11867	.10524
Some level of central coordination and local execution	113	3.7345	1.06919	.10058
Procurement knowledge base intranet and handbook	113	3.6903	1.11867	.10524
Continuous establishment of data transparency	113	4.0796	.89783	.08446
E-procurement engagement and IT solutions	113	3.8319	.99913	.09399
Methods of needs assessment and aggregation of needs	113	3.8230	1.12781	.10610
Good interaction of procurement staff with other units	113	3.5221	1.26842	.11932
Use of specialized procurement roles	113	3.9469	1.00748	.09478
Supplier/contractor evaluation and management	113	3.9912	1.04792	.09858
Negotiation concepts	113	3.6637	1.07413	.10105
Life cycle cost of project and value analyses	113	4.0265	1.14533	.10774

The p-value (significance) for each variable is shown in Table 4.14. The p-value reported is the two-tailored test meanwhile the interest of the study is one-tailored as illustrated by the hypothesis test ($U_2 > U_1$). Furthermore the "sig" value has been divided into two to obtain onetailored results as shown in Table 4.15.

Table 4.1

4 Results of One Sample Test Showing Test Significance

Success Indicators	Test Value = 3.5					
	t	df	Sig. (2tailed)	Mean Diff.	95% Confidence Interval of the Difference	
					Lower	Upper
Precisely defined and communicated standardized procurement processes	6.397	112	.000	.58850	.4062	.7708
Support of senior management for procurement	4.834	112	.000	.48230	.2846	.6800
Early involvement of procurement and key stakeholders in the development of projects	4.277	112	.000	.42920	.2304	.6280
Right key performance indices for projects	5.412	112	.000	.53540	.3394	.7314
Risk management of future evolution possibilities of suppliers	1.808	112	.073	.19027	-.0182	.3988
Some level of central coordination and local execution	2.332	112	.022	.23451	.0352	.4338
Procurement knowledge base intranet and handbook	1.808	112	.073	.19027	-.0182	.3988
Continuous establishment of data transparency	6.863	112	.000	.57965	.4123	.7470
E-procurement engagement and IT solutions	3.531	112	.001	.33186	.1456	.5181
Methods of needs assessment and aggregation of needs	3.044	112	.003	.32301	.1128	.5332
Good interaction of procurement staff with other units	.185	112	.853	.02212	-.2143	.2585
Use of specialized procurement roles	4.715	112	.000	.44690	.2591	.6347
Supplier/contractor evaluation and management	4.982	112	.000	.49115	.2958	.6865
Negotiation concepts	1.620	112	.108	.16372	-.0365	.3639
Life cycle cost of project and value analyses	4.887	112	.000	.52655	.3131	.7400

The t-value from Table 4.14 indicates that all variables obtained a t-value that is not equal to zero which suggests that variables alternative hypothesis to the null hypothesis (Dancey and

Table 4.1

Reidy, 2011).

5 Summary Showing Mean Rankings And 1-Tailored Results.

Success Indicators	Mean	Sig 1tailored	Std Dev.	Rank
Precisely defined and communicated standardized procurement processes	4.0885	0.000	0.97795	1
Continuous establishment of data transparency	4.0796	0.000	0.89783	2
Right key performance indices for projects	4.0354	0.000	1.05161	3
Life cycle cost of project and value analyses	4.0265	0.000	1.14533	4
Supplier/contractor evaluation and management	3.9912	0.000	1.04792	5
Support of senior management for procurement	3.9823	0.000	1.06051	6
Use of specialized procurement roles	3.9469	0.000	1.00748	7
Early involvement of procurement and key stakeholders in the development of projects	3.9292	0.000	1.06668	8
E-procurement engagement and IT solutions	3.8319	0.0005	0.99913	9
Methods of needs assessment and aggregation of needs	3.823	0.0015	1.12781	10
Some level of central coordination and local execution	3.7345	0.011	1.06919	11
Risk management of future evolution possibilities of suppliers	3.6903	0.0365	1.11867	12
Procurement knowledge base intranet and handbook	3.6903	0.0365	1.11867	13
Negotiation concepts	3.6637	0.054	1.07413	14
Good interaction of procurement staff with internal and external stakeholders	3.5221	0.4265	1.26842	15

Summary from Table 4.15 shows that *precisely defined and communicated standardized procurement processes* was ranked the highest factor whiles *good interaction of procurement staff with other units* was ranked the lowest from the total of 15 variables.

With *precisely defined and communicated standardised procurement process* (p=0.0000) being ranked highest from Table 4.15, it is supports the proposition of relying on standardized procurement process as a demand characteristic of public procurement (Murray, 1999; Telgen et al., 2007). This demand is heavily required by governments and regulatory authorities by providing procurement rules and regulations for executing procurement activities. Any

Table 4.1

contrary practice to the procurement rules and regulations is consider as unproductive and perceived as corrupt.

This could be the explanation for the respondents according high importance to this factor. Subsequently the second factor which is *continuous establishment of data transparency* (p=0.0000) shows that transparency of procurement activities as required by public procurement principles is another factor respondents consider highly as a success indicator for the procurement unit. Developing countries like Ghana has seen procurement malpractices and corruption of different kinds in public procurement hence one tool used to monitor malpractice and corruption is transparency of procurement activities.

This could be the reason for respondents rating data transparency of high it is a conventional success factor in public procurement. Along with this conventional demands from public procurement is *Methods of needs assessment and aggregation of needs* (p=0.0015) and *Some level of central coordination and local execution* (0.011) which were considered as significant factors for success. Apart from the so-called conventional factors used in public procurement to indicator success, respondents acknowledged emerging factors such as *right key performance indices for projects* (p=0.0000), *Life cycle cost of project and value analyses* (p=0.0000), *Supplier/contractor evaluation and management* (p=0.0000) and *Risk management of future evolution possibilities of suppliers* (0.0365) as significant for indicators of procurement unit success.

This indicates that respondents perceive organizational performance, risk and value management concepts important for public procurement to ensure efficiency and effectiveness despite risk management ranking 12th from Table 4.15. Note that although *negotiation concepts* (p=0.054) are also considered as important with a mean value above the hypothetical mean and a contributor to organizational success in other jurisdictions, respondents did not its significance strong enough to be success factor for the procurement unit success. This could be as a result of discouraging negotiations within the public procurement circles hence

procurement practitioners have to reconsider acknowledges its benefits but are hesitant in adopting it.

However *Support of senior management for procurement* (p=0.0000) was considered as critical for procurement unit success because the procurement units have to go through a chain of procurement approvals to execute procurement activities hence senior management employees both internally and externally are involved in the procurement process. Likewise *Use of specialized procurement roles* (p=0.0000) was considered significant for procurement unit success.

The public procurement regulatory authority in Ghana encourages the use of specialization among employees for tasks which could explain the reason respondents considered it important. Despite *E-procurement engagement and IT solutions* (p=0.0005) ranking 9th from Table 4.15, it was considered significant for the success of procurement units. E-procurement and information technology is yet to be operationalized in public procurement in Ghana although Ghana has advanced in the adoption and implementation of e-procurement. This provides informative evidence that procurement practitioners in Ghana are willing to adopt this emerging technology in public procurement to attain its benefits as achieved by other developed countries and economies. Another factor procurement practitioners considered as significant is *Procurement knowledge base intranet and handbook* (p=0.0365).

As indicated by other researchers knowledge is crucial for organizational development and this could be the explanation for procurement practitioners embracing this emerging tool as a success indicator for the procurement unit. Unfortunately *Good interaction of procurement staff with internal and external stakeholders* (p=0.4265) was considered as a good factor of success for the procurement unit success since its mean is above the hypothetical mean but its significance as a factor that will drive the procurement was seen as not influential. This is

contrary to the demands of public procurement hence procurement practitioners should reconsider the relevance of this factor as a success factor.

4.4 PROPOSED FRAMEWORK FOR SETTING UP EFFECTIVE AND EFFICIENT PROCUREMENT UNITS IN THE DISTRICT ASSEMBLIES.

A framework was developed to capture the relevant requirements for setting up an effective and efficient function of procurement units as discussed in the findings of the study. Various factors of requirements were assessed in the study focusing on which factors make the procurement unit effective in the district assemblies. In the previous section the influence of these factors on the procurement units were identified and discussed. The relationship of these factors on the procurement unit is shown in Figure 4.7. Subsequently the proposed guideline for effective and efficient functioning of the procurement unit was developed using the critical factors relevant to the procurement unit.

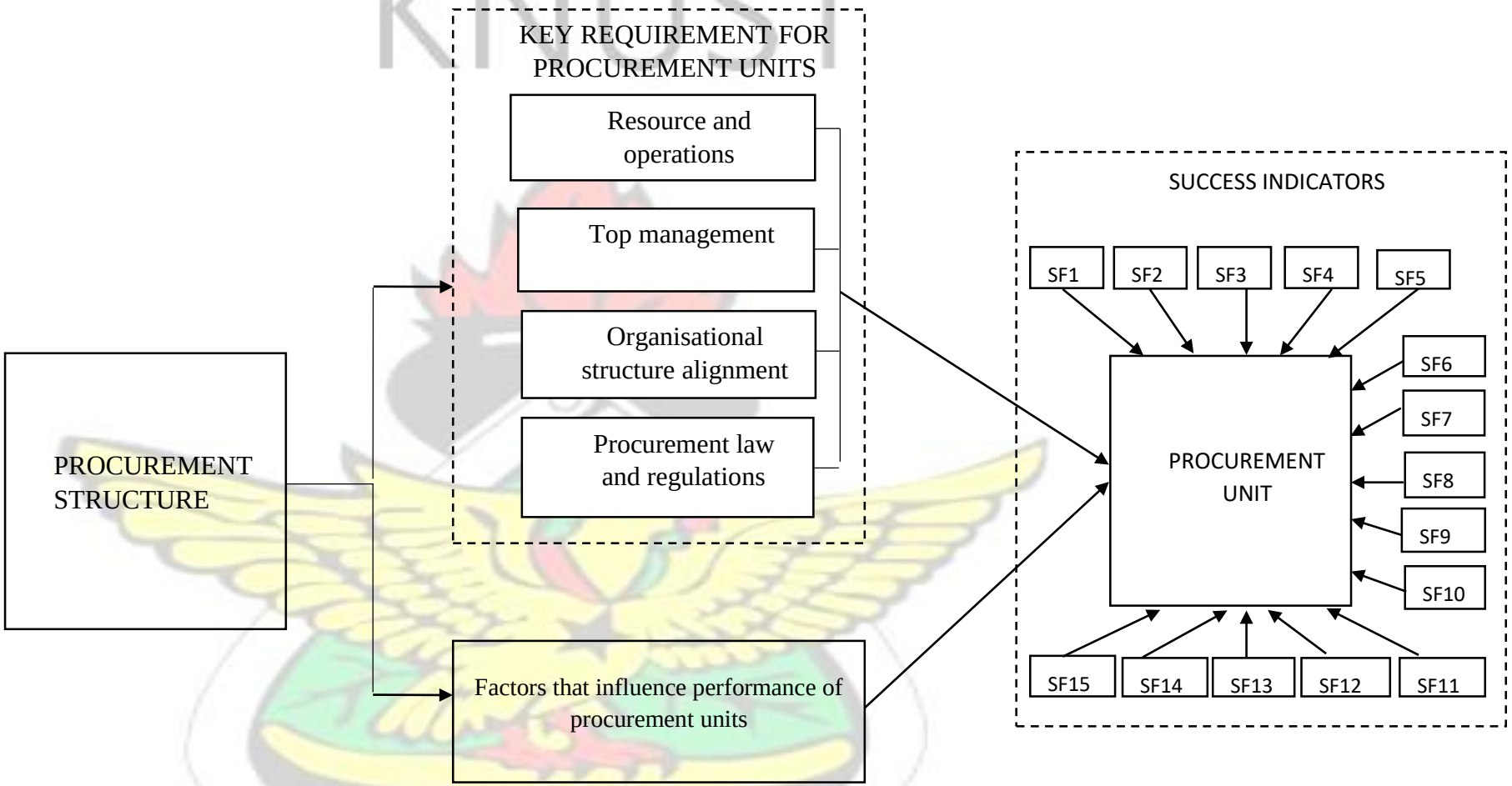

Figure 4.7: Framework showing the relationships among these requirements and the procurement unit.

Table 4.16 Framework adoption guide for setting up effective procurement units

STEP	PROCEDURE	FACTORS	STRATEGY	ACTION
1	Identify the procurement structure using the structural variables	Standardization Specialization Configuration Involvement Formalization Hybrid System	Assess the various levels of structural variables within the procurement structure. Assess the contextual factors that influence the procurement structure.	Big procurement unit or Small procurement unit
2	Examine factors influencing procurement performance	Transparency and fairness of procurement practices Availability of funds Proper procurement planning Staff competence Contract management process Budget allocation Adequate needs assessment from user departments Information management Supplier/tender evaluation Availability of technological systems Lack of procurement strategy	Investigate the influence of these factors on the performance of the procurement unit. Assess the impact of these factors on the performance of the procurement unit whether positively or negatively.	Impact (Positive) – Exploit, optimize and monitor Impact (Negative) – Mitigate and monitor

		Lack of supplier relationship management for project External stakeholders of the organization Interaction of procurement unit with other departments/units		
3	Apply the key requirements for procurement units	Resource and operations management Top management Organizational structure alignment Procurement laws and regulation	Ensure adequate resources are allocated to the procurement units Ensure internal operational activities are set out clearly Ensure procurement leadership are part of top management. Ensure procurement unit is aligned directly to the head of the organization Apply the public procurement laws and regulations	Create a suitable environment for procurement unit to be effective

4	Implement performance success factors for Procurement units	Precisely defined and communicated standardized procurement processes Continuous establishment of data transparency Right key performance indices for projects Life cycle cost of project and value analyses Supplier/contractor evaluation and management Support of senior management for procurement Use of specialized procurement roles Early involvement of procurement and key stakeholders in the development of projects E-procurement engagement and IT solutions Methods of needs assessment and aggregation of needs	Assess these success factors that will enable the procurement unit to be successful. Assess the adoption strategies for implementing these success factors into the procurement units.	Integrating success factors into the assessment of procurement units performance.

		Some level of central coordination and local execution Risk management of future evolution possibilities of suppliers Procurement knowledge base intranet and handbook Negotiation concepts Good interaction of procurement staff with internal and external stakeholders		

The proposed framework as described in Figure 4.7 and its guide in Table 4.16, depicts a procedural approach to ensuring an effective and efficient procurement unit with the district assemblies in Ghana. Identifying the procurement structure which is the first step examines the procurement structure of the organization to understand the dynamics within the organization. The confirmatory study conducted revealed the various levels of *standardization, specialization, configuration, involvement, formalization and centralization* being used in the procurement structure within the organization.

The second step which identifies factors that influence the procurement units was used to address the performance of the procurement. Examining these factors i.e, *Transparency and fairness of procurement practices, Availability of funds, Proper procurement planning, Staff competence, Contract management process, Budget allocation, Adequate needs assessment from user departments, Information management, Supplier/tender evaluation, Availability of technological systems, Lack of procurement strategy, Lack of supplier relationship management for project, External stakeholders of the organization and Interaction of procurement unit with other departments/units* gives the opportunity to know which factors have substantial influence on procurement unit performance hence resources can be channelled appropriately to enhance the performance of the unit.

Step three which speaks of applying the key requirements needed for procurement units to function efficiently. As Baily et al (2008) stated certain essentials are needed in order for the procurement unit to function effectively. The study outlined four factors *Resource and operations management, Top management, Organizational structure alignment and Procurement laws and regulation*. These four factors are requirements for the procurement unit to be effective.

The fourth step which elucidates the success indicators needed for procurement units emphasised 13 factors as success indicators for the procurement unit. These factors are

Precisely defined and communicated standardized procurement processes, Continuous establishment of data transparency, Right key performance indices for projects, Life cycle cost of project and value analyses, Supplier/contractor evaluation and management, Support of senior management for procurement, Use of specialized procurement roles, Early involvement of procurement and key stakeholders in the development of projects, E-procurement engagement and IT solutions, Methods of needs assessment and aggregation of needs, Some level of central coordination and local execution, Risk management of future evolution possibilities of suppliers and Procurement knowledge base intranet and handbook, Negotiation concepts and Good interaction of procurement staff with internal and external stakeholders.

These success indicators coupled with the key requirements as indicated in step three provides the opportunities to mitigate the influence of negative factors on the procurement performance and promote positive influencing factors on the performance of the procurement unit. The stepwise guideline approach provides the platform for requirements needed for effective and efficient procurement units to contextualised ensuring its applicability.

CHAPTER FIVE

CONCLUSIONS AND RECOMMENDATIONS

5.1 INTRODUCTION

In Chapter Five, the findings derived from the data analysis and discussion as shown in Chapter Four were related to the objectives of the research study. Various requirements needed for efficient procurement units and factors that influence their performance were identified coupled with their success factors. The research study further outlined the steps to achieving an effective and efficient procurement units within the district assemblies in Ghana. Presented in this final chapter is the summary of the study, conclusions and recommendations.

5.2 SUMMARY OF FINDINGS

The aim of the research study was to develop a guideline to set up an effective procurement unit in MMDA in Ghana. The study identified the procurement structure and also revealed the key requirements needed for effective procurement unit functioning. Further the factors influencing the performance of the procurement unit were identified and subsequently success factors for procurement units were elaborated which aided in attaining the aim of the research. The next section gives details of the findings with respect to the objectives.

5.2.1 Factors for establishing effective procurement units

Various variables within the procurement structure were identified from literature and were used to identify the procurement structure within the MMDA. These variables covered three themes thus; the structural variables with the procurement structure, the contextual factors that influence the procurement structure of an organization and the key requirements for effective procurement units. In order to identify factors for effective procurement units the procurement structure of the organization was identified to aid comprehensive understanding of the factors needed for effective procurement units. The examination of the procurement structure using

CFA revealed a good level of standardization, involvement and formalization whiles specialization, configuration and hybrid (de)centralization recorded high levels within the procurement structure. Relative importance index were used to identify factors having high influence on the procurement structure i.e., the importance of procurement to the MMDA, procurement volume, time pressure on procurement activities, chief procurement officer qualifications and complex nature of project to be procured. Key requirements for effective procurement units were determined using EFA thus resource and operations management, top management requirement, organizational structure alignment requirement procurement law and regulation requirement. These key requirements are the factors needed for procurement units to be effective.

5.2.2 Factors influencing performance of procurement units

From literature, several factors were gathered as factors that influence the performance of the procurement unit. The One sample t-test was used to assess which factors influenced performance of the procurement unit. The study revealed that Transparency and fairness of procurement practices, Availability of funds, Proper procurement planning, Staff competence, Contract management process, Budget allocation, Adequate needs assessment from user departments, Information management, Supplier/tender evaluation, Availability of technological systems, Lack of procurement strategy, Lack of supplier relationship management for project, External stakeholders of the organization and Interaction of procurement unit with other departments/units are factors that influence the performance of the procurement unit within the organization.

5.2.3 Framework for setting up effective procurement units

Prior to the development of a framework for an effective procurement unit, success factors to ensure the procurement unit is successful were analysed using one sample t-test to ascertain

which success factors are significant to the procurement unit success. Factors such as Precisely defined and communicated standardized procurement processes, Continuous establishment of data transparency, Right key performance indices for projects, Life cycle cost of project and value analyses, Supplier/contractor evaluation and management, Support of senior management for procurement, Use of specialized procurement roles, Early involvement of procurement and key stakeholders in the development of projects, E-procurement engagement and IT solutions, Methods of needs assessment and aggregation of needs, Some level of central coordination and local execution, Risk management of future evolution possibilities of suppliers and Procurement knowledge base intranet and handbook, Negotiation concepts and Good interaction of procurement staff with internal and external stakeholders were identified as the success factors for the procurement units.

Further a framework was developed to help depict the relationships between the procurement department, key requirements and the success factors as shown in Figure 4.7. A procedural guide was subsequently developed based on the findings from the key themes of the research as shown in Figure 4.7. The purpose of the proposed framework and its guide is to help management decision makers establish effective and efficient procurement units. The proposed guide provides the platform for factors to be critically examined and explored when setting up procurement units

5.3 CONTRIBUTION TO KNOWLEDGE

Several studies gathered from literature focused on the broader spheres of public procurement. However no research paid particular attention to the procurement unit of the organization as this is the basic block of public procurement within the organization. The study further identifies the procurement structure of the public organization within the Ghanaian context using the structural variables which gives a good picture of the procurement function within the organization. The study added to existing knowledge by identifying the various

requirements needed for the procurement unit to function effectively and efficiently. Another contribution this study revealed was the factors that influence procurement unit so that managers can adjust their strategies. This adds significantly to knowledge by finding the success factors for the procurement units in their performance. The proposed guideline contributed significantly to knowledge by providing a stepwise approach to setting up an effective and efficient procurement unit.

5.4 RECOMMENDATIONS

These recommendations were deduced from the findings of the study. To ensure that the procurement unit is effectively and efficiently functioning, procurement entities or organizations must adopt these strategies detailed below:

- The procurement unit of the MMDA should have a larger size due to the fact that there were high levels of configuration, involvement and the hybrid system within the procurement structure which indicates that procurement unit should be large to be able to execute the numerous procurement projects. Also a competent procurement head with good skills in procurement and modern concepts of procurement should be selected for the procurement unit.
- Local Government Service should ensure that training of procurement staff is not limited to traditional activities of procurement but also adopt concepts of value analysis in the procurement operations.
- The Chief Procurement Officer position in the organization should be at top management to enable him/her have strategic influence on organization's procurement.
- Procurement entities should ensure procurement entities are adequately resourced and has an effective operations management approach to its procurement functional activities.

- Procurement activities within the organizations should be clearly defined and communicated to members of the procurement function to reduce uncertainty of procurement activities.
- Internal control mechanisms should be engaged to ensure compliance to the procurement law and regulations within the organization.
- Appropriate and reliable performance indices should be established for all projects engaged by the organizations to ensure right delivery of goods, works and services.
- The success factors as indicated in Figure 4.8 should be incorporated into the key performance indicators for the procurement units.
- External influence such as political influence should be deterred from influencing procurement decisions and processes in the organization.
- Public organization should be educated on the need for the procurement unit to move from the tactical level of procurement (clerical) to the strategic level of procurement. This would ensure that the procurement unit does not only focus on complying to rules and regulations but also ensure procurement units make beneficial decisions for the organization.

5.5 FUTURE RESEARCH

The research could not cover everything relating to the procurement unit. The study concludes by suggesting areas where future and further research could be conducted to enrich the effectiveness of the procurement units;

- Similar studies could be conducted with a wider scope including other public organizations since they also engage in public procurement.
- Future works need to be conducted looking at impact of these key requirements on the performance of the procurement units.

- Future studies can be conducted on influence of these success factors on the procurement activities and operations.
- Future studies can be directed at the impact of these factors that influence procurement unit performance.

REFERENCES

Aberdeen Group (2006), "*Industry Priorities for Visibility, B2B Collaboration, Trade Compliance, and Risk Management"*, Global Supply Chain Benchmark Report Aberdeen Group, Boston, MA.

Ahadzie, D.K. (2007), "*A model for predicting the performance of project managers in mass house building projects in Ghana"*, unpublished PhD thesis, University of Wolverhampton, Wolverhampton

Ahlstrom, M. and Brege, S. (1999), "The interactive buying process in governmental procurement of large projects", In: *Proceedings of the 8th Annual IPSERA Conference,* Belfast/Dublin, 28–31 March, pp. 1–12.

Amoatey, C. T. and Ankrah, A. O. (2017), "Exploring critical road project delay factors in Ghan", *Journal of Facilities Management,* Vol. 15 No. 2, pp. 110-12.

Anvuur A., Kumaraswamy, M. and Male, S. (2006), "Taking Forward Public Procurement Reforms in Ghana", *CIB W107 Construction in Developing Countries International Symposium "Construction in Developing Economies: New Issues and Challenges"* January 18th – 20th, Santiago, Chile.

Arnold, U. (1999), "Organization of Global Sourcing: Ways towards an Optimal Degree of Centralization", *European Journal of Purchasing and Supply Management*, Vol. 5 No. 3, pp. 167-174.

Arrowsmith, S. and Trybus, M. (2003), *Public Procurement: The Continuing Revolution*, Kluwer Law International, The Netherlands.

Atherton, A. and Elsmore, P. (2007), "Structuring qualitative enquiry in management and organization research: A dialogue on the merits of using software for qualitative data analysis", Qualitative Research in Organizations and Management: *An International Journal*, Vol. 2 Issue: 1, pp.62-77.

Auditor General Report, (2015), *The Management And Utilisation Of District Assemblies' Common Fund And Other Statutory Funds For The Year Ended 31 December 2015*, Ghana Audit Service, Ghana.

Babbie, E. R. (2001), *The Practice of Social Research.* 9th ed. Belmont, Wadsworth/Thomson Learning, USA.

Babbie, E. R. (2008), *The basics of social research,* 4th ed. Thomas Wadsworth, USA.

Badu, E., Edwards, D. J. and Owusu-Manu, D. (2012), "Trade-credit and supply chain delivery in the Ghanaian construction industry: analysis of vendor interactions with small to medium enterprises", *Journal of Engineering, Design and Technology Management*, Vol. 10 No. 3, pp. 360-379.

Baily, P., Farmer, D., Crocker, B., Jessop, D. and Jones, D. (2008), *Procurement Principles and Management,* 10th ed. Pitman Publishing, London.

Baker, M. J. (2003), "Data Collection - Questionnaire Design", *The Marketing Review*, Vol. 3 No. 3, pp. 343-370.

Banda, E. (2009), *Politics and Economic Consequences,* 1st ed. Center for Study of Responsive Law, Washington D.C.

Basheka, B.C. (2009), "Procurement and Local Governance in Uganda: a factor analysis approach", *International Journal of Procurement Management*, Vol. 2 No. 2, pp. 191209.

Bearden, W. O., Sharma, S., and Teel, J. E. (1982), "Sample size effects on chi square and other statistics used in evaluating causal models", *Journal of Marketing Research*, Vol. 19 No. 4, pp. 425−430.

Becker, H. S. (1958), "Problems of Inference and Proof in Participant Observation", *American Sociological Review,* Vol. 23, No. 6, pp. 652-660.

Belout, A. and Gauvreau, C. (2004), "Factors influencing the project success: the impact of human resource management", *International Journal of Project Management*, Vol. 22 No. 1, pp. 1-11.

Benson, A. D., Scott, D., Johnson, K. and Kuchinke, P. (2002), "The Use of Technology in the Digital Workplace: A Framework for Human Resource Development", *Advances in Developing Human Resources*, Vol. 4, No. 4, pp. 392 – 404.

Bentler, P. M. and Chou, C. (1987), "Practical issues in structural equation modelling", *Sociological Methods and Research,* Vol. 16 No. 1, pp. 78-117.

Bentler, P.M. (2005), *EQS 6 Structural Equations Program manual*, Multivariate Software, Encino, CA.

Berger, E. and Humphrey, N. (2007), *Simple Buying Methods.* 1st. ed. Education Publishers, Nairobi, East Africa.

Bernard, H.R., (2002), *Research Methods in Anthropology: Qualitative and quantitative methods*, 3rd ed. Altamira Press, Walnut Creek, California.

Berssaneti, F. T. and Carvalho, M. M. (2015), "Identification of variables that impact project success in Brazilian companies", *International Journal of Project Management*, Vol. 33 No. 3, pp. 638--649.

Bloom, H., and Nardone, J. M. (1984), "Organizational Level of the Purchasing Function." *Journal of Purchasing and Materials Management*, Vol. 20 No. 2, pp. 14-17.

Blumberg B., Cooper D.R. and Schindler P.S. (2005), *Business Research Methods*, 8th ed. McGraw-Hill Education, Berkshire, London.

Bodnar, G, H. and Hopwood, W. S. (2004), *Accounting Information Systems*, 9th ed. Pearson Education Inc. Upper Saddle River, New Jersey, USA.

Bof, F. and Previtali, P. (2010), "National models of public (e)-procurement in Europe", *Journal of e-Government Studies and Best Practices*, Vol. 5 No. 1, pp.1-14.

Bollen, K. A. (1989), *Structural equations with latent variables*, John Wiley, New York, NY.

Boyan, L. (2003), *Procurement in Private Sector,* 1st ed. Cooper and Newland Institute, Canada.

Brandmeier, R. A and Rupp, F. (2010), "Benchmarking procurement functions: causes for superior performance", *Benchmarking: An International Journal*, Vol. 17 No. 1, pp.526.

Brülhart, M. and Trionfetti, F. (2001), "Industrial Specialisation and Public Procurement: Theory and Empirical Evidence", *Journal of Economic Integration,* Vol. 16, No. 1, pp. 106-127.

Bryman, A. (2008), "Why do researchers Integrate/Combine/Mesh/Blend/Mix/Merge/Fuse Quantitative and Qualitative research?", in Bergman M (Ed.) *Advances in Mixed Methods Research*, Sage, Thousand Oaks, CA.

Bullen C. and Rockart, J. (1981), *A primer on critical success factors*, Sloan School of Management, MIT, USA.

Burt, D.N., Dobler, D. W. and Starling, S. L. (2003), *World Class Supply Management,* 7th ed. McGraw-Hill, London.

Byrne, B.M. (2006), *Structural equation modelling with EQS: Basic concepts, applications and programming,* 2nd ed. Erlbaum, Mahwah, New Jersey, USA.

Callender, G. and Matthews, D. (2002), "The economic context of government procurement: new challenges and new opportunities", *Journal of Public Procurement*, Vol. 2, No. 2, pp. 216–236.

Carr, A. S. and Smeltzer, L. R. (1997), "An empirically based operational definition of strategic purchasing", *European Journal of Purchasing and Supply Management*, Vol. 3, Nov. 4, pp. 199-207.

Carter, J. R. and Narasimhan, R. (1996), "Is purchasing really strategic?", *International Journal of Purchasing and Materials Management,* Vol. 32 No. 1, pp. 20 – 28.

Cavinato, J. L. (1991), "Evolving procurement organizations: Logistics implications", *Journal of Business Logistics,* Vol. 13 No. 1, pp. 27–45.

Chebet, I. K. and Kwasira, J., (2016), "Assessment of public procurement practices in enhancing procurement cost reduction at Embu University College, Kenya". *European International Journal of Science and Technology,* Vol. 5 No. 3, pp. 81–98.

Child, D., (1990), *The Essentials of Factor Analysis*, 2nd ed., Cassel Educational Ltd, London.

Child, J., and Mansfield. R. (1972), "Technology, Size, and Organization Structure." *Sociology,* Vol. 6 No. 3, pp. 369-393.

Choi, T.Y. and Hong, Y. (2002), "Unveiling the structure of supply networks: case studies in Honda, Acura, and DaimlerChrysler". *Journal of Operations Management*, Vol. 20 No. 5, pp.469-493.

Christou, E., Valachis, I. and Anastasiadou, C. (2008), "Research methodology in hospitality industry: the role of the inquiry paradigms", available at: www.ul.edu.lb/fthm/papers/ 3rd%20Axis/Methodology%20greece.doc (Accessed October, 2017).

Chua, D.K.H., Kog, Y.C. and Loh, P.K. (1999), "Critical success factors for different project objectives", *Journal of Construction Engineering and Management*, ASCE, Vol. 125 No. 3, pp. 142-50.

Collis, J. and Hussey, R. (2003), *Business Research: A Practical Guide for Undergraduate and Postgraduate Students,* 2nd ed. Palgrave Macmillan, New York.

Cooke-Davies, T. (2002), "The "real" success factors on projects," *International Journal of Project Management*, Vol. 20 No. 3, pp. 185-190.

Cooper, P. J. (1980), "Government contracts in public administration: The role and environment of the contracting officer", *Public Administration Review,* Vol. 40 No. 5, pp. 459–468.

Corey, E. R. (1978), "Should Companies Centralize Procurement?", *Harvard Business Review*, Vol. 56 No. 6, pp. 102-110.

Covington, C. (2006), "Return on investment vs return for human", *The Source*, Vol. 2, No. 1, pp. 3–4.

Creswell, J. W. (2005), *Educational research: planning, conducting, and evaluating quantitative and qualitative research*, 2nd ed. Prentice Hall, Upper Saddle River, NJ, USA.

Creswell, J. W. (2007), *Research design: Qualitative and quantitative approaches*, 2nd ed. Sage Publications, Thousand Oaks, CA, USA.

Creswell, J. W. (2009), "Mapping the field of mixed methods research", *Journal of Mixed Methods Research,* Vol. 3 No. 2, pp. 95-108.

Creswell, J.W. (2003), *Research Design: Qualitative, Quantitative and Mixed Methods Approaches,* 2nd ed. Sage Publications, Thousand Oaks, CA, USA.

Croom, S. (2000), "The Impact of Web-Based Procurement on the Management of Operating Resources Supply." *The Journal of Supply Chain Management,* Vol. 36 No. 1, pp. 413.

Crow, L. E. and Lindquist, J. D. (1985), "Impact of Organizational and Buyer Characteristics on the Buying Center", *Industrial Marketing Management*, Vol. 14 No. 1, pp. 49-58.

Curran, P.J., Bauer, D.J. and Willoughby, M.T. (2004), "Testing Main Effects and Interactions in Latent Curve Analysis", *Psychological Methods*, Vol. 9 No. 2, pp. 220-237.

Daft, R. L. (1992), *Organization Theory and Design*, 4th ed. West Publishing, St. Paul, Minnesota, USA.

Dancey, C. P. and Reidy, J. (2011), *Statistics Without Maths for Psychology*, 5th ed. Prentice Hall, London, UK.

Darmer, P. (1995), *Understanding of Research Methods Lund*: Student Literature, pp. 252-272.

Davis, P. (2005), "Supply strategies for the public sector", In: *Proceedings of the 14th Annual IPSERA Conference,* Archamps, France, 20–23 March, pp. 519–520.

Dawes, P. L., Dowling, G. R. and Patterson, P. G. (1992), "Factors Affecting the Structure of Buying Centers for the Purchase of Professional Advisory Services", *International Journal of Research in Marketing*, Vol. 9 No. 3, pp. 269-279.

de Boer, L., Harink, J. and Heijboer, G. (2002), "A Conceptual Model for Assessing the Impact of Electronic Procurement", *European Journal of Purchasing and Supply Management*, Vol. 8 No. 1, pp. 25-33.

Defek, L. (2015), "Public procurement: A panel data approach", *Procedia Economics and Finance 25 (2015) 535 – 542, 16th annual conference on finance and accounting*, ACFA Prague 2015, 29th May, 2015.

Dobler, D. W. and Burt, D.N. (1996), *Purchasing and Supply Management*. 6th ed. McGraw Hill Companies, Inc. New York.

Donaldson, T. and Preston, L. (1995), "The stakeholder theory of the corporation: concepts, evidence, and implications", *Academy of Management Review,* Vol. 20 No. 1, pp. 6591.

Dooley, K. and Purchase, S. (2008), "Factors influencing e-procurement usage", In: Thai, K. V. (eds) *International Handbook of Public Procurement,* Florida, Auerbach Publications, pp. 459-470.

Dyer, C. (2000), "B2B Exchange: The Next Step in An Evolving Marketplace", *DSN Retailing Today,* Vol. 39 No. 20, pp. 13.

Easterby-Smith, M., Thorpe, R. and Lowe, A. (1991), *Management research. An introduction*, Sage Publications, London.

Edler, J., Ruhland, S., Hafner, S., Rigby, J., Georghiou, L., Hommen, L., Rolfstam, M., Edquist, C., Tsipouri, L., Papadakou, M. (2005), *Innovation and Public Procurement. Review of Issues at Stake*: Study for the European Commission. Fraunhofer ISI, Karlsruhe, Germany.

Ellram, L. M. and Carr, A. (1994), "Strategic Purchasing: A History and Review of the Literature", *Journal of supply chain management*, Vol. 30 No. 1, pp. 9-19.

Erridge, A. (1996), "Innovations in public sector and regulated procurement", In: Cox, A. (ed.) *Innovations in Procurement Management*, Earlsgate Press, UK.

Essig, M., and Arnold, U. (2001), "Electronic Procurement in Supply Chain Management: An Information Economics-Based Analysis of Electronic Markets." *Journal of Supply Chain Management*, Vol. 37 No. 4, pp. 43-49.

European Commission, (2014), Public Procurement as a Driver of Innovation in SMEs and Public Services, European Union. Available at: http://ec.europa.eu/growth/industry/ innovation/policy/public-procurement/index_en.htm. [Accessed: 8/07/2016]

Fearon, H. E. (1988), *Purchasing Organizational Relationships*, Center for Advanced Purchasing Studies, Tempe, AZ.

Fearon, H. E. and Leenders, M. R. (1995), *Purchasing's Organizational Roles and Responsibilities*, Center for Advanced Purchasing Studies, Tempe, AZ.

Federal Acquisition Institute, (2005), *Annual Report on the Federal Acquisition Workforce, FY 2005*, Fort Belvoir, VA, General Services Administration, 2005. http://www.fai.gov/pdfs/FAWF2005.pdf. [Accessed: 12/07/2016].

Fellows, R. and Liu, A. (2008), *Research Methods for Construction*, 3rd ed. Wiley Blackwell, Chichester, UK.

Field, A. (2005), *Discovering Statistics Using SPSS for Windows*, Sage Publications, London.

Fitzgerald, B. and Howcroft, D. (1998), "Towards Dissolution of the IS Research Debate: From Polarisation to Polarity", *Journal of Information Technology*, Vol. 13, No. 4, pp. 313326.

Ford, J. D. and Slocum, J. W (1977), "Size, Technology, Environment and the Structure of Organizations", *Academy of Management Review*, Vol. 2 No. 4, pp. 561-575.

Fortune, J. and White, D. (2006), "Framing of project critical success factors by a systems model", *International Journal of Project Management*, Vol. 24 No. 1, pp. 53-65.

Fowler, J. and Floyd J. (1995), *Improving Survey Questions: Design and Evaluation*, Sage Publications Vol. 38, Thousand Oaks, CA.

Frooman, J. (1999), "Stakeholder influence strategies", *Academy of Management Review*, Vol. 24 No. 2, pp. 191-205.

Galbraith, J. R. (1971), "Matrix Organization Designs", *Business Horizons*, Vol. 14 No. 1, pp. 29-40.

Garrido-Samaniego, M. J. and Gutierrez-Cillan, J. (2004), "Determinants of Influence and Participation in the Buying Center: An Analysis of Spanish Industrial Companies", *Journal of Business and Industrial Marketing*, Vol. 19 No.5, pp. 320-336.

Gelderman, C. J., Ghijsen, P. W. Th. and Brugman, M.J. (2006), "Public procurement and EU tendering directives – explaining non-compliance", *International Journal of Public Sector Management* , Vol. 19 No. 7, pp. 702-714.

George, D. and Mallery, P. (2003), *SPSS for Windows step by step: A simple guide and reference*. 11.0 update 4th ed. Allyn and Bacon, Boston.

Gerbing, D. W., and Anderson, J. C. (1985), "The effects of sampling error and model characteristics on parameter estimation for maximum likelihood confirmatory factor analysis". *Multivariate Behavioural Research*, Vol. 20 No. 3, 255−271.

Germain, R. and Droge, C. (1998), "The Context, Organizational Design, and Performance of JIT Buying Versus Non JIT Buying Firms", *International Journal of Purchasing and Materials Management*, Vol. 34 No. 2, pp. 12-18.

Gianakis, G. A., and Wang, X. H. (2000), "Decentralization of the Purchasing Function in Municipal Government: A National Survey." *Journal of Public Budgeting, Accounting and Financial Management*, Vol. 12 No. 3, pp. 421-440.

Giunipero, L. C. and Monczka, R. M. (1997), "Organizational Approaches to Managing International Sourcing", *International Journal of Physical Distribution and Logistics Management,* Vol. 27 No. 5/6, pp. 321-336.

Glock, C. H. and Broens, M. G., (2013), "Size and structure in the purchasing function: Evidence from German municipalities", *Journal of Public Procurement*, Vol. 13, No. 1, pp. 1-38

Glock, C. H., and Hochrein, S. (2011), "Purchasing Organization and Design: A Literature Review." *BuR - Business Research*, Vol. 4 No. 2, pp. 149-191.

Gorsuch, R. L. (1983), "*Factor analysis"*, 2nd ed., Lawrence Erlbaum, Hillsdale, New Jersey.

Government Accountability Office, (2005), Framework for Assessing the Acquisition Function at Federal Agencies (GAO-05-218G), Washington, DC.

Greener, S. (2008), *Business Research Methods*. Ventus Publishing ApS, Frederiksberg, Denmark.

Gronhaug, K. (1976), "Exploring Environmental Influences in Organizational Buying", *Journal of Marketing Research*, Vol. 13 No. 3, pp. 225-229.

Hair, J. F., Hult, G. T. M., Ringle, C. M., and Sarstedt, M. (2013), *A Primer on Partial Least Squares Structural Equation Modeling (PLS-SEM)*, Sage Publications, Thousand Oaks.

Hall, R. H., Haas, J. E. and Johnson, N. J. (1967): Organizational Size, Complexity, and Formalization, *American Sociological Review*, Vol. 32 No. 6, pp. 903-912.

Harland, C., Gibbs, J. and Sutton, R. (2000), "Supply Strategy For The Public Sector: Framing The Issues". In *Conference 2000 Proceedings* (pp. 342–351). London, Ontario, Canada: Richard Ivey School of Business.

Hartmann, E., Trautmann, G. and Jahns, C. (2008), "Organizational Design Implications of Global Sourcing: A Multiple Case Study Analysis on the Application of Control Mechanisms", *Journal of Purchasing and Supply Management*, Vol. 14 No. 1, pp. 2842.

Henseler, J. (2010), "On the convergence of the partial least squares path modelling algorithm", *Computational Statistics*, Vol. 25 No. 1, pp. 107–120.

Hickson, D. J., Pugh, D. S. and Pheysey, D. C. (1969), "Operations Technology and Organization Structure: An Empirical Reappraisal", *Administrative Science Quarterly*, Vol. 14 No. 3, pp. 378-397.

Holland, C. P. (1995), "Co-Operative Supply Chain Management: The Impact of InterOrganizational Information Systems", *Journal of Strategic Information Systems*, Vol. 4 No. 2, pp. 117-133.

Hox, J. J. (1995), *Applied multilevel analysis*, 2nd ed. TT-Publikaties, Amsterdam, Netherlands.

Hughes, M. W. (1986), "Why projects fail: the effect of ignoring the obvious", *Industrial Engineering*, Vol. 18 No. 4, pp. 14-18.

Iacobucci, D. (2010), "Structural equations modelling: Fit Indices, sample size, and advanced topics", *Journal of Consumer Psychology*, Vol. 20 No. 1, pp. 90–98.

Inkson, J. H. K., Pugh, D. S. and Hickson, D. J. (1970), "Organization Context and Structure: An Abbreviated Replication", *Administrative Science Quarterly*, Vol. 15 No. 3, pp. 318-329.

Jackson, D. L. (2003), "Revisiting sample size and number of parameter estimates: Some support for the N: q hypothesis", *Structural Equation Modelling*, Vol. 10 No. 1, pp. 128−141.

Jackson, D. L., Gillaspy, A. J. and Purc-Stepthenson, R. (2009), "Reporting Practices in Confirmatory Factor Analysis: An Overview and Some Recommendations", *Psychological Methods*, Vol. 14, No. 1, pp. 6–23.

Johnson, F. P. and Leenders, M. R. (2006), "A Longitudinal Study of Supply Organizational Change", *Journal of Purchasing and Supply Management*, Vol. 12 No. 6, pp. 332-342.

Johnson, G., and Scholes, K. (2002), *Exploring Corporate Strategy*, 6th ed. Prentice Hall, Europe.

Johnson, P. F., Leenders, M. R. and McCue, C. (2009), "Public Procurement Organization: A Comparison of Purchasing's Organizational Roles and Responsibilities in the Public and Private Sectors", in Thai, K. V. (Eds.), *International Handbook of Public Procurement, Florida*, Auerbach Publications, pp. 175 – 185.

Johnson, P. F., Leenders, M. R., and McCue, C. (2003), "A Comparison of Purchasing's Organizational Roles and Responsibilities in the Public and Private Sector", *Journal of Public Procurement*, Vol. 3 No. 1, pp. 57-74.

Johnson, P.F. and Leenders, M.R. (2004), "Implementing Organizational Change in Supply Towards Decentralization." *Journal of Purchasing and Supply Management*, Vol. 10 No. 4/5, pp. 191-200.

Johnson, P.F., Leenders, M.R., and Fearon, H.E. (1998), "Evolving Roles and Responsibilities of Purchasing Organizations", *International Journal of Purchasing and Materials Management*, Vol. 34 No. 1, pp. 2-11.

Johnston, W. J. and Bonoma, T. V. (1981), "The Buying Center: Structure and Interaction Patterns", *Journal of Marketing*, Vol. 45 No. 3, pp. 143-156.

Jones, G. R. (1998), *Organizational Theory: Text and Cases*, 2nd ed. Addison-Wesley: Reading, MA.

Juha, M. and Pentti J. (2008), "Managing Risks in Organizational Purchasing Through Adaptation of Buying Centre Structure and the Buying Process", *Journal of Purchasing and Supply Management*, Vol. 14 No. 4, pp. 253-262.

Kabaj, O. (2003). *The challenge of African Development*. Oxford University Press, London.

Kakwezi, P. and Nyeko, S. (2010), *Procurement processes and performance: Efficiency and effectiveness of the procurement function*. Department of Procurement and Logistics Management, Makerere University Business School.

Kamann, D. F. (2007), "Organizational Design in Public Procurement: A Stakeholder Approach", *Journal of Purchasing and Supply Management*, Vol. 13 No. 2, pp. 127136.

Kaplan, R. S. and Norton, D. P. (1996), *The Balanced Scorecard: Translating Strategy into Action*. Harvard Business School Press, Boston.

Kavua, B. and Ngugi, K. (2014), "Determinants of Procurement Performance of Rural Electrification Projects", *European Journal of Business Management*, Vol. 1 No. 11, pp. 361-377.

Kearney, A. T. (2004), *Creating Value through Strategic Supply Chain Management* – 2004 Assessment of Excellence in Procurement, A.T. Kearney, Marketing and Communications, Chicago, IL.

Kenny, D. A., and McCoach, D. B. (2003), "Effect of the number of variables on measures of fit in structural equation modeling", *Structural Equation Modelling*, Vol. 10 No. 3, pp. 333–351.

Kenny, D. A., Kaniskan, D. B. and McCoach, B. (2014), "The Performance of RMSEA in Models With Small Degrees of Freedom", *Sociological Methods and Research*, Vol. 44, No. 3, pp. 486 – 507.

Kioko, N. J. and Were, S. (2014), "Factors affecting efficiency of the procurement function at the public institutions in Kenya (a case of Supplies Branch in Nairobi)", *International Journal of Business and Law Research,* Vol. 2 No. 2, pp.1-14.

Kirai, A. K. and Kakwezi, P. (2016), "Assessment of determinants of procurement performance at Kenya Pipeline Company - Kenya", *International Journal of Research in Business Managemen,* Vol. 4, No. 4, pp.43- 54.

Klebba, J. M. and Dwyer, R. F. (1981): Environmental Impact on Purchase Decision Structure, *Journal of Purchasing and Materials Management,* Vol. 17 No. 1, pp. 30-36.

Kline, P. (1979), *Psychometrics and psychology,* Academic Press, London.

Kline, R. B. (2010), *Principles and practice of structural equation modelling,* 3rd Edition. New York: Guilford Press.

Kotabe, M. and Murray, J. Y. (2004), "Global sourcing strategy and sustainable competitive advantage", *Industrial Marketing Managemen*t, Vol. 33, No. 1, pp. 7-14.

Kotteaku, A. G., Laios, L. G. and Moschuris, S. J. (1995), "The Influence of Product Complexity on the Purchasing Structure", *Omega,* Vol. 23 No. 1, pp. 27-39.

Kwofie, T., Fugar, F., Adinyira, E. and Ahadzie, D. K. (2014), "Identification and Classification of the Unique Features of Mass Housing Projects", *Journal of Construction Engineering,* Vol. 2014, No. 2, pp. 1-11.

Laing, A. W., Cotton, S., Joshi, R., Marnoch, G., McKee, L. and Reid, J. (1998), "The Buying Centre: Patterns of Structure and Interaction in Primary Health Care", *Service Industries Journal,* Vol. 18 No. 3, pp. 20-37.

Laios, L., and Xideas, E. (1994). "An Investigation into the Structure of the Purchasing Function of State-controlled Enterprises." *Journal of Business Research,* Vol. 29 No. 1, pp. 13-21.

Lau, G., Goh, M. and Phua, S. L. (1999), "Purchase-Related Factors and Buying Center Structure: An Empirical Assessment", *Industrial Marketing Management,* Vol. 28 No. 6, pp. 573-587.

Lawrence, P. R. and Lorsch, J. W. (1967), *Organization and Environment: Managing Differentiation and Integration,* Harvard University: Boston.

Leedy, P. D., and Ormrod, J. E., (2005), *Practical Research: Planning and Design*, 8th ed. Pearson Prentice Hall, New Jersey.

Leenders, M. R., H. E. Fearon, A. E. Flynn and P. F. Johnson, (1997), *Purchasing and Supply Management,* 12th ed. McGraw-Hill Irwin, London.

Leenders, M.R. and Johnson, P.F. (2000), *Major Structural Changes in Supply Organizations*. Center for Advanced Purchasing Studies, Tempe, Arizona.

Lei, P. and Wu, Q. (2008), *Introduction to Structural Equation Modelling: Issues and Practical Considerations*. An NCME Instructional Module, pp. 33-43.

Lengwiler, Y. and Wolfstetter, E. (2006), *Corruption in Procurement Auctions*, Handbook of Procurement. Ed. by N. Dimitri, G. Piga, and G. Spagnolo. Cambridge University Press, pp.412–429.

Leung, S. H. N., Chan, J. W. K. and Lee, W. B. (2003), "The dynamic team role behavior – the approaches of investigation", Team Performance Management, *An International Journal*, Vol. 9 No. 3/4, pp.84-90.

Lewin, J. E. (2001), "The Effects of Downsizing on Organizational Buying Behavior: An Empirical Investigation", *Journal of the Academy of Marketing Science*, Vol. 29 No. 2, pp. 151-164.

Lynn, S. A. (1987), "Identifying Buying Influences for a Professional Service: Implications for Marketing Efforts", *Industrial Marketing Management*, Vol. 16 No. 2, pp. 119-130.

MacCallum R. C., Widaman K. F, Zhang S. and Hong S. (1999), "Sample size in factor analysis", *Psychological Methods*, Vol. 4 No. 1, pp. 84–99.

MacManus S. A. and Watson, S. A. (1990), "Procurement policy: The missing element in financial management education*", International Journal of Public Administration*, Vol. 13, No. 1-2, pp. 155-179.

Malhotra, M. K. and Grover, V., (1998), "An Assessment of Survey Research in POM: from Constructs to Theory", *Journal of Operation Management*, Vol. 16 No. 4, pp. 407-425.

Mamiro, R. G. (2010), "Value for Money: The Limping Pillar in Public Procurement-Experience from Tanzania", Paper Presented at the 4th *International Public Procurement Conference*, August 16-18, 2010, Seoul, South Korea.

Marsh, D. and Stoker, G. (2002), *Theories and Methods in Political Science*, 2nd ed. Palgrave, Macmillan, Houndmills, UK.

Mattson, M. R. (1988), "How to Determine the Composition and Influence of a Buying Center", *Industrial Marketing Management*, Vol. 17 No. 3, pp. 205-214.

McCabe, D. L. (1987), "Buying Group Structure: Constriction at the Top", *Journal of Marketing*, Vol. 51 No. 4, pp. 89-98.

McCue, C. P., and Pitzer, J. T. (2000), "Centralised vs. Decentralised Purchasing: Current

Trends in Governmental Procurement Practices", *Journal of Public Budgeting, Accounting and Financial Management*, Vol. 12 No. 3, pp. 400-420.

McIlroy, J. (1998), "Supply chain management and public procurement", In: *Proceedings of the 4th IFPMM Summer School*, Salzburg, Austria, 9–14 August, pp. 59–76.

Mclntyre, L. J. (1999), *The Practical Skeptic: Core Concepts in Sociology*, Mountain View, *CA:* Mayfield Publishing International, pp. 109-112, California.

McQuiston, D. H. (1989), "Novelty, Complexity, and Importance as Causal Determinants of Industrial Buyer Behavior", *Journal of Marketing*, Vol. 53 No. 2, pp. 66-79.

McWilliams, R. D., Naumann, E. and Scott, S. (1992), "Determining Buying Center Size", *Industrial Marketing Management*, Vol. 21 No. 1, pp. 43-49.

Mensah, S., Aboagye, K., Addo, E. and Buatsi, S. (2003), "Corporate governance and corruption In Ghana Empirical findings and policy implications", paper presented at *African Capital Markets Forum*, Johannesburg, 27-29 October.

Mintzberg, Henry (1980), "Structure in 5's: A Synthesis of the Research on Organization Design", *Management Science*, Vol. 26 No. 3, pp. 322-341.

Monczka, R. M., Trent, R. J., and Handfield, R. B. (2005), *Purchasing and Supply Chain Management*. Mason, OH: South Western.

Muller, E. W. (1991), "An analysis of the purchasing manager's position in private, public and nonprofit settings", *International Journal of Purchasing and Materials Management*, Vol. 27 No. 4, pp. 16–23.

Murray, J. G., (1999), "Local government demands more from purchasing", *European Journal of Purchasing and Supply Management*, Vol. 5, No. 1, pp. 33–42.

Narasimhan, R. and Carter, J. R. (1990), "Organisation, Communication and Coordination of International Sourcing", *International Marketing Review*, Vol. 7 No. 2, pp. 6-20.

Naumann, E. and Kim, J. C. (1986), "A Macro Contingency Approach to the Study of Purchasing Behaviour", *Journal of Purchasing and Materials Management*, Vol. 22 No. 3, pp. 21-27.

Neef, D. (2001). *E-procurement: From Strategy to Implementation*. Prentice-Hall/Financial Times, Upper Saddle River, NJ.

Neill, P. and B. Batchelor, (1999), "Bidding for recognition", *Supply Management*, Vol. 2 No. 24, pp. 36-38.

Nguyen, L.D., Ogunlana, S.O. and Lan, D.T. (2004), "A study on project success factors on large construction projects in Vietnam", *Engineering Construction and Architectural Management*, Vol. 11 No. 6, pp. 404-413.

Nicolini, D. (2002), "In search of project chemistry", *Construction Management and Economics*, Vol. 20 No. 2, pp. 167-77.

Odhiambo, W., and Kamau, P. (2003), "Public procurement lessons from Kenya, Tanzania and Uganda", *Working Paper No. 208*. OECD Development Centre, Paris, France.

OECD (2016), *Preventing corruption in public procurement*: Pilot report assessing public procurement systems in 10 economies. OECD Publishing, Paris, France.

OECD-DAC (2006), *Methodology for Assessment of National Procurement Systems*. OECD Publishing, Paris, France.

Ofori, G. (2007), "Construction in developing countries", *Construction Management and Economics*, Vol. 25 No. 1, pp. 1-6.

Osborne, D. and Plastrik, P. (1997), Banishing Bureaucracy, Perseus Press, Reading, MA.

Osmonbekov, T., Bello, D.C. and Gilliland, D.I. (2002), "Adoption of electronic commerce tools in business procurement: enhanced buying center structure and processes", *Journal of Business and Industrial Marketing*, Vol. 17 No. 2/3, pp.151-166.

Panayiotou, N. A., Gayialis, S. P. and Tatsiopoulos, I. P. (2004), "An e-procurement system for governmental purchasing", *International journal of production economics*, Vol. 90 No. 1, pp.79-102.

Patel, V. (2006), "Contract Management: The New Competitive Edge", *Supply Chain Management Review*, Vol. 1 No. 2, pp. 42 – 44.

Phua, F.T.T. and Rowlinson, S. (2004), "How important is cooperation to construction project success? A grounded empirical quantification", *Engineering, Construction and Architectural Management*, Vol. 11 No. 1, pp. 45-54.

Pinsonneault, A. and Kraemer, K. (1993), ''Survey research methodology in management information systems: an assessment'', *Journal of Management Information Systems*, Vol. 10 No. 2, pp. 75-105.

Pinto, J. K. and Slevin, D. P. (1988), "Critical success factors across the project life cycle", *Project Management Journal*, Vol. 19 No. 3, pp. 67-75.

PMI (2013), *PMBOK Guide: A Guide to the Project Management Body of Knowledge*, 5th ed. Project Management Institute, Pennsylvania.

Polit, D. F., Beck, C. T., (2004), *Nursing Research. Principles and Methods*, 7th ed. J.B. Lippincott Williams and Wilkins Company, Philadelphia, New York.

Pooley, J. and Dunn, S.C. (1994), "A longitudinal study of purchasing positions: 1960–1989", *Journal of Business Logistics*, Vo1. 5 No. 1, pp. 193–213.

PPOA, (2012), Public Procurement and Disposal General Manual, PPOA, Nairobi, Government Printing Press, Republic of Kenya.

Premchand, A, (1993), *Public Expenditure Management*, International Monetary Fund, Washington, D.C.

Price, J. L. (1972): *Handbook of Organizational Measurement*, Heath: Lexington, MA, USA.

Public Procurement (Amendment) Act, 2016 (Act 914)

Public Procurement Act, 2003 (Act 663)

Pugh, D. S., D. J. Hickson, C. R. Hinings, and C. Turner (1968), "Dimensions of Organization Structure", *Administrative Science Quarterly*, Vol. 13 No. 1, pp. 65-105.

Pugh, D. S., D. J. Hickson, C. R. Hinings, K. M. Macdonald, C. Turner and T. Lupton (1963), "A Conceptual Scheme for Organizational Analysis", *Administrative Science Quarterly*, Vol. 8 No. 3, pp. 289-315.

Quinn, F. J. (2005), "The Power of Procurement", *Supply Chain Management Review*, Vol. 9, No. 9, pp. 6-8.

Quinot, G. and Arrowsmith, S. (2013). "Public Procurement Regulations in Africa" *Law and Politics in Africa, Asia and Latin America*, Vol. 46, No. 3, pp. 349-351.

Quintens, L., Pauwels, P. and Matthyssens, P. (2006), "Global Purchasing Strategy: Conceptualization and Measurement", *Industrial Marketing Management*, Vol. 35 No. 7, pp. 881-891.

Ren, Z., Kwaw, P. and Yang, F. (2012), "Ghana's public procurement reform and the continuous use of the traditional procurement system: The way forward", *Built Environment Project and Asset Management*, Vol. 2 No. 1, pp.56-69.

Rendon, R. G. (2008), "Procurement process maturity: key to performance measurement", *Journal of Public Procurement*, Vol. 8 No. 2, pp. 200-214.

Robbins, S. P. (1990), *Organization Theory: Structure, Design and Applications*, 3rd ed., Prentice Hall: New Jersey.

Robinson, K. D. C. (2009), "U.S. Federal Government Procurement: Organizational Structure, Process, and Current Issues", In: Thai, K. V. *International Handbook of Public Procurement,* Florida, Auerbach Publications, pp. 1-19.

Robinson, P. J., Faris, C. W. and Wind, Y. (1967), *Industrial Buying and Creative Marketing*, Allyn and Bacon, Boston, MA.

Rozemeijer, F. (2008), "Purchasing myopia revisited again?", *Journal of Purchasing and Supply Management*, Vol. 14, No. 3, pp. 205-207.

Russell, J. S., Thukral, N. (2003), "Strategic sourcing and procurement in Gower", In: Gattorna, J. L., Ogulin, R., and Reynolds, M.W., *Handbook of Supply Chain Management*, pp.325-342, Gower Publishing, Burlington, VT.

Salant, P. and Dillman, D. A. (1994), *How to Conduct Your Own Survey*, John Wiley and Sons, Inc, US.

Sanchez-Rodrigues, C., Hemsworth, D. and Clavel, J. G. (2006), "An empirical study on the impact of standardization of materials and purchasing procedures on purchasing and business performance". *Supply Chain Management,* Vol. 11 No. 1, pp. 56-64.

Saunders, M., Lewis, P. and Thornhill, A. (2009), *Research Methods for Business Students*, 5th ed. Pearson Education, Harlow, London.

Saunders, M., Lewis, P. and Thronhill, A. (2012), *Research Methods for Business Students*, 6th ed., Prentice Hall, Cranbury, NJ.

Schapper, P. R., Malta, J. N. V. and Gilbert, D. L. (2006), "An analytical framework for the management and reform of public procurement", *Journal of Public Procurement*, Vol. 6, No. 1–2, pp. 1–26.

Schiele, J. J. (2005), "Improving Organizational Effectiveness Through Meaningful Involvement of Municipal Purchasing Departments: Case studies from Ontario Canada", *Journal of Public Procurement,* Vol. 5 No. 2, pp. 145-163.

Schotanus, F. and Telgen, J. (2005), "Implications of a classification of forms of cooperative purchasing", In: J.Y.F. Wynstra, K. Dittrich and F.P.H. Jaspers (eds), *Dealing with Dualities, Proceedings of the 21st IMP Conference,* Rotterdam, the Netherlands, 1–3 September.

Schumacker, R. E. and Lomax, R. G. (2010), *A beginners guide to structural equation modelling,* Routledge Publication, New York.

Segev, A., Gebauer, J., and Beam, C. (1998), Procurement in the Internet Age-Current practices and emerging trend. Haas School of Business, University of California, Berkeley.

Simon, J. L. and Burstein, P. (1985), *Basic Research Methods in Social Science.* 3rd edRandom House, New York.

Singh, R. (2010), "Delays and cost overruns in infrastructure projects: extent, causes and remedies", *Economic and Political Weekly*, Vol. 45 No. 21, pp. 43-54.

Smith, P. (2009), "Trends in the Australian Quantity Surveying Profession: 1995 – 2008", *13th Pacific Association of Quantity Surveyings Congress (PAQS 2009)*, pp. 22-32.

Spekman, R. E. and Stern, L. W. (1979), "Environmental Uncertainty and Buying Group Structure: An Empirical Investigation", *Journal of Marketing*, Vol. 43 No. 2, pp. 5464.

Ssennoga, F. (2006), "Examining discriminatory procurement practices in developing countries", *Journal of Public Procurement*, Vol. 6, No. 3, pp.218-249.

Streubert, H. J. and Carpenter, R. D. (1999), *Qualitative Research in Nursing: Advancing the Humanistic Imperative*. 2nd ed. Lippincott Williams and Williams, Philadelphia.

Sultana, A. (2012), "Impact of Training and Employee Performance", *Inter-disciplinary Journal of Contemporary Research in Business*, Vol. 4 No. 6, pp. 646-696.

Tang, J. E., Shee, D. and Tang, T. (2001), "The Supply-Demand Interaction in Electronic Commerce: A Classification by Type of Relationship and Dominance." *Journal of Service Technology and Management*, Vol. 2 No. 3-4, pp. 289-312.

Telgen, J. (2002), "Inspiring the purchasing community", Introduction to the Conference theme of the 11th Annual *IPSERA Conference*, Enschede, the Netherlands.

Telgen, J., Zomer, G., and de Boer, L. (1997), The efficiency and effectiveness of government purchasing in the Netherlands. *IPSERA Conference Proceedings*, Naples, Italy: T8/2 1–8.

Telgen, Jan, Christine Harland, and Louise Knight (2007), "Public Procurement in Perspective", In: Louise Knight, Christine Harland, Jan Telgen, Khi Y. Thai, Guy Callender, and Katy McKen (ed.): *Public Procurement: International Cases and Commentary*, pp. 16-24 Routledge, London.

Thai, K. V. (2004), "Challenges in public procurement. In Challenges in Public Procurement", *An International Perspective* Vol. 3. PrAcademics Press, Boca Raton FL, USA.

Thai, K. V. And Grimm, R. (2000), "Government Procurement: Past and Current Developments", *Journal Of Public Budgeting, Accounting and Financial Management*, Vol. 12 No. 2, pp. 231-247.

Thai, K.V. (2001), "Public procurement re-examined", *Journal of Public Procurement*, Vol. 1, No. 1, pp. 9–50.

Thompson, A., Strickland, J., and Gamble, E. (2007), *Crafting and executing strategy*, 15th ed. Mcgraw-Hill, Inc, New York.

Tong, D.Y. (2007), An empirical study of e-recruitment technology adoption in Malaysia: Assessment of modified technology acceptance model. Multimedia University, Malaysia.

Trautmann, G., Bals, L. and Hartmann, E. (2009), "Global Sourcing in Integrated Network Structures: The Case of Hybrid Purchasing Organizations", *Journal of International Management*, Vol. 15 No. 2, pp. 194-208.

Trent, R. J. and Monczka, R. M. (2003), "International Purchasing and Global Sourcing: What Are the Differences?", *Journal of Supply Chain Management*, Vol. 39 No. 4, pp. 2637.

Trent, R.J. (2004), "The Use of Organizational Design Features in Purchasing and Supply Management." *The Journal of Supply Chain Management*, Vol. 40 No. 3, pp. 4-18.

Tsang, E. (2000), "Transaction cost and resource-bases explanations of joint ventures: A comparison and synthesis", *Organization Studies*, Vol. 21 No. 1, pp. 215-242.

Tsiga Z., Emes M. and Smith, A. (2017), " Critical success factors for projects in the petroleum industry", *Procedia Computer Science* Vol. 121, pp. 224–231.

UNPCDC (2014), *Why we should engage stakeholders on public procurement.* http://unpcdc.tumblr.com/post/40519983817/why-should-we-engage-stakeholders-onpublic. [Accessed 22/02/17]

Vadiya, K., Sajeev, A. S. M. and Callender, G. (2004), "E-procurement initiatives in the public sector: an investigation into the critical success factors". In: *Proceedings of the 13th Annual IPSERA Conference*, Catania, Italy, 4–7 April, pp. C325–340.

Victor, A. (2012), "Challenges affecting procurement practices in public corporations", *International Journal of Operations and Production Management*, Vol. 31, No. 1, pp. 10- 22.

Von Oelreich, K. and Philip, M. (2013), *Green public Procurement - a Tool for Achieving National Environmental Quality Objectives*. Report 6600. Swedish Environmental Protection Agency, Stockholm, Sweden.

Wang, S. and Bunn, M. D. (2004), "Government/business relationships: insights into contract implementation", *Journal of Public Procurement*, Vol. 4, No 1, p. 84-115.

Westring, G. (1997), *Ghana Public Procurement Reform*. An Audit Report prepared for the World Bank, Advokatfirman Cederquist KB, Stockholm, Sweden.

Wolf, E. J., Harrington, K. M., Clark, S. L. and Miller, M. W. (2013), "Sample Size Requirements for Structural Equation Models: An Evaluation of Power, Bias, and Solution Propriety", *Educational and Psychological Measurement*, Vol. 76 No. 6, pp. 913–934.

Wood, J. (2005), "Organizational Configuration as an Antecedent to Buying Centers' Size and Structure", *Journal of Business and Industrial Marketing*, Vol. 20 No. 6, pp. 263-275.

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

World Bank (2013), *Ghana's Comprehensive Approach to Public Procurement Reform*. Available from: https://www.worldbank.org/en/news/feature/2013/02/04/Ghana-8217s-Comprehensive-Approach-to-Public-Procurement-Reform [Accessed 02/03/17]

World Bank (2015), *Benchmarking public procurement 2015*. Washington, DC: World Bank Group.http://documents.worldbank.org/curated/en/964691468338368092/Benchmarking-public-procurement-2015 [Accessed 02/03/17]

Xideas, E. and Moschuris, S. (1998), "The Influence of Product Type on the Purchasing Structure." *European Journal of Marketing*, Vol. 32 No. 11/12, pp. 974-992.

Yu, A.T.W., Shen, Q., Kelly, J. and Hunter, K. (2005), "Investigation of critical success factors in construction project briefing by way of content analysis", *Journal of Construction Engineering and Management*, Vol. 132 No. 11, pp. 1178-1186.

Zheng, J., Knight, L., Harland, C., Humby, S., James, K., (2007), "An analysis of research into the future of purchasing and supply management", *Journal of Purchasing and Supply Management*, Vol. 13 No. 1, pp. 69–83.

APPENDICES

APPENDIX ONE

KWAME NKRUMAH UNIVERSITY OF SCIENCE AND TECHNOLOGY
COLLEGE OF ART AND BUILT ENVIRONMENT
DEPARTMENT OF BUILDING TECHNOLOGY

INTERVIEW QUESTION GUIDE FOR EXPERTS IN PUBLIC PROCUREMENT IN GHANA.

TOPIC: DEVELOPING A GUIDELINE FOR SETTING UP AN EFFECTTIVE PROCUREMENT UNIT IN THE MMDA IN GHANA.

INTRODUCTION

This interview question guide forms a preliminary part of Master of Philosophy program being pursued by Sitsofe Kwame Yevu, an MPhil student from the Department of Building Technology, KNUST. The significance of the study is to provide a guide for setting up the procurement unit to enhance its efficiency and effectiveness and also to assess the performance of the procurement unit in relation to its success criteria. The research seeks to find out from public procurement experts their views, experiences and skills in managing procurement units in the public sector with the focus being establishing an effective procurement unit and its success criteria.

AIM OF STUDY

The aim of the research is to develop a guideline for establishing an effective procurement unit.

RELEVANCE OF STUDY

The findings of the study will aid in structuring the procurement unit to be effective and efficient in public institutions.

The finding of this research will identify the factors influencing performance of procurement units in the public sector

I appreciate that this interview is going to take part of your respected time, nevertheless I will be very glad if you take some time off your schedule to participate in this research by answering the interview questions as your contribution to this research. You are well assured that answers and responses given in this research will be kept anonymous and strictly confidential.

Your cooperation is very much appreciated.

Thank you.

Sitsofe K. Yevu

Siyevu@gmail.com

INTERVIEW QUESTIONS Section A: Background Information

1. May I kindly know your professional background?

……..

2. What is your level of education.

……

3. What professional body do you belong to.

……

4. What is your level of professional qualification

……

5. How long have you been practising procurement in the industry.

……

6 How long have you been practicing procurement in the public sector.

……

Any other procurement related qualification

……
……

Section B: Main Questions

1. From your experience, what factors were considered in setting up an effective procurement unit
   ……
   ……
   ……
   ……
   …
   ……
   …
   ……
   ……
   ……
   ……
   ……

2. From your experience in the public sector, how was the procurement unit located within the hierarchy of the organizational structure MMDA.

……
……
……

3. From your in experience in the public sector, how is the procurement unit structured in its operations:

- (De)Centralization - Procurement unit being the central authority in the procurement process

.....
.....
.....
.....

- Specialization - How are the procurement unit officer's roles assigned within the procurement unit

……
……
……

- Formalization - Is the organization relying mostly on procedures and rules to manage the conduct of the procurement employees

……
……
……

- Involvement - Do you normally have other department i.e lateral and vertical departments in terms of hierarchy involved in the procurement process

……
……
……

- Configuration - Are there authority/approving structures for the procurement unit activities in the organization

……
……
……

- Standardization - Are characteristics of products to be procured uniform across various departments and also are the processes structured in a routinely manner.

……
……
……

4. From your experience in the public sector, what strategies did you employ to make your procurement unit successful.

……
……
…
……
…
……

……
……
……

5. From your experience, what are the factors influencing the performance of the procurement units.
……
……
……
……
……
……
……
……

6. From your experience in the public sector, what success criteria should be used to assess the performance of the procurement unit.
……
……
……
……

APPENDIX TWO

KWAME NKRUMAH UNIVERSITY OF SCIENCE AND TECHNOLOGY COLLEGE OF ART AND BUILT ENVIRONMENT DEPARTMENT OF BUILDING TECHNOLOGY

QUESTIONNAIRE FOR PUBLIC PROCUREMENT PRACTITIONERS IN MMDA, GHANA.

TOPIC: DEVELOPING A GUIDELINE FOR SETTING UP AN EFFECTIVE PROCUREMENT UNIT IN THE MMDA IN GHANA.

INTRODUCTION

This questionnaire forms part of a research for a Master of Philosophy program being pursued by Sitsofe Kwame Yevu, an MPhil student from the Department of Building Technology, KNUST. The significance of the study is to provide a guide for setting up the procurement unit to enhance its efficiency and effectiveness and also identify factors affecting the performance of the procurement unit. The research seeks to find out from public procurement practitioners in the MMDA about their experiences in organizing the procurement unit.

AIM OF STUDY

The aim of the research is to develop a guideline for establishing an effective procurement unit.

RELEVANCE OF STUDY

The findings of the study will look at organizing the procurement unit to be effective and efficient in public institutions.

The finding of this research will identify the factors influencing performance of procurement units in the public sector

I appreciate that this questionnaire is going to take part of your respected time, nevertheless I will be very glad if you take some time off your schedule to participate in this research by answering this questionnaire as your contribution to this research. You well assured that answers and responses given in this research will be kept anonymous and strictly confidential for academic purposes only.

Your cooperation is very much appreciated.

Thank you.

Sitsofe K. Yevu
MPhil Student
Department of Building Technology - KNUST

Section A - Background Information

Please select from the options provided by ticking the appropriate box.

1. What is your position in the organization?

Coordinating Officer ☐ Head of Procurement Unit ☐
Procurement unit officer ☐ Engineer ☐
Quantity Surveyor ☐ Architect Planning Officer ☐ ☐

2. What is your professional qualification background?

Quantity Surveyor ☐ Purchasing and Supply ☐
Architect ☐ Engineering ☐
Accountant/Finance ☐ Lawyer ☐
Kindly indicate others ……

3. What is your level of education?

HND ☐ Graduate ☐
Postgraduate/Masters ☐ Doctorate ☐
Kindly indicate others……

4. How long have you been practicing procurement in the industry?

2 - 6 years ☐ 6 – 10 years ☐
10 – 14 years ☐ 14 – 18 years ☐
> 18 years ☐

5. How long have you been practicing procurement in the public sector?

2- 6 years ☐ 6 – 10 years ☐
10– 14 years ☐ 14 - 18 years ☐
> 18 years ☐

6. How many procurement related projects have your engaged in the past five years. Please select by ticking the appropriate box for each category.

Goods	Works	Services
a. < 5 ☐	a. < 5 ☐	a. <5 ☐
b. 5 – 10 ☐	b. 5 – 10 ☐	b. 5 -10 ☐
c. 10 – 20 ☐	c. 10 – 20 ☐	c. 10 – 20 ☐
d. > 20 ☐	d. > 20 ☐	d. > 20 ☐

Section B

With your experience in the organization, how often are these activities applied in the procurement process?
Please indicate the levels of frequency on the usage these activities on the procurement process by ticking the appropriate box.

1= Never 2= Rarely 3= Sometimes 4= Often 5= Always

ACTIVITIES	Levels of Frequency				
	1	2	3	4	5
Clearly defined activities and routines					
Make uniform product features across various requisitions					
Are procurement activities done in routinely manner for each project					
Task are assigned based on the specialist function assigned to the employee(s) in the procurement unit.					
Task are assigned to the employee(s) based on the object/project to be procured.					
Task are assigned to a mixed group of object and functional specialist to produce outcome					

Reporting procurement activities to higher authorities					
Seeking approval from higher authorities before proceeding on procurement projects					
Procurement decisions influenced by procurement unit					
User departments are involved in the procurement process					
Higher authorities/officers are involved in the procurement process					
All members of the procurement unit are involved in every procurement project					
Relying on public procurement rules and regulations					
Detailed job description for each employee of the procurement unit					
Supervision of employees for compliance to rules and regulations of public procurement					
All departments in the organization have their budget and can purchase low-value products independently					
All department requirements are sent to a central unit					
Items of lower value within threshold are purchased by various departments and higher values are purchased by centralized units					
Kindly indicate others…					

Section C

In your experience with the organization, which of the following factors are crucial determinants in organising a procurement unit and has strong impact on procurement structure?
Please indicate the levels of severity of these factors on the establishment of a procurement unit.

1= Least 2= Lower 3= High 4= Higher 5= Highest

DETERMINANT FACTORS	Levels of Severity				
	1	2	3	4	5
Location of MMDA in Ghana with reference to the capital city.	☐		☐	☐	☐ ☐
The procurement unit situated in the MMDA.		☐	☐	☐	☐ ☐
Environmental uncertainty of the procurement activities		☐	☐	☐	☐ ☐
Time pressure on procurement activities		☐	☐	☐	☐ ☐
The importance of the procurement to the MMDA		☐	☐	☐	☐ ☐
The perceived risk involved in the procurement		☐	☐	☐	☐ ☐
Procurement volume		☐	☐	☐	☐ ☐
Complex nature project to be procured		☐	☐	☐	☐ ☐
Type of project whether goods, works or services		☐	☐	☐	☐ ☐
Organizational strategy for procurement		☐	☐	☐	☐
Chief procurement officer qualifications		☐	☐	☐	☐ ☐
Size of the organization		☐	☐	☐	☐
Kindly indicate others…					
		☐	☐	☐	☐

SECTION D

In your experience with the organization, which of these factors have key relevance and are often used in setting up an effective procurement unit?

Please indicate the levels of relevance of these factors on making the procurement unit effective and efficient.

1= Not Relevant 2= Slightly Relevant 3= Moderately Relevant 4= Relevant 5= Very Relevant

FACTORS	Levels of Relevance				
	1	2	3	4	5
Chief procurement officer educational qualification					☐

Chief procurement officer practical procurement experiences					❑
Position of the chief procurement officer in the organizational structure					❑
Position of the procurement unit in the organization structure					❑
Chief procurement officer reporting line is to the CEO or head of administration directly					❑
The number of staff in the procurement unit					❑
Job allocation to staff of the procurement unit					❑
Procurement skills and competence of procurement unit staff					❑
Procurement unit staff experience with procurement tasks					❑
Logistics such as furniture, tender boxes, cabinets etc.					❑
Information technology systems such as computers, printers, photocopiers, communication software and devices					❑
Public procurement law and regulations framework					❑
Compliance of the procurement unit to the public procurement laws					❑
Internal rules regulation the decision making process communication among employees					❑
Centralizing or decentralizing the decision making process of procurement					❑
Record management system of procurement activities					❑
Kindly indicate others…					
					❑

SECTION E

In your experience with the organization, which of the following factors influence the performance of the procurement unit?
Please indicate the levels of severity of these factors on how they influence the performance of the procurement unit

1= Least 2= Lower 3= High 4= Higher 5= Highest

FACTORS INFLUENCING PERFORMANCE	Levels of Severity				
	1	2	3	4	5
Budget allocation to organization		☐	☐	☐	☐
Availability of funds		☐	☐	☐	☐
Staff competence and procurement experience		☐	☐	☐	☐
Availability of technological systems		☐	☐	☐	☐
Internal stakeholders of the organization		☐	☐	☐	☐
External stakeholders of the organization		☐	☐	☐	☐
Proper procurement planning		☐	☐	☐	☐
Adequate needs assessment from user departments		☐	☐	☐	☐
Lack of procurement strategy in organization		☐	☐	☐	☐
Lack of supplier relationship management for project		☐	☐	☐	☐
Position of procurement unit with it organizational structure		☐	☐	☐	☐
Interaction of procurement unit with other departments/units		☐	☐	☐	☐
Coordination of company-wide procurement activities		☐	☐	☐	☐
Contract management process		☐	☐	☐	☐
Information management		☐	☐	☐	☐
Transparency and fairness of procurement practices		☐	☐	☐	☐
Supplier evaluation/tender evaluation		☐	☐	☐	☐
Kindly indicate others…					
		☐	☐	☐	☐

SECTION F

In your view, which of the following activities will serve as an indicator that if achieved will drive the procurement unit to success?
Please indicate the levels of importance of these factors if achieved will drive the procurement unit to success

1= Not important 2= Slightly important 3= Moderately important
4= Important 5= Very important

SUCCESS INDICATORS	Levels of Importance				
	1	2	3	4	5
Precisely defined and communicated standardized procurement processes		☐	☐	☐	☐
Support of senior management for procurement		☐	☐	☐	☐
Early involvement of procurement and key stakeholders in the development of projects		☐	☐	☐	☐
Right key performance indices for projects		☐	☐	☐	☐
Risk management of future evolution possibilities of suppliers		☐	☐	☐	☐
Some level of central coordination and local execution		☐	☐	☐	☐
Procurement knowledge base intranet and handbook		☐	☐	☐	☐
Continuous establishment of data transparency		☐	☐	☐	☐
E-procurement engagement and IT solutions		☐	☐	☐	☐
Methods of needs assessment and aggregation of needs		☐	☐	☐	☐
Good interaction of procurement staff with other units		☐	☐	☐	☐
Use of specialized procurement roles		☐	☐	☑	☐
Supplier/contractor evaluation and management		☐	☐	☐	☐
Negotiation concepts		☐	☐	☐	☐
Life cycle cost of project and value analyses		☐	☐	☐	☐
Kindly indicate others…					
		☐	☐	☐	☐

Kindly save the completed questionnaire and return the completed questionnaire to this email address siyevu@gmail.com.

THANK YOU.