INFLUENCE OF RISK MANAGEMENT IN BUILDING PROJECTS IN KENYA: A CASE OF BUILDING PROJECTS IN WESTLANDS SUB - COUNTY

By

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DECLARATION

This research project report is my original work and has not been presented for an award of degree in any other University.

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This research project report has been submitted for examination with my approval as the University of Nairobi supervisor.

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DEDICATION

I dedicate this research project report to my wife Janet and children, Sacha and Miguel for their moral support during my study period.

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My Sincere gratitude and appreciation goes to my supervisor, Dr Juliana Munialo Mutoro, Lecturer, department of distance Studies University of Nairobi, for her guidance, encouragement and support. My regards are also extended to my fellow classmates at the University for their Positive Criticism and patience for making this accomplishment educative and edifying. I also appreciate the contribution of the Architects who participated in the shape up of the research proposal. My sincere appreciation also goes to the University of Nairobi for giving me the chance to further my education. And finally, this work would have not been completed without the support and useful information provided by Nairobi City County.

May God bless and shine his face upon you all.

ABSTRACT

The study investigated the influence of risk management in building projects in Westlands sub-County. The objectives of the study were to: identify procurement options, investigate strategies of risk process and establish policy influence on risk management. The research design presented in this research project report is a descriptive survey design. The target population for the study included clients, contractors and consultant in building projects within Westlands sub - county in Nairobi. A sample size of 32 out of 107 respondents was sampled using stratified random sampling technique. Validity and reliability of the research instrument was measured using Cronbach's alpha and split- half method respectively. Data was collected by self administered questionnaires to respondents. Data generated was analyzed using SPSS version 20. Cross-tabulation was used to establish the relationship between independent and dependent variables. Chi-squire was used to establish the significance of the differences observed. Confidence level was set at 5%. Binary logistic regression was used to model the relationships established. The results were as follows: building projects in Westland County are procured via two contract type: design-bid-build (68%) and design build contracts (32%).The choice of contract options are determined by project duration/time, financial costs, legal issues and project actors. All the companies surveyed were exposed to a range of risks including risks associated with owners, contractors, political risks, financial risks and other risks. Projects procured via design-build contracts had a higher level of risks associated with designers. The various risks identified are under-mitigated while political risks are not mitigated. Effect of licensing procedures, laws and regulations and influence of policies on arbitrage was not significant for both design-build and design-bid-build. The local contractors and designers should be sensitized on risks mitigation strategies to improve the level of risks mitigation in the county. Additional studies should be conducted on the role of the newly created National Construction Authority with regards to risk in building projects and the role of quality control on project risk.

TABLE OF CONTENT

DECLARATION.....Error! Bookmark not defined.

DEDICATION..... iii

ACKNOWLEDGEMENT..... iv

ABSTRACT..... v

TABLE OF CONTENT..... vi

LIST OF TABLES..... xi

LIST OF FIGURES..... xii

ABBREVIATIONSAND ACRONYMS..... xiii

CHAPTER ONE: INTRODUCTION..... 1

1.1 Background Information of the study..... 1

1.2 Statement of the Problem..... 4

1.3 Purpose of the Study..... 5

1.4 Objectives of the study..... 5

1.5 Research Questions..... 6

1.6 Significance of the Study..... 6

1.6.1 Project Actors..... 6

1.6.2 Practitioners..... 6

1.6.3 Policy Makers..... 7

1.7 Delimitation of the Study 7

1.8 Limitations of the Study 7

1.9 Basic assumptions of the study 8

1.10 Definition of Significant Terms as used in the Study 8

1.11 Organization of the study 9

CHAPTER TWO:LITERATURE REVIEW 10

2.1 Introduction 10

2.2 The Concept of Risk Management in Building Projects 10

2.3 Influence of Policies on Risk Management in Building Project 13

2.4 Theoretical Framework 15

2.4.1 Agency theory 16

2.4.2 Moral Hazard theory 17

2.5 Conceptual Framework 19

2.6 Research Gaps 21

2.7 Summary 22

CHAPTER THREE: RESEARCH METHODOLOGY 23

3.1 Introduction 23

3.2 Research Design 23

3.3 Target Population 23

3.4.1 Sampling size 24

3.4.2 Sampling Procedures 25

3.5 Research Instrument 25

3.6 Validity of the Research Instruments 25

3.7 Reliability of the Research Instruments 26

3.8 Data Collection Procedures 26

3.9 Data Analysis Techniques 27

3.10 Ethical issues in research 28

3.11 Summary 28

CHAPTER FOUR:DATA ANALYSIS, PRESENTATION AND INTERPRETATION 30

4.1 Introduction 30

4.2 Sample Characteristics 30

4.3 Data reliability and reproducibility 30

4.4 Demographic Information 30

4.5 To determine how procurement options influence risk management in building projects in 32

4.6 Factors influencing choice of procurement 32

4.6.1 The relationship between factors influencing choice of procurement options and type of contract adopted 32

4.6.2 Binary Regression models of the factors influencing procurement 33

4.7 To investigate how risk management strategies influence management of risks in building projects in Westlands sub – county 36

4.7.1 Risk assessment - nature of risks construction companies in Westlands sub-county are exposed to risks associated with owners 36

4.7. 2 Risks associated with designers 38

4.7.3 Risks associated with contractors 39

4.7.4 Political risks 40

4.7.5 Financial Risks 41

4.7.6 Others risks 42

4.8 Risk Management Strategies 43

4.9 Influence of policies on risk management in building projects in Westlands Sub – County 45

CHAPTER FIVE:SUMMARYOF FINDINGS, DISCUSSION, CONCLUSION AND RECOMMENDATIONS 47

5.1 Introduction 47

5.2 Summary of Findings 47

5.3 Discussions 48

5.3.1 The procurement options and their influence on risk management of building projects in Westland sub - County 49

5.3.2 The strategies of risk management process in building projects in Westlands Sub – County and the influence of Policies 51

5.4 Conclusion 53

5.5 Recommendations 53

5.6 Suggestions for further research 54

REFERENCES 55

APPENDICES 64

Appendix I : Letter of Introduction 64

Appendix II:Questionnaire For Clients 65

Appendix III:Questionnaire For Contractors 71

Appendix IV:Questionnaire For Consultants 77

LIST OF TABLES

Table 3. 2: Sample Size 24

Table 3. 3: Operationalisation of Variables 29

Table 4.1: Demographic information 31

Table 4. 2: Percentages of contract adopted 32

Table 4. 3: Factors influencing choice of procurement 33

Table 4. 4: Correlation matrix between effective factors 34

Table 4. 5: Variables not in the equation 34

Table 4. 6: Contingency Table for Hosmer and Lemeshow Test 35

Table 4. 7: Classification Table 35

Table 4. 8: Binary regression 36

Table 4. 9: Risks associated with owners 37

Table 4. 10: Risks associated with designers 38

Table 4. 11: Risks associated with contractors 39

Table 4. 12: Political Risks 40

Table 4. 13: Financial risks 41

Table 4. 14: Other Risk Factors 42

Table 4. 15: Risk and mitigation measures employed 43

Table 4. 16: Influence of policies on risk management 45

LIST OF FIGURES

Figure 1: Conceptual Framework 20

ABBREVIATIONSAND ACRONYMS

AS/NZS	Australian/New Zealand Standards
CBD	Central Business District
DB	Design Build
DBB	Design Bid Build
GDP	Gross Domestic Product
JRM	Joint Risk Management
PMBOK	Project Management Body of Knowledge
RC	Relational Contract
RMP	Risk Management process

CHAPTER ONE

INTRODUCTION

1.1 Background Information of the study

Kenya's economy is market – based, except for a few state-owned infrastructure enterprises, and maintains a liberalized trade system. As at May 2012, the economic growth record 4% GDP which was attributed largely to growth in Tourism and building. Building industry alone contributes 8 percent to the country's GDP in the year 2011 and continues to register growth due to government infrastructural projects and real estate development (Bureau of statistics, 2011).

Since the quality of buildings has a direct influence on the quality of life, a well functioning building industry is desirable for the development of society. In recent past, the Kenyan building industry has been criticized for increasing costs, low productivity, quality problems and project delays especially government project. A number of factors are highlighted as the major contributing factors and reports points out to lack of regulation and means of control in the building process amongst other factors. In particular, the risk management process becomes critical in project management and therefore requires further development in order to achieve further efficiency improvement in the industry. (National Construction Authority, 2012)

Building process is usually divided into four main phases: programme, design, procurement and production. In the programme phase, the client conceptualizes the project and analyse conditions necessary for its execution. At the design phase, the architects and engineers produce design and building drawings according to the client's requirements. Depending on the procurement option, the design phase follows either the programme phase or procurement phase. In the procurement

phase the client chooses the contractor and parties sign the contract. Finally, the contractor executes the job in the production phase. As the size and the complexity of the projects continue to increase, ability to manage risk throughout the building process becomes central in preventing unforeseen contingencies. There is need to allocate different project risks to the project's actors on the basis of who has the desired qualifications to deal with specific risks.

The way risks are shared among the actors in building projects is largely determined to a larger extent by the choice of procurement option and the content of the related contract documents. And since different procurement options imply different ranges of responsibilities and liabilities in the project, the choice of an appropriate project procurement option becomes a key issue for project actors.

Many studies have compared the advantages and disadvantages of procurement options on project risk. Ling & Poh (2008) on a study of Singapore building industry established that a significant growth in DB project delivery option as compared to the traditional DBB project. However, Ling et al. 2004 reported that DBB procurement was the most widely used strategy in many countries, e.g. the UK, USA and Singapore because DBB contract strategy allows the division of the contract into two main organisation alternatives that is, specific contracts and general contracts. A study by Akintoye & Main (2007) on risk analysis and management of projects shows that UK contractors are positive about collaborative relationships and believe they lead to cost and risk reduction. Drexler and Larson (2000) in their study show that relationships in partnering projects are much more stable than in other types of projects.

The DB contract has increasingly become popular because single point of responsibility is attractive to clients. Ernzen & Schexnayder (2000) in their study of a US building company

established that DB contract were more profitable than DBB by 3.5 percentage points. Konchar & Savido (1998) showed that DB project on average recorded better performance than DBB in terms of unit cost, building speed, delivery speed, cost growth and schedule growth. From the risk allocation perspective, DB contracts are more attractive to clients because responsibility for design implies that more risk is allocated to the contractor. However, the DB alternative may be more expensive compared with DBB contracts. Further, the quality of the final product may be lower if the contractor uses cheaper solutions trying to decrease own cost (Gransberg & Molenaar, 2004). This kind of problem is especially rampant in contracts involving lump sum payment mechanism. In term of time, the DB approach arguably provides an earlier start for project execution than other form of project contracts. Toolanen (2004) found that clients prefer DB contracts when the project's timeframe and availability of resources are critical factors.

Contractors on the other hand consider DB contracts as risky especially when the contractor lacks knowledge and experience on the design-build system. Håkansson et al. (2007) observes that the competence requirements for DB contracts are higher than other forms; hence structured risk analysis should be carried out very early in the project. Simu (2006) shows that smaller contractor preferred DBB to DB contracts. In DB contract cases, contractors increase their price by including insurance for extra risks involved.

In Kenya and other countries, majority of building projects contracts are standardized and these documents assign responsibilities and liabilities to each contracting party. To conclude, the main area of the study was influence of risk management in building projects adopting different procurement options from the joint perspective of clients, contractors and consultants, and reviewing their roles in risk management during the project cycle.

1.2 Statement of the Problem

In building projects, risk management is critical for successful completion of projects, however, in many projects actors often attempt to avoid risks as much as possible and let somebody else in the value chain to deal with them. This has led to many building projects incurring risk resulting in significant deviations in the project performance in terms of time, cost and quality. Moreover these problems are identifiable at very early stages and therefore can be mitigated at an early stage in project life. Numerous studies have been carried out in other parts of the world on various aspects of risk management in building projects. Baloi & Price (2003) carried out a study to classify sources of risks and concluded that sources of risks in building projects can be divided into external risks (e.g. financial, economic, political, legal and environmental) and internal risks that includes design, construction, management and relationship risk. Baccarini & Archer (2001) in their study on risk allocation developed a methodology of ranking risk of projects that allows for an effective and efficient allocation of the resources for the management of risk. They concluded that during risk assessment, identified risks are evaluated and ranked and the goal is to priorities risks for management. A study by Zaghoul & Hartman (2003) investigated the relationship between risk allocation and trust and concluded that trustful relationship between project actors result in a more effective risk allocation process, decrease of contingency funds and, finally, in project cost reduction.

A number of studies have been carried out on risk management in building projects in Kenya. Mbeche (2013) carried out a study on risk management in building projects by analysing time and cost risk and developed a model for allocating risk amongst various parties. Nyabwari (2013) investigated the causes and effects of cost overrun on civil works project in Mombasa and

recommended that contracting parties should hold their responsibilities to avoid time and cost overruns. Finally, Gwaya et al., (2014) carried out a study on contingencies allowances in project budgeting and established an empirical way of estimating contingencies as practiced in Kenya.

Based on this review, there are no other known studies that investigated the influence of risk management in building projects in Kenya. Therefore this study sought to fill the knowledge gap by investigating the influence of risk management in building projects in Westlands Sub-County in Nairobi, Kenya.

1.3 Purpose of the Study

The purpose of the study was to investigate the influence of risk management in building Projects in Westlands – Sub County, Nairobi City County.

1.4 Objectives of the study

The objectives of the study were:

1. To determine how procurement options influence risk management in building projects in Westlands sub- County.
2. To investigate the influence of risk management strategies in building projects in Westlands sub – county.
3. To establish the influence of policies on risk management in building projects in Westlands Sub - County.

1.5 Research Questions

The research questions of the study were:

1. How does procurement options influence risk management in building projects in Westlands Sub-County?

2. How does risk management strategies influence risk management in building projects in Westlands Sub - County?

3. To what extent does policies influence risk management in building projects in Westlands Sub -County?

1.6 Significance of the Study

1.6.1 Project Actors

The study will establish ways in which building project risk can be managed in order to further develop the building industry. It will outline the various procurement options available and how project actors adopt a particular procurement option at different phase of a project to effectively manage risk.

1.6.2 Practitioners

The recommendations may contribute greatly in providing a framework on effective risk management for practitioners; provide information to clients on the type of risk they are likely to get exposed to in undertaking a building construction project, give information to financial institutions that will be necessary in evaluating project for funding. This information may be of help to project financiers, procurement officers and Town planners, among others.

1.6.3 Policy Makers

The study will further provide policy makers with knowledge necessary to come up with laws and regulation for the building sector. And finally, the research will equally be useful to researchers and academicians in furthering knowledge.

1.7 Delimitation of the Study

The study focused on three main groups of actors on the supply side of the project, i.e. clients, contractors and consultants. Clients' relationships with project stakeholders on the demand side i.e. end users, financial institutions and authorities were excluded from the study. Subcontractors were also not included in the study. In addition, the study was confined to Westlands sub-county, in Nairobi County.

1.8 Limitations of the Study

The researcher experienced a number of hindrances in accessing information. The following were some of the challenges. The researcher encountered the problem of accessing building project sites that were heavily guarded. Furthermore, the co-operation of the respondents was a major issue given the working coordination in building sites. To overcome these barriers, the researcher opted to interview the project actors in their officers as opposed to the building sites. And to ensure maximum co-operation, the respondents were each promised a copy of the final report once the research was completed and this may be beneficial to risk management in future projects to be undertaken.

1.9 Basic assumptions of the study

The study was based on the following assumptions; first, the study assumed that the sample was representative of the population under study. Second; the study assumed that the respondents answered the questions provided correctly and truthfully and that the target population provided an enabling environment for the research.

1.10 Definition of Significant Terms as used in the Study

Building projects are contracts undertaken to construct building structures

Client refers to a party that carries out or assigns others to carry out building, demolition or land work.

Contract is a mutually binding agreement that obligates the seller to provide the specified product and obligates the buyer to pay for it.

Design-bid-build is a traditional procurement option where the client contracts separately with designer and a constructor.

Design-build is a procurement method where the contractor is responsible for building and the full design.

Partnering is a structured management approach to facilitate team working across contractual boundaries.

Procurement is a process of securing contracts in projects

A procurement option is a different type of contracts in building projects.

Project risk is an uncertain event or condition that, if occurs, has positive or a negative effect on a project objective.

Risk is an implication of significant uncertainty, which may be upside and downside.

Risk management is a systematic process of identifying, analyzing and responding to project risks.

Risk identification is a process of determining which risks might affect the project and documenting their characteristics.

Risk assessment is a process of assessing the impact and likelihood of identified risks

Risk response is a process of selection and implementation of measures to modify risks.

Uncertainty is a lack of certainty, involving variability and ambiguity

1.11 Organization of the study

The study is organized in the following manner. Chapter One dealt with the background of the study, the problem statement, objectives of the study, the research questions, limitation and delimitation of the study, study assumptions and the definition of terms used in the study. Chapter Two reviewed theories and relevant literature along the study objectives with and illustrated the conceptual framework. Chapter Three dealt with topics on research design, target population, sample size and sampling procedures, research instrument, validity and reliability of the research instruments, data collection procedure and analysis. Chapter Four dealt with data analysis, presentation and interpretation. Chapter Five summarized the findings, discussion, conclusion and recommendations.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

The chapter reviews studies carried out locally and internationally on risk management in building projects. The chapter also reviews different procurement methods that are adopted by various clients to mitigate risk in building projects. Finally, the chapter will equally consider theories that have been advanced on risk management and related studies together with the conceptual framework.

2.2 The Concept of Risk Management in Building Projects

In the recent past, a number of techniques and strategies have been developed to control the potential impact of risk on building projects. Recent studies have systematically divided risk management strategies into three categories that included: risk management process, risk identification and classification, risk analysis, and risk response. Risk response is further divided into four processes, i.e. retention, reduction, transfer and avoidance.

Risk is perceived either as the potential for negative consequences of an event or activity, a combination of hazard and exposure Royer (2000). Recent research has laid emphasis on the two-edged nature of risks, such as a threat and a challenge, the chance of something happening that will have an impact on objectives that can either be positive or negative, combination of the probability or frequency of occurrence of a defined threat or opportunity and the magnitude of the consequences of the occurrence (Edward & Bowen, 1995).

Risk management on the other hand is defined as a system which aims to identify and quantify all risks to which the project is exposed so that a conscious decision can be taken on how to manage the risks (Okmen, 2002). According to PMBOK (2000) risk management is the processes of conducting, planning, identification, analysis, responses, and monitoring and control on a project risk. Other organizations such as AS/NZS have defined risk as the culture, process and structures that are directed towards realizing potential opportunities that managing their adverse effect. Based on these definitions, risk management in the building project management context refers to a systematic way of identifying, analyzing and dealing with risks associated with a project in order to achieve the project objectives.

Risk identification is considered as the first step of risk management process, where potential risks associated with a building project are identified. As an integrative part of risk identification, risk classification attempts to structure the diverse risks affecting a building project. A number of approaches have been suggested in the literature for classifying risks. Perry & Hayes (1985) identified a list of factors extracted from several sources which were divided in terms of risks retainable by contractors, consultants and clients.

Flanagan & Norman (1993) combined the holistic approach of general systems theory with the discipline of a work breakdown structure as a framework, suggested three ways of classifying risk: by identifying the consequence, type and impact of risk. Chapman & Wald (2003) on the other hand grouped risks into four subsets: environment, industry, client and project.

In the Sino-Foreign building joint ventures, Shen et al identified 58 risks that were associated with the project and categorized them into six groups depending on the nature of the risk i.e. financial, legal, management, market, policy and political, as well as technical risks. In general,

the sources of risk in building projects may be divided into three groups: internal or controllable risk such as design risks, building management risks and relationships risks; external risk or uncontrollable risks such financial, economic, political, legal, environmental and force majeure risks.

Risk analysis is the intermediate process between risk identification and risk response and incorporates uncertainty in a qualitative and quantitative manner to evaluate the potential impact of risks (Vaughan, 1997). After identification and analysis of risks, appropriate response strategies must be adopted to cope with the risks in the project implementation and the treatment measures on each risk are based on the nature and impact of the risk.

The main aim of risk analysis is to remove as much as possible the potential negative impact and to increase the level of control of the risks. However, the process of risk management does not aim to eliminate all risks but to identify appropriate strategies to assist project stakeholders to manage them (Flanagan & Norman, 1993).

Risk assessment is the evaluation of risks identified. The goal is to rank risks for management. A number of models are offered in the research literature that uses both qualitative and quantitative methods for assessment of project risks. Tah & carr (2000) developed a model for qualitative assessment based on fuzzy estimates of risk components. Baccarinin & Archer (2001) describe a methodology for risk ranking of projects that allows an effective and efficient allocation of the resources for the management of projects risks. Öztas & Ökmen (2005) propose a pessimistic risk analysis method which is effective in uncertain conditions within building projects. Zeng et al. (2007) propose a risk assessment method based on fuzzy reasoning techniques and aimed at dealing with risks in complex projects. A fuzzy system is also used by Motawa et al. (2006) to

evaluate the risk of change in building projects. Poh & Tah (2006) have developed an integrated model that takes into account both duration and cost risks and can be used for modelling risk impacts that affect the project. Dikmen & Bigonul (2006) propose a methodology for both risk and opportunity assessment of international projects.

Risk responses involve the process of identifying way of dealing with project risk that have been identified and assessed. The four main risk response strategies includes: risk avoidance, risk reduction, risk transfer and risk retention (Smith et at. 2006). Risk avoidance deals with the risks by changing the project plan to eliminate the risks. Risk reduction aims at reducing the probability and/ or consequences of a risk event. Those risks that remain in the project after risk avoidance and reduction may be transferred to another party either inside or outside the project. Risk retention or acceptance refers to risk that remains present in the project. There are two options for retaining risk: developing a contingency plan in case a risk occurs, or take no action until risk is triggered. Baker et al. (1999) have identified risk reduction as the most frequently used technique in the building industry.

2.3 Influence of Policies on Risk Management in Building Project

The earliest policy effort can be traced back to the colonial days during the establishment of the coastal urban settlement. Other policies initiatives such as the alienation of high potential land in the central highlands for exclusive settlement and commercial use by European settlers were initiated. A number of planning initiatives were institutionalized through 1931 town and country ordinance. Post colonial era witnessed the development of urban and regional planning through development policy documents aimed at achieving national development goals (Sessional Paper No. 10 1965). Human settlement strategy for urban and rural development was developed to

provide a framework for management of future urban and rural growth as well as the location of physical development in urban and rural areas to provide a coherent system for human settlements. (Kimani & Musungu, 2010).

Another Sessional paper no. 2, (2009) on national land policy was developed with the objective of providing a frame work on efficient, sustainable and equitable use of land for posterity. Its main aim was to define key measures required to address the critical issues of land administration, land use planning, environmental degradation and resolution of conflict. The key principal in the policy in land use planning is important because it recognized the essential for efficient and sustainable utilization and management of land and land based resources.

In Kenya there are number of legislation that guides the planning and building sector. Prior to 1996 the main statute on planning was the land planning Act that was enacted in 1968 with aim of controlling the development of the urban land. However, the Act only provided for preparation of town plans but its content on the plan and machinery of preparation were inadequate. In 1996 the Act was repealed with enactment of Physical Planning Act. This particular piece of legislation provided for the formulation of National, Regional and Local Physical planning guides, policies and strategies. However, the effectiveness of development control is hampered by amongst others: lack of capacity to inspect and implement plans, lack of relevant support system for effective enforcement and lack of resources by the various authorities.

There are a number of by – laws for building development and control in Kenya with the first one being introduced in 1926 by the colonial government. They were applied to Nairobi Town Council but were later replaced by the Nairobi City Council By-laws that included town planning

and zoning. A set of new building codes have been development through public and private initiatives aimed at reducing building cost and risks through the use of innovative designs and local materials. However no significant success has been realized due to failure by the local authorities to adopt the new codes. (Kimani, 2010)

The planning and building Act 2010 is aimed at broadening the range of acceptable construction materials beyond brick and mortar. The Planning and building act, 2010 has established the construction authority whose mandate is to establish rules and regulations governing building constructions and address the flaws in the planning and building industry.

2.4 Theoretical Framework

"A theory can be defined as a way of making sense of a disturbing situation" (Kaplan, 1964). Theories therefore represent tentative solution to problems."

A theory is a generalization about a phenomenon, an explanation of how or why an event occurs. In effect, a theory offers a satisfactory rationale of the 'why' question and testable explanations for relationships. A testable theoretical explanation of a phenomenon is one that can be falsified.

The theoretical framework, therefore, "has an implication on every decision made in the research process" (Mertens, 1998). The starting point in developing a research proposal according to Crotty (1998) is to identify the methodologies and the methods that will be utilized in the research project and then justify their choice. Methodologies relate to "the strategy, the plan of action, design lying behind the choice and the use of particular methods, and linking the choice and use of methods to the desired outcomes" (Crotty, 1998). The methods applied, on the other hand, convey "the techniques or procedures used to gather and analyse data related to some

research questions" (Crotty 1998). Therefore, it is important "to find a method which is compatible with the kind of thing [one is] trying to investigate" (Mackay 1993). In this study two theories have been advanced that is Agency theory and Moral Hazard theory.

2.4.1 Agency theory

Agency theory is directed at the ubiquitous agency relationship, in which one party (the principal) delegates work to another (the agent), who performs that work. In building projects this relationship defined by the clients (the principal) and the contractor (the agent). Agency theory is concerned with resolving two problems that occur in agency relationships. The first is the agency problem that arises when (a) the desires or goals of the principal and agent conflict and (b) it is the difficult or expensive for the principal to verify what the agent is actually doing. The problem here is that the principal cannot verify that the agent has behaved appropriately. The second is the problem of the risk sharing that arises when the principal and agent have different attitudes towards risk. The problem here is the principal and the agent may prefer different actions because of the different risk preferences. Consequently, ideal principal – agent relationships should reflect efficient organization of information and the risk – bearing costs to best avoid these problems.

According to Floricel & Lampel (1998), in project, potential owner – manager agency types of conflicts may be avoided by well constructed contracts which specify the contractual relationships between the project owner and the primary contractors. Behavior – based contract and outcome based contracts are two generic types of contractual relationships which have been developed to mitigate the problems which arise from the conflict of interest between principal and agent. The behavior -based contract model is preferable when the principal can completely

prescribe and monitor the actions of the agent. Initiatives are created whereby the agent is compensated for following the prescribed behavior and penalized for any deviation.

2.4.2 Moral Hazard theory

Moral Hazard is basically a concept of Insurance adopted as a theory by economist to analysis financial crises. The problem of moral hazard is a situation in which a party is more likely to take risks because the costs that could result will not be borne by the party taking the risk. In other words, it is a tendency to be more willing to take a risk, knowing that the potential costs or burdens of taking such risk will be borne, in whole or in part, by others. A moral hazard may occur where the actions of one party may change to the detriment of another after a transaction has taken place. It often arises after contracts are agreed to between the principals and agents.

Moral hazard problems can lead to unknown projected risk. Elimination of moral hazard problem can be costly, both in discovering the problem and in rewriting the contract between the principal and agent to get rid of the problem. Usually, moral hazard problems are dealt with by placing appropriate incentives in principal-agent contracts so that agents will want to act in line with the interests of principals. In building projects, different parties become bearers of risk. In a DB contract the contractor is required to deliver the specified product or service for a predetermined amount regardless of the actual cost and assume all risk. Hence the scope of the work and the entire requirement are fully and accurately defined prior to contracting. In contrast, the DBB contract requires the client to assume all risk and pay for any other cost.

The selection of the contract type has a significant impact on the contractor's behaviour and contract monitoring. But since the cost of performing the work determines the contractor's profit,

he has an incentive to perform explicitly according to specification defined in the contract. As a rule, monitoring and providing incentives are the two main ways of controlling moral hazard in building contracts. Monitoring is intended to prevent the contractor from behaving in appropriately through direct supervision and an adequate system of rewards and penalties.

A set of valuable incentives can also encourage the contractor to achieve a superior performance. However, two main problems can arise. The first problem concerns the bearing of risk. A higher intensity of incentives creates more uncertainty in contractor's income, requiring a compensatory risk premium. The issue of designing efficient contracts that balance the cost of risk bearing against the incentive gains is widely discussed by (Cummins, 1977; Weitzman, 1980; Lafont & Tirole, 1986; McAffee & McMillan, 1987). The result shows that the intensity of incentive depends on the contractor's risk version and his ability to achieve the performance.

The second problem concerns the performance measurement. If an incentive contract has only one performance objective, the contractor will strive to achieve that goal but may perform poorly in other important areas. Inevitably, this may lead the owner to reward the wrong behaviour all the while he is thinking that he is acknowledging the good behaviour (Kerr, 1975). In addition, providing incentives in a more balanced set of objectives can only mitigate, but not completely eliminate the problem. This is the case because the contractor takes many more actions than any performance measurement system is able to capture (Baker, 1992; Feithman & Xie, 1994; Datar et al. 2001). In real world, it is impossible to write a completely enforceable contract (Milgrom & Roberts, 1992).

2.5 Conceptual Framework

A conceptual framework is an abstraction requesting an object, a property of an object, or a certain phenomenon. Concepts serve a number of important functions in social research. First, they are the formulation of communication. Without a set of agreed – on concepts, inter-subjective communication is impossible. Concepts are abstracted from sense impressions and are used to convey and transmit perceptions and information (Nachmias & Nachmias, 1993).

To carry out this study, the following conceptual framework has been laid. The independent variables include Procurement Options, Strategies of risk management and influence of policies on risk management. They are considered as independent variables and analysed in relation to how they influence the dependent variable which in this case is risk management in building projects. These independent variables are considered to have a strong influence on the dependent variable. This can be represented in the following schematic form below:

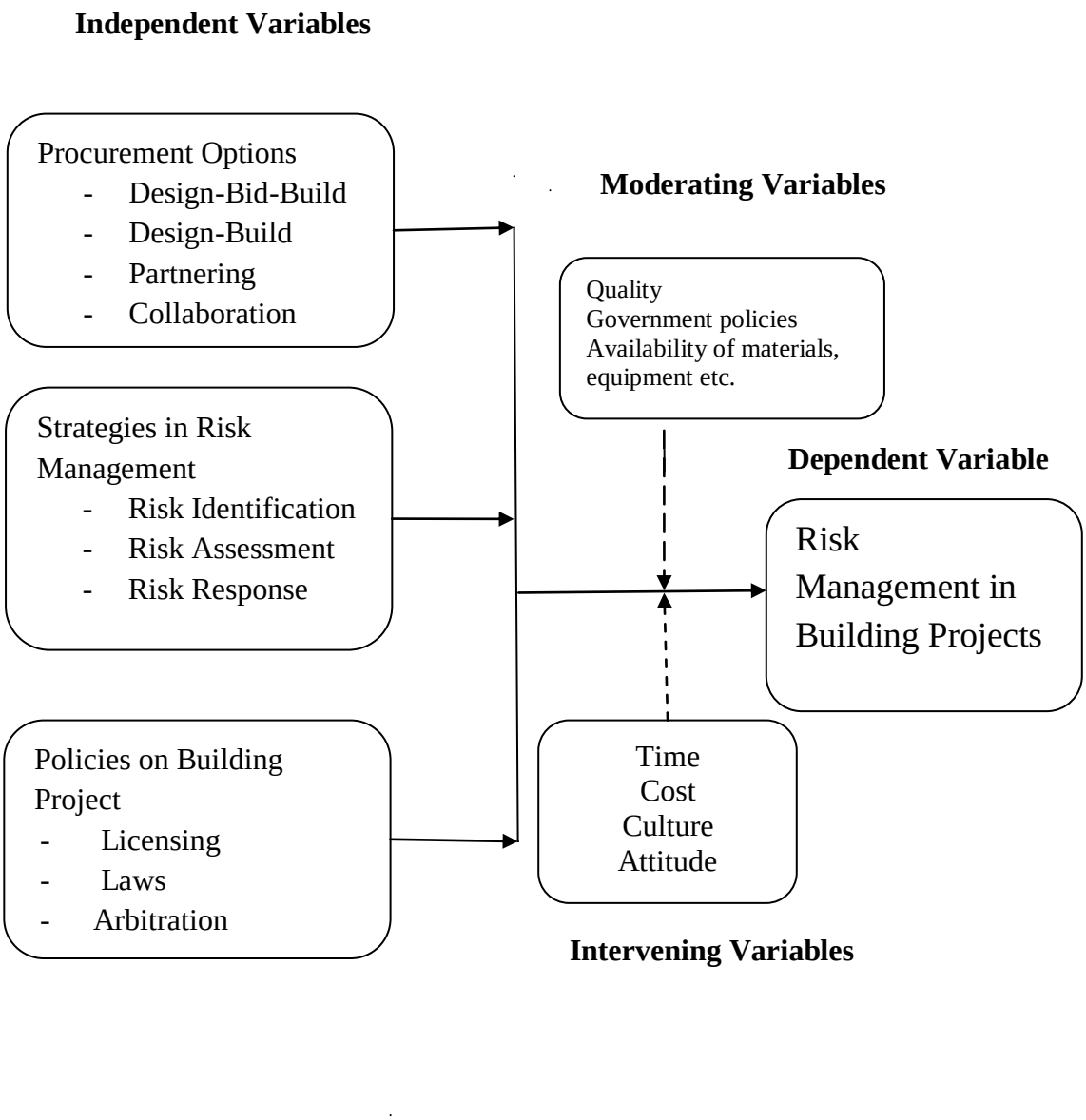

Figure 1: Conceptual Framework

Procurement options refer to the type of contracts adopted to secure the project. The study analysed several procurement options including the Design bid build, Design build, partnering and collaboration and how they influence risk management in building project. Strategies of risk management on the other hand influence the project outcome by analysing the methods used to identify, assess and respond to risk in building project. Policies on building have a direct

influence on risk management in building projects through licensing, legislation and arbitration. Finally, time and cost are the intervening variable that may also influence risk management in building projects that in this case is dependent variable.

2.6 Research Gaps

Most previous studies on building projects risk management had concentrated on projects in Western Europe, Asia and the Middle East where the technology, economic and government policies are different from the situation in Kenya. In United Kingdom, Akintoye & Main (2007) analyzed risk and management of building projects and concluded that contractors are positive on collaborative relationships that lead to cost and risk reduction. Zaghoul & Hartman (2003) investigated the relationship between risk allocation and trust in United States of America and concluded that trustful relationship between project actors' result in a more effective risk allocation process. In Australia, Baccarini & Archer (2001) developed a risk allocation methodology that ranked projects in order to allow for effective and efficient allocation of resources for management of risks. In Kenya, Mbeche (2013) analysed time and cost risks and developed a model for allocating risk amongst various parties. Nyabwari (2013) while investigating the causes and effects of cost overrun on civil works project in Mombasa recommended that project actors' should hold their responsibilities to avoid time and cost overruns. A study by Gwaya et al., (2014) on contingencies allowances in project budgeting established an empirical way of estimating contingencies. These studies on risk management in building projects have concentrated on cost and risk reduction, risk allocation, time and cost overruns leaving other important risk factors such as procurement options, risk management strategies and policy issues. Further, these studies were carried out when the operating

environments were not as turbulent as at the time of this study thus the need to carry out another research that would account for changes in operating environment encountered in this country. This study therefore sought to fill the existing research gap by carrying out a study to determine the influence of risk management in building Projects in Kenya with a focus on Westlands Sub-County, Nairobi.

2.7 Summary

The chapter focuses on review of literature on various procurement options in building project with the objective of analyzing their influence on risk management and establish strategies used in project manage risk. The theoretical frame given to support the conceptual frame work which shows the relationship of variable to be measured. Finally, the empirical review of studies carried out in other parts of the world and the research gaps are also highlighted.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter outlines the methods that were used in the study. The chapter is divided into six main sections that describe the research design, target population, sample size and sampling procedures, data collection instruments, data analysis and presentation techniques.

3.2 Research Design

Research design involves turning research questions into the research project (Robson 2002). This means that to answer the research questions, the appropriate strategies, methods and techniques should be adopted. Nachmias and Nachmias (1993) define research design as the programme that guilds the investigator in the process of collecting, analyzing and interpreting data. The research design used in the study is descriptive survey design that is appropriate for preliminary and exploratory studies so as to allow the researcher to gather information, summarize, present and interpret data for the purpose of classification (Orodho, 2003).

3.3 Target Population

The term population means, the entire mass of observations, which is the parent group from which a sample is to be formed, (Yogesh, 2006). The target population of this study comprised of clients, contractors and consultants of building projects in Westlands sub-County. The total number of possible respondents was 107.

3.4 Sample Size and Sampling Procedures

According to Hart (2006), sampling is a procedure for generalizing about a population without researching every unit in that population. Sampling assumes that a population has a mean value and a deviation from this is dispersed about its mean. The assumption is that even though there is no way of knowing for certain about the characteristics of the entire population, there should be correspondence between the mean of the sample and that of the population (Hart 2006).

3.4.1 Sampling size

A sample size of 32 respondents from a population of 107 was used for the study. This size represented 30% of the frame hence was able to give results that could easily be generalized to the whole population given that its represents majority of individuals in the frame (Kothari, 2006). A sample frame is a group of individuals from the population of interest (Rubin & Babbie, 2009). The frame is chosen due to its representativeness with respect to the target population. Te frame is also large enough to give a better sample size for the population.

Table 3. 1: **Sample Size**

No.	Population Stratum	Population	Sample Size	Percentage Sample Size (%)
1.	Clients	42	13	30
2.	Contractors	36	11	30
4.	Architects	28	8	30
	Total	**107**	**32**	**30**

Source: Nairobi County Planning Department (2014)

3.4.2 Sampling Procedures

Sampling methods refers to the methods that are used to come up with the respondents of the study from the population being targeted (Rubin & Babbie, 2009). Before studying the sample respondents, the study sampled the projects that represented the population. The study adopted stratified random sampling techniques to come up with a representative sample size. Owen (2002) argues that a survey is best done through stratified random sampling since it will enable the researcher identify respondents able to meet the purpose of the study from the large population surveys are known for. With stratified random sampling techniques, the target population was put in layers (strata). This took care of the gender balance.

3.5 Research Instrument

The researcher used questionnaires to collect the primary data. Questionnaires have the advantage of narrowing down the respondent to giving the answers that were required by the researcher (Bryman, 2008). In addition, questionnaires are preferred because respondents of the study are assumed to be literate and able to respond to questions adequately. Kothari (2004) terms the questionnaire as the most appropriate instrument due to its ability to collect a large amount of information in a reasonably quick span of time. The study adopted both open and closed ended questions. Open ended questions allowed the respondents room to explain and elaborate on the responses given. Both primary and secondary data was collected.

3.6 Validity of the Research Instruments

Validity shows whether the instrument measure what they are designed to measure (Borg & Gall 1989). The researcher used content validity to examine whether the instruments would answer

the research questions Borg & Gall (1996). Adjustments and additions to the research instruments, consultations and discussions with the supervisor was done to establish content validity. Further, validity of the research instrument was also tested for internal consistency by use of Cronbach's Alpha (α) with a 60% acceptance level. The Cronbach (α) indicates the extent to which a set of test item will be treated to measures a single variable (Cronbach, 1951). A cut – off value of 7.0 was recommended for validity.

3.7 Reliability of the Research Instruments

Reliability refers to the consistency of the research and the extent to which data collection technique or analysis can be replicated (Wiersma, 1996). In this study, reliability was achieved by the use of split – half method. This Method measures consistency of a test by splitting the test into two and comparing the scores for each half of the test with one another. A consistent test leads the experimenter to believe that it is most likely measuring the same thing (Nachmias & Nachmias, 1993).

3.8 Data Collection Procedures

The researcher first obtained introduction letters from the University of Nairobi and Kenya National Council of Science and Technology to seek authority to collect data from the target population. The researcher then identified the sample frame followed by education of the respondents on the objectives of the study. Ethical issues were duly considered. The researcher in collaboration with the respondents set the study dates for each group. The methods of administering the questionnaire formed part of the discussion with the respondents that suited

their schedule. Self-administering methods were also considered in these discussions. The study was then conducted on the set dates through self-administered questionnaires.

3.9 Data Analysis Techniques

Quantitative methods of data analysis were used to analyze the data collected. The collected data was then coded to come up with quantitative data results. The results were then be analyzed based on the type of data collected. Analysis was done with the help of Statistical Package for Social Science (SPSS) version 20 software. The responses from open – ended questions were listed to obtain proportions appropriately. The responses were then reported by descriptive narratives. Descriptive statistics such as mean and standard deviation were used. Tables were also used to present responses and facilitate comparison.

The following model was used to determine factors influencing risk management in Building Projects in Westlands Sub-County. A binary regression analysis between the variables: procurement options, strategies of risk management and policies on project of risk were used to determine the effects of variables on risk management. The Following Binary Regression Model was estimated.

$Y_{i} = \alpha_0 + \beta_i X_1 + \beta_i X_2 + \beta_i X_3 + \varepsilon_i$

Y_i = Dependent Variable (Project Risk Management)

X = Independent Variable

X_1 = Procurement Options

X_2= Strategies of Risk Management

X_3= Policies on Building Project

β_i = Beta coefficient

ε_i = Error term

α_0 = Constant

According to the formulae, Y is determined by changes in Xs. Beta coefficient is the extent to which a unit changes in X influences Y. The constant is the value of Y when X is Zero.

3.10 Ethical issues in research

The researcher obtained consent of the respondents after proper briefing before administering the questionnaire. Anonymity and confidentiality was assured by the research and the respondents were not required to reveal their names during data collection. Respondents were asked to give out information without any form of inducement.

3.11 Summary

The chapter focused on the methods that were used in obtaining data. The chapter was categorized into six sections that described the research design, target population, sample size and sampling procedures, data collection instruments, data analysis, presentation techniques and ethical research issues.

Table 3. 2: **Operationalization of Variables**

Objectives	Variables	Indicators	Measurement Scale	Tools of analysis	Type of analysis
To determine how procurement options influence risk management in building Projects.	**Independent** Procurement Options	Design - Bid- Build Design- Build Partnering Collaboration	Nominal Ordinal	Frequency distribution tables & percentages	Descriptive
To investigate how risk management strategies influence risk management in building projects in	Strategies of Risk managem ent Process	Risk Identification Risk Assessment Risk Response	Nominal Ordinal	Frequency distribution tables & percentages	Descriptive
To establish the extent to which building policies influence risk management in building projects	Policies influence on Risk Management	Licensing Laws Arbitration	Nominal Ordinal	Frequency distribution tables & percentages	Descriptive
To Investigate Influence of risk management in building projects	**Dependent** Influence of Risk Management in building projects	Procurement Options, Strategies of risk Management, Policies	Nominal Ordinal	Regression	Inferential

The variables contained in the table are independent variables namely: procurement options, risk management strategies and policies influence on risk management. These variables influence risk management in building projects a dependent variable.

CHAPTER FOUR

DATA ANALYSIS, PRESENTATION AND INTERPRETATION

4.1 Introduction

In this section, findings of the study are detailed. A case processing summary of the demographic information will be presented. This is followed by an analysis of how procurement options affect risk. Secondly, an analysis of the influence of strategies on risk management and the influence of policies on risks management in building projects in Westlands sub – county will be undertaken. The presentations will take the form of cross-tabulations tables, charts and Chi-squire test will be undertaken.

4.2 Sample Characteristics

A Shapiro –Wilk's test ($p<0.05$) and visual inspection of the histogram, normality, Q-Q plots and box plots showed that score for the various factors were normally distributed for the various contract types (design build and design-bid-build) with a skewness and kurtotic Z-score within the -1.96 to +1.96 range.

4.3 Data reliability and reproducibility

Cronbach's alpha was used to test the reliability, the values for the questions ranged from 0.79 to 0.62 with an overall Cronbach's alpha of 0.69 showing good reliability.

4.4 Demographic Information

Demographic information provided data on respondents such as gender, age, education level, Job experience, knowledge of risk and job category of respondents. The information is provided in table 4.1 below.

Table 4.1: Demographic information

	Factor	Frequency	Percent	Valid Percent	Cumulative Percent
Gender	Male	Male	17	68.0	68.0
	Female	Female	8	32.0	32.0
	Total	Total	25	100.0	100.0
Age bracket	31-35	2	8.0	8.7	8.7
	36-40	17	68.0	73.9	82.6
	49-50	4	16.0	17.4	100.0
	Total	23	92.0	100.0	
Educational Level	University	25	100.0	100.0	100.0
Job Experience	20-30	7	28.0	28.0	28.0
	31-40	14	56.0	56.0	84.0
	41-50	4	16.0	16.0	100.0
	Total	25	100.0	100.0	
Knowledge of risk	Moderate	4	16.0	16.0	16.0
	Advanced	21	84.0	84.0	100.0
	Total	25	100.0	100.0	
Job category	Architecture	9	36.0	36.0	36.0
	Quantity surveyor	5	20.0	20.0	56.0
	Structural engineer	5	20.0	20.0	76.0
	Contractor	3	12.0	12.0	88.0
	Project manager	3	12.0	12.0	100.0
	Total	25	100.0	100.0	

The sample population consisted of (n=25) respondents. Stratified by sex and age, the respondents characteristics were as follow: 17 were males and 8 were females. Majorities (82%) of the respondents were below forty years and all (100%) had university level education. Eighty two percent of the respondent's knowledge on risk as advanced, while 16% rated their knowledge as moderately good. Majority of the respondents were architectures, quantity surveyors and project engineers. From the results obtained, building projects are still a male dominated field; there is need for gender balance initiatives and change of attitude amongst women towards technical areas of study like engineering and Architectural design. The level of

education and job experience shows that the information was obtained from qualified professional in the field that makes it valid.

4.5 To determine how procurement options influence risk management in building projects in Westlands sub- County.

The study sought to determine the type of contract adopted in particular projects. The results are shown in the table below.

Table 4. 2: **Percentages of contract adopted**

	Frequency	Valid Percent	Cumulative Percent
Design build	12	32.0	32.0
Design-Bid-build	25	68.0	100.0
Total	37	100.0	100.0

On the question pertaining to the nature of contract adopted, the results shows that design build and design – bid-build consisted of 32% (12) and 68% (25) of the contracts respectively. The results shows that in Kenya unlike other parts of the world, design – bid – built is majorly adopted because of reducing exposure to risk by the parties involved.

4.6 Factors influencing choice of procurement

4.6.1 The relationship between factors influencing choice of procurement options and type of contract adopted

The study also sought to establish the relationship between factors influencing choice of procurement options and the contract type. The results are shown in the table 4.3.

Table 4. 3: Factors influencing choice of procurement

Factor	Item	Response		χ^2 value
		Yes	**No**	
Legal Implications	Design Build	50% (6)	50% (6)	0.039
	Design-bid-build	84% (21)	16% (4)	
	Total (37)	**72% (27)**	**28% (10)**	
Financial Cost	Design Build	98% (11)	2% (1)	0.609
	Design-Bid-build	88% (22)	12% (3)	
	Total (37)	**89% (33)**	**11% (4)**	
Project actors	Design build	42% (5)	58% (7)	0.06
	Design-Bid-Build	88% (22)	12% (3)	
	Total (37)	**73% (27)**	**27% (10)**	
Project time	Design build	83% (10)	17%(2)	0.013
	Design-Bid-Build	80% (20)	20% (5)	
	Total (37)	**81% (30)**	**19% (7)**	

The survey evaluated the factors influencing the choice of procurement. According to the results obtained, 72% and 89% of the respondents noted legal implications and financial cost are a factor in the choice of contract respectively. Similarly, 73% and 81% of the respondents noted that project actors and Project completion time are factors in the choice of building contract respectively. When data is disaggregated with respect to type of contract, the results are show that amongst the variables tested, a significant variation was observed between contract type and project completion time ($\chi^2 = p < 0.013$). The results show that the choice of procurement type is mainly influenced by project completion time.

4.6.2 Binary Regression models of the factors influencing procurement

To develop a binary regression model predictive of the choice between design build and design-bid-build given a set of factors, correlations between the various factors was evaluated and the results obtained demonstrated that the set of factors were sufficiently correlated. See table 4.4.

Table 4. 4: Correlation matrix between effective factors

		legal Implications	Financial costs	Project actors	Time
legal	P. Correlation	1	-.016	.178	-.195
Implications	Sig. (1-tailed)		.463	.146	.124
Financial	P. Correlation	-.016	1	-.016	-.146
costs	Sig. (1-tailed)	.463		.463	.194
Project actors	P. Correlation	.178	-.016	1	-.073
	Sig. (1-tailed)	.146	.463		.335
Time	P. Correlation	-.195	-.146	-.073	1
	Sig. (1-tailed)	.124	.194	.335	

The beginning block table which estimates the predictive ability of potential models in the absence of a predictive variable gave an overall predictive percentage of 67%. In addition, Tables 4.5 which demonstrates whether the various variables present in the equation maybe predictive demonstrated that the factors have good predictive value individually ($p< 0.005$). Further, Nagelkerke R squared, which shows how much variance of the dependent variable, is explained by the predictor variables showed that 57% of the variance is explained by the predictors.

Table 4. 5: Variables not in the equation

			Score	df	Sig.
Step 0	Variables	Legal implication	4.752	1	.029
		Financial costs	.113	1	.737
		Project actor	8.826	1	.003
		Time	6.130	1	.013
	Overall Statistics		15.936	4	.003

Hosmer Lemeshow test had a value of 0.231 showing that the model developed is predictive of the outcomes.

Table 4. 6: Contingency Table for Hosmer and Lemeshow Test

	Contract Type=Design build		Contract type=Design-Bid-build		Total
	Observed	Expected	Observed	Expected	
1	5	4.590	0	.410	5
2	2	1.898	1	1.102	3
3	3	2.453	1	1.547	4
4	0	.790	3	2.210	3
5	1	1.960	7	6.040	8
6	0	.142	2	1.858	2
7	1	.166	11	10.834	12

Contingency table for Hosmer and Lemeshow test also showed good predictive ability as illustrated in Table 4.6.

Table 4. 7: Classification Table

Observed		Predicted		
		Which type of contract was adopted in the project		Percentage Correct
		Design build	Design-Bid-build	
Which type of contract was adopted in the project	Design build	10	2	83.3
	Design-Bid-build	2	23	92.0
Overall Percentage				89.2
a. The cut value is .500				

Overall percentage predictive percentage of the model was 89.2% see Table 4.7.

The values for the binary regression model with the associated beta-values and the odds ratios are as shown in Table 4.8.

Table 4. 8: Binary regression

	B	S.E.	Wald	df	Sig.	Exp(B)	95% C.I. for EXP(B)	
							Lower	Upper
Legal implications	-1.586	.996	2.535	1	.111	.205	.029	1.442
Financial costs	1.412	1.587	.791	1	.374	4.102	.183	9.069
Project actors	-3.131	1.281	5.970	1	.015	.044	.004	.538
Time	3.073	1.429	4.628	1	.031	21.611	1.314	355.397
Constant	1.358	2.758	.242	1	.623	3.887		

The results obtained indicate that legal implications, financial costs, project actors and completion time have a positive and negative influence on the choice of contract type. According to the results competition time is the most significant factor in the choice of contract type.

4.7 To investigate how risk management strategies influence management of risks in building projects in Westlands sub – county

4.7.1 Risk assessment - nature of risks construction companies in Westlands sub-county are exposed to risks associated with owners

The study investigated risk management strategies in building projects by assessing several risk factors and the results obtained are indicated in Table 4.9

Table 4. 9: Risks associated with owners

Factor	Item	Response			χ^2 value
		Very Common	**Fairly Common**	**Not common**	
Delayed payment of contractors	Design Build	66.7% (8)	33.3% (5)	0.0% (0)	0.401
	Design-bid-build	56% (14)	44% (11)	0% (0)	
	Total	**60% (22)**	**41% (15)**	**0% (0)**	
Unreasonably imposed deadlines	Design Build	0% (0)	33% (4)	67% (8)	0.136
	Design-Bid-build	16% (4)	48% (12)	36% (9)	
	Total	**11%(4)**	**43% (16)**	**51% (19)**	
Delayed payments to workers	Design build	58.3% (7)	42% (5)	0% (0)	0.321
	Design-Bid-Build	44% (11)	56% (14)	0% (0)	
	Total	**48.6% (18)**	**51% (19)**	**0% (0)**	
Breach of contract	Design build	50% (6)	25% (3)	25% (3)	0.413
	Design-Bid-Build	28% (7)	40% (10)	32% (8)	
	Total	**35% (13)**	**35% (13)**	**30% (11)**	

The survey explored the types of risks associated with owners. According to the results obtained, 60% (22) of the respondents noted that delayed payment to constructors is common and 41% indicated that the phenomenon is fairly common. Further, 11% (4) noted that unreasonably imposed deadlines are common, 43% (16) noted that unreasonably imposed deadlines are fairly common with 51% (19) noting that such deadlines are not common.

On the question pertaining to delayed payment on contractors, 48% (18) of the respondents indicated that the phenomenon is very common, while 51% (19) noted that it's fairly common. Similarly, 35% (13) of the respondents noted that breach of contract is very common, 35% (13)

indicated that it's fairly common with 30% (11) noting that it's not common. When data is disaggregated with respect to contract type, the results are as shown below. The variation across contract type for all variables evaluated was not significant ($\chi 2 = 4.5$, df = 1, $p > 0.005$). From the results obtained, the above risks factors are not closely associated with risks associated with owners.

4.7. 2 Risks associated with designers

The opinion of the respondents on risks associated with designers was also evaluated. The results obtained are shown below in Table 4.10.

Table 4. 10: Risks associated with designers

Factor	Item	Response			χ^2 value
		Very Common	**Fairly Common**	**Not common**	
Defective design	Design Build	8.3% (1)	17% (2)	75% (9)	0.00
	Design-bid-build	28% (7)	68% (17)	4% (1)	
	Total	**21.6% (8)**	**51% (19)**	**27% (10)**	
Deficiency in drawing	Design Build	8.3% (1)	25% (3)	67% (8)	0.00
	Design-Bid-build	36% (9)	60% (15)	4% (1)	
	Total	**27%(10)**	**49% (18)**	**24% (9)**	
Inaccurate material budgets or engineering estimates	Design Build	8.3% (1)	42% (5)	50% (6)	0.00
	Design-Bid-build	60% (15)	36% (9)	4% (1)	
	Total	**43%(16)**	**38% (14)**	**19% (7)**	

On the question pertaining to defective designs, 22% (8) indicated that defective designs are very common, with 51% (19) indicating that the phenomenon is fairly common. However, 27% noted that it's not common. Similarly, 27% (10) noted that defective drawings are common, while 49%

(18) indicated that the phenomenon is fairly common. On the other hand, 27% (9) noted that the phenomenon is not common. Regarding the risks associated with inaccurate material budgets or engineering estimates, 43% (15) indicated that the phenomenon is common while 38% (14) indicating that it's fairly common with the rest noting that it's not common. Disaggregation of the data with respect to contract type yields the following outcome. The variation across contract type for all variables evaluated was significant ($\chi 2 < 0.00$). The results indicate that these risks factors are significantly associated with designers.

4.7.3 Risks associated with contractors

The opinion of the respondents on risks associated with contractors was also evaluated. The findings are indicated in Table 4.11 below.

Table 4. 11: Risks associated with contractors

Factor	Item	Response			χ^2 value
		Very Common	**Fairly Common**	**Not common**	
Construction accidents	Design Build	33% (4)	33.3% (4)	33.3% (4)	0.830
	Design-bid-build	24% (6)	40% (10)	36% (9)	
	Total	**27% (10)**	**38% (14)**	**35% (13)**	
Poor quality workmanship	Design Build	33% (4)	42% (5)	25% (3)	0.304
	Design-Bid-build	20% (5)	68% (17)	12% (3)	
	Total	**24%(9)**	**59% (22)**	**16% (6)**	
Technical quality	Design build	33% (4)	42% (5)	25% (3)	0.304
	Design-Bid-Build	20% (5)	68% (17)	12% (3)	
	Total	**24.3% (9)**	**60% (22)**	**16% (6)**	
Lack of or departure of qualified staff	Design build	33% (4)	42% (5)	25% (3)	0.171
	Design-Bid-Build	20% (5)	72% (18)	8% (2)	
	Total	**35% (13)**	**35% (13)**	**30% (11)**	
Change in design	Design build	0% (0)	25% (3)	75% (9)	0.000
	Design-bid-build	28% (7)	68% (17)	4% (1)	
	Total	**19% (7)**	**54% (20)**	**27% (10)**	

On the question pertaining to construction accidents 38% (14) noted that the phenomenon is fairly common. However, 35% (13) noted the phenomenon is not common. On the other hand, 24% (9) of the respondents noted that poor quality workmanship is very common and 59% (22) indicated that the phenomenon is fairly common. However, 16% (6) indicated that the phenomenon is not common. Regarding the risks associated with technical quality, 24.9% (9) indicated that the risk is very common with 60% (22) indicating that it's fairly common. Similarly, 16% (96) noted that the phenomenon is not common. The preponderance of lack or departure of qualified staff was also evaluated. On this question, 35% (13) noted that it is very common and a similar number indicated that it is fairly common. However, 30% (11) noted that the phenomenon is not common. The need for alterations in designs was also evaluated. Regarding this question, 19% (7) of the respondents indicated that the phenomenon is very common, with 54% (20) noting that the phenomenon is fairly common. Conversely, 27% (10) noted that it's not common. When the data was disaggregated with respect to contract type, the results indicated that apart from change in designs, the variation across contract type for all the other variables evaluated was not significant ($\chi^2 > 0.05$).

4.7.4 Political risks

The position of the respondents regarding the risk associated with changes in laws was also evaluated.

Table 4. 12: Political Risks

Factor	Item	Response			χ^2 value
		Very Common	**Fairly Common**	**Not common**	
Changes in laws	Design Build	33% (4)	50% (6)	17% (2)	0.415
	Design-bid-build	20% (5)	72% (18)	8% (2)	
	Total	**27% (10)**	**38% (14)**	**35% (13)**	
Corruption and bribes	Design Build	42% (5)	42% (5)	17% (2)	0.205
	Design-Bid-build	20% (5)	72% (18)	8% (2)	
	Total	**27%(10)**	**62% (23)**	**11% (4)**	
Delays in approvals	Design build	33% (4)	42% (5)	25% (3)	0.171
	Design-Bid-Build	20% (5)	72% (18)	8% (2)	
	Total	**24% (9)**	**62% (23)**	**14% (5)**	

According to the results obtained, 27% (10) of the respondents noted that the phenomenon is very common with 38% (14) indicated that the phenomenon is fairly common. On the other hand, 35% (13) noted that changes in laws are not common. Similarly, the preponderance of corruption was evaluated. According to the results obtained, 27% (10) of the respondents noted that corruption and bribes are very common with 62% (23) indicating that it's fairly common. Conversely, 11% (4) noted that the phenomenon is not common. Delays in approvals of permits and other document were also evaluated. On this issue, 24% (9) of the respondents noted that the issue is very common with 62% (23) indicating that it's fairly common. Conversely, 14% (5) indicated that the phenomenon is not common. When the data was disaggregated with respect to contract type, the results were as shown in Table 4.12. The variation across contract type for all the variables evaluated was not significant ($\chi^2 > 0.05$). The results indicate that the above factors do not significantly influence political risk.

4.7.5 Financial Risks

The survey explored the opinion of respondents on financial risks. The results obtained are indicated in table 4.13 below.

Table 4. 13: Financial risks

Factor	Item	Response			χ^2 value
		Very Common	**Fairly Common**	**Not common**	
Inflation	Design Build	33% (4)	42% (5)	25% (3)	0.304
	Design-bid-build	20% (5)	68% (17)	12% (3)	
	Total	**24% (9)**	**22% (22)**	**16% (6)**	
Currency fluctuation	Design Build	25% (3)	50% (6)	25% (3)	0.235
	Design-Bid-build	16% (4)	76% (19)	8% (2)	
	Total	**24%(9)**	**59% (22)**	**16% (6)**	
Unforeseen conditions	Design build	25% (3)	50% (6)	25% (3)	0.407
	Design-Bid-Build	16% (4)	72% (18)	12% (3)	
	Total	**24.3% (9)**	**60% (22)**	**16% (6)**	

According to the results obtained, 24% of the respondents indicated that the inflation was very common with 22% indicating that inflation is fairly common. Conversely, 16% noted that inflation is not a common problem. The frequency of currency fluctuation was also evaluated. In this regard, 24% of the respondents noted that currency fluctuation is a very common problem with 59% noting that it's a fairly common problem. The impact of unforeseen conditions like floods, among others, was also evaluated. On this score, 24% noted that the phenomenon is fairly common with 60% noting that it is fairly common. On the other hand, 16% noted that the unforeseen incidences are not common. Disaggregation of data with respect to contract type produced the results shown in table 4.13. The variation across contract type for all the variables evaluated was not significant ($\chi^2 > 0.05$). The results indicate that the above factors do not significantly influence financial risks in building projects management.

4.7.6 Others risks

The survey explored the opinion of various respondents on additional risk factors that companies are exposed to.

Table 4. 14: Other Risk Factors

Factor	Item	Response			χ^2 value
		Very Common	**Fairly Common**	**Not common**	
Delays in resolving contractual issues	Design Build	33% (4)	42% (5)	25% (3)	0.304
	Design-bid-build	20% (5)	68% (17)	12% (3)	
	Total	**24% (9)**	**59% (22)**	**16% (6)**	
Delays in resolving litigations	Design Build	25% (3)	50% (6)	25% (3)	0.235
	Design-Bid-build	16% (4)	76% (19)	8% (2)	
	Total	**19%(9)**	**68% (25)**	**14% (5)**	
Poor quality of construction material	Design Build	33% (4)	50% (6)	17% (2)	0.201
	Design-bid-build	20% (5)	72% (18)	8% (2)	
	Total	**24% (9)**	**65% (24)**	**11% (4)**	
Local Protectionism	Design Build	42% (5)	42% (5)	17% (2)	0.312
	Design-Bid-build	20% (5)	72% (18)	8% (2)	
	Total	**27%(10)**	**62% (23)**	**11% (4)**	

According to the results, delay in resolving contractual issues was noted as a very common risk by 24%. However, 59% of the respondents noted that the risk is fairly common. Conversely, 16% noted that it's not common. Similarly, 19% of the respondents noted that delays in resolving contractual issues is common with 68% noting that it's a fairly common phenomenon. On the other hand, 14% indicated that such delays are not common. Poor quality of construction material was noted as a common problem by 24% of the respondents with 65% noting that it's a common problem. However, 11% indicated that it's not a common response. Further, local protectionism was noted as a very common problem by 27% of the respondents, with 62% noting that it's fairly common. Conversely, 11% indicated that it's not a common problem. Disaggregation of data with respect to contract type yields the results shown in Table 4.14. Variation across contract type for all the variables evaluated was not significant ($\chi^2 > 0.05$).

4.8 Risk Management Strategies

The risk management measure undertaken by companies was also evaluated.

Table 4. 15: Risk and mitigation measures employed

Risk Category	Risk	Risk mitigation strategy	Frequency
Owners	Delayed payment of contractors	-	
	Unreasonably imposed deadlines	Negotiating for longer timelines	49% (17)
	Delayed payment to contractors	Giving contractors down payments	65% (21)
	Breach of contract	-	-
Designers	Defective designs	Hiring of qualified personnel	100% (37)
	Deficiency in drawing	Engaging designers with good track record and professionalism	41% (15)
	Inaccurate material budgets or engineering estimates	Engaging designers with good track record and professionalism	41% (15)
Contractors	Construction accidents	Ensuring compliance by existing regulation on occupational hazards	100% (37)

	Poor quality workmanship	Engaging contractors with good track record and professionalism	100% (37)
	Technical quality	Engaging contractors with good track record and professionalism,	100% (37)
	Lack or departure of qualified staff	Competitive remuneration	38% (14)
	Change of design	Diligent planning process; Regular consultation between design teams and constructors	43% (16)
Political	Changes in laws	Not mitigated	
	Corruption and bribes	Not Mitigated	
	Delays in approvals	Not mitigated	
Financial Risks	Inflation	Take advantage of bulk purchase and placement of long term orders which have no cost overruns	29% (11)
	Currency fluctuation	Bulk purchases or costing projects in dollars	32% (12)
	Unforeseen conditions	-	
Other Factors	Delays in resolving contractual issues	Encourage binding contracts, good track record and professionalism, provide adequate time	41% (15)
	Delays in resolving litigations	Working with legal teams to expedite hearings	43% (16)
	Unfairness in tendering	Not mitigated	
	Poor quality of construction material	Testing of materials and buying from reputable suppliers	41% (15)
	Local protectionism	Not mitigated	

The result obtained demonstrates that political risks are not mitigated by companies. However, risks associated with contractors are mostly mitigated. In addition, the results indicate that risks associated with owners, designers, financial and other factors are mitigated by less than 50% of the companies. According to the results obtained, risk associated with owners such as negotiation for longer timelines and down payments as a risk mitigation accounted for 49% and 65% respectively. Hiring of qualified personnel and engaging designer with good track record

accounted for 100% and 41% of risk mitigation strategy for designers respectively. For contractors competitive remuneration and diligent planning were the only risk mitigation strategies that accounted for less 100%. Political risk was not mitigated by the project actors. Financial risk such as inflation and currency fluctuations were mitigated by bulk purchases which accounted for 29% and 32% respectively. Other factors such as delay in solving contractual issues, litigations and poor quality of materials were mitigated encouraging binding contracts (41%), expediting hearing (43%), testing materials and buying from reputable suppliers accounted for 41%.

4.9 Influence of policies on risk management in building projects in Westlands Sub – County

The influence of policies on licensing procedures was evaluated in the survey.

Table 4. 16: Influence of policies on risk management

Factor	Item	Response			χ^2 value
		Very Great	**Great**	**Moderate**	
Licensing procedures	Design Build	33% (4)	42% (5)	25% (3)	0.304
	Design-bid-build	20% (5)	68% (17)	12% (3)	
	Total	**24% (9)**	**59% (22)**	**16% (6)**	
Laws and regulations	Design Build	25% (3)	50% (6)	25% (3)	0.235
	Design-Bid-build	16% (4)	76% (19)	8% (2)	
	Total	**18%(7)**	**68% (25)**	**14% (5)**	
Effect of policies on arbitrage	Design Build	42% (5)	42% (5)	17% (2)	0.407
	Design-Bid-build	20% (5)	72% (18)	8% (2)	
	Total	**27% (10)**	**62% (23)**	**11% (4)**	

According to the results obtained, 24% noted that the influence of policies on licensing procedures was very great while 59% indicated that the influence is great. Further, 16% indicated that the effect is moderate. The effect of policies on laws and regulations was also surveyed. According to the results obtained, 18% noted that the influence of policies on laws and regulations is very great with 68% noting that the influence is great. However, 14% noted that

the effect is moderate. Further, the effect of policies on arbitrage was evaluated in the survey. Overall, 27% of the respondents indicated that the effect of policies on arbitrage is very great, 62% noted that the effect is great while 11% noted that the effect is moderate. Disaggregation of data with respect to Job designation yielded the outcome shown in table 4.22. No significant difference was noted on the opinion of the various actors on the effect of policies issues evaluated ($\chi^2 = 0.05$).

CHAPTER FIVE

SUMMARYOF FINDINGS, DISCUSSION, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

In this section, the results generated are discussed. The findings/results from the survey are discussed in the first subsection. In the subsequent section, the conclusion and recommendation will be presented.

5.2 Summary of Findings

The study sought to investigate the factors influencing the choice of procurement options and types of contracts, the results indicated that project completion time significantly influence the choice of procurement type. On the question of risk strategies and assessment, the results obtained indicates that defective designs, deficiency in drawing and inaccurate material budgets significantly influence risks associated with designers. On political risk, the results shows that changes in laws, corruption and delays in approvals are do not significantly influence political risks. On Financial risk factors, inflation, currency fluctuations and unforeseen conditions do not significantly influence financial risk. Other risk factors such as delays in resolving contractual issues, litigations, poor quality of construction materials and local protectionism were also investigated. The results show that these factors do not have any significant influence on risks in building projects. On risk management strategies, the results show that risks associated with contractors are mitigated while risks associated with politics are not mitigated. In addition, risks associated with owners, designers, financial and other risks are mitigated less that 50% by project actors. Finally, effects of policies on risk management was investigated and the results

indicates that factors such as licensing procedures, laws and regulations and effects of policies on arbitration have no significant influence on risk management in building projects.

5.3 Discussions

Building projects may be thought of as temporary endeavors with a finite completion date aimed at generating unique products or services (Carbone, 2004). In this context, experts contend that the variability of actual quality, time, and cost performance compared to the expected one crucially impacts on the success of a project and makes risk a central issue in project management – the application of knowledge, skills, tools, and techniques to project activities to meet the project requirements (Flanagan & Norman, 2000). Indeed, it has been demonstrated that failure to deal with risk is a main cause of budget exceeding initial projections/cost overruns, falling behind schedule, and missing performance targets (Carbone, 2004). Risk management is therefore a critical element in defining the relationship between risks, uncertainty and objectives at the various phases of the project thus contributing to the chances of success in the execution of a project (Carbone, 2004).

In this survey, the researcher undertook a survey on the factors influencing risk management for building projects in Westlands Sub-county, Nairobi. In particular, the study explored how procurement options affect risk management in building projects in Westlands sub - County. Similarly, the study investigated the influence of strategies and policies on risk management process in the sub-county.

5.3.1 The procurement options and their influence on risk management of building projects in Westland sub - County

The data obtained reveals that most project actors are well appraised on the concept of project risks management with most respondents rating their knowledge of risks management as advanced. It is believed that their expertise is relevant to determine the success factor for projects (Odeh & Battaineh, 2002). In particular, the data shows that most of the respondents had university level training and had long working experience – a factor which demonstrates that they had the requisite expertise and should thus be able to provide valuable insight. These findings also highlight the fact that poor awareness of project risks is not a factor in risks management in the County. At the same time, the survey demonstrated that most projects in the county are design-bid-build projects and design bid. Collaborations and partnerships are non-existent.

The preponderance of design–bid – build, where the clients appoints an architect or engineer to produce a design document (Design) and then procures (Bid) the contractor to execute (Build) should be notable in one respect. Traditionally, it has been regarded as the contract option of choice for projects. This finding is contrary to research which indicates that changes in procurement laws and the successes of alternative delivery methods are leading owners to choose other procurement options more often, including design-build (Manfield et al, 1994). Indeed, previous studies have demonstrated that projects completed using alternative contract option such as design-build were found to save both time and money compared with the more traditional design-bid-build (Gransberg & Molenaar, 2004). For instance, in Kuwait, the traditional delivery approach of Design-Bid-Build was previously adjudged to be inadequate in

meeting the public sector owner's requirements and expectations of finishing the projects on time and within budget (Manfield et al, 1994).

Although design-bid-build contract option was the most popular in the county, the study also determined that its popularity maybe associated with existing procurement laws, the influence of project actors and time considerations. Indeed, a closer look at the odds ratios in the binary regression table demonstrates the biggest determinant was contract time followed closely by financial consideration, legal implication and project actors. The inclusion of legal regulations as a determinant, especially in design -bid – build projects maybe explained via the possibility that most of these projects are government funded project.

On the other hand, the data reveals that time as a risk factor was an important consideration in the choice of design – bid contract options. These finding is consistent with studies which have shown that time is the main advantage of the design – bid method. Indeed, the pre-contract stage (procurement approval, tendering process, clarification, evaluation and appointment of contractor) and contract stage (overlapping and concurrent of works) as transpires in the design-bid-build is familiarly called the fast-track system (Pinto et al., 2009). Other scholars have contended that in terms of time, the design-build system arguably provides an earlier start for project execution than is the case for other forms. Toolanen (2011) found that clients choose design-build contracts more often when the project's timeframe and availability of resources are critical factors. Indeed, data generated from this study suggest that design-build contract have better performance since these projects are not encumbered by factors such, as the study shows, as faulty designs, incorrect estimates among others.

On the basis of the data generated, it can be asserted that procurement contract options, whose key distinguishing factor is the manner in which they distribute risks, can by themselves be a basis of project risks management - A further demonstration of the dictum that efficient project risk management which emphasizes the fact that risk should lie with the individual actors/party able to best manage it (wood and Ellis, 2005).

5.3.2 The strategies of risk management process in building projects in Westlands Sub – County and the influence of Policies

As construction projects are characterized by many and varying uncertainties, and as highlighted elsewhere in this document, an ability to manage risks throughout the construction process is an important and central element preventing unwanted consequences (Gardiner & Simmons, 1998). Risk management is also decisive for achieving a good final result within budget. In general, the sources of risk in construction projects may be divided into external risks (e.g. financial, economic, political, legal and environmental), internal risks (e.g. design, construction, management and relationships) and force majeure risks (Walker & Hampson, 2003). By employing the foregoing risk classification schema to characterize risks in construction projects, scholars argue that the scheme may influence the behaviour of project actors and, therefore, has a significant impact on the project performance in terms of the total cost (Bowers, 1994).

In this study, the data generated shows that no significant difference existed between the contract types adopted and a range of risks – risks associated with owners, contractors, political risks, and financial risks among others. A demonstration of the fact that project procured via the contract types were affected equally. However, a significant difference was noted in risks associated with designers. This finding is notable in several respects. For instance, a high degree of specification prior to contractor procurement (i.e. design-bid-build) results in a divorce between design and

construction, since construction planning cannot affect design (Chan, 2001, 2002). This separation results in long project durations, a development that can be linked to the need for project redesigns, and decreased innovation due to lack of joint problem-solving and lack of a holistic perspective on design and construction (Broome and Perry, 2002). Therefore, design-build projects offer more opportunities for joint risk management due to early involvement of the contractor.

The drawback associated design-bid-build project highlighted in the foregoing paragraph also suggests a possible mitigation strategy, namely, the need for regular consultation between design teams and constructors. Indeed, combination of the designers and the contractor, continuously discussing technical solutions, offers effective joint risk management for the project (Fisher, 2001). Other scholars have also suggested that careful partner selection (through bid evaluation based on suitable soft parameters) considering desired competences; experiences and attitudes can therefore reduce cost growth (Gardiner & Simmons, 1998). The foregoing assertion provides a rationale for risk mitigation strategy which focuses on competence of designer or constructors and there level of professionalism.

Further, it can be asserted that risk mitigation by companies surveyed is not optimal given the fact that only a fraction of the companies (less than 50%) with specific risks appear to mitigate the highlighted risks. Indeed, external risks (e.g. political risks) were not mitigated. This fact demonstrates the need for better regulation by the authorities concerned. Indeed, findings of the study demonstrate that the influence of laws and regulations, licensing procedures and effect of policies on arbitrage policies, was great. An overview of the other factors highlighted in the study such delays in litigation, enforcement of contracts, unfairness in tendering, local

protectionism not only highlight ways in which policy weakness impact on risks, but they also highlight policy areas which may need renewed focus.

5.4 Conclusion

In conclusion, the study established that building projects in Westland sub - County are procured through two contract types: design-bid-build and design build contracts with the former predominating. It was also established that the choice of contract options are determined by project duration/time, financial costs, legal issues and project actors. At the same time, all the companies researched on are exposed to a range of risks including risks associated with owners, contractors, political risks, financial risks and other risks. Projects procured via design-build contracts had a higher level of risks associated with designers. It was also established that various risks identified are under-mitigated while political risks are not mitigated. Effects of licensing procedures, laws and regulations and influence of policies on arbitration was great for both design-build and design-bid-build.

5.5 Recommendations

Based on the findings of the study, the following recommendations can be drawn:

1. The local contractors and designers should be sensitized on risks mitigation strategies to improve the level of risks mitigation in the county;

2. Financial Institutions should ensure that there are adequate risk management strategies in place as prerequisite to project funding.

3. Additional studies should be conducted on risks mitigation in construction projects. The need for additional studies is necessitated by the limitation of the study including small

sample size and geographical region covered and the over reliance on self-reports. Therefore, future studies should evaluate a large number of projects, should preferably be longitudinal.

5.6 Suggestions for further research

The research focused on factors influencing risk management in build projects. The scope of the study was limited to three factors. Further the research also concentrated on specific project risks. However, there are a number of factors that are associated to risk management but were not investigations. The following areas will require further investigations: the role of the newly created National Construction Authority with regards to building projects risks, the effect of type of financing on project risks and the role of quality control on project risks.

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APPENDICES

Appendix I : Letter of Introduction

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P.O BOX …….

Nairobi, KENYA.

Dear Respondents,

RE: DATA COLLECTION

I am a student at the University of Nairobi. I am currently doing a Research study to fulfill the requirements of the Award of Master of Arts in Project Management on **Influence of Risk Management in building Projects in Nairobi City County Westlands Sub - County.**

You have been selected to participate in this study and I would highly appreciate if you assisted me by responding to all questions as completely, correctly and honestly as possible. Your response will be treated with utmost confidentiality and will be used only for research purposes of this study only.

Thank you in advance for your co-operation.

Yours Faithfully,

Ogal W.O

Appendix II:Questionnaire For Clients

I am carrying out an academic research on the influence of Risk management in building Projects in Nairobi City County Westlands Sub - County. This is in partial fulfillment of the requirement of the Master of Arts in Planning and Project Management at the University of Nairobi. Kindly spare some few minutes of your time to fill this questionnaire. Please respond to the following questions and where applicable, mark the relevant box with a tick (√).

The responses you provide will be strictly confidential. No reference will be made to any individual(s) in the report of the study.

PART A: DEMOGRAPHIC INFORMATION

1) Your sex

( ) Male ( ) Female

2) Your Age bracket

( ) Under 25 ( ) 25-30 ( ) 31-35 ( ) 36-40 ( ) 41-45
( ) 46-50 ( ) 51-55 ( ) 56-60 ( ) Over 60

3) Educational level

( ) Primary ( ) Secondary ( ) College ( ) University

( ) Other _____

4) How long have you been in the industry? ……..

5) How do you evaluate your Knowledge of risks?

Low ( )
Moderate ( )
Advanced ( )

6) In what phases of the project did you participate? (Tick off your answer)

Programme ( )
Design ( )
Procurement (Bid/cost estimate) ( )

Production ( )

7) Categorize your Job _____

Part B: PROCUREMENT OPTIONS

8) Which types of contract (Procurement option) was adopted in the project?

Design build ( ) Design – Bid –Build ( ) Partnering ( ) Collaboration

9) What factors influenced the choice of the procurement option?

(tick off your answer in the appropriate column)

	Not at All	**Small Extent**	**Moderate Extent**	**Great Extent**
Legal implications				
Financial Cost				
Project Actors				
Time				
Others				

10) What were the implications of the type of contract (Procurement Option) on project performance?

(tick off your answer in the appropriate column)

	Not at All	**Small Extent**	**Moderate Extent**	**Great Extent**
Completion time				
Cost				
Overall Performance				
Others				

PART C: RISK MAGAMENT PROCESS

11) To what extent did the type of risk influence your decision to manage risk?

(tick off your answer in the appropriate column)

Type of Risk	Not at all	Little extent	Moderate extent	Great extent	Very great extent
Financial Risk					
Design Risk					
Production Risk					
Force Majeure					

12) what influence did the project actors have on risk management?

(Tick off the most appropriate alternative for each actor)

Project Actors	Very small	Fairly small	Fairly large	Very large
Client				
Contractor				
Consultant				

13) Assess the importance of risk management in the different phases of the project.

(Tick off the most appropriate alternative for each)

Project Stages	Not important	Not so important	Fairly important	Very important
Programme				
Design				
Procurement				
Production				

14) Were there deviations in the project in terms of the following parameters?

(Tick off the most appropriate alternative for each)

	Yes, Positive deviation	**Yes, Negative deviation**	**No deviations**
Cost			
Time			

15) Kindly explain importance of the following factors in project risk management.

a) Risk identification

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b) Risk Assessment

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c) Risk Response

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PART D: INFLUENCE OF POLICIES ON RISKMANAGEMENT IN BUILDING PROJECTS

16) To what extent do the following legal issues influence risk management? Use a Scale of 1-5 where; 5 is very great, 4 great, 3 moderate, 2 very little extent and 1 no extent.

	Very great	**Great**	**Moderate**	**Low**	**Not at all**
Licensing Procedures					
Laws and Regulations					
Arbitration					

17) What are the laws governing building projects?

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(a) Do laws on building facilitate smooth completion of Projects

Yes ( ) No ( )

(b) Explain your answer……

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18) In your opinion, how can the legal framework regulating building projects be improved to ensure proper risk management?

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19) What kind of policies can you recommended for better risk management in building projects?

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PART E: CHALLENGES IN PROJECT RISK MANAGEMENT

20) Were there any major challenges in the implementation of the projects?

Yes ( ) No ( )

If Yes explain ……

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21) What were the challenges if any experienced in different project phases?

a) Programme phase…….

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b) Design phase……..

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c) Procurement phase…….

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d) Production Phase……

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SECTION F: SOLUTIONS

22) How were the identified challenges in the project addressed?

Give a brief explanation

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Appendix III:Questionnaire For Contractors

I am carrying out an academic research on the influence of Risk management in building Projects in Nairobi City County Westlands Sub - County. This is in partial fulfillment of the requirement of the Master of Arts in Planning and Project Management at the University of Nairobi. Kindly spare some few minutes of your time to fill this questionnaire. Please respond to the following questions and where applicable, mark the relevant box with a tick (√).

The responses you provide will be strictly confidential. No reference will be made to any individual(s) in the report of the study.

PART A: DEMOGRAPHIC INFORMATION

1) Your sex

( ) Male ( ) Female

2) Your Age bracket

( ) Under 25 ( ) 25-30 ( ) 31-35 ( ) 36-40 ( ) 41-45
( ) 46-50 ( ) 51-55 ( ) 56-60 ( ) Over 60

3) Educational level

( ) Primary ( ) Secondary ( ) College ( ) University

( ) Other _____

4) How long have you been in the industry? ……..

5) How do you evaluate your Knowledge of risks?

Low ( )

Moderate ( )

Advanced ( )

6) In what phases of the project did you participate? (Tick off your answer)

Programme ( )

Design ( )

Procurement (Bid/cost estimate) ( )

Production ( )

7) Categorize your Job _____

Part B: PROCUREMENT OPTIONS

8) Which types of contract (Procurement option) was adopted in the project?

Design build ( ) Design – Bid –Build ( ) Partnering ( ) Collaboration

9) What factors influenced the choice of the procurement option?

(tick off your answer in the appropriate column)

	Not at All	**Small Extent**	**Moderate Extent**	**Great Extent**
Legal implications				
Financial Cost				
Project Actors				
Time				
Others				

10) What were the implications of the type of contract (Procurement Option) on project performance?

(tick off your answer in the appropriate column)

	Not at All	**Small Extent**	**Moderate Extent**	**Great Extent**
Completion time				
Cost				
Overall Performance				
Others				

PART C: RISK MAGAMENT PROCESS

11) To what extent did the type of risk influence your decision to manage risk?

(tick off your answer in the appropriate column)

Type of Risk	**Not at all**	**Little extent**	**Moderate extent**	**Great extent**	**Very great extent**
Financial Risk					
Design Risk					
Production Risk					
Force Majeure					

12) What influence did the project actors have on risk management?

(Tick off the most appropriate alternative for each actor)

Project Actors	**Very small**	**Fairly small**	**Fairly large**	**Very large**
Client				
Contractor				
Consultant				

13) Assess the importance of risk management in the different phases of the project.

(Tick off the most appropriate alternative for each)

Project Stages	**Not important**	**Not so important**	**Fairly important**	**Very important**
Programme				
Design				
Procurement				
Production				

14) Were there deviations in the project in terms of the following parameters?

(Tick off the most appropriate alternative for each)

	Yes, Positive deviation	**Yes, Negative deviation**	**No deviations**
Cost			
Time			

15) Kindly explain importance of the following factors in project risk management.

a) Risk identification

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b) Risk Assessment

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c) Risk Response

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PART D: INFLUENCE OF POLICIES ON RISKMANAGEMENT IN BUILDING PROJECTS

16) To what extent do the following legal issues influence risk management? Use a Scale of 1-5 where; 5 is very great, 4 great, 3 moderate, 2 very little extent and 1 no extent.

	Very great	**Great**	**Moderate**	**Low**	**Not at all**
Licensing Procedures					
Laws and Regulations					
Arbitration					

17) What are the laws governing building projects?

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(c) Do laws on building facilitate smooth completion of Projects

Yes ( ) No ( )

(d) Explain your answer……

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18) In your opinion, how can the legal framework regulating building projects be improved to ensure proper risk management?

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19) What kind of policies can you recommended for better risk management in building projects?

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PART E: CHALLENGES IN PROJECT RISK MANAGEMENT

20) Were there any major challenges in the implementation of the projects.

Yes ( ) No ( )

If Yes explain ……

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21) What were the challenges if any experienced in different project phases?

a) Programme phase……

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b) Design phase……

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c) Procurement phase…….

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d) Production
Phase……

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SECTION F: SOLUTIONS

22) How were the identified challenges in the project addressed?

Give a brief explanation……

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Appendix IV:Questionnaire For Consultants

I am carrying out an academic research on the influence of Risk management in building Projects in Nairobi City County Westlands Sub - County. This is in partial fulfillment of the requirement of the Master of Arts in Planning and Project Management at the University of Nairobi. Kindly spare some few minutes of your time to fill this questionnaire. Please respond to the following questions and where applicable, mark the relevant box with a tick (√).

The responses you provide will be strictly confidential. No reference will be made to any individual(s) in the report of the study.

PART A: DEMOGRAPHIC INFORMATION

1) Your sex

( ) Male ( ) Female

2) Your Age bracket

( ) Under 25 ( ) 25-30 ( ) 31-35 ( ) 36-40 ( ) 41-45
( ) 46-50 ( ) 51-55 ( ) 56-60 ( ) Over 60

3) Educational level

( ) Primary ( ) Secondary ( ) College ( ) University

( ) Other _____

4) How long have you been in the industry?

……..

5) How do you evaluate your Knowledge of risks?

Low ( )

Moderate ( )

Advanced ( )

6) In what phases of the project did you participate? (Tick off your answer)

Programme ( )

Design ( )

Procurement (Bid/cost estimate) ( )

Production ( )

7) Categorize your Job _____

Part B: PROCUREMENT OPTIONS

8) Which types of contract (Procurement option) was adopted in the project?

Design build ( ) Design – Bid –Build ( ) Partnering ( ) Collaboration

9) What factors influenced the choice of the procurement option?

(tick off your answer in the appropriate column)

	Not at All	**Small Extent**	**Moderate Extent**	**Great Extent**
Legal implications				
Financial Cost				
Project Actors				
Time				
Others				

10) What were the implications of the type of contract (Procurement Option) on project performance?

(tick off your answer in the appropriate column)

	Not at All	**Small Extent**	**Moderate Extent**	**Great Extent**
Completion time				
Cost				
Overall Performance				
Others				

PART C: RISK MAGAMENT PROCESS

11) To what extent did the type of risk influence your decision to manage risk?

(tick off your answer in the appropriate column)

Type of Risk	Not at all	Little extent	Moderate extent	Great extent	Very great extent
Financial Risk					
Design Risk					
Production Risk					
Force Majeure					

12) What influence did the project actors have on risk management?

(Tick off the most appropriate alternative for each actor)

Project Actors	Very small	Fairly small	Fairly large	Very large
Client				
Contractor				
Consultant				

13) Assess the importance of risk management in the different phases of the project.

(Tick off the most appropriate alternative for each)

Project Stages	Not important	Not so important	Fairly important	Very important
Programme				
Design				
Procurement				
Production				

14) Were there deviations in the project in terms of the following parameters?

(Tick off the most appropriate alternative for each)

	Yes, Positive deviation	Yes, Negative deviation	No deviations
Cost			
Time			

15) Kindly explain importance of the following factors in project risk management.

a) Risk identification

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b) Risk Assessment

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c) Risk Response

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PART D: INFLUENCE OF POLICIES ON RISKMANAGEMENT IN BUILDING PROJECTS

16) To what extent do the following legal issues influence risk management? Use a Scale of 1-5 where; 5 is very great, 4 great, 3 moderate, 2 very little extent and 1 no extent.

	Very great	**Great**	**Moderate**	**Low**	**Not at all**
Licensing Procedures					
Laws and Regulations					
Arbitration					

17) What are the laws governing building projects?

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(e) Do laws on building facilitate smooth completion of Projects

Yes ( ) No ( )

(f) Explain your answer……

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18) In your opinion, how can the legal framework regulating building projects be improved to ensure proper risk management?

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19) What kind of policies can you recommended for better risk management in building projects?

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PART E: CHALLENGES IN PROJECT RISK MANAGEMENT

20) Were there any major challenges in the implementation of the projects?

Yes ( ) No ( )

If Yes explain ……

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21) What were the challenges if any experienced in different project phases?

a) Programme phase……

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b) Design phase……

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c) Procurement phase……

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d) Production Phase……

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SECTION F: SOLUTIONS

22) How were the identified challenges in the project addressed?

Give a brief explanation

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THANK YOU FOR YOUR TIME AND COOPERATION