FACTORS AFFECTING PROCUREMENT AND SUPPLY CHAIN PERFORMANCE IN BUILDING CONSTRUCTION FIRMS IN NAIROBI

EUNICE MUTHONI KIROMO

A RESEARCH PROJECT SUBMITTED IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE AWARD OF THE DEGREE OF MASTER OF BUSINESS ADMINISTRATION, UNIVERSITY OF NAIROBI

OCTOBER, 2015

DECLARATION

This research project is my original work and has not been presented to any other institution of learning for the award of an academic certificate.

Signature: ……..... Date: …….

Name: Eunice Muthoni Kiromo

Registration: D61/70811/2014

This research project has been submitted for examination with my approval as the student supervisor.

Signature: ……..... Date: …….

Mr. Tom Kongere

Supervisor

Lecturer, School of Business

University of Nairobi

ACKNOWLEDGEMENT

I wish to recognize a number of individuals who contributed to the successful completion of this research project.

Special appreciation goes to my supervisor Mr. Tom Kongere. I wish to sincerely acknowledge his professional advice and guidance in the research project.

To all my family members especially my parents, Mr and Mrs Cyrus Kiromo, my beloved siblings and also my cousin, Mr.Joseph Maina,for their moral support and encouragement during my study.

To all of you, kindly accept my appreciation for your great support.

DEDICATION

I wish to dedicate this project to my family, especially my parents Mr and Mrs. Cyrus Kiromo who encouraged me when writing this project.

ACRONYMS & ABBREVIATIONS

GDP: Gross Domestic Product

SRM: Supplier Relationship Management

SPSS: Statistical Package for Social Sciences

ICT: Information Communication Technology

ERP: Enterprise Resource Planning

NCA: National Construction Authority

TABLE OF CONTENTS

DECLARATION ..... **ii**

ACKNOWLEDGEMENT ..... **iii**

DEDICATION ..... **iv**

ACRONYMS & ABBREVIATIONS ..... **v**

TABLE OF CONTENTS ..... **vi**

LIST OF TABLES ..... **viii**

LIST OF FIGURES ..... **ix**

ABSTRACT ..... **x**

CHAPTER ONE: INTRODUCTION **1**

1.1 Background of the Study 1
1.1.1 Procurement and Supply Chain Performance 2
1.1.2 Building Construction Industry in Nairobi 2
1.2 Statement of the Problem 3
1.3 Research Objectives 5
1.4 Value of the Study 5

CHAPTER TWO: LITERATURE REVIEW **7**

2.1 Introduction 7
2.2 Theoretical Review 7
2.3 Factors Affecting Procurement and Supply Chain Performance 9
2.4 Empirical Review 10
2.5 Summary and Research Gap 12

CHAPTER THREE: RESEARCH METHODOLOGY **14**

3.1 Introduction 14
3.2 Research Design 14
3.3 Population of the Study 14
3.4 Sample Design 14
3.4 Data Collection 15
3.5 Data Analysis 15

CHAPTER FOUR: DATA ANALYSIS, PRESENTATION AND INTERPRETITION **17**

4.1 Introduction 17
4.2 General Information 19
4.3 Procurement and Supply Chain Practices Employed 24

4.4 Factors Affecting Procurement and Supply Chain Performance 28
4.5 General Performance 32
4.6 Factor Analysis for Performance in Building Construction Firms 33

CHAPTER FIVE 35

SUMMARY, CONCLUSION AND RECOMMENDATIONS 35

5.1 Introduction 35
5.2 Summary of Findings 35
5.3 Conclusion 36
5.4 Recommendations 37
5.5 Suggestions for Further Research 37

REFERENCES 39

APPENDICES 42

Appendix I: Introduction Letter 42
Appendix II: Questionnaire 42
Appendix III: List Of Building Construction Firms In Nairobi 47

LIST OF TABLES

Table 4.1: Cronbach's alpha reliability coefficients results for the questionnaire factors .. 18
Table 4.2: Response Rate 19
Table 4.3: Respondents gender..... 19
Table 4.4: Continued service with the construction firms..... 20
Table 4.5: Registration of the construction firms..... 22
Table 4.6: Registration with the National Construction Authority 22
Table 4.7: Year of registration..... 24
Table 4.8: Procedure used when ordering building materials 25
Table 4.9: Procurement practices applied 26
Table 4.10: Building materials supplier sourcing..... 27
Table 4.11: Problems faced in transporting the materials 28
Table 4.12: Follow up system during delays..... 29
Table 4.13: Challenges in the procurement and supply chain..... 30
Table 4.14: Rate of company's procurement performance 31
Table 4.15: Performance of the construction firms measured..... 32
Table 4.16: Rotated Component Matrix for Performance in Building Construction Firms 33

LIST OF FIGURES

Figure 4.1: Respondents position in the organization 20
Figure 4.2: Respondent's level of education 21
Figure 4.3: Category of registration 23
Figure 4.4: Source of materials used 25
Figure 4.5: Level of cooperation from supplier 29

ABSTRACT

The study aimed at evaluating the factors affecting procurement and supply chain performance in building construction firms in Nairobi. Specifically the study aimed to examine the procurement and supply chain practices as well as the factors affecting procurement and supply chain performance in building construction firms in Nairobi. A descriptive cross sectional research design was used. The research targeted building construction firms carrying out their operations in Nairobi. There are fifty eight (58) registered construction firms in Nairobi and these firms constituted the population. A total of 17 companies were used for the sample. The study targeted 1 procurement manager, 1 supply chain manager and atheist 3 procurement supply chain officers from each company and this gave a total of 85 respondents. The study used both primary and secondary data to meet its objectives. The main data collection instruments used to collect data was a questionnaire containing open-ended and closed-ended questions. Ones the data was collected, the researcher checked for its accuracy, consistency and completeness. The first objective was analyzed using descriptive survey and the second objective through factor analysis. Descriptive statistics method was applied to analyze quantitative data where data was scored by calculating the percentages, mean' standard deviation and Variance. This was done using statistical computer software. Factor analysis was used to explore the common variance-covariance characteristics of the sets of factors that affect procurement and supply chain performance. According to the findings; majority got their building materials from suppliers, majority ordered building materials using both written requisitions and verbal requests. The study found that majority were faced with distance problem between supplier depots and construction sites. Based on the findings, the study concludes that firms were faced with transportation challenges which include; distance between supplier depots and construction sites and poor road infrastructure which hampers greatly on their service delivery. From the findings the study recommends that procurement and supplies managers should be trained on how to ensure efficiency in the system in order to meet the client's requirements. The study further recommends that plans are not static and that preparation of annual procurement plans should be participatory, frequently reviewed so as to improve on the construction firms performance. In addition, to avoid delays in supply and provision of services, timelines have to be respected since most projects would have overruns.

CHAPTER ONE: INTRODUCTION

1.1 Background of the Study

The role of the procurement and supply chain function in organizations has received and continues to receive increasing attention as the years go by. A strategic approach to procurement is important because it can assist an organization in meeting its policy objectives and to obtain value for money in its expenditure for goods and services (Gian, 2012).

Mason and Leek (2008), established that procurement and supply chain plays an important role in helping to shape the competitive position of any construction organization in the market place. This component can directly support the corporate and business strategies of the organization or its business units. For example, increasing product or service quality, this helps in improving the quality of suppliers; increasing market share by securing the supply chain of critical components at the level required; improving cash flow thus minimizing inventory levels or extending payment terms.

According to cox (2000), procurement and supply chain enhances efficiency and competitiveness among other benefits but to realize these benefits, it is important to look at the strategic factors that affect the performance of the procurement and supply chain function. Selection and maintaining competent suppliers is very essential in procurement. However, many factors affect a firm's ability to choose the right supplier. There is a need to identify the strategic supplier related factors and include them in the supplier selection criteria. Some of the factors firms consider include trust and commitment, adequate finance, quality, reliable delivery times, adequate logistic and technological capabilities.

Effective management of the procurement function is a precursor to the performance of the construction system in achieving its intended objectives in both the public and the private sector (Mendoza, 2008).

1.1.1 Procurement and Supply Chain Performance

Procurement and Supply Chain performance is a measure of identifying the extent to which the procurement and Supply Chain function is able to reach the objectives and goals with minimum costs. There are two main aspects of the procurement performance; effectiveness and efficiency. Procurement and Supply Chain Effectiveness is the extent to which the previously stated goals and objectives are being met. It refers to the relationship between actual and planned performance of any human activity. Additionally, Efficiency is the relationship between planned and actual resources required to realize the established goals and objectives and their related activities, referring to the planned and actual costs. As a result, supplier performance is the most important procurement performance driver (Van Weele, 2002).

Procurement can be generally defined as the process of acquiring goods/services either through buying, leasing, renting, hire purchase or through any other legally acceptable means of acquisition which is allowed by the procuring entity's policy and the existing laws (Procurement and Disposal act, 2005). Supply chain on the other hand can be summarized to mean the management of all activities, information, knowledge and financial resources associated with the flow and transformation of goods and services up from raw-materials suppliers, components suppliers, and other suppliers in such a way that the expectation of the users and the organizations are met or surpassed (Lyson and Farrington 2006).

In order for the procurement unit to carry out its mandate as required, it must ensure that they contract suppliers who will enable them do so. This can be done by appraising suppliers by looking into and critically analyze strategic supplier related factors that affect performance of the procurement function before awarding them contracts for supply and delivery of various goods or services (Martin ,2004).

1.1.2 Building Construction Industry in Nairobi

The building construction industry is an important contributor to the Kenyan economy and also makes a major contribution to the quality of housing in Nairobi (Office of Fair

Trading, 2004). Most African countries including Kenya over the recent years have made a remarkable progress in establishing plants that manufacture building materials so as to meet the high demands.

According to the Economic Survey (2015), the building and construction industry contributed 4.5per cent of Kenya's Gross Domestic Product (GDP), which rose to 5.36trillion, from 4.73 trillion in 2013, representing a nominal growth of 13.3 per cent. The industry is composed of a wide variety of companies that are involved in the construction of buildings, both residential and non-residential. Although the projects differ, the companies typically face many of the same procurement and supply chain management challenges.They are dependent on the same source of demand (residential and non-residential); they are subject to the same regulatory constraints (procurement codes and standards); they are exposed to shifts in demand for their products from constantly evolving technologies and practices and they operate within the same, increasingly, competitive, global market place (Eriksson, 2014).

According to Mbiti (2008), the construction industry in Nairobi employs more than 10,000 people who are required to deliver the constructed facilities to the clients' on time, within budget and meeting specified standards of quality. All these may be feasible only if the predetermined levels of labor productivity are known by stakeholders in advance. The construction industry in Nairobi is growing as evidenced by the industry growth rate, increase in total cost of materials for all buildings as well as the value of reported private building works completed in selected main towns.

1.2 Statement of the Problem

Procurement function has been one of the vital departments in any organization. It contributes tremendously to the organizational efficiency and effectiveness. Any head of department is expected to purchase goods/services or works at the right time, price, place quantity and quality for the use of all the departments in the organization so that the organization would derive great benefits from this and would therefore be able to serve their customers in a better way(Snider and Rendon,2001). When a procurement department

is inefficient in its procurement activities it affects all the other departments and therefore has a great impact on the organization's Supply Chain as a whole.

The present day business environment is getting more challenging and therefore companies have to increase their business operations to stay competitive. As a result managers need to embrace all those practices that will improve their performance one of the most important factors for improving business operations is implementation of effective and efficient procurement and supply chain management practices. Chong and Ooi (2008), assert that a good organized and executed supply chain management will make possible companies to decrease their inventories, have better customer services and diminishing of costs as their inventory turns. In addition, one of the biggest advantages of supply chain management practices, in the short term objectives, is increasing productivity and decreasing inventory levels and reducing lead time which will eventually lead to an improved performance of the firm.

An international study done by Kabaj (2003),concludes that an efficient public procurement system is vital to the advancement of all countries and is a concrete expression of their national commitments to making the best possible use of public resources. Non-adherence to standardized procurement processes culminates in poor co-ordination within various departments and enhances presence of leakages of financial resources, which turns out to be costly component to the whole management process of the procurement function (Knight, 2010).Ruteri and Xu (2009),did a study on supply chain management factors facing the food industry sector in Tanzania and found out that the factors that affect supply chain management in the food industry comprised of greater differentiation of food products, competition for consumers, understanding of supply chain management concept, inventory management, pricing strategy, customer service and customer perceived value, marketing and distribution strategies.

Moenga (2011) study focused on procurement and supply chain practices and performance of small scale tea sector in Kenya and found that the challenges affecting the sector were procurement and supply chain visibility, increasing customer demands, risk management, globalization and cost containment.

Gitau (2011) focused on procurement and supply chain malpractices in the Kenya public sector and found out that supply chain is affected by one or more of its components. These components are either internal or external to the supply chain, and can be classified as belonging to the following realms or contributors to the functioning of the supply chain: Transportation, Utilities/Equipment, Communication, Suppliers, Customers, Labour and Finance.

Despite the numerous studies on supply chain management, the aspect of effects of the procurement and supply chain performance in relation to building construction firms, specifically in Nairobi has been largely neglected therefore this study is intended to bridge the knowledge gap. Therefore the research question for this study was what are the factors affecting procurement and supply chain performance in building construction firms in Nairobi?

1.3 Research Objectives

The main objective

i. To examine the procurement and supply chain practices employed in building construction firms in Nairobi.

ii. To establish the factors affecting procurement and supply chain performance in building construction firms in Nairobi.

1.4 Value of the Study

The study will be a contribution to the increase of the general knowledge of the subject and will act as a reference material for future researchers and scholars interested in related studies.

The study will also enable the policy makers in building construction companies in Kenya to gain a better understanding of factors affecting procurement and supply chain performance in building construction firms in Nairobi. This will assist them in coming up with appropriate policies that can enable the building construction companies to come up with appropriate strategies on improving on procurement and supply chain performance.

The findings and recommendations of the study intend to assist the management of construction companies in Nairobi to formulate effective strategies towards addressing the problem of poor procurement and supply chain performance of construction projects which usually leads to either failure of the project or cost overruns.

The study also enhance understanding of the procurement supply chain performance and how it influence the building construction works in terms of economical performance, time performance, quality, environmental performance, work performance and innovation. This may be used by the managers in building construction firms around the country.

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

This chapter provides information from the review of literature on factors affecting procurement and supply chain performance in building construction firms in Nairobi. Theoretical framework that guided the study has also been identified.

2.2 Theoretical Review

This study was guided by the Technology, Organization, and Environment theory, institutional theory and quality management theory.

2.2.1 Institutional Theory

Institutional Theory by Meyer and Rowan (1977), states that the institutional environment strongly influences the development of formal structures in an organization more than market pressures. To improve efficiency in organizations, innovative structures are legitimized. This means that organizations must maintain certain structures and procedures so as to maintain legitimacy in the institutional environment.

Institutional theory has effects on procurement and supply chain performance. The institutional theory highlight that procedures must be observed in order to ensure that all the stakeholders involved in the procurement exercise obtain fair treatment. The procedures include; planning for the required procurement over a given period, identifying the source of the items, highlighting specifications of procurement, determining procurement procedures, Sourcing (soliciting) offers, evaluation, post qualification, commencement of contract, contract performance (delivery) and management, record keeping and accountability, payment and post contract performance. If the institution follows the procedures then the procurement and supply chain performance will be increased.

2.2.2 Quality Management Theory

Quality management theory by Heizer & Render (2005),states that the top management commitment and participation in quality management practices are the most important factors for the success of firm. Quality management is considered to have four main components: quality planning, quality control, quality assurance and quality improvement. Quality management is focused not only on product/service quality, but also the means to achieve it. Quality management theory focuses on continuous improvement therefore uses quality assurance and control of processes to achieve more consistent quality (Hansen, 2008).

The theory suggests that quality management is an important aspect for good performance of procurement and supply chain departments. Quality management affects the quality of goods procured and the delivery of quality services to the clients. Quality management results to high customer satisfaction and high firm's performance. The study will use quality management theory to identify how quality management affects procurement and supply chain performance.

2.2.3 Technology, Organization, and Environment Theory

The Technology, Organization, and Environment theory was developed in 1990 by Tornatzky and Fleischer. It identifies three aspects of an organization that influences the process by which it adopts and implements technological innovation. This three aspects are;- technological context, organizational context, and environmental context. Technological context describes both the internal and external technologies relevant to the firm. This includes current practices and equipment internal to the firm, as well as the available technologies external to the firm. Organizational context refers to descriptive measures about the organization such as scope, size, and managerial structure. Environmental context is the arena in which a firm conducts its business, its industry, competitors, and dealings with the government (Tiago & Maria 2010).

According to Rowan (2013),The use of information communication technology (ICT) based procurement systems in building construction is affected by technological innovation

in the technological context, organizational context and environmental context. All these contexts determines the level of automation, type of procurement systems to be used in the firm, nature of the ICT infrastructure and how e-procurement is employed in the firm. This theory will be useful in this study for identifying how ICT affects procurement and supply chain performance in building construction firms.

2.3 Factors Affecting Procurement and Supply Chain Performance

The performance of a supply chain (responsiveness and efficiency) is determined by decisions in the areas of inventory, transportation, facilities and information. Hence these four areas are identified as drivers of supply chain performance.

Some of the factors that affect procurement and supply chain performance are;- Environmental uncertainty, Technology, Supply Chain Relationships, Flexibility and Quality. Environmental uncertainty refers to the environmental issues in the product chain or the unexpected changes of customers, suppliers, competitors and technology (Dwivedi and Butcher, 2009).

Telecommunications and computer technology allow all the actors in the supply chain to communicate among each other. The use of information technology allows suppliers, manufacturers, distributors, retailers, and customers to reduce lead time, paperwork, and other unnecessary activities. It is also believed that managers will experience considerable advantages with its use such as the flow of information in a coordinated manner, access to information and data interchange, improved customer and supplier relationships, and inventory management (Handfield and Nichols, 2013).

Supply chain relationships play an important role in achieving the firm's goals. The coordination and integration of activities with suppliers and understanding of customer's needs results in greater benefits for companies (Fraza 2012).

Flexibility can be understood as the ability to react and adapt quickly to changes in the market due to an increase or decrease of customers' requirements. The complex markets, fierce competition and fast changes in demand require that companies be ready to react promptly to customers' needs (Bowersox and Cooper 2007).

Quality is meeting or exceeding the expectations of your customer Achieving better efficiency, quality and productivity, and acquiring the highest value of a product at lower cost will improve the business performance of a company (Bishop, 2009).

Managing the external environment has increasingly become a major challenge to the modern manager. This is mainly due to the fact that the environment is highly dynamic. Whether the changes are significant or not, managers still need to consider them because as an open system, an organization is highly dependent on the outside world for such things as its supplies. Ability to cope or effectively manage the external environment may be the difference between a successful and a failed organization (Otieno, 2004).

2.4 Empirical Review

According to Chang (2008), Information technology (IT) plays a great role towards supporting adoption of centralized procurement systems in construction firms. Centralized procurement system leads to a central procurement data base that creates a favourable environment for effective automation of procurement processes. Chopra (2008) affirms that there are two primary types of procurement systems: electronic procurement and standard procurement. Both types of systems are widely available and are often included in an enterprise resource planning (ERP) or accounting software product.

Lee (2002) affirms that Supplier relationship management (SRM) is a discipline of working collaboratively with those suppliers that are vital to the success of your organization, to maximize the potential value of that relationship. SRM is about developing two-way, mutually beneficial relationships with your most strategic supply partners that deliver greater levels of innovation and competitive advantage than could be achieved by operating independently. Peters (2004) argues that SRM managers should be responsible for managing no more than three supplier relationships, in order to devote sufficient time to each. Staff involved in SRM activities will have a good combination of commercial, technical and interpersonal skills.

Compton (2007), suggests that effective execution of organization procurement procedures greatly depends on the level of employees' training since lack of professional trained staff

on procurement functions limits the ability of the organizations to embrace procurement best practices through benchmarking. Charles (2009) affirms that lack of professional training is a key impediment to maintenance of high level of professionalism in the execution of procurement in construction firms.

Golder (2007) asserts that organizations that fail to integrate procurement functions with information communication technology systems like electronic data interchange,employs manual procurement procedures that are inefficient and ineffective and leads this to wastage of procurement funds since the procurement processes are characterized by a low degree of transparency. According to Ken (2007), IT has reached almost every aspect of procurement and may enhance and deepen the effort of procurement reform. Specifically, information technology (IT) promotes economy and efficiency, significant savings of companies' funds by increasing competition, transparency by making available. Procurement information of all sorts such as bidding opportunities, bidding documents, notices etc,

Mensah and Ameyaw (2012) identify absence of internal control and management structures as a barrier towards sustainable procurement. Without proper structures, organizations will face complications in making its business more sustainable, since sustainability demands elaborate and updated structural systems within the supply chain like quality control systems. Lenard (2005), asserts that although returns from supply chain investment could be massive, challenges are colossal too. This could be one of the barriers to the institutionalization of sustainable procurement practices.

According to Okoth (2013), factors affecting procurement and supply chain performance include, bureaucracy and time consuming methods of procurement, training on cost effectiveness and timely delivery of projects, stake holders involvement, failure to involve suppliers at the early design and specification stage leading to frequent changes of design and specifications and cancellation of contracts. Okoth, faulted the lengthy procedures that do not support cost saving strategies such as early supplier involvement, lean supply chain management and Just in Time delivery. He also noted slow implementation of the procurement law.

A study by Mulwa (2010) revealed that the use of poor supplier appraisal methods and application of ineffective supplier selection process discourages implementation of effective procurement practices. Oyugi (2012) noted that many Construction firms lack effective supplier relationship management strategies and do not collaborate with suppliers and this impacts negatively towards implementation of cost-effective procurement practices. The study, therefore, deduced that the key notable factors influencing supplier management, also affect procurement practices in construction firms.

According to Mwangi (2010), purchasing departments have become larger and more complex, most organizations have adopted IT based systems that have created a platform for installation of automated procurement systems. These procurement systems provide efficient and extensive cost savings and other business benefits by automating many of the purchasing processes.

2.5 Summary and Research Gap

The theoretical and the empirical literature demonstrate that, the existing literature on factors affecting procurement performance is not extensive in Africa and in Kenya in particular. Most studies on factors affecting procurement performance are common in many developed countries such as Europe, America and Canada. The studies done failed to explain how each of the sourcing strategies can support implementation of effective procurement practices in building construction firms. This indicates that, there lacks a specific study that clearly identifies the factors affecting procurement and supply chain performance in construction firms in Nairobi.

Innovation in technology has played a major role in enhancing many organizations procurement performance (Harrison,2014). Studies done previously did not clearly elaborate how organizations should innovate technology to succeed in implementing efficient procurement. The studies failed to explain the type of technology that should be embraced by construction firms in order to enhance its procurement and supply chain performance. Many firms that employ just in time inventory management technique have succeeded in embracing sustainable procurement performance. However, the studies done, failed to explain how just in time and other inventory management techniques affect

procurement performance in building construction industry and give recommendations on the best inventory management techniques enchasing good performance in building and construction firms in Kenya.

The previous literature has therefore not specifically addressed the key factors affecting procurement and supply chain performance in building construction industry and hence developing a major knowledge gap in this particular research area. This study aims to fill the missing gaps by determining the major factors affecting procurement and supply chain performance in building construction firms in Nairobi.

CHAPTER THREE: RESEARCH METHODOLOGY

3.1 Introduction

This chapter provided details of research design and data collection techniques used. It also described the data analysis approach that was used in the study. This was against the background of the research objective, to examine the factors affecting procurement and supply chain performance in building construction firms in Nairobi.

3.2 Research Design

A descriptive cross sectional research design was used to examine the factors affecting procurement and supply chain performance in building construction firms in Nairobi. A descriptive survey was appropriate since it involved a one-time interaction with groups of people and was used to describe characteristics of a population or phenomenon being studied.

A descriptive study was also appropriate since according to Mugenda and Mugenda (2003) it is one which information is collected without changing the environment (nothing is manipulated).

3.3 Population of the Study

The research targeted building construction firms carrying out their operations in Nairobi. According to National Construction Authority (2015), there are fifty eight (58) registered construction firms in Nairobi. This constituted the population.

3.4 Sample Design

The researcher adopted the 30% proposed by Mugenda and Mugenda (2003) of the building construction companies in Nairobi. According to them a minimum sample of 30% is adequate for educational research. Hence, a total of 17 companies was used for the sample.

The study targeted 1 procurement manager, 1 supply chain manager and atheist 3 procurement supply chain officers from each company and this gave a total of 85 respondents.

3.4 Data Collection

The study used both primary and secondary data to meet its objectives. The main data collection instruments used to collect data was a questionnaire containing open-ended and closed-ended questions. The questions were structured in order to obtain information on factors affecting procurement and supply chain performance in building construction firms in Nairobi. The questionnaire consisted of three sections. Section A consisted of demographic information, sector B consisted of the practices, while section C consisted of questions on factors affecting performance.

The questionnaire allowed greater uniformity in the way questions were asked, ensuring greater compatibility in the responses. The use of open and close-ended questions on the questionnaire allowed for uniformity of responses to questions; while unstructured questions gave the respondent freedom of response which helped the researcher to gauge the feelings of the respondent; he/she can use his or her own words (Field, 2005). Secondary data was obtained through desk search techniques from published reports which include the journals, periodicals and building construction publications.

3.5 Data Analysis

Ones the data was collected, the researcher checked for its accuracy, consistency and completeness. The use of closed-end and open-end questionnaires contributed towards gathering of both quantitative and qualitative data. The first objective was analyzed using descriptive survey and the second objective through factor analysis.

Descriptive statistics method was applied to analyze quantitative data where data was scored by calculating the percentages, mean' standard deviation and Variance. This was done using Statistical Package for Social Sciences (SPSS) computer software. SPSS was considered appropriate since it allowed the researcher to follow clear set of quantitative data analysis procedures that leads to increased data validity and reliability and

demonstrates the relationship between the research variables. Factor analysis was used to explore the common variance-covariance characteristics of the sets of factors that affect procurement and supply chain performance.

CHAPTER FOUR: DATA ANALYSIS, PRESENTATION AND INTERPRETITION

4.1 Introduction

The main objective of this study was to investigate the effects of the procurement and supply chain performance in relation to building construction firms. In this regard, this chapter presents the results and findings of the study as collected from the sample population. The data has been presented by tabulation. The chapter covers respondents' general information based on demographic information, and findings based on how the two research questions/objectives affect procurement and supply chain practices employed in building construction firms and factors affecting procurement and supply chain performance in building construction firms. The section will end with a discussion of the chapter.

4.1.1 Cronbach's alpha reliability coefficients results

Cronbach alpha was used to test consistency and reliability of the data collection instrument. The higher the score, the more reliable the generated scale was. Researchers have indicated 0.7 to be an acceptable reliability coefficient but lower thresholds are sometimes used in the literature. The Cronbach's alpha reliability coefficients for the three of effects of procurement and supply chain performance factors are given in Table 4.1 below.

Table 4.1: Cronbach's alpha reliability coefficients results for the questionnaire factors

Public sector performance	Mean	Standard Deviation	Cronbach's Alpha Reliability Coefficients	Evaluation based on Sekaran (2000)
Procurement and supply chain practices	8.6669	2.58068	0.715055	Acceptable
Factors affecting procurement and supply chain performance	8.99646	3.02830	0.757562	Acceptable
Performance	8.4966	2.51733	0.688859	Acceptable
Overall reliability			0.720492	Acceptable

The results in Table 4.1 above indicate that the user's questionnaire factors were reliable since the Cronbach's alpha reliability coefficient for the employee's instrument was 0.720492 indicating that it was good and hence acceptable. Therefore, questionnaire instrument used for this particular research was a reliable measure of the effects of the procurement and supply chain performance in relation to building construction firms.

4.1.2 Response Rate

Table 4.2 shows the studies response rate. The study targeted a sample of 85 respondents whereby 62 respondents participated resulting in a 73% response rate. This response rate was high and satisfactory as Mugenda and Mugenda (2003) observe that in descriptive research, a response rate of above 50% is adequate for analysis. Two of the 62 questionnaires were partially filled in as respondents claimed that information required was sensitive and highly confidential hence not authorized to submit. However, the two questionnaires were still deemed usable. Other questionnaires were not returned reasons being that data required was confidential and also others simply did not fill them in despite constant follow up through phone calls and e-mails. The high response rate was attributed

to use of online data collection methods like use of e-mails in addition to physical dropping and picking later method of questionnaire administration. Construction firms located out of CBD were easily and quickly reached through e-mails and phone calls hence enabling data collection from many firms.

Table 4.2: Response Rate

Response	Frequency	Percentage
Responded	62	73
Not responded	23	27
Total	**85**	**100**

4.2 General Information

This section evaluates the respondents demographic in terms of; gender, respondents position in the organization, respondents level of education among other factors as shown below

4.2.1 Respondents Gender

The study aimed at evaluating the respondent's gender. The findings are as shown below;

Table 4.3: Respondents gender

Gender	Frequency	Percentage
Male	47	76
Female	15	24
Total	**62**	**100**

According to Table 4.3, majority of the respondents were male as shown by 76% while 24% were of the female gender. The findings show that the procurement and supplies department were dominated by the male gender.

4.2.2 Respondents Position in the Organization

Figure 4.1 shows the position of the respondents in the organization.

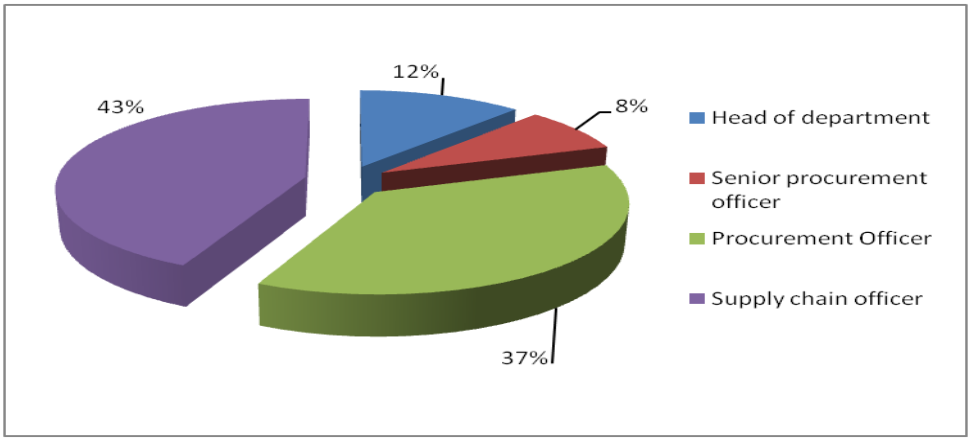

Figure 4.1: Respondents position in the organization

Majority of the respondents (43%) were supply chain officer, 37% were procurement officer, 12% were head of department and 8% were senior procurement officer. This depicts that all the targeted departments were represented in the study.

4.2.3 Continued Service with the Construction Firms

Respondents were asked to indicate their continued service with the construction firms.

Table 4.4: Continued service with the construction firms

Years	Frequency	Percentage
1 to 2 years	1	1
3 to 4 years	6	10
5 to 6 years	17	28
Over 6 years	38	61
Total	**62**	**100**

Table 4.4 shows that 61% who were the majority had worked with the constriction firms for over 6 years, 28% had worked with the firms between 5 to 6 years, 10% had worked with the firms between 3 to 4 years while 1% had worked with the firms between 1 to 2 years. The results show that the respondents had vast knowledge of the firms operations due to the time of service as shown above.

4.2.4 Respondent's Level of Education

Respondent's level of education was evaluated and tabulated on figure 4.2 below;

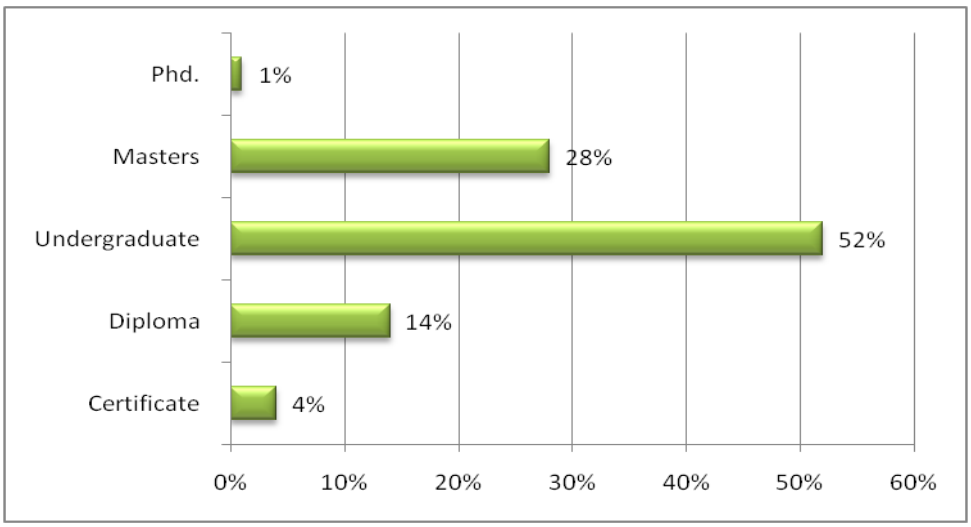

Figure 4.2: Respondent's level of education

The findings show that 52% who were the majority were undergraduates, 28% were masters holders, 14% had diploma certificate, 4% had certificates as their highest education level while 1% Phd. This shows that the respondents were well educated and could respond to the questionnaire as well they were qualified for their current positions.

4.2.5 Registration of the Construction Firms

The study aimed at evaluating the registration of the construction firms.

Table 4.5: Registration of the construction firms

Registration of the construction firms	Frequency	Percentage
Sole Proprietorship	6	9
Partnership	17	27
Company	40	64
Total	**62**	**100**

According to the Table 4.5, 64% were registered as a company, 27% were registered under partnership and 9% were registered under sole proprietorship. This shows that the firms were registered and operated legally.

4.2.6 Registration with the National Construction Authority

An assessment was conducted to evaluate whether the companies were registered with the National Construction Authority. Table 4.6 shows the tabulation.

Table 4.6: Registration with the National Construction Authority

Response	Frequency	Percentage
Yes	61	98
No	1	2
Total	**62**	**100**

The findings show that 98% who were the majority were in agreement while 2% were of the contrary opinion. Those who had not registered indicated that they were in the process of doing so.

4.2.7 Category of Registration

Further the study aimed at investigating which categories the construction firms were registered under.

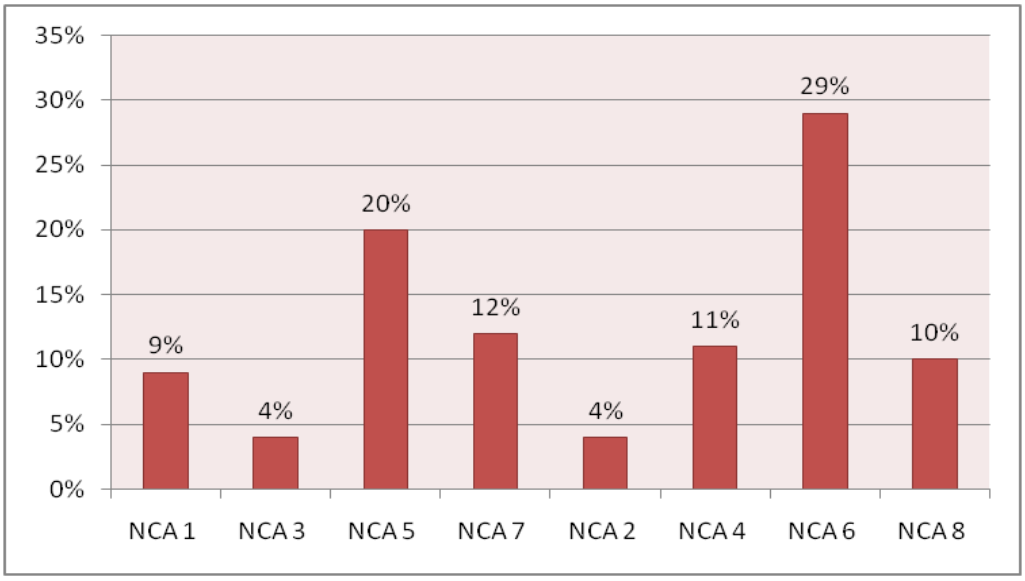

Figure 4.3: Category of registration

According to figure 4.3, 29% who were the majority were registered under NCA 6, 20% were registered under NCA 5, 12% were registered under NCA 7, 11% were registered under NCA 4, 10% were registered under NCA 8, 9% were registered under NCA 1, 4% were registered under NCA 3 as well as 4% were registered under NCA 2. This shows that all the eight categories of NCA were well represented in this study.

4.2.8 Year of Registration

The study also aimed at establishing when the firms were registered. Findings are as shown below;

Table 4.7: Year of registration

Period	Frequency	Percentage
Between 2000 to 2015	5	8
Between 1990 to 1999	32	51
Between 1980 to1989	21	34
Before 1989	4	7
Total	**62**	**100**

According to Table 4.7, 51% who were the majority had registered between 1990 to 1999, 34% had registered between 1980 to1989, 8% had registered between 2000 to 2015, 7% had registered before 1989. The findings show that the firms had operated for more than 10 years in supply and procurement and hence they understood the practice well.

4.3 Procurement and Supply Chain Practices Employed

In this section, the study sought to know the extent to which procurement and supply chain practices employed influence supply chain performance in building construction firms. The extent was measured on a Likert scale of 1-5 where: 5= Very Large Extent, 4= Great Extent, 3= Moderate Extent, 2= Small Extent and 1= Very Small Extent. The higher the mean, the greater the extent of agreement while the greater the standard deviation, the greater the level of variation in the responses.

4.3.1 Source of Materials Used

The study was interested in knowing where the firms procured as well as sources supplied from. Results are as shown below;

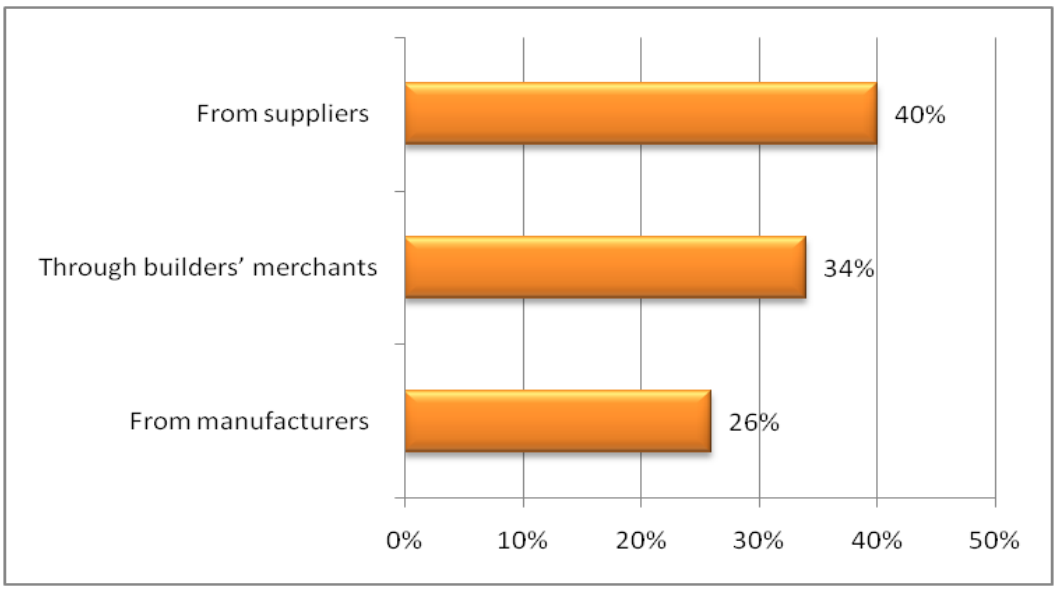

Figure 4.4: Source of materials used

Figure 4.4 shows that; 40% who were the majority indicated that they got their building materials from suppliers, 34% got their building materials through builders' merchants while 26% got their building materials from manufacturers. The main reason behind this was because the suppliers were cheaper as compared to the others and they were flexible in terms of payment period.

4.3.2 Procedure Used When Ordering Building Materials

The study evaluated the procedure the firms used ordering building materials. Results are as shown below;

Table 4.8: Procedure used when ordering building materials

Requisitions	Frequency	Percentage
Written requisitions	15	24
Verbal requests	2	3
Both written requisitions and verbal requests	45	72
Total	**62**	**100**

According to Table 4.8 above, 72% who were the majority ordered building materials using both written requisitions and verbal requests, 24% ordered building materials using written requisitions while 3% ordered building materials using verbal requests. The reason behind ordering building materials using both written requisitions and verbal requests it's for documentation and accountability purposes.

4.3.3 Procurement Practices Applied

The extent of various procurement practices applied in the construction firms were assessed. Findings show that the procedures were applied to a great extent as shown by a mean score of 3.58. The tabulations are as shown below;

Table 4.9: Procurement practices applied

Statement	Mean	Standard deviation
The company practices supplier relationship management	3.77	1.142
The company practices ethical procurement	3.60	1.030
The company practices green supply chain management	3.68	.238
The company's measures to keep a competitive edge	3.61	1.087
Application of professional ethics in the company	3.75	.231
Company's ability to view the system holistically from one point	3.46	.303
The extent to which E-technology system are adopted	3.19	.415
Total	**25.06**	**4.446**
Average	**3.58**	**0.635**

Table 4.9 shows that; the company practices supplier relationship management to a great extent (mean score 3.77), application of professional ethics in the company were applied to a great extent (mean score 3.75), the company practices green supply chain management to a great extent (mean score 3.68), the company's measures to keep a competitive edge to

a great extent (mean score 3.61), the company practices ethical procurement to a great extent (mean score 3.60), company's ability to view the system holistically from one point was done to a great extent (mean score 3.46) however it E-technology system was adopted to a moderate extent (mean score 3.19).

4.3.4 Building Materials Supplier Sourcing

The study aimed at evaluating factors considered before settling for building materials supplier. This is as shown by Table 4.10

Table 4.10: Building materials supplier sourcing

Factor in consideration	Mean	Standard deviation
There are efficient procurement mechanisms being used	4.04	.334
Competitive prices paid for focus products	3.65	1.263
Suppliers are delivering the right goods at the right time	3.19	1.201
Procurement unit is operating efficiently	3.62	1.098
Procurement managers are taken through the supply training program to ensure checks and balances in the process	3.73	.118
There is effective communication with the suppliers	3.31	.461
Total	**21.54**	**4.475**
Average	**3.59**	**0.746**

According to the findings; there were efficient procurement mechanisms being used to a great extent (mean score 4.04), procurement managers were taken through the supply training program to ensure checks and balances in the process to a great extent (mean score 3.73), there was competitive prices paid for focus products to a great extent (mean score 3.65), procurement unit was operating efficiently to a great extent (mean score 3.62), there was effective communication with the suppliers to a moderate extent as well it was to

a moderate extent that the (mean score 3.31) and suppliers were delivered the right goods at the right time (mean score 3.19).

4.4 Factors Affecting Procurement and Supply Chain Performance

In this section, the study sought to evaluate factors affecting procurement and supply chain performance. Five construct were used to measure this as presented below;

4.4.1 Problems faced in Transporting the Materials

The study evaluated the problems faced in transporting the materials to the construction site. The results are as shown below

Table 4.11: Problems faced in transporting the materials

	Frequency	**Percentage**
Distance between supplier depots and construction sites	32	51
Poor road infrastructure	14	23
Traffic jam	4	7
Shortage of transporting means	12	19
Total	**62**	**100**

According to Table 4.11, 51% indicated that they faced distance problem between supplier depots and construction sites, 23% were faced by poor road infrastructure, 19% were faced by shortage of transporting means while 7% were faced with traffic jam problems. This infers that the construction firms faced a transportation challenge of moving their materials to the construction site from their suppliers.

4.4.2 Follow up System during Delays

The study evaluated whether respondents were faced with follow up system when there were supply delays.

Table 4.12: Follow up system during delays

Response	Frequency	Percentage
Yes	55	88
No	7	12
Total	**62**	**100**

According to Table 4.12, majority of the respondents (88%) were in agreement that they were faced with follow up system when there were supply delays while 12% of the contrary opinion.

4.4.3 Level of Cooperation from Supplier

Those who were in agreement (88% as shown by Table 4.12) were further asked to rate the level of cooperation from the supplier when following up delayed materials.

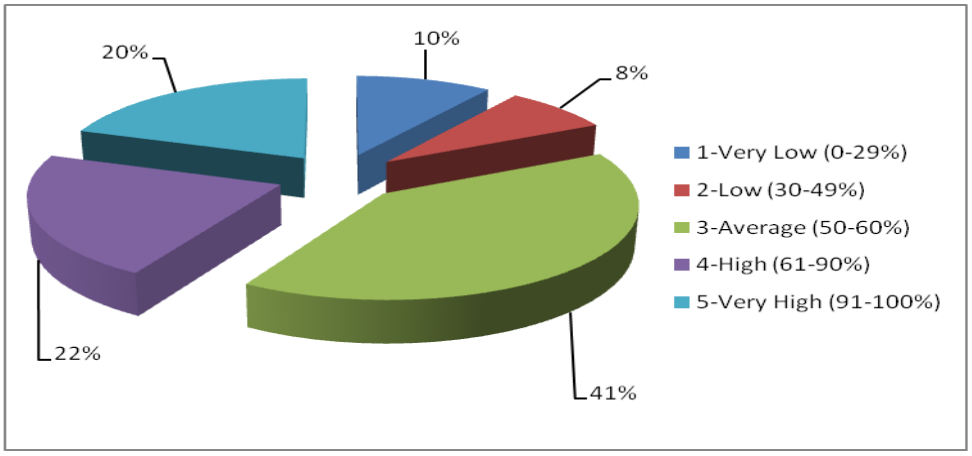

Figure 4.5: Level of cooperation from supplier

According to figure 4.5, 41% indicated that the level of cooperation from the supplier when following up delayed materials was average, 22%were of the opinion that the level of cooperation from the supplier when following up delayed materials was average, 20%

indicated that the level of cooperation from the supplier when following up delayed materials was very high 10% rated the level of cooperation from the supplier when following up delayed materials to a very low extent while 8% rated the same as low.

4.4.5 Challenges in the Procurement and Supply Chain

The study aimed at establishing whether the firms were experiencing challenges in the procurement and supply chain in given areas. Responses are as shown below;

Table 4.13: Challenges in the procurement and supply chain

Statement	Mean	Standard deviation
Communication barriers among stakeholders	3.88	.446
Lack of conflict resolution skills	3.73	1.041
Variation control procedures	3.73	1.116
Rigid framework of program	4.04	.038
Poor work quality control procedures	3.01	2.783
Total	**18.39**	**5.424**
Average	**3.68**	**1.085**

Table 4.13, shows that; communication barriers among stakeholders was a challenge to a great extent (mean score 3.88), lack of conflict resolution skills was to a great extent (mean score 3.73), variation control procedures was to a great extent (mean score 3.73) rigid framework of program was experienced to a great extent (mean score 4.04) however poor work quality control procedures was rated moderate (mean score 3.01).

4.4.6 Rate of Company's Procurement Performance

The study aimed at assessing the company's procurement performance, where it was rated to a great extent (mean score 3.75).

Table 4.14: Rate of company's procurement performance

Factor in consideration	Mean	Standard deviation
Costs Reduction	4.08	. 720
Procurement Time	3.69	1.192
Quality of services	3.65	1.018
Information technology use	3.59	.129
Supplier relationships	3.72	. 831
Company Flexibility	3.88	.659
Condusive working environment	3.61	1.338
Total	**26.22**	**4.336**
Average	**3.75**	**0.867**

According to Table 4.14, there was reduced costs to a great extent (mean score 4.08), supplier relationships was ensured to a great extent (mean score 3.69), the process ensured reduced time (mean score 3.65), the company was flexible (mean score 3.59), the process ensured quality (mean score 3.72), company environment was condusive to a great extent (mean score 3.88) and information technology was effective to a great extent (mean score 3.61).

4.5 General Performance

In this section, the study sought to evaluate performance of the construction firms. The findings are as shown;

4.5.1 Performance of the construction firms measured

Performance of the construction firms was measured which was found to be to a great extent (mean score 3.83).

Table 4.15: Performance of the construction firms measured

Performance measures	Mean	Standard deviation
Projects are done within the approved cost	3.75	1.026
Works quality to specification	3.84	.175
Completion within expected time	3.76	1.274
Projects executed conform to specifications	3.92	.153
Satisfaction of stakeholder	3.89	1.105
Total	**19.16**	**3.733**
Average	**3.83**	**0.747**

Table 4.15 shows that; projects were executed and conformed to specifications to a great extent (mean score 3.92), stakeholder were satisfied of to a great extent (mean score 3.89), works qualified to specification to a great extent (mean score 3.84), projects were completion within expected time to a great extent (mean score 3.76) while projects were done within the approved cost to a great extent (mean score 3.75).

4.6 Factor Analysis for Performance in Building Construction Firms

Factor analysis was used to extract the most important components that measured the rotated component factor analysis for performance in building construction firms. The principal component analysis and varimax rotation methods were used to extract components with the Eigen values > 1 and items with correlation coefficients greater than or equal 0.60 as shown in the following rotated matrix tables.

Table 4.16: Rotated Component Matrix for Performance in Building Construction Firms

	Components		
Rotated component factor analysis for Performance	**Procurement and Supply chain practices employed**	**Factors affecting procurement and supply chain**	**Performance Indicators**
The company practices green supply chain management	.400		
The company's measures to keep a competitive edge	.399		
Application of professional ethics in the company	.397		
There are efficient procurement mechanisms being used	.389		
Competitive prices paid for focus products	.801		
Suppliers are delivering the right goods at the right time	.371		
Procurement unit is operating efficiently	.369		
Procurement managers are taken through the supply training program to ensure checks and balances in the process	.365		

communication barriers among stakeholders		.430	
Lack of conflict resolution skills		.426	
Variation control procedures		.419	
Rigid framework of program		.402	
Supplier relationships			.416
Company Flexibility			.385
Projects are done within the approved cost			.381
Works quality to specification			.379
Completion within expected time			.374
Projects executed conform to specifications			.374
Satisfaction of stakeholder			.401
Eigen Values	**36.326**	**19.458**	**8.805**
Variance %	**36.564**	**22.163**	**12.229**
Cumulative %	**36.564**	**58.727**	**89.706**

Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization. A rotation converged in 8 iterations.

Factor analysis results yielded three components. These were interpreted as procurement and supply chain practices employed (36.564%), factors affecting procurement and supply chain (22.163), performance in building construction indicators (12.229%); all explaining 89.7% of the variance in performance. Since the largest Eigen value of 36.564 corresponds to procurement and supply chain practices employed, this is a component that claims most of the responses.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

This chapter provides the summary of the findings from chapter four, and also it gives the conclusions based on the objectives of the study. The researchers then present the recommendations for both the research and for the policy and practice.

5.2 Summary of Findings

According to the findings; majority (40%) got their building materials from suppliers, majority (72%) ordered building materials using both written requisitions and verbal requests. The company practices supplier relationship management to a great extent (mean score 3.77). Application of professional ethics in the company were applied to a great extent (mean score 3.75). The company practices green supply chain management to a great extent (mean score 3.68). The company's measures to keep a competitive edge to a great extent (mean score 3.61). There were efficient procurement mechanisms being used to a great extent (mean score 4.04). Procurement managers were taken through the supply training program to ensure checks and balances in the process to a great extent (mean score 3.73). There was competitive prices paid for focus products to a great extent (mean score 3.65) and the procurement unit was operating efficiently to a great extent (mean score 3.62).

The study found that majority were (51%) faced with distance problem between supplier depots and construction sites. Majority (88%) were in agreement that they were faced with follow up system when there were supply delays. Majority (41%) indicated that the level of cooperation from the supplier when following up delayed materials was average. Communication barriers among stakeholders was a challenge to a great extent (mean score 3.88). Lack of conflict resolution skills was to a great extent (mean score 3.73). Variation control procedures was to a great extent (mean score 3.73). Rigid framework of program was experienced to a great extent (mean score 4.04). There was reduced costs to a great

extent (mean score 4.08). Supplier relationships was ensured to a great extent (mean score 3.69). The process ensured reduced time to a great extent (mean score 3.65). The company was flexible to a great extent (mean score 3.59). The process ensured quality to a great extent (mean score 3.72). Company environment was conserved to a great extent (mean score 3.88) and information technology was effective to a great extent (mean score 3.61).

Factor analysis results yielded three components. These were interpreted as procurement and supply chain practices employed (36.564%), factors affecting procurement and supply chain (22.163), performance in building construction indicators (12.229%); all explaining 89.7% of the variance in performance. Since the largest Eigen value of 36.564 corresponds to procurement and supply chain practices employed, this is a component that claims most of the responses.

5.3 Conclusion

Based on the above findings, the following conclusions were made for factors affecting procurement and supply chain performance in building construction firms. The study found that, the use of procurement and supply chain practices in a large extent has improved its organisational performance. Some of the ways in which procurement and supply chain improved organisational performance include; improved quality of products, improved ability to meet demand, improved organisational performance, leads to reduced costs improved ability to meet demand and helps in customer satisfaction and confidence.

The study found out that the firms were faced with transportation challenges which include; distance between supplier depots and construction sites and poor road infrastructure which hampers greatly on their service delivery. Similarly, the study found out that the firms were faced with; communication barriers among stakeholders, lack of conflict resolution skills as well as variation control procedures.

The study concludes that performance of the construction firms was due to the supplies and procurement practices applied which include; practicing supplier relationship management, ethical procurement, green supply chain management as well as application of professional ethics in the company.

5.4 Recommendations

Based on the above conclusions, the following recommendations were made for procurement and supply chain performance in building construction firms in Nairobi. From the findings the study recommends that procurement and supplies managers should be trained on how to ensure efficiency in the system in order to meet the client's requirements.

Transportation should be improved by either outsourcing firms that have enough automobiles that can handle the project supply as well as ensure coordination by improving on customer to suppliers' communication skills. This will lead to improved service delivery and timely receiving of building materials.

The study recommends that plans are not static and that preparation of annual procurement plans should be participatory, frequently reviewed so as to improve on the construction firms performance. Equally, management of the procurement and supplies process should be administered by qualified, competent and experienced procurement professionals. This will not only help maintain good procurement standards but also will help achieve high levels of efficiency and effectiveness.

In addition, to avoid delays in supply and provision of services, timelines have to be respected since most projects would have overruns. For the success of the contracts under execution, the management of the construction firms should ensure that proper mechanisms for project monitoring and evaluation are put in place with the input of procurement personnel and the user department should submit progress reports on time in order to fasten the necessary action.

5.5 Suggestions for Further Research

This research concentrated on the study of factors affecting procurement and supply chain performance in building construction firms. The researcher recommends further research on the same topic but in other organizations other than construction firms, both within the country and outside the country. This will help to establish whether the same effects will be held true in organizations other than construction organizations and in other parts in and

out of the country. This will also assist in providing concrete facts upon which reliable conclusions can be made.

A replication of this study should be carried out but this time using a larger sample, more time should be allocated to the same and a combination of more than one of data collecting instrument should be used like interview and focus group discussions these will help to counter check the information provided.

A further study needs to be conducted using more variables that seem to be more relevant to this study

REFERENCES

Andrew, A. (2009). Strategic sourcing process model. *Journal of Business & Industrial and Labor Relations Review*, Vol.17, No.1. pp. 99-120.

Arrow S. (2008). An overview of EC policy on public procurement: *European Journal of Operational Research*. Vol.202, No.1. pp. 16-24

Brooks, W. (1998). Supply chain management practices and organization performance. *Journal of Supply Chain Management*. Vol.26, No.2. pp.148-163.

Buvik, A. and John, G. (2000). When does vertical coordination improve industrial purchasing relationships? Journal of Marketing, 64(4), 52–64

Chang, S. (2008). An Investigation of Stock Depletion Cost and Its Effect on Inventory. *Journal of Supply Chain Management*. Vol.27, No.7. pp. 144-163.

Charles, N. (2008). Centralized and decentralized procurement functions. *Journal of supply chain Management*. Vol.29, No.4. pp. 66-73.

Chong, A.Y.L. and Ooi, K.B. (2008). 'Adoption of inter organizational system standards in supply chains: an empirical analysis of Rosetta Net standards', *Industrial Management and Data Systems*, 108 (4), 529–547

Chopra, P. (2005). *Purchasing and supplies chain Management*.(4th Ed).NewJersy: Kogan Page Publishers

Christianne D, (2008). New developments in employee training. work study. *International Journal of Management*, Vol. 29 Iss: 1, pp.56 – 55

Compton, D. (2007). *Purchasing and supplies chain Management*. (3rd Edition).Network: Pearson Publishers

Corsten, P. (2009). Public procurement practices in developing countries. *Journal of supply chain Management*. Vol.44, No.7. pp. 46-48.

Delaney, J.T. and Huselid, M.A. (2006). 'The impact of human resource management practices on performance in for-profit and nonprofit organizations', *Academy of Management Journal*, 39, 949–969

Eisenhardt, K.M. (1989), Agency theory: an assessment and review, *Academy of Management*.

Elliot, R. (2007). What is the right inventory management approach for purchased item?",*Journal of purchasing Management.* Vol.22, No.7. pp.148-153.

Findlay, C. (2009), The case for procurement outsourcing. *Journal of Procurement*. Vol.33, No.7. pp. 144-146.

Ho, L.A. (2008). 'What affects organizational performance?: the linking of learning and management', *Industrial Management & Data Systems,* 108, (9), 1234–1254

Hoque, Z. and James, W. (2000). 'Linking balanced scorecard measure to size and market factors: impact on organizational performance', *Journal of Management Accounting Research,* 12, 1–17

Hunja, R. (2009).Obstacles to public procurement reform in developingCountries. *Journal of supply chain Management*. Vol.35, No.9. pp. 149-152.

Johnson, P.F. and Klassen, R.D. (2005). "E-procurement", *MIT Sloan Management Review*, 46 (2), 7-10

Kaufman, P.A. (2009). "Retailer acceptance of new products: a relational perspective", *American Marketing Association Conference Proceedings*, 13, 161.

Lysons, K .(2007). *Purchasing and supplies chain Management*. (5TH Ed).New Jersy: Pearson publishers.

Masime (2009). The Effect of EProcurement Practices on efficient procurement in public hospitals.

Nyeko, P. K. (2004). Procurement Processes and Performance: Efficiency and Effectiveness of the Procurement Function.

Oyugi. (2013). Factors influencing compliance to procurement regulationsin public sector. *Supply chainJournal*. Vol.36, No.9. pp. 111-124.

Shalle, N. I, Guyo, W. &Amuhaya, I. M. (2014). Role of inventory optimization. *Journal of supply chain Management*. Vol.32, No.7. pp. 139-142

Simpson, M. (2007), Benchmarking and the organization the performanceVol.18, No.9. pp. 138-142

Turban, E., Lee, J., King, D. and Chung, M.H. (2000). *Electronic Commerce*, Prentice Hall, Upper Saddle River, NJ

Van Weele, A.J. (2002) Purchasing and Supply Chain Management. Analysis, Planning and Practice, 3rd edition. Thomson Learning, London

Vonderembse, M.A. and Tracey, M. (1999). The Impact of Supplier Selection Criteria and Supplier Involvement on Manufacturing Performance. The Journal of Supply Chain Management, vol. 35, no. 3, pp. 33-39

Woods, A., Joyce, P. (2003), Owner-managers and the practice of strategic management, *International Small Business Journal*, Vol. 21 No.2, pp.181-96

Woolcock, S. (2008) *Public Procurement and the Economic Partnership Agreements: Assessing the potential impact on ACP Procurement Policies.* Commonwealth Secretariat

Xingxing, Z. (2012). An agency theory perspective on supply chain qualitymanagement. *Journal of Supply Chain Management*. Vol.31, No.9. pp.111-116

Wall, F.R. (2003), Organizational efficiency by integrated information systems versus management control? *An agency-based approach, paper presented at the 2nd Conference on Performance Measurement and Management Control, Nice,* September 18-19.

Weele, A.J., (2000). Professional development of purchasing in organizations: towards a purchasing development model *In: WMRC (Ed.), Global Purchasing and Supply Chain Strategies. Touch Briefings, London, pp. 170–175*

Wilson, C.L., (2002), E-procurement and energy: Power Economics, Wilkington Publishing, Great Britain, Vol. 6 , ISSU11.

McCue, C.P. and Pitzer, J.T. (2006). "Centralized vs Decentralized Purchasing: Current Trends in Government Procurement Practices." *Journal of Public Budgeting, Accounting& Financial Management*, 12 (3): 400-420.

Mugenda, O.M. and Mugenda, A.G. (2004): revised. Research Methods; Quantitative Qualitative Approaches: ACTS Press, Nairobi

APPENDICES

Appendix I: Introduction Letter

Dear Sir/ madam,

RE: REQUEST FOR PERMISSION FOR DATA COLLECTION

I am a postgraduate student of the University of Nairobi pursuing a master degree in business administration (procurement option). I wish to conduct a research titled *factors affecting procurement and supply chain performance in building construction firms in Nairobi* .A questionnaire has been developed to assist gathering relevant information for this study. I wish to seek your permission to be allowed access to your members of staff who will be selected randomly and issued with a questionnaire.

Your grant of permission to conduct the study in your company will be highly appreciated. I wish to guarantee you that all information will be treated with utmost confidentiality and high ethical standards will be observed.

Yours Sincerely,

Eunice Muthoni Kiromo

Appendix II: Questionnaire

This questionnaire has four sections, section A on the general information of respondent, section B assesses the procurement and supply chain practices employed, section C solicit information on the factors affecting procurement and supply chain performance in Nairobi and section D will measure the procurement and supply chain on firms performance**.**

SECTION A: GENERAL INFORMATION

1. Gender

   Male [ ] Female [ ]

2. What is your position in the organization?

   Head of department [ ]
   Senior procurement officer [ ]
   Procurement Officer [ ]
   Supply chain officer [ ]

3. How long have you worked in the organization?

   1 to 2 years [ ] 3 to 4 years [ ]
   5 to 6 years [ ] Over 6 years [ ]

4. What is your level of education?

   Certificate [ ] Diploma [ ]
   Undergraduate [ ] Masters [ ]
   Phd. [ ] Other specify …….

5. What type of organization is the firm?

   Sole Proprietorship [ ]
   Partnership [ ]
   Company [ ]
   Other (please specify) .....

6. Is your firm registered with the National Construction Authority (NCA)?

Yes [ ] No [ ]

7. If yes, in which category is it registered?

NCA 1 [ ] NCA 3 [ ] NCA 5 [ ] NCA 7 [ ]

NCA 2 [ ] NCA 4 [ ] NCA 6 [ ] NCA 8 [ ]

8. When was the firm registered in this category? In the year……

SECTION B: Procurement and Supply Chain Practices Employed

9. What is the source of materials you use?

From manufacturers [ ]

Through builders' merchants [ ]

From suppliers [ ]

Others (please specify)……..

10. What procedure do you use when ordering building materials?

Written requisitions [ ]

Verbal requests [ ]

Both written requisitions and verbal requests [ ]

Others (please specify)……

11. Please indicate by ticking the extent to which the following procurement practices are applied in your organisation as per the following scale of 1-5. Use a scale of 1-5 where; 5 Very Great extent, 4 Great extent, 3 Moderate extent, 2 Small extent and 1 Very small extent

Statement	**1**	**2**	**3**	**4**	**5**
The company practices supplier relationship management					
The company practices ethical procurement					
The company practices green supply chain management					
The company's measures to keep a competitive edge					
Application of professional ethics in the company					
Company's ability to view the system holistically from one point					
The extent to which E-technology system are adopted					

12. From your perspective, kindly rate the significance of the procurement supply chain practices listed below on a sale of 1 – 5 in their effect on performance (5) = strongly agree (4) = agree (3) = Medium (2) = disagree (1) = strongly disagree

Factor in consideration	**1**	**2**	**3**	**4**	**5**
There are efficient procurement mechanisms being used					
Competitive prices paid for focus products					
Suppliers are delivering the right goods at the right time					
Procurement unit is operating efficiently					
Procurement managers are taken through the supply training program to ensure checks and balances in the process					
There is effective communication with the suppliers					

SECTION C: Factors Affecting Procurement and Supply Chain Performance

13. What problems do you face in transporting the materials?

Distance between supplier depots and construction sites [ ]

Poor road infrastructure [ ]

Traffic jam [ ]

Shortage of transporting means [ ]

14. Do you have a follow up system when there are supply delays?

Yes [ ] No [ ]

b) If yes, how can you rate the level of cooperation from the supplier when following up delayed materials?

1-Very Low (0-29%) [ ]

2-Low (30-49%) [ ]

3-Average (50-60%) [ ]

4-High (61-90%) [ ]

5-Very High (91-100%) [ ]

15. To what extent does your firm experiencing challenges in the procurement and supply chain in the given areas? Use a scale of 1-5 where; 5 Very Great extent, 4 Great extent, 3 Moderate extent, 2 Small extent and 1 Very small extent

Statement	**1**	**2**	**3**	**4**	**5**

communication barriers among stakeholders					
Lack of conflict resolution skills					
Variation control procedures					
Rigid framework of program					
Poor work quality control procedures					

16. Kindly rate your company's procurement performance in the given factors. on a sale of 1 – 5 in their effect on performance (5) = Very High (4) = High (3) = Medium (2) = Low (1) =Very Low

Factor in consideration	**1**	**2**	**3**	**4**	**5**
Costs Reduction					
Procurement Time					
Quality of services					
Information technology use					
Supplier relationships					
Company Flexibility					
Condusive working environment					

SECTION D: Performance

17. To what extent do you agree with the following in relation to your firm? Use a scale of 1-5 where; 5 Very Great extent, 4 Great extent, 3 Moderate extent, 2 Small extent and 1 Very small extent

Performance measures	**1**	**2**	**3**	**4**	**5**
Projects are done within the approved cost					
Aligning quality to specification					
Completion within expected time					
Projects executed conform to specifications					
Satisfaction of stakeholder					

THANK YOU FOR YOUR TIME AND PARTICIPATION

Appendix III: List Of Building Construction Firms In Nairobi

1. Maridadi Building Contractors, Nairobi
2. Arcon works limited
3. Mandhir Construction Limited, Nairobi
4. Malva Construction Limited, Nairobi
5. M R Shah Construction (K) Limited, Nairobi
6. Lee Construction Limited, Nairobi
7. LaljiJavda and Sons, Nairobi
8. LaljiBhimjiSanghani, Nairobi
9. Kualam Limited, Nairobi
10. Kishore Construction Limited, Nairobi
11. Kirethi General Construction Company Limited, Nairobi
12. Kalpna Builders, Nairobi
13. Jagat Sign and Company (1996) Limited, Nairobi
14. Fubeco (China Fushun) , Nairobi
15. Faburex Construction (K) Limited, Nairobi
16. Expert Systems Limited, Nairobi
17. Elite Earth Movers Limited, Nairobi
18. Dunhill Building Contractors Limited, Nairobi
19. Dickways Construction Company Limited, Nairobi
20. Chirag Builders Limited, Nairobi
21. China Jiangsu International, Nairobi
22. Channa Construction Limited, Nairobi
23. Chalbene Limited, Nairobi
24. Cementers Limited, Nairobi
25. Bomco Building Contractors Limited, Nairobi
26. Beulah Contractors and Transporters, Nairobi
27. Beach Construction Company, Nairobi
28. Avco Builders Limited, Nairobi

29. Arcade Construction Company Limited, Nairobi

30. Rxe Roofing Products Ltd, nairobi
31. Aquarium and Garden Pond Supplies, nairobi
32. Ongata Works Ltd, Nairobi
33. Nanjing Construction, Nairobi
34. Zenith Development Limited, Nairobi
35. Willadams Builders and General Contractors, Nairobi
36. Wilken Building Contractors Limited, Nairobi
37. Uttam Construction, Nairobi
38. Unispan Limited, Nairobi
39. Twiga Construction Company, Nairobi
40. Triple Nine Associates Limited, Nairobi
41. Terrazzo Enterprises, Nairobi
42. Sumbacon Systems Limited, Nairobi
43. Shona Singh and Piara Singh Company, Nairobi
44. Shamanek Limited, Nairobi
45. Scrachit Company Limited, Nairobi
46. Renocon, Nairobi
47. Reno Masters Kenya Limited, Nairobi
48. Putton Limited, Nairobi
49. Parbat Siyani Construction Limited, Nairobi
50. Ongata Works Limited, University Way, Nairobi
51. Ongata Works Limited, Nairobi
52. Nones Company Limited, Nairobi
53. New Con (K) Limited, Nairobi
54. Nasib Engineering and Construction Limited, Nairobi
55. Muthaiga Properties Limited, Nairobi
56. MuljiDevraj and Brothers Limited, Nairobi
57. Mohinder Singh Mohan Singh and Company, Nairobi
58. Model Builders and Civil Engineers (K) Limited, Nairobi

SOURCE: National Construction Authority (2015)