

KWAME NKRUMAH UNIVERSITY OF SCIENCE AND TECHNOLOGY,

KUMASI

COLLEGE OF ART AND BUILT ENVIRONMENT

DEPARTMENT OF BUILDING TECHNOLOGY

KNUST

**PROCUREMENT RISKS MANAGEMENT IN THE PUBLIC SECTOR OF
GHANA: A CASE STUDY OF PUBLIC HEALTH AGENCIES IN THE
GREATER ACCRA REGION**

**A Thesis Submitted to the Department of Building Technology in Partial
Fulfillment of the Requirement for the Degree of Master of Science (MSc) in
PROCUREMENT MANAGEMENT**

BY

**LOUIS LAWER LAWERTEH
(BSc. (Hons) Building Technology)**

2015

DECLARATION AND CERTIFICATION

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

Louis Lawer Lawerteh

(Student)

Signature

Date

Dr. Theophilus Adjei-Kumi

(Supervisor)

Signature

Date

Dr. Bernard Badien

(Head of Department)

Signature

Date

DEDICATION

I dedicate this work firstly to the Almighty God for the gift of life and how far he has brought me. It's also to my dear grandmother, Madam Victoria Okpattah, for her immeasurable contributions toward my education.

KNUST

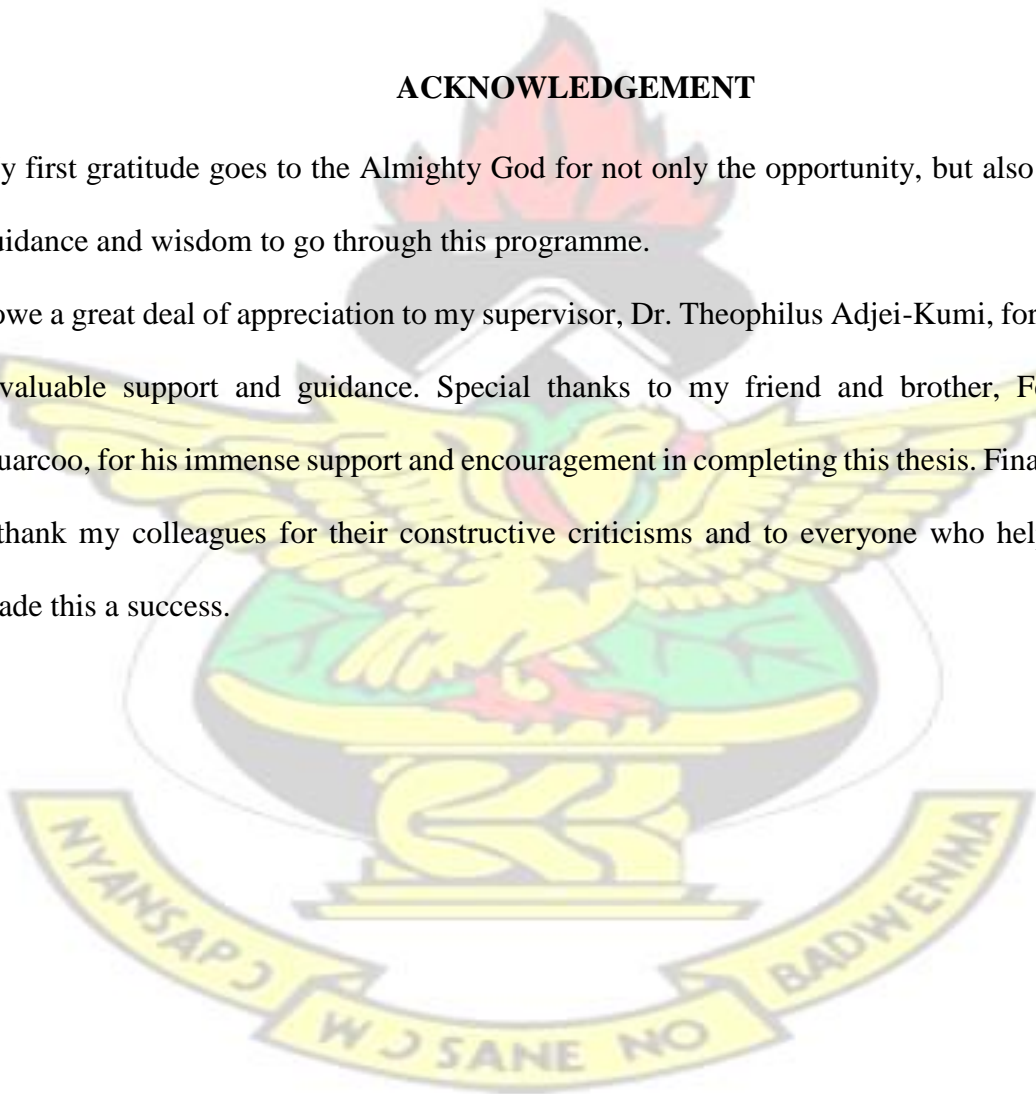


KNUST

ACKNOWLEDGEMENT

My first gratitude goes to the Almighty God for not only the opportunity, but also the guidance and wisdom to go through this programme.

I owe a great deal of appreciation to my supervisor, Dr. Theophilus Adjei-Kumi, for his invaluable support and guidance. Special thanks to my friend and brother, Felix Quarcoo, for his immense support and encouragement in completing this thesis. Finally, I thank my colleagues for their constructive criticisms and to everyone who helped made this a success.



ABSTRACT

Efficient public procurement practices contribute towards the sound management of public expenditures more generally. With the trend towards decentralization of government functions, it puts the decision-making on procurement in the hands of those responsible for delivery of services. Risk management is an activity which integrates recognition of risk, risk assessment, developing strategies to manage it, and mitigation of risk using managerial resources.

The aim of the study was to identify risks associated with the various stages of the procurement process within public sector agencies and recommend ways of dealing with the identified risks. The objectives of the study among others included identifying risks associated with various stages of the procurement process, assessing the impacts of risks on the procurement process and proposing risk management strategies to be adopted by the public sector agencies. Public health sector agencies in the Greater Accra region were used as case study.

The main tools for the collection of data included questionnaires while the target population for the data collection were procurement practitioners. Statistical package for social scientists (SPSS V 20) using mean score ranking was employed to analyze data obtained.

The study identified thirty two (32) risks associated with various stages of the procurement process, twelve (12) impacts of these risks on the procurement process and sixteen (16) risk management strategies.

The findings classified seven (7) of the identified risks as major; three (3) of the impacts of the risks as critical or significant; and all sixteen (16) risk management strategies as very important.

The study concludes that an efficient procurement system requires strategic risk management at all stages of the procurement process. It recommends among others, training and professional development for procurement staff and effective monitoring of public procurement entities by the procurement regulatory authority.

KNUST



TABLE OF CONTENTS

DECLARATION AND CERTIFICATION.....	ii
DEDICATION	iii
ACKNOWLEDGEMENT.....	iv
ABSTRACT	v
TABLE OF CONTENTS	vii
LIST OF TABLES	x
LIST OF FIGURES.....	x
CHAPTER ONE	
1 INTRODUCTION	
..... 1	
1.1 BACKGROUND OF THE STUDY	
1	
1.2 PROBLEM STATEMENT	
3	
1.3 RESEARCH QUESTIONS	4
1.4 AIM OF THE STUDY	5
1.5 OBJECTIVES OF THE STUDY	5
1.6 SIGNIFICANCE OF THE STUDY	5
1.7 SCOPE OF THE STUDY.....	6
1.8 RESEARCH METHODOLOGY	7
1.9 RESEARCH PROCESS	8
1.10 RESEARCH OUTLINE	8
CHAPTER TWO	
10 LITERATURE REVIEW	
..... 10	
2.1 INTRODUCTION	
10	
2.2 DEFINITIONS	10
2.2.1 Public Procurement.....	10
2.2.2 Risk	
11	

2.2.3 Risk Management	13
2.3 RISK MANAGEMENT	14
2.3.1 Risk Identification and Initial Assessment	14
2.3.1 Risk Identification Techniques	15
2.3.2 Risk Analysis	19
2.3.2.1 Expected Outcome Analysis	20
2.3.2.2 PERT	20
2.3.2.3 Monte Carlo Simulation	22
2.3.3 Risk Response and Mitigation Strategies	23
2.3.3.1 Risk Avoidance.....	24
2.3.3.2 Risk Transfer	25
2.3.3.3 Risk Elimination	25
2.3.3.4 Risk Acceptance	26
2.4 RISK MANAGEMENT IN THE PROCUREMENT CONTEXT	26
2.4.1 Introduction	26
2.4.2 Procurement Risks Associated with Stages of Procurement Process	27
2.4.3 Impact of Risks on Procurement Process	29
2.4.4 Procurement Risks Management Strategies	29
2.5 SUMMARY OF THE CHAPTER	30
CHAPTER THREE	
32 RESEARCH METHODOLOGY	
..... 32	
3.1 INTRODUCTION	32
3.2 THE STUDY AREA/POPULATION	32
3.2.1 Ministry of Health	32
3.2.2 Ghana Health Service	33
3.2.3 National Health Insurance Authority (NHIA)	33
3.2.4 Foods and Drugs Authority	33
3.2.5 National Ambulance Service	33
3.2.6 Korle-Bu Teaching Hospital	34
3.2.7 Christian Health Association of Ghana	34
3.2.8 Ghana Medical & Dental Council	34

3.2.9 Ghana Registered Nurses & Midwives	34
3.2.10 Private Hospitals & Maternity Homes Board	35
3.2.11 Pharmacy council	35
3.2.12 Alternate Medicine Council	35
3.3 POPULATION	35
3.4 SAMPLE AND SAMPLING TECHNIQUES	36
3.5 DATA COLLECTION AND PROCESSING	36
3.6 QUESTIONNAIRE DESIGN	37
3.7 QUESTIONNAIRE ADMINISTRATION	38
3.8 THE RESEARCH DESIGN	38
3.9 DATA ANALYSIS	39
CHAPTER FOUR	
40 RESULTS AND DISCUSSIONS	
..... 40	
4.1 INTRODUCTION	40
4.2 NATURE OF SURVEY AND RESPONSE OF RESPONDENTS	40
4.3 DATA ANALYSIS	40
4.4 PRESENTATION OF RESULTS AND DISCUSSIONS	41
4.5 ANALYSIS OF DEPENDENT VARIABLES	44
4.5.1 Risks Associated with the Various Stages of the Procurement Process	45
4.5.2 Impact of Risks on the Procurement Process	51
4.5.3 Risk Management Strategies	53
4.6 SUMMARY OF FINDINGS	56
CHAPTER FIVE	
57 CONCLUSION AND	
RECOMMENDATIONS..... 57	
5.1 INTRODUCTION	57
5.2 REVIEW OF AIM AND OBJECTIVES	57
5.2.1 RISK ASSOCIATED WITH STAGES OF THE PROCUREMENT	57

5.2.2 IMPACT OF RISKS ON THE PROCUREMENT PROCESS	58
5.2.3 RISK MANAGEMENT STRATEGIES	58
5.3 CONCLUSION	58
5.4 RECOMMENDATIONS.....	60
5.5 LIMITATIONS OF THIS RESEARCH.....	61
5.6 RECOMMENDATIONS FOR FURTHER RESEARCH	61

REFERENCES	62
-------------------------	-----------

62

APPENDIX.....	68
----------------------	-----------

68

LIST OF TABLES

Table 2.1 Summary of Risk Definition	13
Table 2.2: Risk Associated with Stages of procurement process	28
Table 4.1: Characteristics and Analysis of the Demographic Data	41
Table 4.2a Risks Associated with the Various Stages of Procurement Process	45
Table 4.2b Associated risks in order of ranking	49
Table 4.2c Major risks identified	51
Table 4.3 Impact of Risks on the Procurement Process.....	52
Table 4.4 Risk Management Strategies	55

LIST OF FIGURES

Figure 2.1: Output of PERT	21
Figure 2.2 – Translation of a random figure to a value	23
Figure 4.1 Years of Procurement Practice	42
Figure 4.2 Type of Procurement Involvement	43
Figure 4.3 Level of Educational Qualification	44

KNUST



CHAPTER ONE

INTRODUCTION

1.1 BACKGROUND OF THE STUDY

Governments worldwide have become more conscious ways and means to procure goods, works and services in a time of fiscal restraint, economic uncertainty and aging infrastructure renewal demands. This has led to the consideration of alternative approaches to procurement. Procurement is an important activity in the management of supply chains. Cane (2004) highlighted that procurement forms part of the service delivery system of government. It however encourages specific aims that also support the main objective of procurement and relates to advancing environmental, social and industrial policies.

Unfortunately, today's dynamic business environment revolves around significant uncertainties present in customer demand, supply availability and supply cost. Procurement has thus become more and more risky and the management of the risks involved is challenging. Such a difficulty has apparently attracted attention from both academia and practitioners. As a result, many types of flexible supply contracts (Cachon 2004) have been proposed for managing risks that might arise from procurement. However, most of these supply contracts focus mainly on demand uncertainty and availability uncertainty. Little, if any, attention is paid to the risks in relation to procurement risks management in the public sector. Notwithstanding, risk normally emanates from the contrary direct and indirect consequences. Risks generally presents an idea of events that could possibly occur which are considered or not and present consequential results on individuals, institutions and societies. Kogan and

Tapiero (2007) stated that risks generally occur from both external and internal conditions but presents results that only affect the individual or organization internally.

Procurement risk management is one of the most challenging yet highly rewarding initiatives in supply chain management that have great impact on public procurement. However, the procurement approach or system adopted would determine the intensity of its associated risk. Cox and Townsend (1998a) argue that risk management process is one of the most important prerequisite for effective procurement of a project although this is considered a difficult task (Chapman and Ward, 2003). As a result, considerable emphasis is increasingly being put on improving the management of risk in the early phases of the processes associated with procurement, when governments decide on how best to procure, whether to proceed, and on the best risk assignment strategy to achieve qualitative and quantitative value for money.

Risk management is considered integral to modern project management and independent of the procurement mode used (PMI, 2008), although procurement practitioners seem to see this function more as an art than science. The identification of risks and definition of their associated properties and values are the most difficult steps in risk management.

The National Audit Office, London (2000) indicated that managing risk in the public sector involves implementing corporate and systematic processes for assessing risk impacts relating to cost effectiveness. It also requires employing highly knowledgeable staff with the requisite skills in determining and evaluating possible risks that are likely to be encountered. However, Cabral et al. (2006) indicated that there are risk management tools that are normally adopted to screen abnormally low offers from

suppliers through schemes and diverse scoring regulations (e.g. determining the average of all offers) which may be prudent than the more innovative offers. Chapman and Ward (2004) further explained that good public procurement should include adequate risk management processes even if there are no formal instituted risk management systems within the organization. Various studies have been conducted in areas regarding risk management (Haghnevis and Sajedi, 2006) and have contributed to the formulation of various methodologies and models for risk management. Management of risk is very necessary since it does not only result in the success of a single project but also has influence on the entire public sector and presents the basis for adequate investigation. This study therefore seeks to consider the extent to which public procurement practices in Ghana incorporates risks management principles and to assess the impact of identified procurement risks and risks management strategies employed by procurement practitioners on public procurement in Ghana.

1.2 PROBLEM STATEMENT

In Ghana, about fifty to seventy percent of the national budget on public procurement of goods, works and services is expended by the government, including the many affiliated agencies and departments (Adjei, 2006). Adequate public management and administration, relating to prudent and efficient public procurement has thus become an important issue because of this huge outlay. This means a well-developed and robust approach to procurement risks management in the public sector must be adopted as an effective way of ensuring efficiency and value for money.

Risks in procurement can lead to massive loss of resources and non-availability of goods and services if not prevented. Although guidelines and procedures in the Public

Procurement Act, 2003 (Act 663) and its manual addresses some risks related issues, the lack of understanding of procurement risks and their management poses significant threats to efficiency and performance of procurement. Preliminary survey conducted at some government departments and agencies through interviews, revealed a low level awareness of procurement risks management amongst most procurement practitioners. Only few know the risks relating to the different stages of the procurement process.

Management of risk in procurement is one way of ensuring efficiency and value for money when procuring services, works and goods. Addressing these challenges will improve these risk management steps and facilitate better quality decision-making and investment analysis for the planning and procurement phases, which has been the primary motivation of this study.

This study therefore focuses on highlighting the various risks associated with public procurement and making recommendations on their management to enhance performance and efficiency. Studies on procurement has been far-fetched when it comes risk management in government agencies, hence the need for this study.

1.3 RESEARCH QUESTIONS

What is the knowledge level of public procurement practitioners in Ghana regarding risk in procurement?

What are the risks associated with the various stages of the procurement process in the public services?

Do procurement risks have an impact on public procurement in Ghana?

What risks mitigation measures can be adopted in Ghana's public procurement?

1.4 AIM OF THE STUDY

The aim of the study was to examine risks associated with procurement in the Ghanaian public sector of and recommend ways of dealing with them.

1.5 OBJECTIVES OF THE STUDY

The following objectives were formulated to assist in achieving the aim of the study;

- To determine the level of knowledge of procurement practitioners in Ghana regarding risk in procurement.
- To identify the risks associated with the various stages of the procurement process.
- To document the likely impact of these identified risks on public procurement.
- To identify the risks management strategies employed by procurement practitioners in the public sector and its limitations.

1.6 SIGNIFICANCE OF THE STUDY

It is the hope of the researcher to a large extent that this study would ensure parsimonious management of public funds and promote value for money procurement in line with the stated objectives.

Procurement has not achieved the stated objectives for many years. The reason for this has not been clear but economic factors and lack of expertise have been speculated to be among the cause. In conjunction with other studies, the study will provide direction for development of procedures and risks matrices for public sector procurement. The study will also enable policy makers to develop policies on public procurement risks management.

Understand the impact of risk on the public procurement will factor influence the selection of procurement method. The study goes a long way to bring to researcher's doors relevant literature on the research work and provide a good database for future direction in procurement risk management in the public sector.

1.7 SCOPE OF THE STUDY

The research work is geographically confined to the Greater Accra Region of Ghana focusing on Public Health Sector Agencies. It conceptually focuses on examining the various procurement risks in addition to their impact on the procurement processes within these agencies. Data collection was limited to the procurement professionals in the said agencies of the public health sector, since majority of the agencies have their offices or head offices in Accra. These agencies include the following:

1. Ministry of Health
2. Ghana Health Service
3. National Health Insurance Authority
4. Foods and Drugs Authority
5. National Ambulance Service
6. Korle-Bu Teaching Hospital
7. Christian Health Association of Ghana
8. Ghana Medical & Dental Council
9. Ghana Registered Nurses & Midwives
10. Private Hospitals & Maternity Homes Board
11. Pharmacy council
12. Alternate Medicine Council

1.8 RESEARCH METHODOLOGY

Gray et al., (2007) indicated that the review of the activities adopted for research work includes the principles, procedures and strategies necessary for information gathering, analyses and its interpretation. This is called research methodology. Also, the techniques that are used in conducting research is typically known as research methodology.

The research methodology comprise administration and collection of questionnaires, interviews and observations. Sampling procedures and statistical techniques were used to organize and interpret data (Bryman, 2008). The discussions in this session are centered on the procedures adopted at all stages of the research.

The research adopted a case study design which sought to investigate risks management strategies employed by procurement practitioners in the Ghanaian public sector. The targeted respondents for the study were procurement professionals in the public sector. Primary data was obtained by administering and collecting survey questionnaire from respondents. The target for the study was chosen using the purposive method of sampling; to achieve the objectives the information provided by the respondents was very useful because they were wholly involved with the research under review. Closed and open ended questions were used and designed using simple language for easy understanding. The SPSS version 20 and Excel were used in processing the data and information. Descriptive analysis was used for demographics and represented by charts, tables and bar graphs

1.9 RESEARCH PROCESS

The research process explains various steps adopted throughout the entire research and highlights the systematic methodologies employed to address the questions outlined in the research. The scope of the research and the study objectives centered on the public sector agencies in Accra. The design of the questionnaire took into consideration procurement risk management principles. With reference to the research questions, the research design chosen was suitable. A critical review of the literature conducted concurrently in developing a theoretical background of the study in relation concerning the proposed study. Finally, data was analyzed and subsequently discussed. Conclusions on the study were drawn and recommendations proposed.

1.10 RESEARCH OUTLINE

The study was structured into five core chapters:

The chapter one includes the aim of the study, the extracted objective, problem statement, background and significance of the study and scope of the research.

The chapter two focuses on the conceptual to theoretical aspect of procurement risks management in the public Sector; risks management strategies in procurement and the process and procedures captured adopted in line with the Public Procurement Act, 2003, Act 663.

The chapter three deliberates on the method of the research, the area and population of the study, the sources of data and sampling techniques and how the analysis will be run.

The chapter four shows how the research work was analyzed and discussed from the data collected from the survey respondents.

The chapter five summarizes the conclusions, recommendations of the research highlights areas for further studies.

KNUST



CHAPTER TWO

LITERATURE REVIEW

2.1 INTRODUCTION

The earlier section gives a background to the study, statement of the problem and the justification for the research. In addition, the objectives of the research were outlined. In this chapter, literature pertaining to studies and publications in risk management is reviewed. The review of risk management studies helped to understand the risk management techniques and their applications in public procurement.

2.2 DEFINITIONS

2.2.1 Public Procurement

Procurement is defined as obtaining commodities and services at the optimal overall charge of proprietorship, best specification and capacity, within the ideal time, at the ideal location for the uninterrupted prospects or applications of states, organizations, or persons, usually through an agreement (Public Procurement Act 663, 2003). The provision of optimal service to users at lowest cost and the protection of state coffers are the main objectives of procurement (Barly, 1994).

Wickenberg (2004) in his study acknowledged the economic and social benefits of public procurement. The social benefits are primarily the indirect positive effects of savings for the economy and improvements in the environmental. With both benefits having impact on the finances of people, coupled with direct effects on the day-to-day activities of people, public procurement is a platform where communal guidelines are integrated (Ghana Integrity Initiative, 2007). Procurement in the public concept has been defined as means by which the acquiring bodies make use of public resources (World Bank, 1995a). The World Bank (2003) estimated the government's yearly worth

of public procurement for items, facilities and consultancy provisions at six hundred million US dollars representing approximately ten percent of the nation's Gross Domestic Product. Public procurement is thus an integral function of governments. The huge financial outlay has great economic impact and should be managed prudently (Thai, 2001). The judicious administration of procurement is fundamental to the achievement of socio-economic and political as the prudent handling of public procurement functions is fundamental to achieving economic, objectives of governments. Implicitly, public procurement offers dimensions of communal and financial effect on an economy (Adjei, 2006). It can be inferred from the above that public procurement is the acquisition of goods and services with the aim of providing specific benefits for the general public as a whole.

2.2.2 Risk

There are a number of definitions of risks obtained from the literature. However, the choice of any depends on the applicable situation. Risk comes from the primary and secondary effect of conclusions and proceedings which were unjustified or improperly equipped, while considering the impacts on persons, companies or communities at large. Risk in basic terms is defined as follows: Risk = probability of risk occurring x impact of risk occurring (McNeil et al., 2005).

Samson et al. (2008) propose that there exists no general definition of risk. They assert that new definitions will be created each time an organization encounters a new problem. Their report agrees with the analysis of Grimvall et al. (2003) regarding the same issue. They assert that for the majority of organization, the definition of risk will to a high degree depend on the condition, in which the risk arises. They further expound that this state of awareness is significant in the projects where the risks frequently occur

in different circumstances and with a large number of different subjects. According to Samson et al. (2008), organization typically accept more or less of the already existing definitions, but colleagues will moderately devise their individual concrete definitions. Table 2.1 demonstrates some of the current definitions of risks recognized by eminent establishments and academics. Winch (2010), observes that the majority of the meaning of risk comprise entire spectrum incorporating positive and negative results, which agrees with the definitions obtainable in Table 2.1. Winch (2010) further criticizes the usage of a risk as word for either a positive or a negative result and calls it very unsuitable. As an alternative of this he suggests the realization of the more appropriate structure, which splits the determination of the risk of dangers and chances. During the implementation of this methodology in organizations, it is possible to develop more operative tactics, which danger and the chance to govern independently. Finally, it asserts that threat and control capability in many aspects it will be dissimilar and hence it is essential to isolated.

Table 2.1 Summary of Risk Definition

Source	Definition
PMI (2004).	Risk is indeterminate happening or the state in which if this occurs, has consequence, positively or negatively on the
ISO 31000:2009	The result of doubt on the purpose <ul style="list-style-type: none"> <input type="checkbox"/> effect is this nonconformity from that anticipated, positive or negative. <input type="checkbox"/> Purposes can have diverse features and can be used at
Jaafari (2001)	Risk is defined as the susceptibilities or the ^{dissimilar stages} probability of occurrence of profit/loss, multiplied by its corresponding value.

Alessandri et al. (2004)	Risk presents the distribution of probabilities of consequences for each alternative.
--------------------------	---

2.2.3 Risk Management

Risk management involves identifying threats or opportunity for resource optimization. It encompasses the growth of vital mitigation factors to oversee risk and facilitate an organization in undertaking a suitable act to resource administration. Thus, risk management is the medium through which improbability is structurally supervised to better the possibility of adhering to the goals of a project. Risk management seeks to determine the prospects of risk in the birth stages and administer them in order to prevent negative impacts of the risk on the task (Verzuh, 1999; Okmen, 2002).

2.3 RISK MANAGEMENT

The process of dealing with risks in recent decades has become pivotal in most project based organizations (Flanagan et al., 2007). Potts (2008) says that the risk management in the public procurement sector is generally either been overlooked or handled capriciously.

However, Flanagan et al. (2007) suggest that it is important for majority of organizations institute risk control measures which ensures minimum loss from occurred risks. By these measures, risks can be minimized or transferred to generate more profit for the organization.

In order to be economical and capable of making sound judgment with respect to procurement procedures, it is important to use knowledge and experience within the organization. Many resort to informal ways of managing risk without knowing it. This

risk management approach is subjective and uncontrolled. Flanagan et al (2007) advocates for formal approach to risk control processes. This approach must be more methodical with established procedures which must give the leading principles and structure for managing risks on daily basis. (Flanagan et al., 2007).

Sometimes even small incidents can trigger reaction with negative (or positive) ripple effects on an entire project. Thus is substantially important to put a system in place which allows the identification of these risk and examination of their impacts (Flangan et al., 2007).

2.3.1 Risk Identification and Initial Assessment

By preliminary condition for general risk management is the estimation of risk and risk identification. The estimation of risk includes the examination of the likelihood, influence, and result of individual recognized risk to achieving the conventional goals, and also measures for the correction of position to accept this risk if it must occur. The estimation of risk is therefore the necessary condition for the determination of risks. This stage of risk management is viewed by many as the most important, as the subsequent stages can only operate on the identified risks (Al-Bahar and Crandall, 1991). According to Clark et al., (1990), an acknowledged risk cannot be considered risk, but rather an administration obstacle. In their study they identified a difference between an identified risk and one which, although exists, has not been identified. The process of risk identification as defined by Al-Bahar and Crandall (1991) as "the procedure of methodically and constantly classifying, labelling, and evaluating the early impact of risks related a project." Although the initial assessment of significance of risks could be considered a part of the analysis stage, it is placed here because of the need to limit the number of identified risks (Perry and Hayes, 1985, Berny and

Townsend, 1993).

There are risks that can be regulated and those that cannot. Controlled risks are risks which are located in the element of project or can be under the control of stakeholders in the project. Uncontrollable risks are risks, which are located out of the control of stakeholders in the project. They are sometimes called “the Acts of God”.

2.3.1 Risk Identification Techniques

The process of risk identification relies on information, decision, and skill of the people involved in the project or business. In order to assist these people, and to add a scientific base to the process, techniques have been developed. These techniques help to control the bias, discussed earlier.

The techniques can be divided into two categories; those designed to assist in the identification of risks (and opportunities) and those designed to assist in determining the initial significance of these risks. The following list, although not exhaustive, shows examples of the techniques available to assist in the identification stage.

- 1) Checklists
- 2) Brainstorming
- 3) Cause-event-effect
- 4) Prototype activities

The techniques applied to the pre-analysis stage include the following.

- 1) Qualification
- 2) Quantification
- 3) Risk Mapping
- 4) Classification

Checklists are a popular method of identifying risks and opportunities. They constitute an effective method of relating past experience to present situations. The checklist will usually contain a list of the risks which commonly occur on projects or ventures of a similar type. Although this technique will not identify the risks specific to the venture under consideration, they do ensure that risks identified on other ventures, usually through experience, are considered (Al-Bahar and Crandall, 1987).

Brainstorming: The objective of this technique is to elicit information specific to the venture under consideration. The process requires a group of people involved in the venture, preferably with different expertise and perspectives, in order that the list of risk and opportunities reflects all aspects of the venture. The inclusion of a number of people in the exercise helps to control personal bias although this also introduces problems of an increased time requirement and a potentially riskier stance (Harrison, 1995).

Cause-Event-Effect technique approaches the problem from a different perspective by tracing the consequences back to discover the possible causes (Jardine Ins Brokers, 1987, Al-Bahar and Crandall, 1991, Flanagan and Norman, 1993). This approach acknowledges that a single risk (the effect) can have many causes, each one contributing to the probability of occurrence.

Prototype activities; is a technique, by (Klein, Powell, and Chapman, 1994,) for use on construction projects requires a prototype activity to be defined. The risks are then identified as variations from that prototype. The technique was produced to reduce the reliance on using the network of activities and allow the risk aspects of the project to be targeted. The key feature of the prototype activity is that it does contain uncertainty, but at an acceptable level. In this way, rather than identifying every source of uncertainty, only those with above normal uncertainty are considered. This again

reinforces the idea that the objective is to gain an acceptable level rather than to minimize risk.

At the pre-analysis stage, the first stage of any analysis is risk measurement, in which the possible effects of the identified risks and their likelihood of occurring are assigned. There are two methods of achieving this; qualification and quantification (Franke, 1987). Qualification is used when the two parameters are described using words. For example, the impact might be described as low, moderate, or high, and the likelihood as probable, unlikely, etc. Words are used because of the difficulty in assigning actual values. Although such classifications are relatively easy to assign, their usefulness is limited.

In Risk Quantification, it is also possible to evaluate the impact of a risk in terms of cost or time, as these have commonly used units. Parameters such as quality cannot readily be quantified due to the lack of suitable units. In such cases, it is suggested that the effect is converted to an equivalent cost (Franke, 1987). However, in some cases this is not possible or advisable (Drucker, 1974).

The quantification of the probability of the risk occurring is often a more subjective task than that of the impact or effect. Ideally, the probability would be derived statistically from historical data. Unfortunately, historical data is generally not available, or is too sparse to make a confident statistical prediction. Consequently, in many cases, a subjective assessment is made, based on the historical data available and the experience and judgment of the people involved. Risk Mapping and Risk Classification are examples of the techniques used for this task.

Risk Mapping, this is perhaps the most common and simplest of the techniques. A risk map is a two dimensional graph; one axis representing the potential impact of a risk,

and the other denoting the probability of occurrence. The graph is converted to a map by the placing of contours (or ISO-risk curves); the contours further away from the origin denote high risk.

Risk classification has been developed to describe the nature of a risk, either in terms of its origin, consequence, or impact, etc. The risk classification can then be used in determining possible strategies to control each risk. According to Tah and Carr (2000), risk categorization procedures, endeavors to integrate the different risks that impact a project. Different ways of classifying risks suggested in the literature exist. Presently, there is a number of approaches, isolation, parting of risks on the grouping. Some literature give endorsement for definition of risks, based on their impact on the project, while others assume the classifications, founded on the cause of risk (Hastak and Shaked, 2000). Also, risk distribution method, centered to the standard of knowledge they can be executed with the aid of the following four groups (Winch, 2010): Tah et al. (1993), utilized the classification of the risks according to their source and the arrangement of their influence on the project. Classification according to nature and to scales, grouping them into two the basic groups of primary and second risks as proposed by Cooper and Chapman (1987). Risk identification and initial assessment should be considered at the projects start, because conclusions arrived at the initial practicability and design levels of a project have the utmost effect on the project (Hendrickson and Au, 1989) while Nasir (2003) classified risk according to their sources.

2.3.2 Risk Analysis

The process of risk analysis can appear complicated at commencement. Before developing appropriate risk response and mitigation strategies, it is essential to conduct a detailed analysis of the identified risks and classify them under the risk classification

taxonomy. This process of risk analysis is necessary to determine the impact (severity or otherwise) and their likelihood of occurrence at the project delivery stage.

Several techniques developed to determine the combined risk, usually in a project, and the sensitivity of the project to the individual risks are described in this section. The importance of risk analysis has been stressed by Al-Bahar and Crandall (1991), describing it as "the vital link between risk identification and management". Of all levels of risk management, the risk analysis phase contains the vast majority of the available techniques. The techniques discussed here are:

- Expected Outcome Analysis
- PERT
- Monte Carlo Simulation

2.3.2.1 Expected Outcome Analysis

This is the simplest technique used and builds on the standard quantification technique of defining the probability and effect. Multiplying these two parameters gives the expected outcome for each uncertainty, and the sum of these gives the expected outcome for the project. The figure represents the average outcome of the uncertainties which, if added to the price of the project, would reflect the average price of the project.

Although this technique is quantifying the risk, giving a sum of money which can be added to the price, it does not really define the balance between the risks and the opportunities. To illustrate this, consider a list of items whose expected outcome was zero. The result gives no indication of how the risk and opportunity is distributed around the balancing point (of zero), or the probability and potential influence of the individual

hazards and prospects. This highlights another problem in that this technique treats a risk with a relatively high probability of occurrence and moderate impact the same as one of low probability but catastrophic implications.

2.3.2.2 PERT

According to Malcolm, et al (1959), the Program Evaluation Review Technique, PERT, is perhaps the first risk analysis technique, dating back to the late 1950's. The technique is based on the network of activities for a project, in which the activity durations are considered variable, rather than fixed, as they are in critical path examination.

The purpose of the method is to identify the likelihood of finishing the project by pre-defined dates. The range of possible durations for each activity is defined using a three-point approximation based on the beta distribution. The three parameters are referred to as the optimistic; the most likely; and the pessimistic durations.

The mean and variance of each activity duration is evaluated using properties of the beta distribution from the three parameters given. The analysis begins with the determination of the critical path using the most likely durations. The mean overall period is then the sum of the average period of every action in the critical path. Using the Central Limit Theorem (Wilson, 1972), the variance of that interval is total of the modifications of the action periods along a path a high consideration. The resultant distribution has the characteristics of the normal distribution, an example of which is shown in figure 2.1.

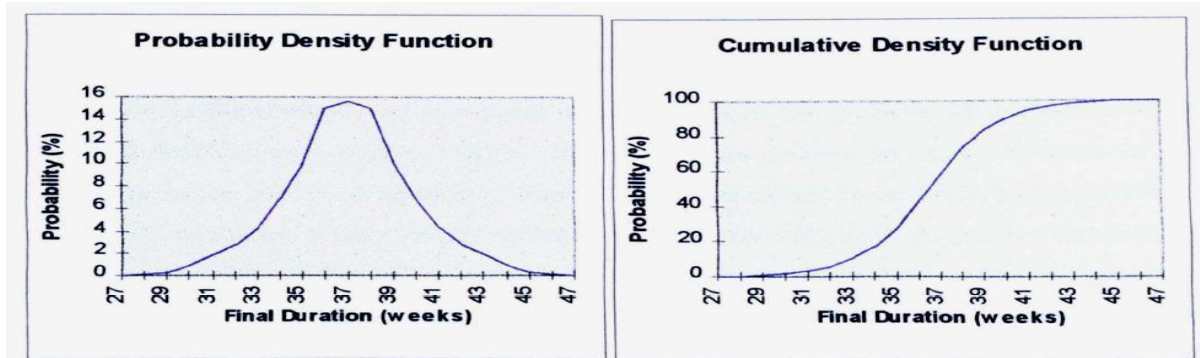


Figure 2.1: Output of PERT

Source: Dawson, P. J. (1997)

Frequency distributions, such as those shown in Figure 2.1, are a common output of quantitative risk analysis techniques. The distribution on the left is a probability density function in which the height of the graph represents the relative likelihood of that outcome. The top of the graph illustrates the most probable result and very recognizable. An alternative method of presenting the distribution is the cumulative density function, as shown on the right. The height of the graph represents the probability of finishing before that date rather than on that date. PERT is still being applied and an important technique, especially in determining the distribution of costs, as this contains only one path (Aquino, 1992).

2.3.2.3 Monte Carlo Simulation

This model was developed as a solution to the problem of multiple critical paths in PERT (Van Slyke, 1963). The technique gained its name because of its similarity to the games of chance in Monte Carlo. The technique, explained in terms of the PERT problem, allows every activity duration to vary and estimates, rather than evaluates, the distribution of project duration. It achieves this by simulating the project a number of times, each time randomly assigning durations for each activity in the whole network

from the distributions defined. An arbitrary digit is transformed to a period by determining the period for which the probability of that duration not being exceeded equals the random number. To illustrate this, consider the distribution in Figure 2.2 below, in which a rate is nominated from a trilateral dissemination by means of a haphazard figure of fifty-seven. The distribution of total duration is produced by compiling the results generated for each simulation.

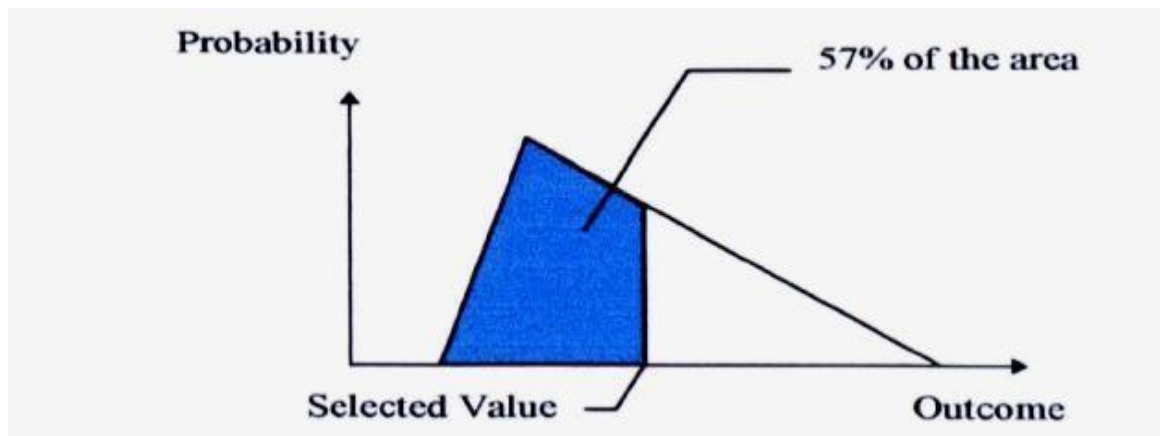


Figure 2.2 – Translation of a random figure to a value

Source: Dawson, P. J. (1997)

One aspect of Monte Carlo simulation which requires examination is the generation of the random numbers used in the analysis. Since Monte Carlo simulation is undertaken on computers, there are two methods by which the numbers can be produced; a table of random numbers can be stored on the computer or the computer can generate the numbers internally. The computer generates the numbers by evaluating a function which, strictly speaking, cannot produce truly random numbers. The numbers produced by this method have been termed pseudo random numbers (Tocher, 1963).

2.3.3 Risk Response and Mitigation Strategies

The central objective of any strategy of reaction and softening of consequences appears to accept development of action for the purpose of the elimination of risks from the project or, at best, to decrease their latent adverse consequences. This can be realized via the instant reaction to the project or backward answer (reserve plan). Instant answer typically leads to the liquidation of risk. From the other side, reserve plan will be achieved only they must show up the revealed risks.

In previous studies the many springs of risk were determined on the basis specification from the literature and more lately they were categorized according to the groups of risk.

These springs of risk also were evaluated from the point of view of the likelihood of their incidence and action to the total sum of project in case they happen. Determined and evaluated sources of risk, risk matrix can then direct colleagues on the project selection policies of reaction to the risk. Depending on that, where the source of risk lies on the matrix there are four wide risks of strategy of reaction (Alexander et al; 2006).

- Risk avoidance
- Risk transfer
- Risk mitigation (reduction)
- Risk acceptance (retention)

It is important to also note that the concrete answers to the risks can cause subsequent risks, which could not happen in other cases. For instance, turnkey contract at a static charge will cut the risk of the over expenditure of means for the owner, but the class of mark they can appear. (del Cano and de la Cruz, 2002).

2.3.3.1 Risk Avoidance

Risk avoidance is one of risk response and mitigation strategies adopted during the probability of happening of risk with high impacts associated with it. From a conventional point of view, this ascertains not opting to perform an action. According to Hillson (1999), there is a great sacrifice by evading doings; determination must be in the direction of the refinement of necessities on obtaining of additional information. Answer of the risk of a change in the sphere of activity, so that the risky elements of work within the framework of one of strategies, risks no longer are achieved. Sometimes it cannot be easily for the comparison of the sources of risk precisely in one of these quadrants. It can be, that some of these sources of risk lie on the border of these quadrants. Policies, which are most operational, in such cases must be selected. In the majority of the cases the efficiency is calculated from the point of view of the expenditures, connected with these risks (Alexander et al; 2006).

2.3.3.2 Risk Transfer

When action it is high, in spite of the fact that the probability of the existence of the risk of foundation can be comparatively little, strategies of the transfer of risk adapt. Goal consists in the transfer to the third persons such risks, which it can process them well (Agerberg and Agren, 2012). There are two methods of the transfer of the risks of project. Insurance project against any high of the action of the sources of risk is one of the methods of the transfer of the risks of insurance companies from the payment of insurance payments (Alexander et al; 2006). The causes of risk they can be transmitted via the agreements by owner or to other interested parties of project.

2.3.3.3 Risk Elimination

Not all sources of risk it can be unraveled by evading risks and transfer. This makes risks another important answer to strategy. The softening of consequences attempts to place measures in the place in order to decrease the gravity of the event of risk, must occur this event (council of the county of Karmartenshir, n.d.). Actually the large part of the risks, cannot be solved above answers two risks (i.e. non-admission and transfer). Thus for the majority of risks, reduction or softening methods must be used.

Liabile on that, where the source of risk consists into the matrix of the risk of the softening of consequences it can be made either by decreasing the probability of risks or by decreasing their action, or both. If the influence of risk it is high, reduction in the risk can be made by a reduction in the scales of damage. If risk appears very frequently, then more reasonable to decide the sources of risk to their root, suppressing their trigger (Hillson, 1999). Every time that the likelihood of risk and action they are high, answer strategy must be to decrease both.

2.3.3.4 Risk Acceptance

Period that sources of risk decrease into the quadrant of low action low likelihood the matrix of risk, such risks are considered satisfactory. Passive adoption occurs, when influence is insignificant for which no previous plans they can be required. Also active acknowledgement appears, if influence if this happens, it is necessary to even more reduce, in which risks reserve plan is placed on the place by the isolation of a sufficient interval and assets (Piney, 2002).

2.4 RISK MANAGEMENT IN THE PROCUREMENT CONTEXT

2.4.1 Introduction

In any procurement there are a variety of risk factors that arise from external and internal sources that must be assessed. Good public procurement practice incorporates some risk management whether formally or informally.

Risk is managed in public sector procurement by ensuring a system is put in place to evaluate and deal with impacts of risk more economically. The tools and techniques for identifying very low offers from suppliers, insurance scheme guarantees and different scoring rules (e.g. closest to the arithmetic average of all submitted offers) are traditionally used for risk management. (Cabral et al., 2006).

Modern public procurement practice has become more sophisticated with practitioners having to deal with multi-faceted factors such a cost saving, transparency and sectorial policies when dealing with risks. Cost saving however remains the single most important goal in risk management.

Dealing with risks in the public sector is three-fold according to ECEG (2010). Firstly, to define and assess risks and rewards for all partners involved at the various stages of the procurement process, including the nature of risks, which may change during the various procurement stages, the causes and source for risk, the likelihood of risks to occur, and the potential consequences of risk occurrence (additional costs, reduced rewards). Secondly, for each risk, to take action to avoid or reduce the likelihood of the risk to materialize and allocate responsibilities to take action to reduce the likelihood. Thirdly, for each risk, to define actions to mitigate the potential consequences (see also Ward and Chapman, 1991; Hood & Rothstein, 2000; Zhao and Duan, 2008).

2.4.2 Procurement Risks Associated with Stages of Procurement Process

Each procurement process cycle typically consists of six stages namely; planning, sourcing, evaluation, contract award, contract management and procurement process evaluation. For each stage, several risks can be identified depending on the type of procurement. The following thirty two (32) risks have been identified from various literature which is applicable to the Ghanaian procurement context.

Table 2.2: Risk Associated with Stages of procurement process

Stage of procurement process	Risks
Planning	<ol style="list-style-type: none"> 1. Understatement of need 2. Overstatement of need 3. Misinterpretation of user's needs 4. Inaccurate budget estimates (i.e. underestimate) 5. Impractical timeframe 6. Incomprehensive procurement planning
Sourcing	<ol style="list-style-type: none"> 1. Inadequate information in tender documents (e.g. inadequate scope or product definition) 2. Improper documentation (e.g. the use of wrong standard document & ambiguous evaluation criteria) 3. Biased or wrong specification (e.g. use of brand names) 4. Terms and conditions unacceptable to tenderers 5. Failure to identify potential sources 6. No or insufficient number of responses 7. Use of inappropriate selection method 8. Inadequate response to tenderers' enquires 9. Non-adherence to prescribed tender receipt and opening procedures
Evaluation	<ol style="list-style-type: none"> 1. Non-adherence to effective evaluation procedures 2. Offers not meeting tender requirements 3. Political Interference 4. Use of subjective approach to evaluation

Contract Award	<ol style="list-style-type: none"> 1. Selection of unsuitable supplier/contractor 2. Selection of unsuitable product 3. Failure of successful tenderer to accept award
Contract Management	<ol style="list-style-type: none"> 1. Improper Contract Administration 2. Variation in price and foreign exchange 3. Failure of either party to fulfil contractual obligations 4. Authorized increase in scope of works 5. Improper contract closure 6. Loss or damage/injury to goods/persons/property 7. Fraud
Procurement process Evaluation	<ol style="list-style-type: none"> 1. Failure to identify shortfalls 2. Failure to engage all stakeholders in evaluation 3. Failure to document outcomes of evaluation

2.4.3 Impact of Risks on Procurement Process

Every risk has its level of impact on a procurement process. Some impacts may be significant while others may not. This is why it is important to analyse and evaluate every risk related to a particular procurement. The level of analysis and detail required will vary depending on the type and scope of procurement. Common impacts of the risks identified in 2.4.2 above include but not limited to the following:

1. Misprocurement
2. Reduced competition
3. Increased procurement cost
4. Delay in procurement
5. Poor value for money
6. Cost overruns
7. Time overruns
8. Difficulty in evaluating tenders
9. Contractual disputes and claims
10. Poor client/supplier relations

11. Mistrust

12. Contract termination

2.4.4 Procurement Risks Management Strategies

Risk management is effective when risks are properly identified and accurately evaluated. Public procurement practice in Ghana has a framework with inherent risk management strategies to address the risks identified in 2.4.2. This is a result of controls built into the public procurement process to eliminate most of these risks.

The sixteen (16) risks management strategies listed below are considered most important in dealing with the identified risks public procurement practice.

- 1 Training and professional development for procurement staff
- 2 Improved transparency
- 3 Increased competition
- 4 Stakeholder engagement (i.e. users, suppliers, technical experts, management)
- 5 Ensure strict compliance to procedures and prescription of Public Procurement Act
- 6 Utilize inputs of Technical Experts
- 7 Conduct procurement process evaluation
- 8 Ensure compliance to ethical standards and codes of practice
- 9 Ensure good contract administration and performance management
- 10 Ensure good records keeping and documentation
- 11 Ensure provision of securities and insurances by third parties
12. Maintain, audit and review evaluation procedures
13. Improve tender documentation and its review
14. Follow and maintain fraud control procedures

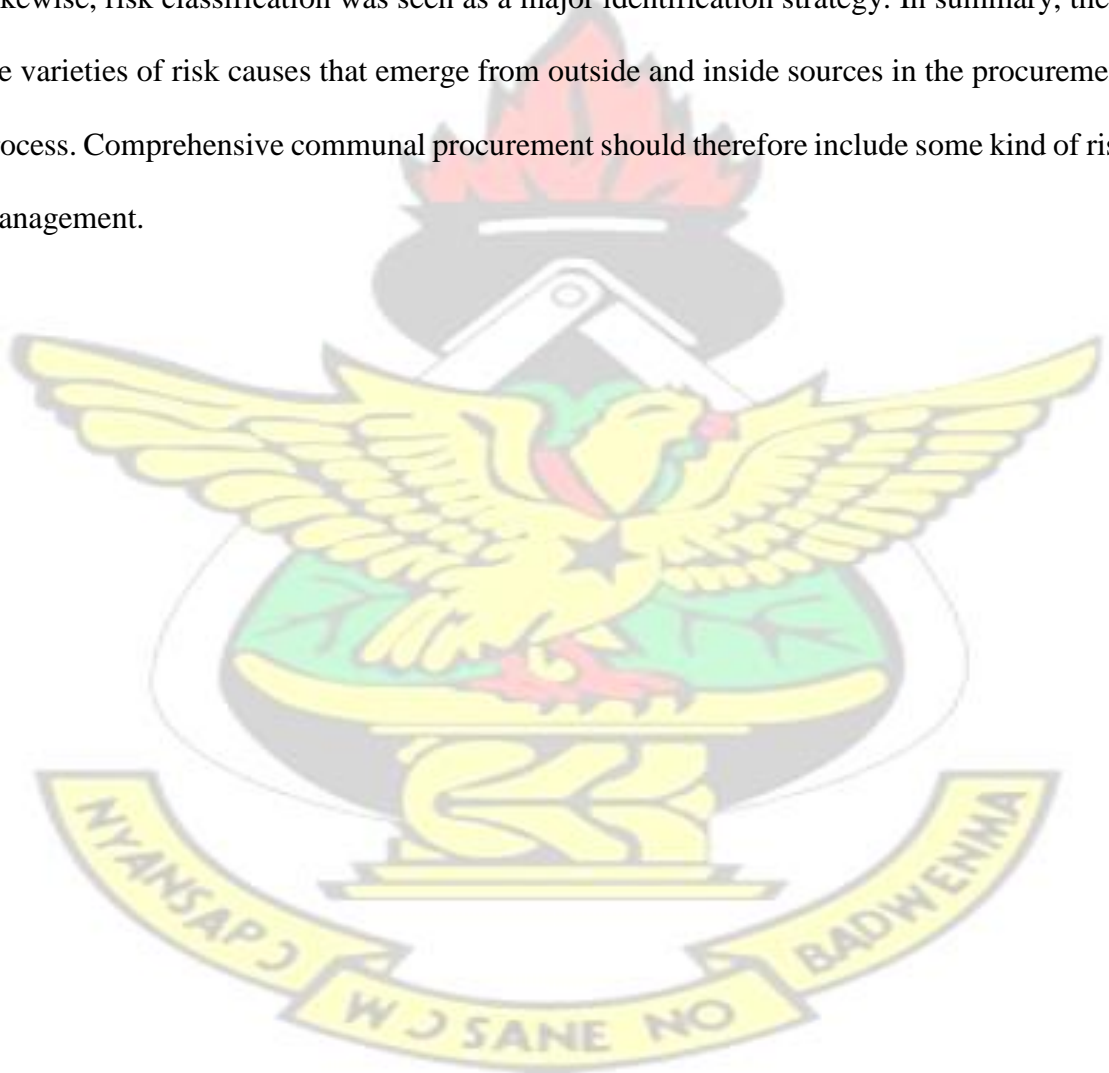
15. Implement performance management strategies

16. Development risks management checklist for all stages of the procurement process

2.5 SUMMARY OF THE CHAPTER

The chapter reviews literature, published and unpublished, relevant to the research, and was organized around the research study. The review revealed the risk management techniques for managing risks at distinct levels of procurement.

Likewise, risk classification was seen as a major identification strategy. In summary, there are varieties of risk causes that emerge from outside and inside sources in the procurement process. Comprehensive communal procurement should therefore include some kind of risk management.



CHAPTER THREE

RESEARCH METHODOLOGY

3.1 INTRODUCTION

In this chapter describes the researcher's overall research method, deliberation and support of data gathering methods employed are explained. The methodology also informs the strategy and procedure employed in carrying out the research agenda and how the data collected is interpreted.

3.2 THE STUDY AREA/POPULATION

The area of the study covers public health sector agencies in Accra. Accra is the administrative capital of the country with the administrative offices of the various ministries, institutions and agencies. The agencies considered in the research include the following:

3.2.1 Ministry of Health

The Ministry of Health (MoH) is a ministry that bears duty for the health of Ghana. It participates in the assignment of the services of public health, the administration of Ghana in the medical branch and of the building of hospital and system of the medical formation of Ghana. Ministry central workplaces are situated in Accra. The Ministry achieves its broad mandate through a number of agencies with specific mandates in relation to public healthcare delivery. Most of these agencies in Accra were considered in the study.

3.2.2 Ghana Health Service

Ghana Health Service is a civil service organ, founded according to Act 525 dated 1996 within the framework of public health of the sector of the reform of Ghana. This independent administrative by the establishment, which corresponds for realizing of national strategy in the region of public health under the control of the Ministry of Public Health through its council of managers - council is health services of Ghana. By its headquarters in Accra but it has regional and district departments.

3.2.3 National Health Insurance Authority (NHIA)

Introduced under the National Health Insurance Act 2003 Act 650, the NHIA, is a corporate organ with the objective of ensuring the application of a state health insurance schemes that safeguards entrance to fundamental healthcare facilities to everyone in Ghana. It has regional and district offices with its headquarters in Accra.

3.2.4 Foods and Drugs Authority

Food and Drugs Authority (FDA) of previously Food and Drugs Board was created in August 1997. These are the national control, provided of public health law, 2012 (Act 851) by the passing track of assignment and guaranteeing the observance of standards to sale of foodstuffs, medicines, cosmetic, preparations, the medical instruments also of everyday chemical constituents.

3.2.5 National Ambulance Service

They are healthcare providers offering emergency medical services, and often transport the sick or the injured to medical facilities on time for the appropriate treatment.

3.2.6 Korle-Bu Teaching Hospital

The Korle-Bu Teaching Hospital, established in 1923 as the premier health care facility in the country. As a teaching hospital, it is affiliated with the medical school of the University of Ghana and provides training for health professionals. The hospital is the largest referral center in Ghana and provides specialists treatment such as radiotherapy, plastic surgery, cardiothoracic surgery, etc.

3.2.7 Christian Health Association of Ghana

The Christian Health Association of Ghana (CHAG) is an umbrella body, which organizes the work of Christian churches and Christian establishments with respect to public health. This is the organ, through which entire or large part of the Christian church the associated services/of the programs of public health connection with the Ministry of Public Health for purposes of the guarantee of proper collaboration and complementarity of the efforts of government to the guarantee of needs for the region of public health of Ghana.

3.2.8 Ghana Medical & Dental Council

The Ghana Medical and Dental Council is an agency of the Ghana government responsible for regulating the standards of training and practice of medicine and dentistry in Ghana. It is located in Accra the capital city of Ghana.

3.2.9 Ghana Registered Nurses & Midwives

The Nursing and Midwifery Council, in line with of the Health Professions Regulatory Bodies Act, 2013 (Act 857), is mandated to secure in the public interest in standard of training and practice of nursing and midwifery. Its office is located in Accra.

3.2.10 Private Hospitals & Maternity Homes Board

The Board was introduced under the Private Hospitals and Maternity Homes Act, 1958 to provide regulation and control of private hospitals and maternity homes.

3.2.11 Pharmacy council

The Council is a statutory regulatory body established by an Act of Parliament of Ghana, The Pharmacy Act, 1994 (Act 489). Its core function is to safeguard public awareness the uppermost values in the practice of pharmacy. Its office is located in Accra, the capital of Ghana.

3.2.12 Alternate Medicine Council

The Council was established under the Traditional Medicine Practice Act (Act 575) to control and regulate traditional medicine practice. The Council is responsible for the training and registration of Traditional Medicine Practitioners and licensing of their practice premises. The Office located in Accra, the Capital of Ghana.

3.3 POPULATION

The population of is the total collection of individuals or objects with common, binding characteristics or traits. The population for this study comprise procurement staff within the public health sector agencies in Accra. The supreme aim of settling on this group of people is that their directly or indirectly impact procurement within public health sector agencies

3.4 SAMPLE AND SAMPLING TECHNIQUES

According to De Vaus (2001) the process of sampling makes it possible to limit a study to a relatively small portion of the population. A sample is a representative selection of a population. Public Health Sector Agencies were purposively selected because they play a major role in the supply chain to improve the amount of quality demand that can be met by having commodities and items in supply when the clients or healthcare receiver needs it. Purposive sampling is usually used in research when sampling informants with a specific knowledge or skill (Creswell, 1994; Patton, 2002).

Professionals who directly engaged in procurement of goods, services and works in the various health sector agencies were purposively selected. The identified and selected professionals include procurement officers, managers and directors or heads of Procurement Unit as defined by the Public Procurement Act.

Determination of a sample size research is based on a number of factors. These include population size, the risk of selecting a “bad “sample and the allowable sample error (DeVaus, 2001). All the twelve (12) public sector agencies were chosen for the study. The researcher limited the respondent to four (4) members each of the respective public sector health agencies who were involved in procuring goods and services. This became necessary because the information needed could only be provided by staff with knowledge and experience in public procurement.

3.5 DATA COLLECTION AND PROCESSING

According to Patton (2002) expanding one additional data gathering tool fortifies and provides reliability of research. More than one data collection instrument portrays a true

picture of the case under study. The researcher collected data from two (2) different sources. This approach was used to expose issues that could not be raised in using only one data collection instrument. The study made use of primary and secondary data sources in order to gather relevant information for the study.

Questionnaire was the research instruments used for the study. This was designed in line with the objectives of the study. The primary data collected from the selected respondents were analyzed. Al-Moghany (2006) insists that scientists cannot foretell people's reasoning unless querying them about it.

The designed questionnaire is perhaps the greatest extensively applied data assemblage technique used during survey to find out facts, opinions and views (Naoum, 1998). Questionnaire administration is cost effective and involve a large number of people to provide better results according to McQueen and Knussen (2002). The questionnaire was also structured to get feedback on opinions of respondents on the study.

3.6 QUESTIONNAIRE DESIGN

The questions were developed and reviewed by experienced professionals in the related field. Questions were administered and retrieved from five participants on pilot basis to identify and eliminate potential ambiguities. The questionnaire was designed to collect general data from procurement practitioners. These questions were categorize to collect data on risks associated with the various stages of the procurement process, impact of identified risks on the public procurement process and risk management strategies.

The questionnaire was made up of the following sections: Part One: personal and general information about participants. Part Two: risks associated with the various stages of the procurement process. Part Three: impact of identified risks on the public procurement

process and Part Four: risk management strategies. Parts two, three and four were rated by respondents on a five-point likert scale.

3.7 QUESTIONNAIRE ADMINISTRATION

Few questions were reviewed based on responses from the pilot questionnaire administration stated earlier. This improved the reliability and validity of the questionnaire. A complete set of questionnaire with a covering introductory letter from the Department of Architecture at Kwame Nkrumah University of Science and Technology, Kumasi were administered in person. The identified prospective respondent were given enough time to conveniently and conformably respond to the questionnaires and made them ready for collection. The primary data collected was reviewed by the researcher to ensure maximum accuracy, legibility, completeness, consistency and to reduce ambiguities.

3.8 THE RESEARCH DESIGN

According to Frazer and Lawley (2000), research design is a plan of soliciting information to answer questions or problems or problems posed by the research. The paradigm adopted aids the selection of an appropriate research methodology [Bailey, 1987].

A researcher may use different designs. However a researcher contributes immensely to development of theory by the use of one type of design [Saunders, et al., 2007].

This research employs quantitative approach given the nature of the agenda and characteristics of the measurement. Besides, as recounted in the literature review, a quantitative research strategy is the most suitable strategy to adopt in measurement of the implementation challenges and it is the most consistently adopted design.

3.9 DATA ANALYSIS

The data collected was edited, sorted, coded and quantitatively analyzed. The data was analyzed using Statistical Package for Social Scientists (SPSS Version 20) and Microsoft. Frequency tables, percentages, bar charts and other descriptive means were also used to analyze the data on the general information about the respondents. Results from these analyses provided the basis for conclusions drawn. The mean scores ranking and standard deviation were adopted in ranking the factors articulated from the data.



CHAPTER FOUR

RESULTS AND DISCUSSIONS

4.1 INTRODUCTION

This chapter focuses on the organization, structure and characteristics of the data collected from the field as well as the analysis and interpretations drawn from it to address the key research objectives and questions outline in chapter one. The results obtained are discussed in the light of existing literature which was reviewed.

4.2 NATURE OF SURVEY AND RESPONSE OF RESPONDENTS

With reference to Chapter three on targeted population, 48 procurement professionals were identified through ‘purposive sampling’. In all a total of 28 questionnaires were completed and retrieved from the 48 respondents constituting a response rate of 58.33%.

4.3 DATA ANALYSIS

The data analysis was done by dividing them into four main parts. The first part concentrated on the background of the respondents which was based on information carried in the Part One (general information) of the questionnaire. Risks associated with the various stages of procurement process consisted the part two. Part Three dealt with impact of identified risks on the public procurement process whiles Part Four focused on risk management strategies.

4.4 PRESENTATION OF RESULTS AND DISCUSSIONS

On the first part of the analysis, descriptive statistics were obtained on the responses given on the variables in Part One. This involved the frequency and percentage of responses to each of the variables. The questions centered on their level of involvement, years in position, types of procurement involved in, and level of education. This helped to assess and increase the validity, reliability and precision of the responses and result of the main research.

Table 4.1: Characteristics and Analysis of the Demographic Data

VARIABLES		FREQUENCY	PERCENTAGE
Involved in the procurement process	Yes	28	100%
	No	-	-
Formal Training in Procurement	Yes	23	82%
	No	5	18%

Source: Field Data

From Table 4.1 above, on the respondent involvement with procurement in their line of duty, all the respondents are engaged in the procurement process at their various agencies. Also eighty-two (82%) of the respondent have received formal training on procurement whiles eighteen (18%) of the respondent have not received any form of formal training.

Years of Procurement Practice

This section sought after the years' respondents have practiced procurement in their various procurement units. The results displayed in Figure 4.1 shows that the Fiftyfour percent (54%) of the respondents have less than 5years of experience in procurement practice. Thirty-two percent (32%) of the respondent have five to ten years of experience in their position respectively. The result also shows that 11% of the respondents have eleven to fifteen years of experience in the said position with 3% with above fifteen years of experience in procurement practice.

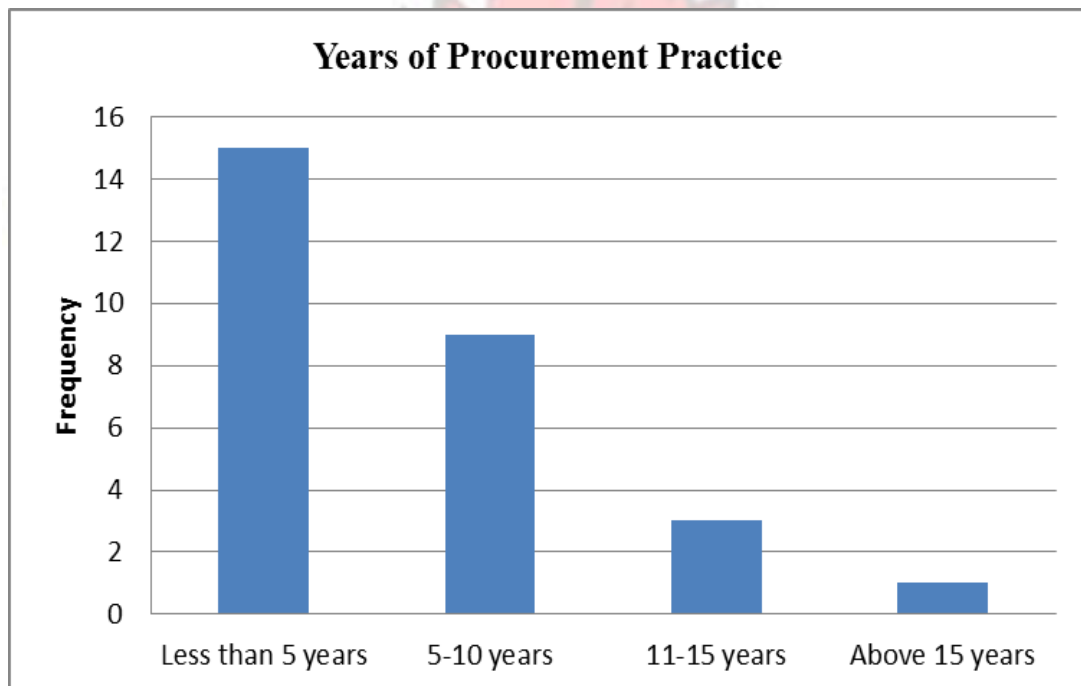


Figure 4.1 YEARS of Procurement Practice

Type of Procurement Involvement

Fifty percent (50%) of the respondents are involved in all the types of procurement. The result displayed in figure 4.2 also shows that twenty-one percent (21%) of the respondents are involved in procurement of only goods whiles eighteen percent (18%)

of the respondents are involved in procurement of works only. The remaining 11% percentage are involved in the procurement of services only.

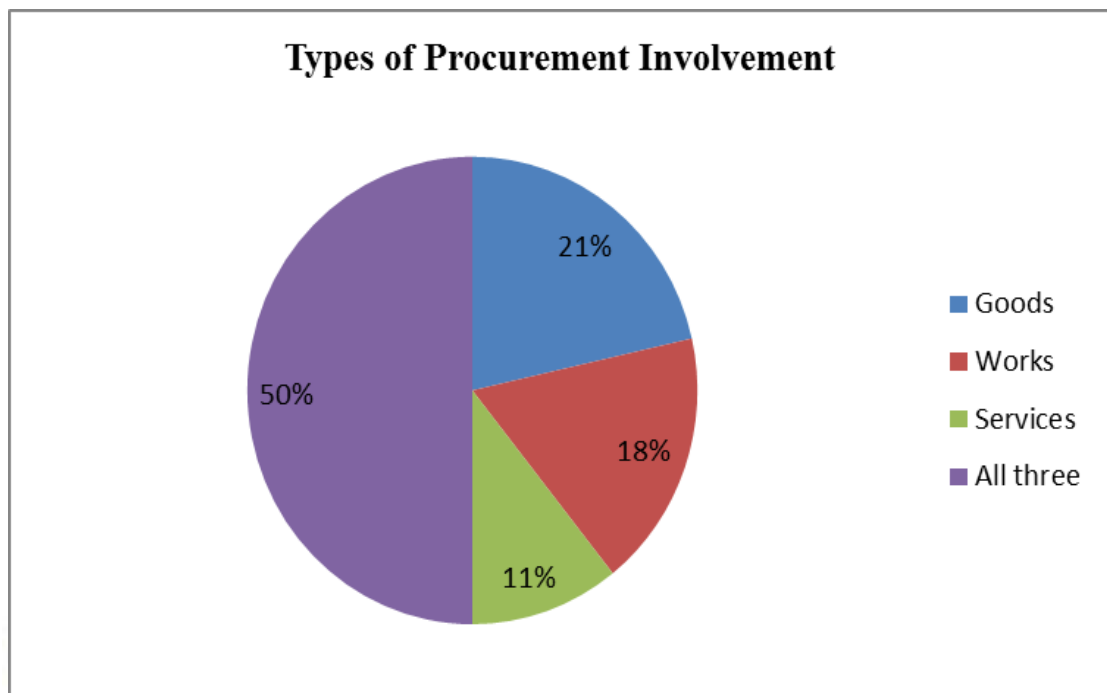


Figure 4.2 Type of Procurement Involvement

Educational Qualification

The question was posed to find the educational qualification of the respondents and since the level of this qualification to a larger extent determines a position in the firm and hence their involvement in procurement decision. Such involvements determine the quality of responses given. A cursory look at Figure 4.3 reveals that 43% are Masters' degree holders, 50% Bachelor's Degree holders, 3.5% CTC/HND Foundation and 3.5% have GCE "A" Level/SSSCE certificates. The deduction from the above statistics is that most of the respondents have higher degrees; hence their involvement in procurement decision is most likely.

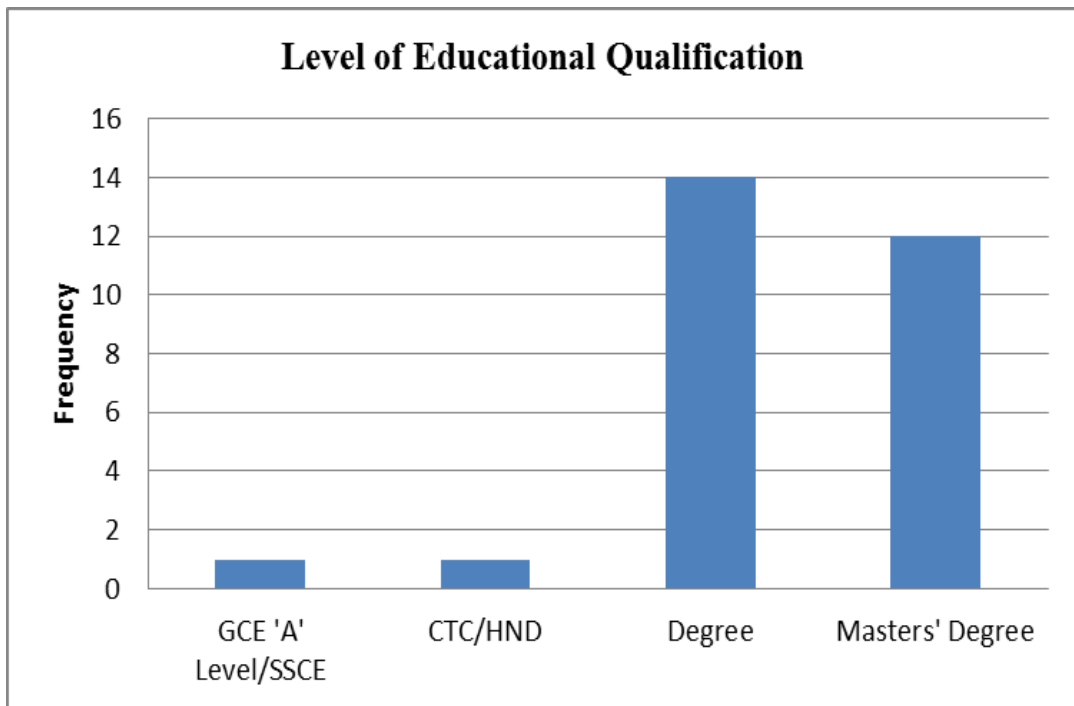


Figure 4.3 Level of Educational Qualification

4.5 ANALYSIS OF DEPENDENT VARIABLES

Mean score and standard deviation were the statistical analyses used in this section. The respondents were asked to rank the various ethical procurement practices using the five-point likert scale rating, a criterion is deemed significant if it had a mean of 3.5 or more on a five-point likert scale and a mean of 2.8 or more on a three-point likert scale. In ranking tied criteria (that is two or more) whose mean are the same, the standard deviation with the lowest value is used to determine the highest significance ranking (Ahadzie, 2007). Standard deviation values below 1.0 indicate regularity amongst the respondents in agreement of the stated level of results (Ahadzie, 2007). They were altogether used to assess the various variables under this section. The procedure, findings and relevant discussions are as follows:

4.5.1 Risks Associated with the Various Stages of the Procurement Process

The respondents were asked to rate the various stages of the procurement process in respect to the risks associated with them by the use of a five-point likert scale, (1 - Strongly Disagree, 2 - Disagree, 3 - Neutral, 4 - Agree, 5 - Strongly Agree). The risks associated with the various stages of the procurement process namely; planning, sourcing, evaluation, contract award, contract management and procurement process evaluation were assessed based on the report. Table 4.2a below shows the results of the assessment.

Table 4.2a Risks Associated with the Various Stages of Procurement Process

Risks at Various Stages of Procurement Process	N	Mean	Standard Deviation	Ranking
Planning Stage				
Understatement of need	28	3.5714	1.10315	7th
Overstatement of need	28	2.9643	1.23175	28th
Misinterpretation of user's needs	28	3.3571	1.19301	13th
Inaccurate budget estimates (i.e. underestimate)	28	3.6071	1.16553	6th
Impractical timeframe	28	3.7500	0.88715	2nd
Incomprehensive procurement planning	28	3.6786	1.09048	4th
Sourcing Stage				
Inadequate information in tender documents (e.g. inadequate scope or product definition)	28	3.3214	1.41562	15th
Improper documentation (e.g. the use of wrong standard document & ambiguous evaluation)	28	3.1786	1.30678	18th

Biased or wrong specification (e.g. use of	28	3.2500	1.35058	17th
Terms and conditions unacceptable to	28	2.9286	1.30323	30th
Failure to identify potential sources	28	2.8214	1.12393	32nd
No or insufficient number of responses	28	3.0357	1.26146	23rd
Use of inappropriate selection method	28	3.0357	0.99934	22nd
Inadequate response to tenderers' enquires	28	3.0000	1.08866	26th
Non-adherence to prescribed tender receipt and	28	2.8929	1.16553	31st
Evaluation Stage				
Non-adherence to effective evaluation	28	3.3214	1.41562	14th
Offers not meeting tender requirements	28	3.0357	1.31887	24th
Political Interference	28	3.6429	1.25357	5th
Use of subjective approach to evaluation	28	3.0000	1.27657	27th
Contract Award Stage				
Selection of unsuitable supplier/contractor	28	3.4643	1.45251	9th
Selection of unsuitable product	28	3.1071	1.39680	20th
Failure of successful tenderer to accept award	28	3.3929	1.19689	12th
Contract Management Stage				
Improper Contract Administration	28	3.4643	1.17006	8th
Variation in price and foreign exchange	28	3.7857	1.10075	1st

Failure of either party to fulfil contractual obligations	28	3.7500	1.00462	3rd
Authorized increase in scope of works	28	3.4286	1.03382	10th
Improper contract closure	28	3.3929	1.10014	11th
Loss or damage/injury to goods/persons/property	28	3.2857	0.97590	16th
Fraud	28	2.9643	1.47779	29th
Procurement Process Evaluation Stage				
Failure to identify shortfalls	28	3.0000	1.01835	25th
Failure to engage all stakeholders in evaluation	28	3.1429	1.14550	19th
Failure to document outcomes of evaluation	28	3.0714	1.15241	21st

Source: Field Data

From the table 4.2a above, 'Impractical timeframe', 'Incomprehensive procurement planning' 'Inaccurate budget estimates' and "Understatement of need" were the major risks identified at the planning stage of the procurement process with mean scores of 3.750, 3.679, 3.607 and 3.571 respectively as established on the five-point likert scale rating criterion.

Only 'Political Interference' with a mean score of 3.643 was considered a major risk at the evaluation stage of the procurement process. 'Variation in price and foreign exchange and "Failure of either party to fulfill contractual obligations" were the two significant risks identified at the contract management stage of the procurement process with 3.786 and

3.570 as their mean scores respectively based on the above mentioned rating criterion. No risk associated with the sourcing, contract award and procurement process evaluation stages of the procurement process was considered significant based on the assessment conducted and the above mentioned rating criterion.

The results confirm findings in literature that there is a need to assess risks of procurement process at the various stages which includes the risks' nature, which may be subjected to change throughout the numerous procurement stages, the sources and causes for risk, the probability of risks occurring, and the probable consequences of risk to occur (ECEG, 2010).

The results of the assessment conducted on the thirty-two identified risks in order of their ranking is shown be Table 4.2b below.

Table 4.2b Associated risks in order of ranking

Risks	N	Mean	Standard Deviation	Ranking
Variation in price and foreign exchange	28	3.7857	1.10075	1st
Impractical timeframe	28	3.7500	0.88715	2nd
Failure of either party to fulfil contractual obligations	28	3.7500	1.00462	3rd
Incomprehensive procurement planning	28	3.6786	1.09048	4th
Political Interference	28	3.6429	1.25357	5th
Inaccurate budget estimates (i.e. underestimate)	28	3.6071	1.16553	6th
Understatement of need	28	3.5714	1.10315	7th

Improper Contract Administration	28	3.4643	1.17006	8th
Selection of unsuitable supplier/contractor	28	3.4643	1.45251	9th
Authorized increase in scope of works	28	3.4286	1.03382	10th
Improper contract closure	28	3.3929	1.10014	11th
Failure of successful tenderer to accept	28	3.3929	1.19689	12th
Misinterpretation of user's needs	28	3.3571	1.19301	13th
Non-adherence to effective evaluation	28	3.3214	1.41562	14th
Inadequate information in tender documents (e.g. inadequate scope or product definition)	28	3.3214	1.41562	14th
Loss or damage/injury to goods/persons/property	28	3.2857	0.97590	16th
Biased or wrong specification (e.g. use of brand names)	28	3.2500	1.35058	17th
Improper documentation (e.g. the use of wrong standard document & ambiguous evaluation criteria)	28	3.1786	1.30678	
Failure to engage all stakeholders in evaluation	28	3.1429	1.14550	19th
Selection of unsuitable product	28	3.1071	1.39680	20th
Failure to document outcomes of evaluation	28	3.0714	1.15241	21st
Use of inappropriate selection method	28	3.0357	0.99934	22nd
No or insufficient number of responses	28	3.0357	1.26146	23rd

Offers not meeting tender requirements	28	3.0357	1.31887	24th
Failure to identify shortfalls	28	3.0000	1.01835	25th
Inadequate response to tenderers' enquires	28	3.0000	1.08866	26th
Use of subjective approach to evaluation	28	3.0000	1.27657	27th
Overstatement of need	28	2.9643	1.23175	28th
Fraud	28	2.9643	1.47779	29th
Terms and conditions unacceptable to	28	2.9286	1.30323	30th
Non-adherence to prescribed tender receipt	28	2.8929	1.16553	31st
Failure to identify potential sources	28	2.8214	1.12393	32nd

Source: Field Data From Table 4.2b above, out of a total of thirty-two (32) risks identified with the various procurement process stages, seven (7) were identified as significant according to the five- point likert scale rating criterion. These risks in order of most significant based on the assessment are shown by Table 4.2c below.

Table 4.2c Major risks identified

No	Risk	Stage of Procurement Process
1	Variation in price and foreign exchange	Contract Management
2	Impractical timeframe	Planning
3	Failure of either party to fulfil contractual obligations	Contract Management
4	Incomprehensive procurement planning	Planning
5	Political Interference	Evaluation
6	Inaccurate budget estimates (i.e. underestimate)	Planning
7	Understatement of need	Planning

Table 4.2c above shows that four (4) out of the seven (7) risks major risks identified are associated with the planning stage of the procurement process. Two (2) are associated with the contract management stage in the process of procurement. It can therefore be concluded that the contract management and the planning stages of the procurement process are critical and should be given the need attention in respect of risks management.

4.5.2 Impact of Risks on the Procurement Process

Part three of the questionnaire sought to find the level of impact of identified risks on the procurement process. The respondents were requested to rate the impact using the likert scale (1 - Very Low, 2 - Low, 3 - Medium, 4 - High, 5 - Very High). As already, stated that a criterion is deemed significant if it had a mean of 3.5 or more.

From Table 4.3 below the ‘Contractual disputes and claims’, ‘Increased procurement cost’ and ‘Delay in procurement’ were considered significant impacts of risks on the procurement process with 4.679, 3.6786 and 3.643 mean scores respectively.

The results confirm findings in literature that one of the major impacts of risk on the procurement process was “increased procurement cost” (Zhao and Duan, 2008; Hood and Rothstein, 2000; Ward and Chapman, 1991). Also, Flangan et al. (2007) agrees to the finding that contractual disputes and claims are major influence of risks on the procurement process.

Table 4.3 Impact of Risks on the Procurement Process

Impact of Identified Risks	N	Mean	Standard Deviation	Ranking
Contractual disputes and claims	28	4.6786	0.54542	1st
Increased procurement cost	28	3.6786	0.90487	2nd

Delay in procurement	28	3.6429	1.02611	3rd
Reduced competition	28	3.4643	1.03574	4th
Cost overruns	28	3.4643	1.17006	5th
Poor value for money	28	3.4286	1.31736	6th
Time overruns	28	3.3571	1.02611	7th
Misprocurement	28	3.2143	1.22798	8th
Contract termination	28	3.0000	1.33333	9th
Mistrust	28	2.8214	0.98333	10th
Poor clients/suppliers relations	28	2.5714	1.23013	11th
Difficulty in evaluating tenders	28	2.5357	1.23175	12th

Source: Field Data

4.5.3 Risk Management Strategies

Following literature review a number of risks management strategies in dealing with identified risks in public procurement were identified. The respondents were once again requested to rate the significance level of these strategies using the likert scale (1 – Not Important at all, 2 - Not Important, 3 - Neutral, 4 - Important, 5 - Very important). Table 4.4 below shows the results of the analysis. As already stated that a criterion is deemed significant if it had a mean of 3.5 or more. Values below 1.0 from the standard deviation indicate regularity in agreement amongst the respondents from the reported level of results (Ahadzie, 2007).

All the risk management strategies have mean scores which are above 3.5, indicating that they are all very important strategies in the public health sector procurement risk management. The standard deviation of all the risk management strategies are beneath

1.0, signifying regularity in agreement amongst the respondents. The highest ranked strategy was 'Training and professional development for procurement staff' which had a mean of 4.7500 and the lowest standard deviation of 0.4410. This result is in line with a study conducted by Brammer and Walker (2007), which highlights training and professional development for procurement staff.

The next highest ranked strategies were 'Ensure good records keeping and documentation', 'Ensure strict compliance to procedures and prescription of Public Procurement Act', 'Ensure good contract administration and performance management', 'Increased competition', 'Ensure compliance to ethical standards and codes of practice' and 'Improved transparency' with mean scores of 4.714, 4.607, 4.464, 4.429, 4.429 and 4.393 in their order of ranking respectively. Also compliance to ethical standards and codes of practice was highlighted by (Flanagan et al., 2007) in his study.

The results confirm findings in literature that, projects need to be insured against any high influence risk sources which is one way the risk can be transferred to a third party (Alexander et al., 2006; Agerberg and Agren, 2012). Stakeholder engagement at the various stages is also an important risk management strategy (Cabral et al., 2006; ECEG, 2010). According to (Tah et al., 1993; Hillson, 1999; Hastak and Shaked, 2000; Tah and Carr, 2000) suggested as strategy of risk management by using a risk-breakdown organization in categorizing risks according to the location and their origin of influence on the project.

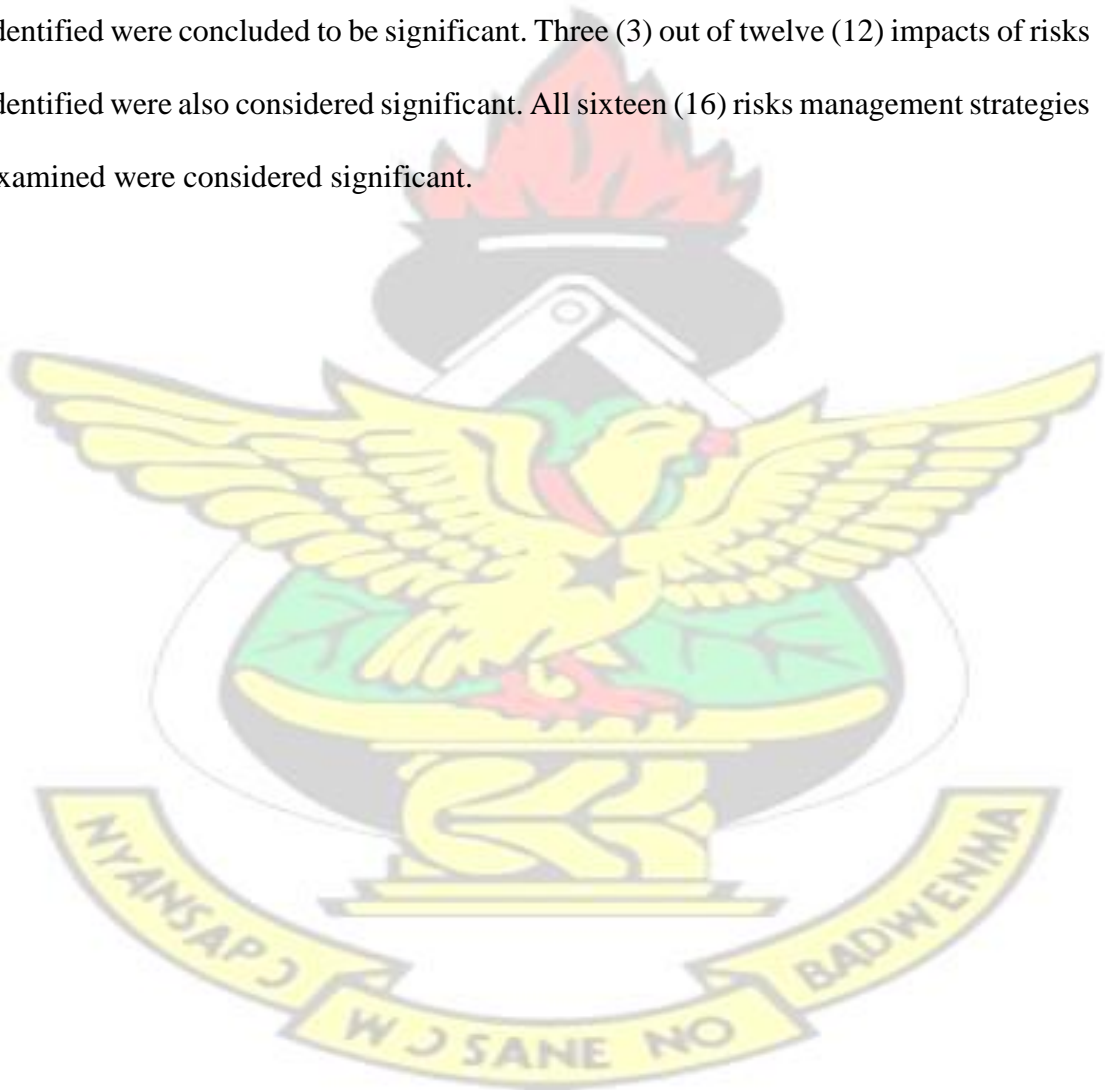
Table 4.4 Risk Management Strategies

Strategies	N	Mean	Standard Deviation	Ranking
Training and professional development for procurement staff	28	4.7500	0.44096	1st
Ensure good records keeping and documentation	28	4.7143	0.46004	2nd
Ensure strict compliance to procedures and prescription of Public Procurement Act	28	4.6071	0.49735	3rd
Ensure good contract administration and performance management	28	4.4643	0.57620	4th
Increased competition	28	4.4286	0.57275	5th
Ensure compliance to ethical standards and codes of practice	28	4.4286	0.57275	6th
Improved transparency	28	4.3929	0.73733	7th
Stakeholders engagement (i.e. users, suppliers, technical experts, management etc.)	28	4.3571	0.73102	8th
Utilize inputs of Technical Experts	28	4.3571	0.55872	9th
Development risk management checklist for all stages of the procurement process.	28	4.3214	0.61183	10th
Conduct procurement process evaluation	28	4.2143	0.62994	11th
Follow and maintain fraud control procedures	28	4.1786	0.66964	12th
Maintain, audit and review evaluation procedures	28	4.1786	0.66964	13th
Implement performance management strategies	28	4.0714	0.60422	14th
Ensure provision of securities and insurances by third parties	28	4.0357	0.74447	15th
Improve tender documentation and its review	28	3.9643	0.57620	16th

4.6 SUMMARY OF FINDINGS

This chapter dealt with the analysis and discussions of the results obtained from the field survey. It began with a brief discussion of the survey questionnaires and descriptive statistics of the results obtained from the field. Interpretation and deductions were derived from the results of the likert scale rating for procurement risks, impact of risks and risk management strategies employed.

The summary of the findings are as follows: Seven (7) out of thirty-two (32) risks identified were concluded to be significant. Three (3) out of twelve (12) impacts of risks identified were also considered significant. All sixteen (16) risks management strategies examined were considered significant.



CHAPTER FIVE

CONCLUSION AND RECOMMENDATIONS

5.1 INTRODUCTION

This chapter concludes the report by summarizing the objectives addressed and observations made in the study. It concludes and recommends ways for achieving the project aim and objectives. Limitations of the research are then described with suggestion constructed for future research. The chapter also revisits the aim and objectives of the research to bring out the extent of work done on it.

5.2 REVIEW OF AIM AND OBJECTIVES

The main objective of this research, as noted earlier [see chapter 1, section 1.4], was to identify risk associated with public procurement process. Upon analyzing the aim, objectives of the study were extracted. At this section, the objectives of the study were reassessed to identify the amount of work that has been accomplished according to these objectives.

5.2.1 RISK ASSOCIATED WITH STAGES OF THE PROCUREMENT PROCESS

The results the need to assess risks in the various phases of the process of procurement. The assessment should include risk occurrence and the potential consequences, the effect and origin of risks, the nature and the probability of the risk to occur in different phases of procurement. ‘Variation in price and foreign exchange’, ‘impractical timeframe’, ‘failure of either party to fulfil contractual obligations’, ‘incomprehensive procurement planning’, ‘political interference’, ‘inadequate budget estimates’ and ‘understatement of need’ were the seven (7) major risks identified from the various stages of the procurement process.

5.2.2 IMPACT OF RISKS ON THE PROCUREMENT PROCESS

One of the objectives of the study was to assess impact of risks on the procurement process within public health sector agencies. The study identified ‘contractual disputes and claims’, ‘increased procurement cost’ and ‘delay in procurement’ as the three (3) major risks that impact the procurement process within the public health sector.

5.2.3 RISK MANAGEMENT STRATEGIES

All the sixteen (16) risk management strategies identified from the study were ranked high among the procurement practitioners in the various public health agencies. The result further revealed that ‘training and professional development for procurement staff’, ‘ensure good records keeping and documentation’, ‘ensure strict compliance to procedures and prescription of Public Procurement Act’ and ‘ensure good contract administration and performance management’ were the five top-ranked management strategies adopted by the various public sector health agencies.

5.3 CONCLUSION

The primary aim of this research was to identify risk and risk management strategies in the procurement process of public health sector agencies. Risk management has become prevalent in many public sector agencies establishing how keen they are with developing a system to add and achieve value in the procurement process.

For goods and services to improve in terms of delivery, a system that is well managed in terms of procurement was observed. To achieve an efficient procurement process, the study has shown that strategic risk management plays a significant role. This require a critical look at the management and idea sharing of the procurement process. All agencies require a continuous, rigorous and systemic approach to procurement risks

management. A risk culture is developed when an organization want to manage risk effectively to support the overall objectives of the organization. There should be the need for establishing communications and boundaries to limit the various stakeholders in the procurement process. Managing risk at the individual level has become less adequate comparing to the present environment in which procurement is operated; there should be ample ways in dealing with risks at all stages of the procurement process.

This requires an idea of the corporate objective to be achieved in the organization and how decision that affect these objective become more strategic with the ability to understand and communicate these risks in different views.

The conclusions drawn from the study is summarized as follows:

- An effective procurement system requires strategic risk management at all stages of the procurement process.
- ‘Planning’ and ‘Contract Management’ stages of the procurement process are critical in respect of risk management
- ‘Delays’, ‘Disputes/Claims’ and ‘Increased Procurement Cost’ are the major impacts of risks on the procurement process.
- ‘Training and Professional Development of Procurement Staff’ is the most important risk management strategy. This is rightly so because knowledge and skill of most of the risk management strategies are acquired through training and professional development.

5.4 RECOMMENDATIONS

These suggestions were made upon evaluating and analyzing all the data:

- Training and professional development for procurement staff on risk management at the various stages of the procurement process need to be

encouraged. This is also supported by the position of (Nsugaba, 2006; Thai, 2010) that lack of competent procurement workforce is a major challenge of public procurement process.

- Risks identification, assessment and management should be carried out at every stage of the procurement process, particularly the 'Planning' and 'Contract Management' stages.
- Integrated risk management at every level of the agencies from assessment of potential risks and communicating risk from an organization-wide viewpoint, making tactical decisions that influences the achievement of an organization's corporate objectives which enhances risk management at the various stages of the procurement process.
- Procurement regulatory authority (Public Procurement Authority) in collaboration with the Ministry of Health must ensure compliance through rigorous monitoring and application of punitive measures to those agencies that do not comply with the restriction of the Public Procurement Act.
- Agencies should ensure good records keeping, documentation and performance at the different phases of the procurement process.

5.5 LIMITATIONS OF THIS RESEARCH

The study undertaken is very important and the findings from the study are useful for procurement practitioners, which helps them incorporate risk management strategies into their procurement process. But with any research or study, limitation also bounds this research. Basically, it concerns procurement practitioners of Public Health Sector Agencies in the Greater Accra Region.

The study did not cover all Public Health Sector Agencies throughout the country. There was administrative and time constraint during the study. This limitation does not undermine the significance of but provide scope for further research.

5.6 RECOMMENDATIONS FOR FURTHER RESEARCH

This research was based on Public Health Sector Agencies. The research has given directions to a lot of other research in the field. Other researchers can look into how to expand the study to bring to light essential objective of risk management during the procurement process in the public sector.

REFERENCES

1. Adjei, A.B, (2006), Message from the Chief Executive. Public Procurement Board, June 2006.
2. Al-Bahar, J. F., and Crandall, K. C.(1990). Systematic Risk Management Approach for Construction Projects. ASCE Journal of Construction Engineering and Management, 116 (3),pp. 533-546
3. Alessandri, T.M., Ford, D.N., Lander, D.M., Leggio, K.B. and Taylor, M. (2004): Managing Risk and Uncertainty in Complex Capital Projects. The Quarterly Review of Economics and Finance, Vol. 44, pp. 751-767.
4. Alexander, C. and Marshall, M.I. (2006). The Risk Matrix: Illustrating the Importance of Risk Management Strategies [online]. Available from: <http://www.joe.org/joe/2006april/tt1.shtml> [Accessed 5 January 2015].
5. Al-Moghany, S.S. (2006), Managing and Minimizing Construction Waste in Gaza
6. Strip. A thesis submitted to the Islamic University of Gaza- Palestine.
7. Bailey, P., Farmer, D., Jessop, D. and Jones, D.(1998). Purchasing Principles and

8. Management, eight edition. Prentice Hall. Financial Times: Great Britain
9. Berny, J. and Townsend, P.R.F.(1993). "Macrosimulation of Project Risks -A Practical Way Forward". International Journal of Project Management, 11(4), pp. 201-208.
10. Bryman, A. (2008) Social research methods.(4th Edition) Oxford and New York: Oxford University Press.
11. Cabral, L., Cozzi, G., Denicoló, V., Spagnolo, G. and Zanza, M. (2006),
 "Procuring Innovations." In N. Dimitri, G. Piga & G. Spagnolo (Eds).
 Handbook of Procurement (pp. 483-528). Cambridge: Cambridge University
 Press.
12. Cave, J. and Frinking, E. (2007). Public Procurement for R&D. [Online]. Available
 at [www2.warwick.ac.uk/fac/soc/economics/staff/faculty/cave/publications/pp_for
 rd.pdf](http://www2.warwick.ac.uk/fac/soc/economics/staff/faculty/cave/publications/pp_for_rd.pdf).
13. Chapman, C. and Ward, S. (2004). "Why Risk Efficiency Is a Key Aspect of
 Best
 Practice Projects." International Journal of Project Management, 22: 619-632.
15. Chapman, C.B., and Ward, S.C. (2003). Project Risk Management:
 Processes, Techniques, and Insights (2nd ed.). Chichester Wiley.
16. Creswell, J.W. 2nd Edition (2003) Research Design: Qualitative, Quantitative and
 17. Mixed Methods Approaches, UK: Sage Publications
18. Del Cano, A. and De la Cruz, M. (2002) Integrated methodology for project risk
 management. Journal of Construction Engineering and Management, 128
 (6), 473-485.
19. Flanagan, R., Jewell, C. and Johansson, J. (2007): Riskhantering i praktiken – med
 exempel från byggverksamhet. Centrum för management i byggsektorn (CMB),
 Chalmers, Göteborg.

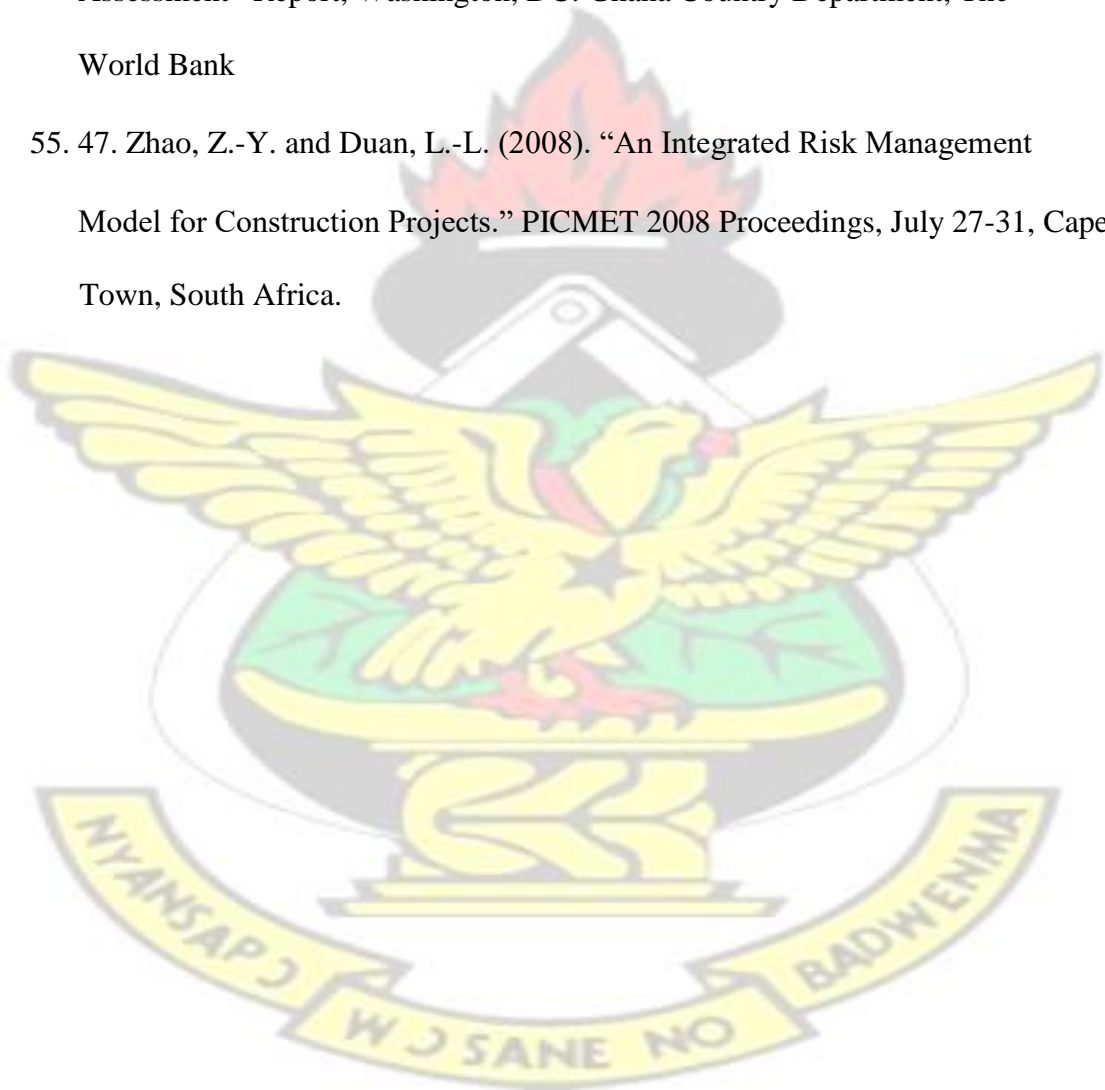
20. Ghana Public Procurement Act, 2003 (Act 663). Republic of Ghana. Accra
Ghana
21. Publishing Corporation
22. Grimvall, G., Jacobsson, P. and Thedéen, T. (2003): Risker i tekniska system
(Risks in technical systems). Student litterature, Lund.
23. Hastak, M. and Shaked, A. (2000). ICRAM-1: Model for International
Construction Risk Assessment, ASCE Journal.
24. Hillson, D. (199). Project risks – identifying causes, risks and effects. PM Network,
Project Management Institute. 14(9), 48-51.
25. Holton, G.A. (2004): Perspectives - Defining Risk. Financial Analysts Journal,
Vol. 60, No. 6, pp. 19-25.
26. Hood, C. and Rothstein, H. (2000). Business Risk Management in
Government: Pitfalls and Possibilities. [On-line]. Available
27. www.lse.ac.uk/collections/CARR/pdf/BusinessRiskManagementInGovt.pdf.
28. [Retrieved March 22, 2015].
29. ISO 31000:2009 (2009): Risk Management Principles and Guidelines.
International Organization for Standardization, Geneva.
30. Jaafari, A. (2001) Management of risks, uncertainties and opportunities on
projects: time for a fundamental shift. International Journal of Project
Management, 19 (2), 89-101.
31. Klein, J. H., Powell, P. L. and Chapman, C. B.(1994). "Project Risk Analysis
Based on Prototype Activities". Journal of the Operational Research Society, 45
(7), pp. 749-757.
32. Kogan, K. and Tapiero, C. S. (2007). "Supply Chain Games: Operations

- Management and Risk Valuation.” International Series in Operations Research & Management Science, 113.
33. Laryea, S. (2007), An experimental approach to project risk identification and prioritization, In Procs CME25: Construction Management and Economics: past, present and the future, 15-18 July 2007. United Kingdom: University of Reading, Reading.
34. Laryea, S. and Hughes, W. (2009). How contractors in Ghana include risk in their bid prices. In: Procs 25th Annual ARCOM Conference, Nottingham, UK[online], Available from: <http://centaur.reading.ac.uk/12241/> (Accessed 20 May 2015).
35. Lember, V., Kalvet, T. and Kattel, R. (2011). “Urban Competitiveness and Public Procurement for Innovation.” Urban Studies, in press.
36. McNeil, A.J., Frey, R. and Embrechts, P. (2005): Quantitative Risk Management. Princeton University Press, Princeton, NJ.
37. Naoum, S.G. (1998). Dissertation Research and Writing for Construction Students. Boston: Butterworth-Heinemann.
38. National Audit Office. (2000). Supporting Innovation: Managing Risk in Government Departments. Report by the Comptroller and Auditor General. London: The Stationery Office.
39. Nsubuga, C.K. (2006), Challenges of procurement in Uganda Local Government. Available at www.ppda.go.ug
40. Nyiri, L., Osimo, D., Özcivelek, R., Centeno, C. and Cabrera, M. (2007). Public Procurement for the Promotion of R&D and Innovation in ICT.

Institute for Prospective Technological Studies. Luxembourg: Office for Official Publications of the European Communities.

42. Patton, M. (2002), *Qualitative evaluation and research methods* (3rd Ed.). Thousand Oaks, CA.
43. Perry, J.G. and Hayes, R.W. (1985): *Construction projects – know the risk*. Chartered Mechanical Engineer, Vol.32, pp. 42-45.
44. Potts, K. (2008): *Construction Cost Management: Learning from Case Studies*. Taylor & Francis, London.
45. Samson, S., Reneke, J.A. and Wiecek, M.M. (2008): *A Review of Different Perspectives on Uncertainty and Risk and an Alternative Modelling Paradigm*. Reliability Engineering and System Safety, Vol. 94, pp. 558-567.
46. Saunders, M., Lewis, P. and Thornhill, A. 4th Edition (2007). *Research Methods for business students* Harlow, England: Prentice Hall.
47. Tah, J.H.M. and Carr, V. (2000): *Information modelling for a construction project risk management system*. Engineering, Construction and Architectural Management. Vol.7, No. 2, pp. 107-119.
48. Thai, K. V. (2010), “Towards New Horizons in Public Procurement”. *Towards New Horizons in Public Procurement* PR Academics Press.
49. Thai, K.V. (2001), *Public Procurement Re-Examined*, Journal of Public Procurement, vol. 1 No. 1, pp 9 50
50. Ward, S. and Chapman, C. (1991). “Extending the Use of Risk Analysis in Project Management.” *International Journal of Project Management*, 9 (2): 117-123.
51. Winch, G.M. (2010): *Managing Construction Projects*. Wiley-Blackwell, Chichester

52. Wittig, W.A. (1999). Building Value through Public Procurement: A Focus on Africa. Paper Presented to the 9th international Anti-Corruption conference.(Available online at : www.legacy.transparency.org).
53. World Bank (2003), Economic Report on Ghana. Ghana Country Department, the World Bank, Washington, DC.
54. 46. World Bank, (2003). Ghana 2003 Country Procurement Assessment Report, Washington, DC: Ghana Country Department, The World Bank
55. 47. Zhao, Z.-Y. and Duan, L.-L. (2008). “An Integrated Risk Management Model for Construction Projects.” PICMET 2008 Proceedings, July 27-31, Cape Town, South Africa.



APPENDIX

QUESTIONNAIRE

KWAME NKRUMAH UNIVERSITY OF SCIENCE AND TECHNOLOGY

DEPARTMENT OF BUILDING TECHNOLOGY

MSc. PROCUREMENT MANAGEMENT

Confidential survey questionnaire

**Topic: PROCUREMENT RISKS MANAGEMENT IN THE PUBLIC SECTOR
OF GHANA**

Introduction:

I am a post-graduate student at the Kwame Nkrumah University of Science and Technology pursuing a Master of Science Degree in Procurement Management. As part of successful completion of this programme, I am conducting a research into Procurement Risks Management in the Public Sector of Ghana.

The aim of the research is to identify risks associated with public procurement processes and recommend ways of dealing with them.

Your response to this research will be confidential and will be used exclusively for academic purposes. The questionnaire is divided into four main parts.

Thank you for your cooperation and support.

Please return or direct any enquiries to: Louis Lawer Lawerteh

Tel: 024-6772001

E-mail: lawerlawerteh@yahoo.com

PART ONE: RESPONDENT'S PROFILE

1.1 Which institution do you work with?

.....

1.2 Which department of your institution do you belong?

.....

1.3 What is your position or job title?

.....

1.4 Are you involved with procurement in line with your duties?

Yes No

1.5 How long have you been practicing procurement? Less than 5 years

5-10 years

11-15 years

Above 15 years (please specify).....

1.6 Which type of procurement are you involved in? (Tick as applicable) Goods

Works

Services

All

1.7 Do you have any formal training in procurement or procurement related field?

Yes

No

1.8 If Yes, Please specify.....

1.9 What is your highest educational level?

GCE 'A' Level/SSSCE

CTC/HND Degree

Masters' Degree

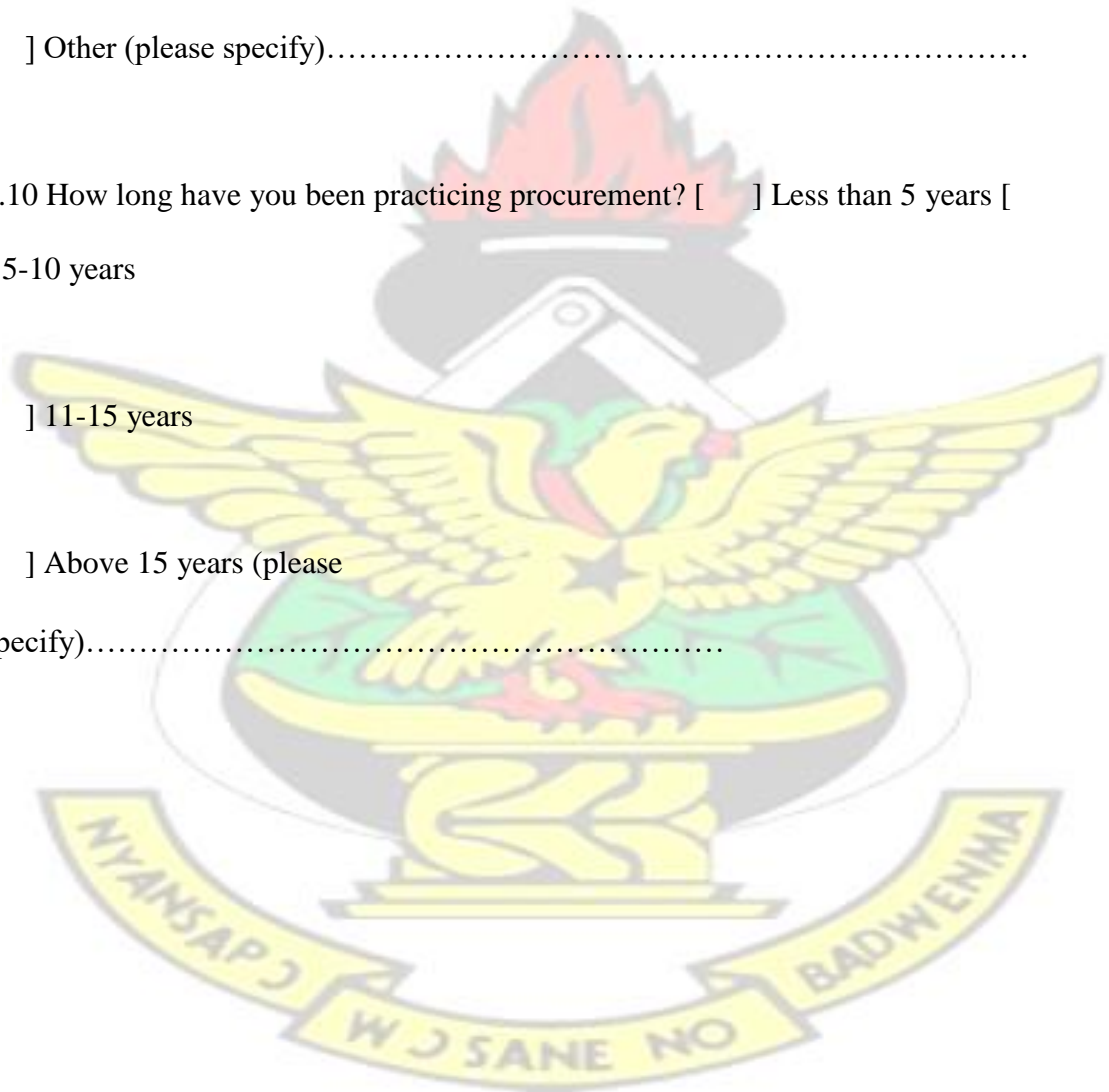
Other (please specify).....

1.10 How long have you been practicing procurement? Less than 5 years

5-10 years

11-15 years

Above 15 years (please specify).....



**PART TWO: RISKS ASSOCIATED WITH VARIOUS STAGES OF THE
PROCUREMENT PROCESS**

The table below show a list of risks identified at the various stages of the public procurement process in Ghana. From your experience, please indicate your level of consent of the risks on a scale of 1-5 as follows. [1=Not Strongly Disagree; 2=Disagree; 3=Neutral; 4=Agree; 5=Strongly Agree]. Please tick (✓) in the appropriate column.

No.	Risks Associated with Various Stages of Procurement Process	Strongly Disagree 1	Disagree 2	Neutral 3	Agree 4	Strongly Agree 5
1.0	Planning Stage					
1.1	Understatement of need					
1.2	Overstatement of need					
1.3	Misinterpretation of user's needs					
1.4	Inaccurate budget estimates (i.e. underestimate)					
1.5	Impractical timeframe					
1.6	Incomprehensive procurement planning					
2.0	Sourcing Stage					
2.1	Inadequate information in tender documents (e.g. inadequate scope or product definition)					

2.2	Improper documentation (e.g. the use of wrong standard document & ambiguous evaluation criteria)					
2.3	Biased or wrong specification (e.g. use of brand names)					
2.4	Terms and conditions unacceptable to tenderers					
2.5	Failure to identify potential sources					
2.6	Use of inappropriate selection method					
2.7	No or insufficient number of responses					
2.8	Inadequate response to tenderers' enquiries					
2.9	Non-adherence to prescribed tender receipt and opening procedures					
3.0	Evaluation Stage					
3.1	Non-adherence to effective evaluation procedures					
3.2	Offers not meeting tender requirements					
3.3	Political Interference					
3.4	Use of subjective approach to evaluation					
4.0	Contract Award Stage					
4.1	Selection of unsuitable supplier/contractor					

4.2	Selection of unsuitable product					
4.3	Failure of successful tenderer to accept award					
5.0	Contract Management Stage					
5.1	Improper contract administration					
5.2	Variations in price and foreign exchange					
5.3	Failure of either party to fulfil contractual obligations					
5.4	Authorized increase in scope of works					
5.5	Improper contract closure					
5.6	Loss or damage/injury to goods/persons/property					
5.7	Fraud					
6.0	Procurement Process Evaluation Stage					
6.1	Failure to identify shortfalls					
6.2	Failure to engage all stakeholders in evaluation					
6.3	Failure to document outcomes of evaluation					

PART THREE: IMPACT OF IDENTIFIED RISKS ON THE PUBLIC

PROCUREMENT PROCESS

The table below highlights the impacts of the identified risks on the public procurement process in Ghana. From your experience, please indicate your assessment of the impact of the identified risks on a scale of 1-5 as follows. [1=Very Low; 2=Low; 3=Medium; 4=High; 5=Very High]. Please tick (✓) in the appropriate column.

No.	Impact of Identified Risks	Very Low	Low	Medium	High	Very High
		1	2	3	4	5
1	Misprocurement					
2	Reduced competition					
3	Increased procurement cost					
4	Delay in procurement					
5	Poor value for money					
6	Cost overruns					
7	Time overruns					
8	Difficulty in evaluating tenders					
9	Contractual disputes and claims					
10	Poor client/supplier relations					
11	Mistrust					
12	Contract termination					

PART FOUR: RISK MANAGEMENT STRATEGIES

The table below lists risks management strategies for dealing with the identified risks.

From your experience, please indicate the level of relative importance of these strategies

on a scale of 1-5 as follows. [1= Not Important at all; 2=Not Important;

3=Neutral;

4=Important; 5=Very Important]. Please tick (✓) in the appropriate column.

No.	Risks Management Strategies	Not Impt. at all	Not Impt.	Neutral	Impt.	Very Impt.
		1	2	3	4	5
1	Training and professional					
2	Improved transparency					
3	Increased competition					
4	Stakeholder engagement (i.e. users, suppliers, technical experts, management etc.)					
5	Ensure strict compliance to procedures and prescription of Public Procurement Act					
6	Utilize inputs of Technical Experts					
7	Conduct procurement process evaluation					
8	Ensure compliance to ethical standards and codes of practice					
9	Ensure good contract administration and performance management					

10	Ensure good records keeping and documentation					
11	Ensure provision of securities and insurances by third parties					
12	Maintain, audit and review evaluation procedures					
13	Improve tender documentation and its review					
14	Follow and maintain fraud control procedures					
15	Implement performance management strategies					
16	Development risks management checklist for all stages of the procurement process					

Any other comments, please state:

.....

.....

.....

.....

