

**FACTORS AFFECTING EFFECTIVENESS OF RISK MANAGEMENT IN  
PUBLIC HOUSING CONSTRUCTION PROJECTS IN KENYA: A CASE OF  
KIBERA SLUM UPGRADING HOUSING SCHEME IN NAIROBI**

**BY**

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## **DECLARATION**

This research project report is my original work which has never been presented to any other institution or university for the award of any degree, diploma or certificate whatsoever.

Signature ..... Date.....

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This research project report is being submitted for examination with my approval as the university supervisor.

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## **DEDICATION**

This research project report is dedicated to my beloved mother and father, Mr. & Mrs. Ngundo for not sparing their meagre resources to educate me and for inculcating in me a hard working and responsible spirit during my tender age.

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## TABLE OF CONTENT

<b>DECLARATION.....</b>	<b>ii</b>
<b>DEDICATION.....</b>	<b>iii</b>
<b>ACKNOWLEDGEMENT.....</b>	<b>iv</b>
<b>TABLE OF CONTENT .....</b>	<b>iv</b>
<b>LISTS OF TABLES.....</b>	<b>ix</b>
<b>LIST OF FIGURES .....</b>	<b>xi</b>
<b>ABBREVIATIONS AND ACRONYMS.....</b>	<b>xii</b>
<b>ABSTRACT.....</b>	<b>xiii</b>
<b>CHAPTER ONE:INTRODUCTION.....</b>	<b>1</b>
<b>1.1 Background of the Study.....</b>	<b>1</b>
1.1.1 Public Housing Construction Projects in Kenya.....	4
<b>1.2 Statement of the Problem.....</b>	<b>5</b>
<b>1.3 Purpose of the Study.....</b>	<b>6</b>
<b>1.4 Research Objectives.....</b>	<b>6</b>
<b>1.5 Research Questions.....</b>	<b>7</b>
<b>1.6 Significant of the study .....</b>	<b>7</b>
<b>1.7 Limitations of the Study .....</b>	<b>8</b>
<b>1.8 Delimitation of the Study.....</b>	<b>9</b>
<b>1.9 Ethical issues of the Study.....</b>	<b>9</b>
<b>1.10 Definition of Significant Terms used in the Study .....</b>	<b>9</b>
<b>1.11 Organization of the Study .....</b>	<b>11</b>

<b>CHAPTER TWO: LITERATURE REVIEW.....</b>	<b>12</b>
<b>2.1 Introduction.....</b>	<b>12</b>
<b>2.2 Theoretical reviews .....</b>	<b>12</b>
2.2.1 Agency Theory.....	12
2.2.2 Financial Theory .....	14
<b>2.2.3 Uncertainty Theory.....</b>	<b>15</b>
<b>2.3 Empirical review .....</b>	<b>16</b>
2.3.1 Top Management Support.....	17
2.3.2 Competence of project team .....	18
2.3.4 Project Risk planning.....	23
2.3.5 Project approval procedure .....	25
<b>2.4 Critical review .....</b>	<b>26</b>
<b>2.5 Conceptual Framework.....</b>	<b>28</b>
<b>2.6 Summary of the Literature .....</b>	<b>30</b>
<b>2.7 Research Gap .....</b>	<b>30</b>
<b>CHAPTER THREE: RESEARCH METHODOLOGY .....</b>	<b>32</b>
<b>3.1 Introduction.....</b>	<b>32</b>
<b>3.2 Research Design .....</b>	<b>32</b>
<b>3.3 Target Population .....</b>	<b>32</b>
<b>3.4 Sample size and Sampling Procedure .....</b>	<b>33</b>
3.4.1 Research Instruments. ....	35
3.5.1 Pilot- Testing.....	36
3.5.2 Validity of instrument .....	36
3.5.3 Reliability of instrument .....	37
<b>3.6 Data Collection Methods .....</b>	<b>37</b>

3.7 Data Analysis and Procedure.....	38
3.8 Operationalization Table of Variables.....	38
<b>CHAPTER FOUR: DATA PRESENTATION, ANALYSIS AND INTERPRETATION .....</b>	<b>40</b>
4.1 Introduction.....	40
4.2 General information .....	40
4.2.1 Gender of the Respondents .....	41
4.2.2 Age category .....	41
4.2.3 Highest level of education attained.....	42
4.2.4 Designation .....	42
4.2.5 Operational period of the organization .....	43
4.3 Factors affecting effectiveness of risk management .....	43
4.3.1 Rating the extent to which given risks affects project success .....	44
4.4 Top Management Support .....	45
4.4.1 Extent to which top management fails to allocate resources .....	45
4.4.2 Top management role affects effectiveness of risk management .....	46
4.4.3 Top management support affects effectiveness of risk management .....	47
4.5 Competence of project team .....	49
4.5.1 Project officials attains technical expertise.....	49
4.5.2 Level of communication skills.....	49
4.5.3 Extent to which project officer achieve house construction qualifications .....	50
4.5.3 Competency of project officers and effectiveness of risk management .....	51
4.6 Project risk Planning .....	53
4.6.1 Plans put in place to mitigate occurrence of project risks .....	53
4.6.3 Lack of planning for Kibera Upgrading housing scheme affects the scheme success.....	54
4.7 Planning for risks affects effectiveness of risk management .....	55

4.7.1 Planning for project risks influence achieving of project performance .....	55
4.7.2 Lack of project risk planning affects effectiveness of risk management .....	55
<b>4.8 Project funding.....</b>	<b>57</b>
4.8.1 Budget guidelines established was effective.....	58
4.8.2 Enough amounts allocated for project cost .....	58
4.8.3 Long project approval budget procedure risk affects effectiveness of risk .....	59
4.8.4 Project cost affects effectiveness of risk management .....	59
4.8.5 Project timeliness cost hinders effectiveness in risk management .....	61
<b>4.9 Regression analyses.....</b>	<b>61</b>
4.9.1 Model Summary.....	62
4.9.2 ANOVA (b) .....	64
4.9.3 Coefficients (a).....	64
<b>CHAPTER FIVE: SUMMARY OF FINDINGS, DISCUSSIONS,CONCLUSIONS AND RECOMMENDATIONS.....</b>	<b>67</b>
<b>5.1 Introduction.....</b>	<b>67</b>
<b>5.2 Summary of the findings and discussions.....</b>	<b>67</b>
<b>5.3 Conclusions.....</b>	<b>73</b>
<b>5.4 Recommendations.....</b>	<b>74</b>
<b>5.5 Suggestions for further research .....</b>	<b>76</b>
<b>APPENDICES .....</b>	<b>86</b>
<b>Appendix I: Letter of introduction.....</b>	<b>87</b>
<b>Appendix II: Questionnaire: .....</b>	<b>87</b>



## **LISTS OF TABLES**

Table 3. 1: Population of the Study .....	33
Table 3. 2: Sample Size .....	35
Table 3. 3: Operationalization of Variables .....	38
Table 4. 1 Response rate .....	43
Table 4. 2 Gender profile .....	41
Table 4. 3 Age category .....	41
Table 4. 4 Level od education.....	42
Table 4. 5 Operational period of the organization .....	43
Table 4. 6 Effects of project risks .....	44
Table 4. 7 Allocation of resources .....	45
Table 4. 8 Top management role .....	46
Table 4. 9 Top management support .....	47
Table 4. 10 Technical expeertise of project officers .....	49
Table 4. 11 Level of communication skills .....	49
Table 4. 12 House construction qualifications.....	50
Table 4. 13 Competency of project officers .....	51
Table 4. 14 Plans to mitigate project risks.....	53
Table 4. 15 Level of project risk planning .....	53
Table 4. 16 Lack of project risk planning .....	54
Table 4. 17 Planning for project risks .....	55
Table 4. 18 Lack of project risk planning .....	55
Table 4. 19 Budget fuidelines .....	58

Table 4. 20 Project funding allocation.....	58
Table 4. 21 Budget approval procedures .....	59
Table 4. 22 Project funding.....	59
Table 4. 23 Project timeliness .....	62
Table 4. 24 Model Summary .....	62
Table 4. 25: ANOVA (b) .....	64
Table 4. 26: Coefficients (a) .....	64

## **LIST OF FIGURES**

Figure 1: Conceptual Framework.....	29
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## **ABBREVIATIONS AND ACRONYMS**

<b>CPM</b>	-	Critical Path Method
<b>CSFs</b>	-	Critical Success Factors
<b>ERM</b>	-	Enterprise Risk Management
<b>ESP</b>	-	Economic Stimulus Programme
<b>KENSUP</b>	-	Kenya slum upgrading programme
<b>NGOs</b>	-	Non Governmental Organizations
<b>PERT</b>	-	Program Evaluation and Review Technique
<b>PPP</b>	-	Public Private Partnership
<b>RMS</b>	-	Risk Management Systems
<b>UN-HABITAT</b>	-	United Nations Human Settlement Programme
<b>UK</b>	-	United Kingdom

## ABSTRACT

Kenya has seen a significant rise in infrastructure developments in the recent past, especially in the fields of real estate development and many house construction projects have failed to achieve project success due to increase in risk and uncertainty. The objective of this study was to establish the factors affecting effectiveness of risk management in housing construction projects in Kenya, a case of Kibera Slum Upgrading Housing Scheme. The research objectives were; to determine the extent to which level of top management support affect effectiveness of risk management in housing construction projects, to establish the extent to which competence of project team affect effectiveness of risk management in housing construction projects, to examine the extent to which project funding affect effectiveness of risk management in housing construction projects and to establish the extent to which project risk management affect effectiveness of risk management in housing construction projects. To achieve study objective, descriptive survey design was adopted. This research design involved gathering data that described events and then organized, tabulated, depicted, and described the data. The population of the study for this study was five institutions that manage the Kibera Upgrading Housing Scheme which include Ministry of land, provisional administration, community organizations, religious group and KENSUP. Fisher formula was used to select the study sample size of 116 from a target population of 164. The primary data for this study was collected using both closed and open ended structured questionnaires. The collected data was well examined and checked for completeness and comprehensibility. The data was then summarized, coded and tabulated. Descriptive statistics such as means, standard deviation and frequency distribution were used to analyze the data. Data presentation was done by frequency tables for ease of understanding and interpretations. Inferential statistics such as regression and correlation analysis were used to determine the relationship between effectiveness of risk management and factors that affect risk management effectiveness in housing sector. The study established that low level of top management support where project management failed to develop project procedures from initiation stage, install training programs, establish project management office and support quality management affected the effectiveness of risk management in Kibera Housing Scheme by a factor of 0.683 and p value of 0.03. Incompetent project team members who did not understand project risk management process affected effective risk management by a factor of 0.517 and p value of 0.04, lack of funding which did not link to Gantt chart of the project affected the effectiveness of risk management by a factor of 0.468 and p value of 0.02 and lack of project risk planning where there was no proper risk identification, assessment, prioritization, mitigation and control affected effectiveness of risk management by a factor of 0.691 and p value of 0.01 in Kibera Housing Scheme. The study recommends that top management should be committed to inclusive and transparent risk management, project team should be trained in risk management and administrative skills, project funding should be linked to the Gantt chart and proper project risk planning should be done to enable structured and systematic risk management in construction projects.

# **CHAPTER ONE**

## **INTRODUCTION**

### **1.1 Background of the Study**

Risk management is the processes to manage the potential risks by identifying, analyzing and addressing them to reduce the probability or impact of unfavorable negative events and maximize realization of emerging opportunities. The outcome may help to mitigate the likelihood of risk occurring and the negative impact when it happens (Partnerships, 2005). Risk management has become an important part of the management process for any project. In fact, Actually, Akintoye.. (2003) believes that the circumstances within the construction industry had led to adopting risk management and analysis into practice.

Project risk management has a prominent position in the framework of project management theory and methodology (Project Management Institute, 2008). The reason is that unexpected events will usually occur during a project (Pinto, 2007). Given the importance of project risk management in project management functioning, the efficiency of risk management is expected to significantly influence project performance (Harker and Satvros, 1998). Strutt (1993) carried a study on impact of risk management on project performance in US and found that risk management strategies lead to project success.

Risk often varies in the likelihood of its occurrence and its impacts from one project another and risk changes its nature during the project life cycle (Smith, Merna and Jobling, 2006). A lack of project information, particularly in the early stage of a construction project, always leads to a higher degree of risk associated with cost, time and quality. The level of risk, however, may decrease with the project. When risks are being realized as the project progresses, the increased level of certainty reduces the level of risk in the project. Project risks often tend to be interrelated, but they can sometimes be considered in isolation. Risks can not only affect the achievement of project objectives but also influence the occurrence of one another. According to Loosemore. (2006), the perception of risk varies at both individual and organizational levels because different

people hold different views and have different understandings of a particular risk's components, sources, probabilities, consequences and preferred actions. People's beliefs, attitudes, judgments and feelings are believed to influence risk perception to a certain extent (Akintoye & Macleod, 1997).

The rapid development of housing schemes has effectively facilitated increase in house construction risks (Lientz & Larssen 2004). In the case of the UK, the top three risks in the housing construction business are commercial risk, contractual risk and operational risk (Amos and Dents, 1997). Santoso, Ogunlana and Minato (2003) found managerial and design factor to be the major and most significant problems in a high-rise construction project in Jakarta, in terms of frequency and risk impacts. In China, the most significant risk events are found to be financial risks, including capital return difficulty, owners' delaying payment and owner's unreasonable upfront capital demand (Fang, 2004).

In order to minimize and control these risks successfully, project risk management policies and strategies have been developed and implemented in organizations. The effectiveness of risk management in construction project management has been questioned in the past 10 years (Coles & Moulton 2003). Although there is a well-developed, designed and implemented processes of project RM such as risk management planning, risk identification, risk assessment, risk analysis and risk response planning, 51% of construction project experience failure attributed to occurrence of risks (Lee & Chun 2009). A government report in America demonstrates that over 80 percent of house development projects have failed in whole or in part due to ineffective poor risk management (Lientz & Larssen 2004).

An effective risk management system not only brings a higher level of awareness of the consequences of risk but also focuses on a more structured approach, more effective centralized control and better transfer of risk information between parties influence reduced long-term loss expenses and project time overruns (Edwards, 1995). Successful risk management should convert uncertainty to risk and convert risk to opportunity. The

project and organization would hence achieve more gains by maximizing opportunity, minimizing risk and reducing uncertainty. Sundararajan (2004) stated that if risk events are not handled and managed properly, consequences like increasing the financing cost, changing the capital structure, delay the building or facility operation, overrun budget, lost the cash inflow, lead to liquidated damages claim, produce poor quality end product, involve rework after completion might occur.

Wood (2005) states the enhancement of the transparent practical linkage of the risk mitigation plan and risk register to the corporate plan objectives as a key measure of project success. According to Hampton (2006) success in risk management is based upon knowledge, relationships and sharing best practices. Lenckus (2005) mentions securing management support, committing ample time to the effort, planning wisely, proving the plan's worth early and pacing risk manager among the CSFs for enterprise risk management (ERM). Coccia (2005) believes that communication and the promotion of behavioural changes throughout an organization are the key success factors for ERM. Based on a survey results by McDonald (2004), clearly defined risk appetite articulated through limits and monitoring procedures, involvement of managerial board, centralized ERM organizations, proper communication and instilling risk into the culture of business are among the most important success factors in ERM. Some other experts such as Lemos *et al.* (2001) and Roth and Espersen (2004) limit the success of risk management to the successful performance of its formal processes of risk management planning, risk identification, risk analysis, risk response planning and risk monitoring and control. Despite the necessity, benefits and effectiveness of implementing risk management systems (RMS), various researchers state that the organizations which have been successful in practical implementation of RMS are still in a small minority which does not exceed 25% according to the most optimistic reports (Kutsch & Hall, 2010).

Risk and uncertainty constantly plagued construction industry compared with other business activities due to its characteristics of complexity, dynamic and time consuming. As risk management is predicting the unpredictable, it is one of the most vital



management tools to cope with project risks and uncertainties. Risk management strategies are important to create values to a project and improve house construction project performance in term of cost, time and quality. However, risk management strategies are not implemented in most of the existing construction companies in Kenya resulting to house construction project failure through increase cost overrun, schedule slip and poor quality performance. Risk management is essentially influencing the successful project performance (Jin & Yean, 2005).

### **1.1.1 Public Housing Construction Projects in Kenya.**

The construction industry is a key contributor of our economy in that it contributes about seven percentage of our gross domestic product. Housing construction constitutes the largest part of construction industry and it is one of the key achievements planned in the social pillar in government's vision 2013 blue print. The Government of Kenya through the Ministry of Land, Housing and Urban Development under National Housing Programme seeks to facilitate, through multiple strategies, development of over 300,000 housing units across the country. Most of the housing development will be done through Public Private Partnership (PPP) contractual arrangements. The programme commences with the construction of over 6,000 housing units in parcels of land located in Nairobi City County.

The government along with committed development partners came up with an ambitious plan known as Kenya slum upgrading programme. This is a housing policy under the ministry of Housing for the slum dwellers with a view to providing decent homes throughout the whole country. Kenya slum upgrading programme (KENSUP) was initiated in year 2001 in partnership with United Nations Settlement Programme (UN HABITAT). The programme was launched in 2004 and has been ongoing up-to-date. The main objective of this programme is to provide decent and affordable housing to the urban poor specifically those living in slums such as Kibera, Mathare and other slums in Kenya. The project was to cover 1.6 million households comprising at least over 5.3

million people (KENSUP, 2005). Kibera, as one of the most pronounced slums within Kenya, is undergoing an intensive slum upgrading process. The government, UN-HABITAT and a contingent of NGOs, notably Majina Ufanisi, are making in into the settlements in an attempt to facelift the housing and sanitary conditions (Ministry of Housing, Kenya, 2010).

The Government of Kenya report asserts that KENSUP was initiated in year 2000 to facilitate national wide slum upgrading of over 200 slums in Kenya at a total cost approximately Ksh 800 billion and be completed by year 2020. Kibera, slum upgrading Kibera slum upgrading project is delayed for over ten years due to ineffective fund disbursement (GOK, 2010).The clearance of Kibera is expected to take between two and five years to complete. The entire project is planned to take nine years and will re-house all the slum residents in the city (Government of Kenya, 2004).

## **1.2 Statement of the Problem**

In order to manage projects effectively and increase the chances for a project's success, it is important to employ effective risk management strategies for completing the project. The project risk management positively influences project performance by instrumental effects through creation of a contingency plan or by influencing project time, budget or design plan. However, construction projects in developing countries such as Kenya continue to experience failure due ineffective management, cost controls, inappropriate building regulations and codes as well as a lack of basic project planning and provisions (Zwikael and Ahn, 2011).

Kenya has seen a significant rise in infrastructure developments in the recent past, especially in the fields of real estate development. However, many house construction projects have failed to achieve project success due to increase risk and uncertainty. For instance, the Kibera Slum upgrading project has not been successful due to increase in project risks including insecurity, theft, and high cost of building material, lack of building foundations, political and unyielding topography and cramped sprawl of the area

flooding risk. Kibera upgrading project was planned to take nine years from 2000 but still uncompleted in the year 2013 with the delay attributed to ineffectiveness in project risk management. The Kibera upgrading project initial cost of Ksh 3 Billion has increased to 4.5 billion (KENSUP, 2013). Although there were measures put in place to manage risk in government construction housing projects, Kibera house upgrading project experience failure raising questions on effectiveness of risk management in the project. The Ngara civil servants housing scheme had its cost increased from 1billion to 2billion when one of the contractors was terminated for lack of performance. The economic stimulus programme (ESP) of 2010 have some of its projects unfinished to date, with no clear indication of when they will be completed, and this has resulted in loss of value of public funds.

Cases of stalled prison and police staff houses have been noted yet the contract documents have clauses that stipulated how to handle project deficiencies in the course of project implementation. Prevision study on project risk management in construction companies. For instance, Wanjohi, and Mugure, (2008) found that construction companies have implemented Project risk management strategies to minimize project delays, overruns and failures. This study seeks to determine the factor affecting effectiveness of risk management strategies in housing construction projects in Kenya, a case of Kibera Housing schemes.

### **1.3 Purpose of the Study**

The purpose of this study was to determine factor affecting effectiveness of risk management in housing construction projects in Kenya. The study focused on a case of Kibera Housing schemes (KENSUP) in Kibera, Nairobi

### **1.4 Research Objectives**

The specific objectives of the study were;

1. To determine how level of project top management support affect effectiveness of risk management in public housing construction projects.

2. To establish the extent to which competence of project team affect effectiveness of risk management in public housing construction projects.
3. To examine the extent to which project funding affect effectiveness of risk management in public housing construction projects.
4. To determine the extent to which Project Risk planning affect effectiveness of risk management in public housing construction projects

### **1.5 Research Questions**

This study sought to achieve the following specific research questions:

1. How does level of project top management support affect effectiveness of risk management in public house construction projects?
2. How does competence of project team affects effectiveness of risk management in public house construction projects?
3. How does project funding affect effectiveness of risk management in public house construction projects?
4. What are the effects of project risk planning on effectiveness of risk management in public housing construction projects?

### **1.6 Significant of the study**

Project risk management increases the likelihood of project success. It provides a holistic view of risks, challenges and potential problems and builds processes to help construction companies in monitor and manage them. This not only reduces the cost of housing project, but gives organization valuable strategies to reduce risk associated with project investments and tactical project activities. The construction company management will increase confidence in knowing that project will meet targeted goals and achieve expected outcome.

The professionals in construction industry will have information on factors that affect effective risk management in public housing construction projects. This will enable them

to conscientiously incorporate risk management in their professional work and that would result in better project performance.

The government in the developing policies regarding project risk management and other regulatory requirements of house scheme project in Kenya. The policy maker will gain insight how well to incorporate the sector effectively to ensure effective mitigation of project risks for the house construction projects to achieve high project success.

The academicians will be furnished with relevant information regarding effects of project risk management strategies on house construction project performance. The study will contribute to the general body of knowledge and form a basis for further research.

### **1.7 Limitations of the Study**

The researcher encountered various limitations that tend to hinder access to information sought by the study. The respondents that were approached were reluctant in giving information fearing that the information that the study was seeking would be used to intimidate them or print a negative image about the institutions. The researcher handled the problem by having an introduction letter from the institute and assuring them that the information they gave would be treated confidentially and it would be used purely for academic purposes.

The researcher also encountered problems in soliciting information from the respondents as the information required was subject to areas of feelings, emotions, attitudes and perceptions, which was not accurately quantified and/or verified objectively. The researcher encouraged the respondents to participate without holding back any information they could be having as the research instruments would not bear their names.

The study was limited in achieving its objectives by lack of sufficient funds and time limited the researcher from accessing all the house construction projects in Kenya to collect data for the study. The researcher however limited the study by focusing a case of Kibera Housing scheme in Nairobi, Kenya.

### **1.8 Delimitation of the Study**

The study will be limited in to establishing the effects of risk management on the house construction project performance in Kenya. The study will focus on Kibera Housing Scheme projects in Nairobi. Although there construction projects carried outs by different organization in private and government, the study will focus on Kibera Housing project in Nairobi.

### **1.9 Ethical issues of the Study**

The study made use of letter of introduction which gave background and purpose of the research and were informed that they were participating in the research on their own free will. This study also promised not to reveal the identity of the respondents for the sake of security concerns. The respondents were assured that the information they provided was exclusively and solely used for academic purposes and was treated with the confidence it deserved and upon request, they would be furnished with a copy of the final report.

### **1.10 Definition of Significant Terms used in the Study**

**Project risk** is an unforeseen event or activity that can impact on the project's progress, result or outcome in a positive or negative way.

**Project Risk Management:** This is the human activity which integrates identification of risk, risk assessment, measurement, monitoring, developing strategies to manage it, and mitigation of those risks which can threaten project achieving performance.

**Effectiveness in risk management-**It is present if the project achieves success in its objectives of efficiency in cost, quality, scope, timeliness, sustainability and satisfaction of the users.

**Public housing construction project-** is a project funded by public funds whose end product is provision of houses to the citizens aimed at enhancing public social welfare.

**Project success-** This is the achievement of all the project objectives which include cost effectiveness, quality, scope, timeliness and satisfaction of the users of the product.

**Project Performance-** It is a measure of the level of project success.

**Top Management Support-** This is the executive management commitment towards supporting project management decisions.

**Project team-** This includes all persons/parties that play any role towards the success of the project at any stage of the project life cycle.

**Competence of project team-** This is the level of skill and knowledge level of the house construction project staff in terms of academic and professional qualifications

**Project funding-** This involves securing of the required project funding at the required amounts and at the right timing.

**Project Risk Planning-** It is the process that involves setting the roadmap towards all activities necessary to achieve structured and systematic proper risk management

**Project Risk Management-** Risk management is a structured approach for the identification, assessment, and prioritization of risks followed by coordinated and economic allocation of resources to minimize, monitor, and control the probability and impact of undesirable house construction events or maximization of realization of emerging opportunities.

**Project Risk Management Strategy-** It is a structured and coherent approach adopted in identifying, assessing and managing house construction project risk.

**Kenya Slum Upgrading Programme (KENSUP)** - is the initiative started between the government of Kenya and United National Settlement Programme (UN-HABITAT) in 2000 to rid Kenya of slums in a bid to provide decent housing settlements in our cities in line with the Millennium Development Goal No.7

### **1.11 Organization of the Study**

The study was organized into five chapters. Chapter one covers the background of the study, statement of the problem, purpose of the study, research question, significant of the study, limitations of the study, delimitation of the study, definition of significant terms and the organization of the study. Chapter two consists of the literature review which was sub-divided into different sub-headings concerning factor affecting effectiveness of risk management in housing construction projects. Chapter three covered the research methodology divided into; Research design, Target population, Sample and sampling procedures, Research instrument, Validity of the instrument, Reliability of the instruments, data collection and data analysis. Chapter four was a representative of research data presentation, analysis and interpretation. Chapter five focused on the summary of the study findings, discussions, conclusions and recommendations.



## **CHAPTER TWO**

### **LITERATURE REVIEW**

#### **2.1 Introduction**

In this chapter, past studies have been reviewed in regards to factors affecting effectiveness of risk management. The study reviews the theoretical foundation regarding effectiveness of risk management which include, agency, financial and uncertainty theories. The chapter also present the review of the variable under the study including top management support, competency of project team, project funding, project risk planning and project approval procedure .The study further presents the empirical review, critical and conceptual framework and summary of the literature. Only the issues in the objectives will be featured, critically reviewed and discussed.

#### **2.2 Theoretical reviews**

Concern with risk management became more evident after Ibbs and Kwak (2000) published their research, which recognized this knowledge area as one of the neediest in terms of management, as examined in three of the four economic sectors studied. However, Akintoye & MacLeod (1997) had already pointed to the effectiveness of risk management as one of the major concerns of project professionals. Nevertheless, for Raz (2002) the discipline of risk management is still in its infancy. Within the line of studies of the nature of risks and their conceptual aspects, the following works stand out: (Perminova, 2008). Basically they deal with aspects of risks and their relationship with uncertainty, their effects and implications for project results.

##### **2.2.1 Agency Theory**

Agency theory extends the analysis of the firm to include separation of ownership and control, and managerial motivation. In the field of corporate risk management agency issues have been shown to influence managerial attitudes toward risk taking and hedging (Smith & Stulz, 1985). Theory also explains a possible mismatch of interest between

shareholders, management and debt holders due to asymmetries in earning distribution, which can result in the firm taking too much risk or not engaging in positive net value projects (Mayers & Smith, 1987). Consequently, agency theory implies that defined hedging policies can have important influence on firm value (Fite & Pfleiderer, 1995). The latter hypotheses are associated with financing structure, and give predictions similar to financial theory.

Managerial motivation factors in implementation of corporate risk management have been empirically investigated in a few studies with a negative effect (Faff & Nguyen, 2002). In the absence of the traditional equity-owner, responsible for assuming the residual risk and guarantee of debt repayment, project-financing arrangements are often accompanied by detailed and complex contracts which specify the exact nature and duration of the relationships between various participants in the project. It becomes necessary to carefully identify the risks that may occur over the life of the project, from conception to operation, and allocate those risks to the participants who are best able to manage them (Zou, Zhang & Wang, 2007)

To manage various types of risk the project sponsor or financial advisor may develop a matrix of project participants and risk components associated with the project to identify risk allocation and the various contractual agreements which allocate risk (Minato (2003) agency risk may be reduced or eliminated by the competition between project managers in managerial labour markets (Hamimah, 2007).

As project size increases, the two functions usually attributed to the project manager; management and risk bearing, may be treated as naturally separate factors of production within a set of contracts known as the project managed by the project management team. Although individual project stake-holders act from self interest, they realize that their own individual destinies depend, to some extent, on the success of the project management team in its competition with other project management teams. As the number of project stakeholders increases, the potential agency incentive problems, associated with the separation of ownership and control of the project, would tend to be

resolved by the discipline exerted on project managers by managerial labour markets both within and outside the project (Akintoye & MacLeod, 1997).

### **2.2.2 Financial Theory**

Project can proceed only if the demand price exceeds the supply price of capital assets. Because these prices include margins of safety, they are affected by expectations concerning unknowable outcomes. In the beginning of a recovery from a severe recession, margins are large as expectations are pessimistic; over time, if an expansion generates returns that exceed the projections these margins prove to be larger than necessary. Thus, margins will be reduced to the degree that projects are generally successful, exceeding expectations. Minsky, (2008) created a famous taxonomy of financing profiles undertaken by investing firms: hedge (prospective income flows are expected to cover interest and principle with a safe margin); speculative (near-term income flows will cover only interest, although it is expected that either finance costs will fall, that income flows will rise, or that assets can be sold at a higher price later—in which case revenues will be sufficient to cover principle) and Ponzi (near-term receipts are insufficient to cover interest payments so that debt increases because the Ponzi unit borrows to cover interest payments) (Mankiw & Gregory, 1999). Over the course of an expansion, these financial stances evolve from largely hedge to include ever rising proportions of speculative and even Ponzi positions.

Some Ponzi positions are undertaken voluntarily (due, for example, to expectations that debt can be refinanced at much more favorable terms, or that large capital gains can be realized from asset price appreciation), some are fraudulent and some result from disappointment (Ceylan & Korkmaz 2006). Attempts to raise leverage and to move to more speculative positions can be frustrated if results turn out to be more favorable than expected; an investor attempting to engage in speculative finance could remain hedge because incomes realized are greater than were anticipated. This is because as aggregate investment rises, this has a multiplier impact on effective demand which can raise sales beyond what had been expected. Later, Minsky, (2008) explicitly incorporated the

Kaleckian result that in the truncated model, aggregate profits equal investment plus the government's deficit. Thus, in an investment boom, profits would be increasing along with investment, helping to validate expectations and encouraging even more investment. This added strength to his proposition that the fundamental instability in the capitalist economy is upward—toward a speculative frenzy, as investment generates profits, which breeds more investment.

### **2.2.3 Uncertainty Theory**

Uncertain theory was introduced by Liu (2010) due to generalization of domain of uncertainty. Uncertainty theory was also applied to uncertain logic by Li and Liu (2010) in which the truth value is defined as the uncertain measure that the proposition is true. Furthermore, uncertain entailment was proposed by Liu that is a methodology for calculating the truth value of an uncertain formula when the truth values of other uncertain formulas are given.

Uncertainty is, of course, not a neglected concept in project management. Early development of activity network techniques in the 1950s, such as PERT (Program Evaluation and Review Technique), recognized the possibility of variation in task durations. These techniques were extended in the 1960s to incorporate probabilistic branching for instance Graphical Evaluation and Review Technique. Qualitative approaches, such as the Synergistic Contingency Evaluation and Review Technique, and Analysis of Potential Problems, were developed to guide project managers to prepare for uncertainty with risk prevention and contingency planning (Henriksen & Uhlenfeldt, 2006).

This extensive literature on project planning has developed our understanding of scheduling tasks in complex and uncertain projects, describing such well-known techniques as the critical path method (CPM). There is also extensive knowledge on how to handle the relationships with the stakeholders, utilizing such tools as contract formalization and enforcement, responsibility charts, force field analysis, and conflict

management. Foreseen uncertainties are identified, but uncertain, influences in a project management.

Uncertainty risk also affects how project management should approach stakeholder management. The project team in one of our samples liked to utilize the phrase “proactively occupy the white spaces in the contract.” This meant that, through anticipating uncertainties, they could proactively write in the contingencies reflecting these uncertainties, possibly staking out a claim before other stakeholders had thought of it. Thus, foreseen uncertainty requires disciplined risk management, the identification of potential risk that could affect the project followed by the planning of preventive measures to block adverse events and multiple contingent courses of action that are then triggered by the events (Young & Jordan, 2008).

Progress tracking demands monitoring not only which activities have been completed, but also to the uncompleted project activities. The project manager must not only be able to trouble shoot, but also function as a reactive consolidator of what has been achieved up to a certain stage in the project. All risks the incidents in the environment, or certain outcomes of the project work) must be constantly monitored and communicated to project stakeholders. Flexible contingent actions, depending on outcomes of key influence parameters, should be anticipated in the decision tree (Zwikaël & Ahn, 2011).

### **2.3 Empirical review**

In construction projects, risks play a significant part in decision making and may affect the performance of a project. If they are not dealt with sensibly, they may cause cost overruns, delays on schedule and even poor quality. Each project has a different level and combination of risks and sites will adopt different strategies to minimize them because the characteristics of projects are unique and dynamic.

### **2.3.1 Top Management Support**

Many researchers subscribe strongly to the view that top management support and commitment is a critical success factor in effectiveness of project risk management. It is also important to emphasize effective top management support for different project scenarios. Critical top management support includes a broad range of activities in an organization, including developing project procedures that include the initiation stage, training programs, establishing a project management office, support quality management and so on (Zwikael and Ahn, 2011).

Kerzner (2003) also supports this view, stating that lack of visible executive support is the biggest detriment to achieving maturity and excellence in the management and implementation of projects. This is a factor common within public sector project management and implementation. Rao and Mak (2001) also outline a number of key responsibilities for the executive to ensure project success, which include approving the project, confirming it is aligned to the strategic goal of the business, allocating resources such as human, time and financial resources to the implementation effort. Wang and Nah, (2010) add that communicating the business vision and overcoming resistance of project implementation to these key roles. Hence, top management should involve itself in resolving conflict by mediating between groups and promoting project acceptance, by building cooperation between various stakeholders and involving users in the project implementation process.

Wayne (2002), says that the essence of top management support is related to effective decision-making, managing risk, and authorizing business process change. Keoki, Sears & Clough (2008), also state that commitment and support from top management plays a key role in influencing the success in almost any initiative within an organization.

Ifinedo (2008) investigates the impact of contingency factors such as top management support, business vision, and external expertise. The results show that top management support influences the success level of the organizational system. The study from Zwikael (2008) argues that the high importance of top management support is considered

to be among the Critical Success Factors for project management. It is also important to emphasize effective top management support for different project scenarios. Critical top management support includes a broad range of activities in an organization, including developing project procedures that include the initiation stage, training programs, establishing project management office, support quality management and so on.

Kerzer (2003) suggest that the essence of top management support related to effective decision-making to manage risk and to authorize business process change. A crucial part of a successful project is top management support, the benefit of which is related to improving decision making in order to manage risk. Top-level management responds to business processes and manages risk. Successful mitigation or bearing of risk is contingent upon commitment and support from top management. Moreover, commitment and support from top management plays a key role in influencing the success in almost any initiative within an organization (Hasanali, 2002). Top management formulated and decides objectives and strategies for organizational risk management activities, mission and overall objectives (Henriksen & Uhlenfeldt, 2006).

In one study, it is argued that an organization uses risk management to anticipate the probability of a negative impact and that risk management needs top-level management support. Risk management requires the acknowledgement that risk is a reality and the commitment to identify and manage risk (Galorath, 2006). These concepts refer to the highly needed support and approval from top management for risk management. The essence of commitment and support from top management supports the effective decision-making process in order to manage risk. Commitment and support from top management is important in every kind of management and it is thus an important factor for risk management (Zou,Zhang &Wang 2007).

### **2.3.2 Competence of project team**

The owners' project team consists of project managers, project executives and functional members (Kerzner, 1997). In order to complete project successfully, it is critical that

every project team member has a good understanding of the fundamental project requirements, which include project planning, organizing, motivating, directing and controlling (Cleland & Ireland, 2002) and has positive attitude. The problems of the incompetence of project team in Vietnam's oil and gas industry have been divided into two categories, individual incompetence and ineffective teamwork.

The first issue concerns the ability of each individual in the project team in performing his/her job. Only a few people can perform their duties well with high productivity, on time and with high efficiency. The reasons for this poor performance often come from the lack of knowledge, skills and abilities of project team members. Although most of the project team members have Bachelor's degrees or higher education, their knowledge, skills and abilities seem not to be sufficient for managing oil and gas projects. In addition, oil and gas projects require project team members to work with foreign partners to international business standard.

Robbins (2001) stated that a work team generates positive synergy in project risk management through coordinated effort. Their individual efforts result in a level of performance that is greater than the sum of those individual inputs. Today risk strategies effectiveness is vital for the success of a project (Kerzner, 1997). In order to cope with the problem of the project team's incompetence, several critical strategies were proposed namely training and education, good staffing and effective teamwork. Training and education are now considered a competitive way for organizations to achieve improvement.

The last strategy proposed was building effective project team. Creating effective team covers a wide range of areas but it can be grouped in four keys components: work design, composition, context, and process (Wenk, 2010). The work design category includes variables such as freedom and autonomy, the opportunity to utilize different skills and talents, the ability to complete a whole and identifiable tasks and working on a task or



project that has a substantial impact on others. Composition includes variables that relate to how teams should be staffed.

As stated by Akintoye and MacLeod (1997), formal risk management is rarely used, not only because of a lack of knowledge but also because of doubts in the suitability of risk management techniques for construction activities. From the findings, construction players in Malaysia also seldom employ formal risk management in their business practices and it may be because of a lack of knowledge and a lack of exposure to risk management. Although local organizations sometimes apply risk management, the applied risk management method typically amounts to undocumented practices, which unfortunately fail to achieve the full benefits of formal risk management practices.

Proper emphasis on past experience and multidisciplinary/competent project team are success factors proposed in many textbooks and research works (Loosemore, 2006). Project teams themselves, not project managers, deliver projects and shape the implementation of the project (Munns & Bjeirmi, 1996). A team consisting of all necessary specialists, professionals and experts is able to make integrative decisions based on seeing the picture as a whole, and executes them later on with greater pace (Hillson, 2002). Proper project planning and control require project teams to utilize appropriate project management techniques and tools. On large construction projects in Vietnam, a developing country, it is extremely difficult to assemble adequate and capable professionals to direct projects to success.

The contractor is an important member of the project team. Contractors have a responsibility to deal with construction risks. They have a responsibility to play in successful risk management of the project (Treceno, 2003). A contractor's capability in risk management is one of the key factors to project performance (Wang & Chou, 2003). There has been a trend in construction contracts over the past few years to shift the risks to the contractor (Lynch, 2003), by using contract clauses. If there is no stipulation about the allocation of a certain risk event, the client and the contractor would

normally have consensus that such risk should be taken by the contractor, particularly as such risks arise from unexpected disturbance by a third party, such as illegal waste disposal, threats by gangs, and requests for contributions to local community, the contract terms and conditions should clearly state the allocation of risks to the various parties. It is not sufficient to have vague conditions where it is unclear who is responsible and could lead to misunderstanding. Such misunderstanding could result in disputes with other parties or even project failure.

Risks which the contractor will have to consider, allocate, assume or lay off can arise at all stages from bid agreement through to construction and any follow up maintenance (Baartz & Longley, 2003). It is not possible or cost-effective for contractors to carry all risks. Consideration must also be given to the contractor's ability to control and bear the risks (Bonthroyd & Emmet, 1996). Better understanding of risks enables allocation to be aligned to the party most able to control them.

Some of the risks associated with the construction process are fairly predictable or readily identifiable; others may be totally unforeseen. Palmer (1996) and Baartz and Longley (2003) consider the risks list from contractor's perspective to include inclement weather; delays in site availability; site conditions; inadequate detail drawings; late material deliveries; unanticipated price changes; subcontractors failure to perform; unproductive labour and strikes; design risk; construction defects; damages, penalties and costs caused by delays in completion of the works. Contractors should also consider the obligations to carry insurance and the capacity to transfer risks to subcontractors, insurers or consultants. When deciding risk management strategies, a contractor must consider many aspects, including risk responsibilities, risk patterns, risk management capabilities (Wang & Chou, 2003).

### **2.3.3 Project Funding**

The critical risk factors affecting project time and cost identified in this work were similar to the findings of other surveys conducted in several developing countries. In

Indonesia, the findings from the survey conducted by He,Z. (1995) on high rise building projects showed that increased material cost and inaccurate material estimation were the factors most affecting project cost overrun, whereas, design change and low labour productivity were identified as the factors most causing project delay.

Another survey conducted by Addison and Vallabh (2002) in Jordan identified the same findings as this study that a total of 106 from 130 projects surveyed were delayed and found that poor design, change orders, and weather conditions were perceived as the factors most causing project delay. Similarly, the problem of payment for completed work was found to be the highest ranking factor causing time overrun in Nigerian construction industries (Elinwa & Joshua 2001). In Ghana, the critical factors causing project delay and cost overrun were found by Frimpong (2003) to include difficulty in obtaining monthly payments and material price escalation.

High inflation/ increased price was recognized as the top critical risk factor affecting both project time and cost. On the projects surveyed, the prices of steel, aluminium, multiplex and timber had increased dramatically over a few months. These materials are commonly used in building projects, indeed, steel, multiplex and timber are intensively used at the early stage of such projects in the form of reinforcing bars and formwork for the building structure. As indicated, most of the construction projects were in the early stages, and consequently, most of them were affected by these unwelcome effects. These materials are also used to a lesser extent for finishing components, so other contracts, which were surveyed in the middle and final stages of construction, were inevitably influenced by this impact. For these materials, based on the information obtained from the project managers interviewed, most of the contractors had contracts with variable prices with their suppliers. Contractors who had such contracts would typically attempt to find other suppliers who sold these materials at a lower price or renegotiate with their suppliers to get a more reasonable price. This response would not fully solve the problem of increased costs, and would also cause project delays as a result of renegotiation.

Cox. (1999), which identified that variation orders would cause cost overruns in the range 5% to 8% from the original contract prices. Stocks and Singh (1999) concluded that owners' involvement in the design phase would reduce the number of variation orders affecting cost overrun. Most of the funds to finance the projects would likely be borrowed from banks, with the remaining funds earned when the projects were partially sold out or rented in advance. According to Santoso (2003), owners will manage their cash flow effectively by minimizing cash out and maximum cash in when funds are borrowed from banks. If they fail to generate funds, they will postpone project progress payment to the contractors to minimize cash out. Several of the projects studied had bad experiences on delayed payments, especially for the commercial projects funded by the private sector. According to the contractors surveyed, delayed progress payments would affect their project's cash flow as a result of delayed income. Contractors usually have limited capital for executing a project and when the capital provided is exceeded, consequently, the contractors may postpone payments to subcontractors and suppliers. As a result, they will also reduce their performance. These multiple problems will eventually cause construction delays.

#### **2.3.4 Project Risk planning**

The first stage in the risk management process, risk planning, involves planning how to approach and perform risk management to ensure that the level, type and visibility of risk management are commensurate with both the size of the risk and the importance of the project. The project objectives are established and the responsibilities are assigned to the relevant parties in the risk planning stage (PMI, 2004). Risk identification, the second stage in risk management, identifies potential risks by recognising, filtering and ranking the risks in a risk profile. According to Zou, Zhang and Wang (2007), risk classification is an integral part of risk identification. Risks of different types are placed in different categories by considering their predetermined characteristics (Aleshin, 1999).

Risk management planning develops a detailed strategy for risk responses depending on the nature of likely risks. Another round of brainstorming session was conducted to

determine cost – benefits of actions against each risk event. Accordingly, risks responses were implemented (Wang, 2001). Another round of brainstorming was done to determine whether the residual risk is tolerable before implementation. To control risk in the project under study, a small group was formed with representatives from both owner (TCPO) and developer.

The group worked very closely with the project monitoring and control group. They maintained a risk register to monitor each risk event along with the implementation progress of each work package. This register helped in making various decisions across the project phases. Risk analysis lead to deriving a few effective risk responses in line with the principles like avoidance, transferring, reduction, and absorbing (Wang, 2001).

Hoffman (2001) states the following mitigation strategies to handle the most prominent software risks model functional requirements, have each project team member *au fait* with all aspects of the project, use software modelling tools to assist in the design phase, utilize internet technologies to stay in contact for e-mail, project web site implement a scope management plan, research all limitations of development environment and compare with software requirements and have a software inspection process and ensure independent testing is done using strong test cases.

Deficiencies in project planning and team building are well-known risk factors (Kasser, 1998). A full and complete project plan may not necessarily be presented before the contract but a comprehensive and proper project management strategy needs to be initiated as soon as possible (Cadle and Yeate, 2001). Furthermore, a well-balanced team including both well and less experienced analysts and SW developers needs to be built. Finally, efficient communication channels linking project managers, project team, customer managers and end-users the essential to ensure flows of information and feedback. These communication channels are viewed as the key of final success in IS development and implementation (Cadle and Yeate, 2001).

Finally, the plan should include formally defined and agreed milestones and deliverables (Holland and Light, 1999). These milestones and timelines enable appropriate project monitoring and control, as well as timely mitigation decisions whenever risk events emerge. Management of these deadlines needs to be met in order for the project to stay within agreed schedules and budgets and to maintain project team credibility.

### **2.3.5 Project approval procedure**

Bureaucratic government system and long project approval procedure risk is common to projects in Vietnam because of incompetent staff of government regulatory agencies, unclear responsibility and power, relatively poor law implementation processes, and complex approval procedures (Hamimah, 2008). This causes long delay to receive project approval. This also reduces Vietnam's image in the eyes of foreign investors. Of companies interviewed in a survey, 20 percent said that they did not intend to extend their business in the next three years (Hamimah, 2008) because of long approval time. Moreover, the total foreign investment capital into Vietnam has seriously decreased: \$2,345 million in 1997 *vis-à-vis* \$307 million in 2002. It clearly indicates need for improving project approval procedures. Mitigating measures for this risk is complex as it is external to the organization. The executives who were interviewed suggested the strategies like requesting government for administrative reform; good relationship with government; good relationship with environment authority, NGOs; familiarity with approval procedures and understanding local laws and regulations.

Since, the oil and gas industry is the main contributor to the country's economy, a collective request from the organizations in the oil and gas industry would sensitize government to reform various ministries. The request must be given to the central levels so as to initiate reform in every level of government services. Vietnam is currently in the process of administrative and economic reforms. Although it has achieved considerable positive results, the reforms should be deeper and wider to encourage foreign investors to invest in Vietnam and form joint ventures with organizations in the country.

Creating and maintaining good relationship with both central and local governments also help reduce project approval delays. The owner should adapt well to the local government and try to understand them as well as their requirements (Bing, 1999). The owner should show the benefits that project offers in short- and long-term socioeconomic developments of the local community and the region. Benefits such as job creation, improvement of living standard, tax income. are important government objectives. The organizations need to fulfill those in order to maintain a good relationship with the government. It is clear that when the relationship with both local people and government is good, the project approval would be quicker and the owners will save time and money (Hamimah, 2008).

Besides maintaining good relationship with government, good relationship with environmental authority and NGOs is also important. It is so because oftentimes there are conflicts between project owners and these agencies that may negatively influence projects. Environmental impact assessment and social impact assessment are required to be carried out for infrastructure projects not just only to satisfy regulatory requirements, but also to remain productive and competitive throughout the project's life. The owner organizations should be familiar with the government project approval procedures as well as being conversant with local laws and regulations. This would reduce the approval time considerably (Baloi, D. & Price, 2003). Building database for past project approvals and forming templates of approval documentation would considerably reduce time and cost of project approval process.

## **2.4 Critical review**

Projects are exposed to both internal risks (financial, design, contractual, construction, personal, involved parties and operational risks) and external risks (economical, social, political, legal, public, logistical and environmental risks). All the risks may influence cost, schedule or quality of the project in negative ways (Charoenngam & Yeh, 1999). Therefore, risk management should be well recognized and handled as an integrated

function of project management. Risks in construction often cause time and cost overruns. Many projects have been delayed or exceeded their planned budgets, as project managers could not manage risk effectively (Zou, Zhang & Wang, 2007). These problems seem to happen more frequently these days, because of the emerging nature of the economy. Projects today are exposed to considerably more risks and uncertainties because of factors such as planning and design complexity, presence of various interest groups (project owner, consultants, contractors, vendors, resource availability (material, equipment, and funds), climatic environment, social concerns as well as economical and political statutory regulations.

In the case of the UK, the top three risks in the construction business are commercial risk, contractual risk and operational risk (Amos & Dents, 1997). Santoso, Ogunlana and Minato (2003) found managerial and design factor to be the major and most significant problems in a high-rise construction project in Jakarta, in terms of frequency and risk impacts. In China, the most significant risk events are found to be financial risks, including capital return difficulty, owners' delaying payment and owner's unreasonable upfront capital demand (Fang, 2004). Additionally, Zou, Zhang and Wang (2007) also identified personnel risk, such as client risk, designer risk, contractor risk, subcontractor risk or supplier risk, as major risks in the Chinese construction market.

In the Malaysian case, financial risk and time risk are identified as the major risks. The findings show that the emergence of financial and time risks is largely because of frequent late payments and poor planning that plague the performance of the local construction industry. Because risks are interdependent, financial risk and time risk could trigger the occurrence of one another, bringing cumulative effects to the achievement of project objectives. According to Akintoye and MacLeod (1997), UK construction firms tend to treat risk differently and risk responses, ordered from the most often to the least often used, are risk transfer, risk retention, risk avoidance and risk reduction. Another study conducted by Amos and Dents (1997) showed that risk retention is the most



common response in the UK construction industry, followed by risk reduction, risk removal, risk transfer and risk avoidance.

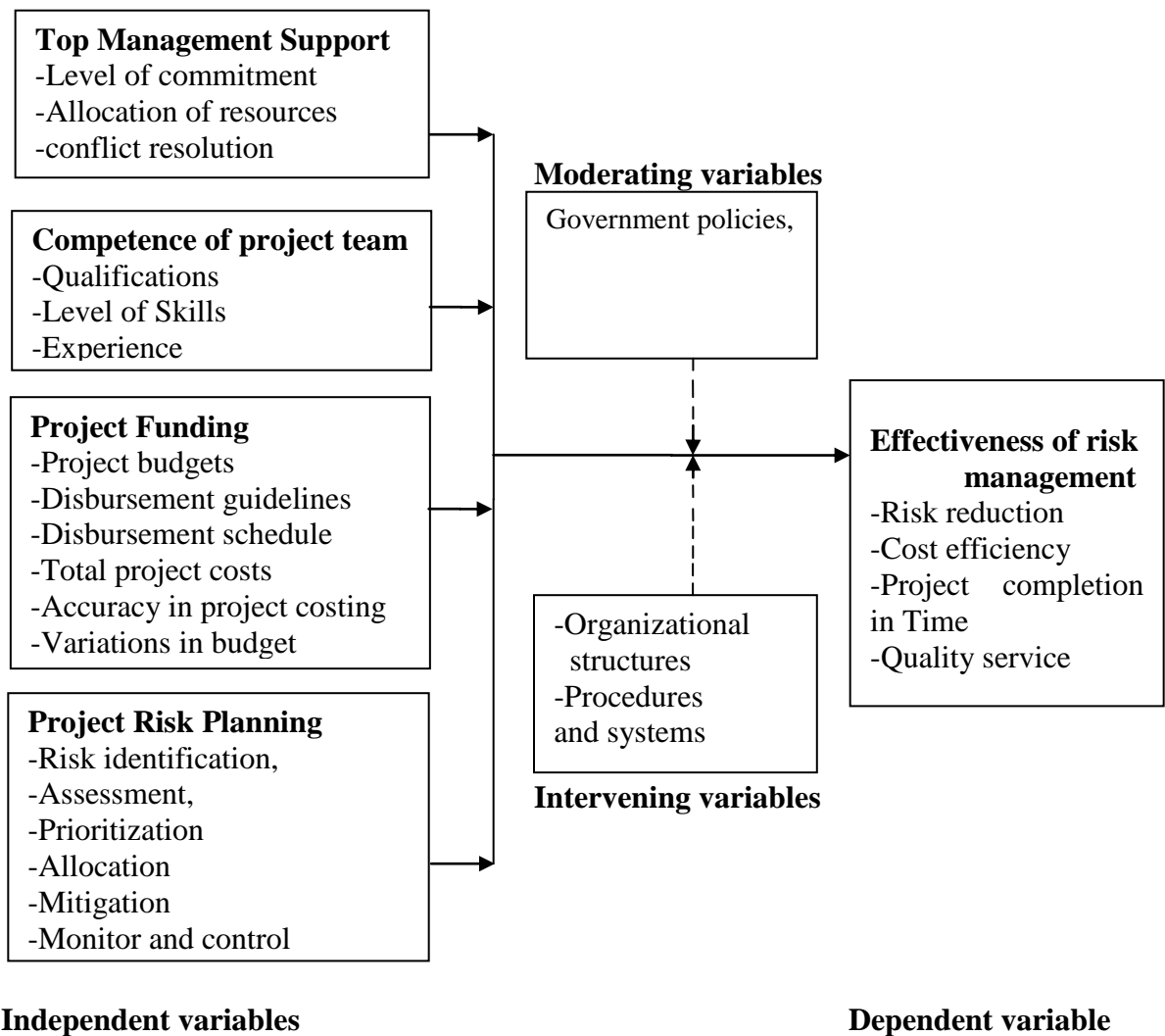
Different risk responses should be adopted for different types of risk for effective and efficient risk management because risks are characteristically unique and specific. The preferred treatment plan for financial risk and time risk are risk retention and risk control, respectively. An arbitrary allocation of a 10% contingency sum in the contract total is one of the methods of risk retention; it is simple and convenient. Time risk can be controlled through an application of advanced construction technology and/or the allocation of extra resources (Chandran, 2004). Construction projects can be unpredictable. Managing risks in construction projects has been recognized as a very important process in order to achieve project objectives in terms of time, cost, quality, safety and environmental sustainability. Project risk management is an iterative process, the process is beneficial when is implemented in a systematic manner throughout the lifecycle of a construction project, from the planning stage to completion.

While the involvement of senior management is arguably critical to the success of any initiative, it is absolutely essential for risk management. The reason is simple – certain aspects of risk management run counter to human nature. While people are eager to talk about favorable results and success, they are generally less enthusiastic when it comes to discussing actual or potential losses that affect their business (Cleland & Ireland, 2002). Without a demonstrated commitment to the risk management process from the highest echelons of the organization, a culture for success and managerial invincibility will prevail where past achievements provide protection from future risks and good management is enough to prevent troubles from arising. Problems are considered managerial failures to which risk management draws unwanted attention

## **2.5 Conceptual Framework**

The conceptual framework defines the mental stretch of the study in formulating the linkage between the independent variables and the dependent variable. The independent

variables are further dissected into their measurable indicators. The effect of the independent variables on the dependent variable is interfered with by extraneous variables- moderating and intervening variables, that come in between and affect the envisaged magnitude of the effect. The study sought to determine factors affecting effectiveness of risk management in housing construction projects in Kenya. The independent variables were the factors affecting effectiveness of risk management while dependent variable was the effectiveness of risk management.



**Figure 1: Conceptual Framework**

## **2.6 Summary of the Literature**

From the review of the studies, effective risk management ensure successful accomplishment of projects Managing risk dynamically throughout the project phase ensure user, customer and client involvement, management commitment, clear specification and design, appropriate planning, realistic expectations, competent and committed staff, and clear vision and objectives influence project success. This research importance stems from the essence of risk management itself, for the reason that risk management has been identified as one of the most important tools in determining any project success; yet, few studies investigate the nature of this relationship (Fewings, 2005). As a result, this research will drive the attention to the importance of a high level of awareness to risk management problems. Effectiveness of risk management and construction project's success is important because most of projects are operating in a very dynamic and rapidly changing environment not always fixed circumstances and uncertainty factors are surrounding the firm, in such environment adopting changes very quickly is a must for the project overall to grow or even survive.

## **2.7 Research Gap**

Most of the studies reviewed identify and prioritize risks through empirical research in order to suggest mitigating measures. Although they are important to clients for future projects, the studies fail to provide any framework for risk management from software developers' perspective. Literature reviewed on effects of risk management strategies on project performance indicates that effective risk management impact positively on project performance (Jin and Yean, 2005). The review indicate that project risks are part and parcel of construction projects. However, the degree of risk varies with complexity, size both in terms of schedule and budget, and location. Scope creep, lack of communication, ambiguous requirements, lack of resources, lack of transparency/inclusiveness in project issues, delays in completion and improper procurement are some of the common risk elements in public housing construction projects. Cases of stalled prison and police staff

houses have been noted yet the contract documents have clauses that stipulated how to handle project deficiencies in the course of project implementation. Previous studies Wanjohi, and Mugure, (2008) found that construction companies have implemented Project risk management to minimize project delays, cost overruns and failures. There is a need therefore to determine the factors affecting effectiveness of risk management in housing construction projects in Kenya, a case of Kibera Housing Scheme.

## **CHAPTER THREE**

### **RESEARCH METHODOLOGY**

#### **3.1 Introduction**

This chapter provides the research methodology of the study. It gives the specific procedures that were followed in undertaking the study. The research design, sampling design, sampling methods and procedures, data collection procedures and instruments and data analysis are described in this chapter.

#### **3.2 Research Design**

The study adopted a descriptive survey design. According to Kothari (2004), a descriptive design involves planning, organizing, collection and analysis of data so as to provide information being sought. This design provided a great depth of responses resulting in a better and elaborate understanding of the phenomenon under study.

This research design involved gathering data that described events and then organized, tabulated, depicted and described the data. Descriptive studies portray the variables by answering who, what and how questions (Babbie, 1998). According to Mugenda and Mugenda (2003), descriptive design is a process of collecting data in order to test hypothesis or to answer the questions of the current status of the subject under study. Its advantage is that, it is used extensively to describe behaviour, attitude, characteristic and values. The research design was deemed fit to establish factors affecting effectiveness of risk management in housing construction projects in Kenya, a case of Kibera Housing Scheme.

#### **3.3 Target Population**

The population for this study was staff working in five institutions that manage the Kibera Upgrading Scheme and include Ministry of Land, Housing and Urban Development, provisional administration, community organizations, religious groups and

KENSUP. They comprised of 164 respondents comprising of Commissioners from Ministry of Land, Housing and Urban Development, Administration officers, Community leaders, Directors from KENSUP, religion leaders, and financial officers from the ministries and KENSUP. These were the individual who were suited to offer information on the factors affecting effectiveness of risk management in housing construction projects in Kibera Housing Scheme.

**Table 3. 1: Population of the Study**

<b>Respondents</b>	<b>Number</b>	<b>Population %</b>
Heads of Department	5	3
Project officers	35	21
Administration officers	6	4
Community leaders	51	31
Religious leaders	10	6
Directors from KENSUP	12	7
Finance officers	45	28
Total	164	100

Source: Ministry of Land, Housing and Urban Development (2014)

### **3.4 Sample size and Sampling Procedure**

The study adopted Fisher *et al*(1972) formula in determining the sample size and stratified random sampling in selecting the respondents in the sample size. The sample size in descriptive studies was determined by using Fisher et al formulae. The following formula was used.

$$N = \frac{Z^2 pq}{e^2}$$

Where

n = the desired sample size (if the target population is greater than 10,000)

Z = the standard normal deviation at 95% confidence level (=1.96)

P = the expected population correlation coefficient (population effect size)

Since no studies have been done on these subjects, 50% (large effect size) was used to determine sample size

q= 1-p

d= level of precision (set at +/- 5% or 0.05)

Thus,

$$n = \frac{(1.96)^2 (0.50) (0.50)}{(0.50)^2}$$

$$= 384$$

Since the target population was less than 10,000, the sample size was adjusted using the following formula:

Where  $nf = n/1 + (n/N)$

Where nf= desired sample size when population is less than 10,000.

n= the desired sample size when the population is more than 10,000

N= the estimate population size of all 164

$$\text{Hence } nf = \frac{384}{1 + (384/164)}$$

$$= \frac{384}{3}$$

$$= 116$$

Therefore, 116 was the study sample size, which represents  $116/164=0.7$  of the target population

For the purpose of this study, stratified random sampling was adopted. According to Kothari (2000), a stratified random sampling is used where the population embraces a number of distinct categories, the frame can be organized by these categories into separate "strata." Each stratum was then sampled as an independent sub-population, out of which individual elements can be randomly selected. Mugenda, and Mugenda (2003), indicated that sample size 10% to 20% is sufficient for a study. Since the study

population was small, 70% of the population was considered to select a sample size of 116 respondents.

**Table 3. 2: Sample Size**

Respondents	Number	Sample	Sample Size
		Proportion	
Heads of Departments	20	0.7	14
Project officers	35	0.7	25
Administration officers	6	0.7	4
Community leaders	51	0.7	36
Religious leaders	10	0.7	7
Directors from KENSUP	12	0.7	8
Finance officers	45	0.7	31
Total	164	100	116

Source: Ministry of Housing (2014)

### **3.4.1 Research Instruments.**

The primary data for this study was collected using the questionnaires. Questionnaires were used in collecting data and consisted of a mixture of open ended and close ended questions and according to Babbie, (1998) this allows for intensity and richness of individual perceptions in respondent responses. The study used questionnaires because it is flexible and facilitates the capture of in-depth knowledge of the respondents, promotes respondent cooperation and allows probing further for clarification of issues. As a method of data collection questionnaires are appropriate because they are easy to analyze, and are cost effective (Andersen, 2003)



The questionnaires which mainly contained closed and open ended questions were self administered to the sample respondents and according to (Andersen, 2003). This allowed for intensity and richness of individual perceptions in respondent responses. A letter requesting for information accompanied the questionnaire explaining the purpose of study to the respondents.

### **3.5.1 Pilot- Testing**

According to Mugenda (2008) pilot testing involves conducting a preliminary test of data collection tools and procedures to identify and eliminate problems, allowing programs to make corrective revisions to instruments and data collection procedures to ensure that the data that will be collected is reliable and valid. The reliability and validity of research instruments determines the quality of data collected and hence that of the whole research (Babbie, 1998). Key informants in the three categories of respondents was used in the pilot test to establish the reliability and validity of the instrument, the questionnaires were administered to the key informants and the information was analyzed to establish its validity and reliability. Any questions within the instrument found to be resulting in unreliable or invalid information was altered in order to result in more reliable and valid information.

### **3.5.2 Validity of instrument**

Validity refers to the accuracy or truthfulness of a measurement in terms of the likelihood that research questions is misunderstood or misinterpreted and on whether the research instruments provide adequate coverage of research objectives. Expert opinions from the supervisor and literature searches were done to help to establish validity. In order to collect reliable data; the researcher designed the questionnaires under the guidance of the study supervisor and discussion with the peers and ask the same question with slightly different wording in different parts of the research instrument or in complementary instruments.

### **3.5.3 Reliability of instrument**

Reliability is synonymous with repeatability or stability and a measurement that yields consistent results over time is said to be reliable (Kothari, 2008). Reliability is synonymous with repeatability or stability and a measurement that yields consistent results over time is said to be reliable (Kothari, 2008). Cronbach's alpha formula was used in calculating the reliability of data and a coefficient of 0.8 was accepted (Mugenda, 2008).

Reliability was obtained by correlating the scores of each questionnaire for each variable. This is recommended by such scientific researchers as Kothari, (2008) when measuring reliability of a questionnaire. Pearson product moment correlation coefficient (r) was used to test reliability of the questionnaire. The correlation coefficient of the halves was correlated by Spearman Brown Prophecy formula

$$Re = \frac{2r}{1+r}$$

Mugenda and Mugenda (2003) indicated that a correlation coefficient of value closer to 1 is very reliable.

### **3.6 Data Collection Methods**

The data was gathered through the use of questionnaires to collect both quantitative and qualitative information. The study collected primary data using semi-structured questionnaires, which also contain A 5 point Likert scale questions. Close ended or structured questions gave a respondent limited and pre-determined response option to choose from. The advantage of structured questions was that they were easy to analyze but they left no room for other possible responses. The questionnaires were self administered using give and take method.

### **3.7 Data Analysis and Procedure.**

The collected data was well examined and checked for completeness and comprehensibility. The data was then summarized, coded and tabulated. Descriptive statistics such as means, standard deviation and frequency distribution were used to analyze the data. Data presentation was done by the use of frequency tables for ease of understanding and interpretations. Qualitative data was analyzed using content analysis to generate qualitative report which was presented in a continuous prose.

Qualitative data was analyzed through content analysis and presented, systematically, in prose form to generate a report according to the objective of the study. Inferential statistics such as regression and correlation analysis were used to the relationship between effectiveness of risk management and factors that affects risk management effectiveness in project management in housing sector. A multiple regression model was developed to establish the relationship between the dependent and independent variables (Sekaran, 2003). The relationship equation was represented by the linear equation below:

$$Y = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \mu$$

Y= Dependent variable- Effectiveness of risk management

$\alpha$  = Constant

$\mu$  = Error

$\beta$  = Coefficient of the Disbursement

$X_1$  = Level of project top management Support

$X_2$  = Competence of project team

$X_3$  = Project funding

$X_4$  = Project Risk planning

### **3.8 Operationalization Table of Variables.**

Operationalization of variables refers to the process of breaking down variables to their measurable indicators. It also further to identify the methods of data collection, scales of measurement and techniques of data analysis used in the study.

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

Objectives					
	Variables	Indicators	Method of collecting data	Scale of measurement	Data analysis Techniques
To determine how level of project top management support affect effectiveness of risk management in public housing construction projects.	Project top management support	-Risk management commitment -Risk knowledge -Resource allocation	Questionnaire	Nominal, ordinal, interval, likert	Mean, Standard deviation, Percentages, Correlation, Regression, Frequencies
To establish how competence of project team affect effectiveness of risk management in public housing construction projects.	Competence of project team	-Qualifications -Level of Skills -Experience -Knowledge level on risks	Questionnaire	Nominal, ordinal, interval, Likert	Mean, Standard deviation, Percentages, Correlation, Regression, Frequencies
To examine the extent to which project funding affect effectiveness of risk management in public housing construction projects	Project funding	-Disbursement schedule -Cost estimation -Variations -Disbursement guidelines	Questionnaire,	Nominal, ordinal, interval, Likert	Mean, Standard deviation, Percentages, Correlation, Regression, Frequencies
To determine the extent to which Project Risk planning affect effectiveness of risk management in public housing construction projects.	Project Risk Planning	-Risk Identification -Risk Control -Risk assessment	Questionnaire	Nominal, ordinal, interval, Likert	Mean, Standard deviation, Percentage, Correlation, Regression, Frequencies
Effectiveness of risk management	Effectiveness	-Risk reduction -Cost efficiency -Project completion in Time -Quality services	Questionnaire	Nominal, ordinal, interval, Likert	Mean, Standard deviation, Percentage, Correlation, Regression, Frequencies

## **CHAPTER FOUR**

### **DATA PRESENTATION, ANALYSIS AND INTERPRETATION**

#### **4.1 Introduction**

This chapter focused on presentation, data analysis and interpretation and presents the discussion and conclusion of the study. The objectives of this study were to determine factors affecting effectiveness of risk management in housing construction projects in Kenya.

#### **4.1 Response Rate**

**Table 4. 1 Response Rate**

This table shows the results on the response rate of the respondents.

	Frequency	Percent
Responded	96	82.75
Not Responded	20	17.25
Total	116	100

From the study sample of 116 respondents, 96 responded and filled the questionnaires for analyses. This constituted 82.75% response rate. The questionnaires were self administered to the respondents who were explained the purpose of the research by use of give and take method. According to Babbie (2002), a response rate of 50% and above is adequate for data analysis. The researcher made use of frequency tables and percentages to present data.

#### **4.2 General Information**

The study sought to establish the profile of the respondents in terms of gender, age bracket, education level and working experience and the following are the results:-

#### 4.2.1 Gender of the Respondents

**Table 4. 2 Gender profile**

This table shows the results on the gender of the respondents.

	Frequency	Percent
Male	63	66
Female	33	34
Total	96	100

The study requested the respondents to indicate their gender. From the findings, 66% of the respondents were male while 34% were female as indicated in the table 4.2 above. This means that management at the housing construction projects in Kenya encompasses both male and female.

#### 4.2.2 Age category

This table shows the results of the age bracket of the respondents.

**Table 4. 3 Age category**

	Frequency	Percent
30 years and below	2	2
31-41 years	34	35
41-50 years	50	52
Over 50	10	11
Total	96	100

The study requested respondents to indicate the age brackets in which their ages fall. From the findings, Table 4.3 above shows that majority 52% of the respondents indicated that they were 41-50 years, 35% of the respondents indicated that they were aged between 31-40 years while 11% of the respondents indicated that they were over 50 years and 2% were 30 years of age and below. This implies that majority of the respondents are above the youths age, though there was distribution in all age category as shown in Table 4.3

#### **4.2.3 Highest level of education attained**

**Table 4. 4 Level of education**

This table shows the results on the level of education of the respondents.

	Frequency	Percent
Diploma	49	51
Degree	30	31
Post graduate	17	18
Total	96	100

The study sought to investigate the highest academic qualifications attained by the respondents as shown by Table 4.4 above. From the findings, majority 51% of the respondents indicated that they had diploma level of education, 31% had degree while most 18% of the respondents were postgraduates. This implies that the study had the information from literate and competent personnel who had experiences on effects of risk management strategies on the project performance.

#### **4.2.4 Designation**

The respondents were requested to indicate their designation in the enterprise. From the findings, respondent's designations were officers, community leaders, religious leaders, directors, finance officers of institutions.

#### **4.2.5 Operational period of the organization**

**Table 4. 5 Period of operation of the organization**

This table shows the results on respondents on period the organization has been in operation.

	Frequency	Percent
1-5 years	34	36
6-10 years	53	55
11-15 years	9	9
Total	96	100

The study sought to know the period in which the organization has been in operation. From the findings, as presented on table 4.5 majority 55% of the respondents indicate that the organization has been in operation for 6-10years, 36% of the respondents said organization has been in operation 1-5 years while 9% of the respondents said organization has been in operation for between 11-15 years. This implies that employee's work period at the organization was long thus had strengthened the experience which inturn leads to a collection of valid information.

#### **4.3 Factors affecting effectiveness of risk management**

The study sought to establish the extent to which various project risks affect project success and various project risks were examined and the following are the results:-



#### 4.3.1 Rating the extent to which given project risks affect effective risk management in Kibera Housing Scheme

**Table 4.6 Effects of project risks**

This table shows the results of the respondents on the extent to which given project risks affect effective risk management in Kibera Housing Scheme

Project risks	Moderate	Great Extent	Very Great Extent	Mean	Standard deviation
Poor project management	12	23	61	4.53	0.47
Political Interference	19	29	48	4.06	0.15
Lack of support from parties	11	46	39	4.26	0.24
Insufficient funds	12	32	52	4.17	0.19
Corruption	15	25	56	4.47	0.29
Conflicts among parties	15	33	48	4.53	0.48
Lack of transparency in tendering process	10	27	59	4.73	0.67
Tender award to a contractor without capacity	11	38	47	4.69	0.58
Tender award to a contractor with tender rates below market rates	5	49	42	4.56	0.54

Respondents were requested to rate the extent to which the given project risks affect the effectiveness of risk management in housing construction projects in Kenya, using a scale of 1-no extent, 2- less extent, 3-moderate, 4- great extent and 5-very great extent. From the findings majority of the respondents indicated that lack of transparency in tendering process, tender award to a contractor without capacity or with tender rates below market rates affects the effectiveness of risk management to a great extent as indicated by a mean of 4.73, 4.69 and 4.56 with standard deviation of 0.67, 0.58 and 0.54. Most of the respondents indicated that poor project management and conflicts among parties affect

the effectiveness of risk management of housing construction projects to a very great extent as indicated by a mean of 4.53 and 4.53 with standard deviation of 0.47 and 0.48. Most of the responders indicated that corruption, lack of support from parties, insufficient funds and political interference affects the effectiveness of risk management to a great extent as indicated by a mean of 4.47, 4.26, 4.17 and 4.06 with standard deviation of 0.29, 0.24, 0.19 and 0.16.

#### **4.4 Top Management Support**

The study sought to establish the extent to which level of top management support affected effectiveness of risk management in Kibera Housing Scheme and various dimensions of top management support were examined and the following are the results:-

##### **4.4.1 Extent to which top management fails to allocate sufficient resources**

**Table 4. 7 Allocation of resources**

This table shows the results of the respondents on the extent to which management fails to allocate sufficient resources.

	Frequency	Percent
Very high	38	40
High	37	39
Moderate	11	11
Low	10	10
Total	96	100

On the extent to which top management in Kibera Upgrading Housing Scheme failed to allocate resource for project risk planning, most 40% of the respondents indicated in Table 4.7 above that there was a very high failure for the top management in Kibera Upgrading Housing Scheme to allocate resource for project risk planning. The study further found that 39%, 11% and 10% of the respondents indicated that the top management failed to a high, moderate and low extent in allocating the resource for

project risk planning. This implies that risk management also faces difficulties in allocating resources.

#### 4.4.2 Top management role affects effectiveness of risk management

**Table 4.8 Top management role**

This table shows the results of the respondents on the extent to which given management role affect effectiveness of risk management.

Top management role	Very Great Extent	Great extent	Moderate extent	Mean	Standard deviation
Commitment level to risk management	56	23	17	4.93	1.09
Support in risk identification	40	35	21	4.53	1.13
Developing project procedure	60	30	6	3.84	0.37
Identification of Project scoping	47	34	15	4.33	1.14
Assist in establishing a project management office	46	29	21	4.58	1.03
Commissioning the right officers to the project	30	45	21	4.49	0.41
Identifying uncertainty	48	29	19	3.35	0.66
Ensure safety in construction site	49	31	16	4.65	1.06
Support quality management of the scheme	49	28	19	4.40	1.5
Effective conflict management	47	28	21	4.44	0.31
Ineffective communication	60	20	16	4.46	0.35
Coordination of scheme activities	43	36	17	4.49	0.41

The respondents were requested to indicate the extent to which the given statement concerning top management role in Kibera Upgrading Housing Scheme affect effectiveness of risk management in the scheme. Majority of the respondents indicated that commitment level to risk management, ensuring of safety in construction site; assisting in establishing a project management office and supporting in risk identification affects effectiveness of risk management in the scheme to a very great extent as indicated by mean of 4.93, 4.65, 4.58 and 4.53 and standard deviation of 1.09, 1.06, 1.03 and 1.13. Coordination of scheme activities, ineffective communication and effective conflict management affects effectiveness of risk management in the scheme to a great extent as indicated by mean of 4.49, 4.46 and 4.44 with standard deviation of 0.41, 0.35 and 0.31.

Most of the respondents indicated that commissioning the right officers to the project, supporting quality management of the scheme, identification of project scoping, commitment level to risk management and developing project procedure affects effectiveness of risk management in the scheme to a great extent as indicated by a mean of 4.40, 4.33, 3.93 and 3.84 with standard deviation of 1.15, 1.14, 0.39 and 0.37. The study further found that most of the respondents were neutral on whether indentifying uncertainty affects effectiveness of risk management in the scheme as indicated by a mean of 3.35 with standard deviation of 0.66. This implies that risk management requires top-level management support, acknowledgment that risks are realities, and a commitment to identify and manage them.

#### **4.4.3 Top management support affects effectiveness of risk management**

##### **Table 4.9 Top management support**

This table shows the results of the extent to which the respondents agreed on given statements on how top management support affected effectiveness of risk management in Kibera Upgrading Housing Scheme.

<b>Top management support</b>	<b>Moderately agree</b>	<b>Agree</b>	<b>Strongly agree</b>	<b>Mean</b>	<b>Standard deviation</b>
Effective decision making process by top management affects risk management in the scheme	14	35	47	4.61	0.58
Approval of project budget	21	29	46	4.48	0.47
Solving of conflicts and mediating between groups	18	30	48	4.30	0.43
Building cooperation between various stakeholders and involving users in the Kibera Housing Scheme in the implementation process	16	31	49	4.79	0.67
Failure to allocate sufficient resources for risk management	18	29	49	3.82	0.35

The respondents were requested to indicate the extent to which they agreed with the given statement regarding how top management support affects effectiveness of risk management in Kibera Upgrading Housing Scheme. From Table 4.9 above, majority of the respondents strongly agreed that building cooperation between various stakeholders and involving users in the Kibera Housing Scheme implementation process as well as effective decision making process by management affects risk management in the scheme as indicated by a mean of 4.79 and 4.61 with standard deviation of 0.67 and 0.58. Most of the respondents agreed that approval of project budget and solving of conflicts and mediating between groups affects risk management in the scheme as indicated by a mean of 4.48 and 4.30 with standard deviation of 0.47 and 0.43. While most of the respondents were neutral in indicating whether failure to allocate sufficient resources for risk management affects risk management as show by a mean of 3.82 with standard deviation of 0.35. This implies that management should be part of decision making process as the principles of risk management requires.

#### **4.5 Competence of project team**

The study sought to establish the extent to which competence of project team affected effectiveness of risk management in Kibera Housing Scheme and various dimensions of competence of project team were examined and the following are the results:-

**Table 4. 10 Technical expertise of project officers**

This table shows the results of the respondents on the extent to which project officers attained technical expertise.

	Frequency	Percent
Very Great Extent	59	62
Great Extent	29	30
Moderate Extent	8	8
Total	96	100

The study required the respondents to indicate the extent to which project officers attained technical expertise in performing duties in Kibera Housing Scheme. From the findings on Figure 4.10, 62% of the respondents indicated that project officials attains technical experience in performing duties to a very great extent, 30% said to a great extent while 8% said project officials are experienced in performing duties to a moderate extent. This implies that project officers should be highly specialized expertise processes in planning, cost estimating, design and construction.

#### **4.5.2 Level of communication skills in risk management**

**Table 4. 11 Level of communication skills**

This table shows the results of the respondents on the level of communication skills in risk management of project officers.

	Frequency	Percent
High	23	24
Low	62	65
Medium	11	11
Total	96	100

The level of communication skills of the project team in risk management was sought and 65% of the respondents said that the project team had a low level of communication skills in risk management, 24% of the respondents indicated that they had high level of communication skills while 11% of the respondents said that level of communication skills among the project team in risk management was medium. This implies that there were some problems for risk communicators which involved how to reach the intended audience and to make the risk comprehensible and relatable to other risks.

**Table 4. 12 House construction qualifications**

This table shows the results of the respondents on the extent to which project officers achieved house construction qualifications.

	Frequency	Percent
Very Great Extent	49	51
Great Extent	37	39
Moderate Extent	10	10
Total	96	100

The study sought to establish the extent to which project officer achieved house construction qualifications to undertake Kibera Upgrading Scheme operations. From the study findings, 51% of the respondents said that project officer achieve house construction qualifications to undertake Kibera Upgrading Scheme operations to a very great extent, 39% said to a great extent while 10% of the respondents indicated that project officer

achieve house construction qualifications to a moderate extent. This implies that management engagement should be on the basis of established qualifications.

#### 4.5.3 Competency of project officers and effectiveness of risk management

**Table 4.13 Competency of project officers**

This table shows the results of the extent to which respondents agreed with given statements on various parameters that give indication of competence of project team in Kibera Housing scheme.

<b>Competency of project team</b>	<b>Moderately agree</b>	<b>Agree</b>	<b>Strongly agree</b>	<b>Mean</b>	<b>Standard deviation</b>
Level of administrative skill of project team members	11	45	40	4.69	0.59
Delay in provision of drawings to contractors	11	37	48	4.88	0.76
Failure to adopt appropriate risk strategies affect risk management of the success of the scheme	6	30	60	4.71	0.62
Low level of skills in risk evaluation affects information sharing on risk management leading to incompleteness of Kibera Housing Scheme in time	15	37	44	4.77	0.58
Low level of creativity in assessing risks facing the scheme lead to unsuccessful project	21	26	49	4.86	0.64
Level of flexibility influence house construction	19	28	49	4.55	0.46
Incompetency in risk control lead to ineffective risk management in the scheme	21	30	45	4.66	0.53
Incompetent staff of government regulatory agencies	10	26	60	4.52	0.48
Level of competency of contractors in risk management	15	34	47	4.39	0.31
Desire by contractors to make easy money through contractual claims affect success of risk management	11	36	49	4.20	0.29



Level of team work determine success of risk management	9	38	49	4.30	0.33
Style of leadership by the project manager determine level of success of the scheme	11	45	40	4.16	0.27

The study sought to know the extent to which respondents agreed with the given statement concerning competency of project officers and effectiveness of risk management in Kibera Housing Scheme. From the findings, majority of the respondents strongly agreed that delay in provision of drawings to contractors, low level of creativity in assessing risks facing the scheme lead to unsuccessful project and that low level of skills in risk evaluation affects information sharing on risk management leading to delay in completion of Kibera Housing Scheme in time as indicated by a mean of 4.88, 4.86 and 4.77 with standard deviation of 0.76, 0.64 and 0.58.

Most of the respondents agreed that failure to adopt appropriate risk strategies, level of administrative skill of project team members, incompetency in risk control lead to ineffective risk management in the scheme, level of flexibility that influence house construction and incompetent staff of government regulatory agencies affects effectiveness of risk management as indicated by a mean of 4.71, 4.69, 4.66, 4.55 and 4.52 with standard deviation of 0.62, 0.59, 0.53, 0.46 and 0.48. Most of the respondents agreed that level of competency of contractors in risk management, team work determine success of risk, desire by contractors to make easy money through contractual claims affect success of risk management and style of leadership by the project manager determine level of success of the scheme as indicated by a mean of 4.39, 4.30, 4.20 and 4.16 with standard deviation of 0.31, 0.33, 0.29 and 0.27. This implies that competence of all persons involved in the project not only in their areas of contribution but also an appreciation of the importance of risk management during the entire project life cycle would promote a concerted effort to deal with project risks in order to achieve project success.

#### **4.6 Project risk Planning**

The study sought to establish the extent to which project risk planning affected effectiveness of risk management in Kibera Housing Scheme and various dimensions of project risk planning were examined and the following are the results:-

##### **4.6.1 Plans put in place to mitigate occurrence of project risks**

**Table 4. 14 Plans to mitigate project risks**

This table shows the results of respondents on whether there were any plans put in place to mitigate occurrence of project risks.

	Frequency	Percent
Yes	60	63
No	36	37
Total	96	100

Respondents were requested to indicate whether there are plans to mitigate occurrence of project risks in Kibera Upgrading housing scheme. From the findings, majority 63% of the respondents showed that there are plans put in place to mitigate occurrence of project risks in Kibera Upgrading housing scheme while 37% of the respondents showed that there are no plan to mitigate occurrence of project risks as indicated on Table 4.14 above.

##### **4.6.2 Level of project risk planning at Kibera Upgrading housing scheme**

**Table 4. 15 Level of project risk planning**

This table shows the results of respondents on the level of project risk planning at Kibera Housing scheme.

	Frequency	Percent
Medium	60	56
Low	36	44
Total	96	100

Respondents were requested to rate the level of project risk planning at Kibera Upgrading housing scheme. From the findings majority 56% of the respondents reported that there was a medium level of project risk planning at Kibera Upgrading housing scheme while 44% of the respondents stated that there was a low level of project risk planning at Kibera Upgrading Housing Scheme as indicated on Table 4.15 shown above.

#### **4.6.3 Lack of planning for Kibera Upgrading housing scheme affects the scheme success**

**Table 4. 16 Lack of planning for project risks**

This table shows the results of respondents on the extent to which lack of planning for project risks in Kibera Housing Scheme affected the scheme success.

	Frequency	Percent
Very great extent	48	50
Great extent	36	38
Moderate extent	7	7
Less extent	5	5
Total	96	100

On the extent to which lack of planning for project risk affect projects, Table 4.16 above shows that lack of planning for project risk affect projects to a very great extent, great extent, moderate extent and less extent as indicated by 50%, 38%, 7% and 5% of the respondents.

#### **4.7 Planning for project risks influences project performance**

The study sought to establish the extent to which planning for project risks influence achieving of project performance and shown below are the results:-

##### **4.7.1 Planning for project risks influence achieving of project performance**

**Table 4. 17 Planning for project risks**

This table shows the results of respondents on the extent to which planning for project risks influence project performance.

	Frequency	Percent
Very great extent	48	50
Great extent	29	30
Moderate extent	15	16
Less extent	4	4
Total	96	100

On the extent to which planning for project risks influence achieving of project performance, majority, 50% of the respondents showed that planning for project risks influence achieving of project performance to a very great extent. Most 30%, 16% and 4% of the respondents showed that planning for project risks influence achieving of project performance to a great extent, moderate and less extent.

##### **4.7.2 Lack of project risk planning affects effectiveness of risk management**

**Table 4. 18 Lack of project risk planning**

This table shows the results of respondents on the extent to which they agreed to various given statements on parameters of project risk planning.

<b>Risk Planning</b>	<b>Strongly agree</b>	<b>Agree</b>	<b>Neutral</b>	<b>Mean</b>	<b>Standard deviation</b>
Lack of Risk planning affects sufficient allocation of resources to mitigate against risks	46	26	18	4.67	0.59
Risk are inadequately controlled due to lack of employment of competent staff who fail to take correct action	46	26	24	4.75	0.73
Failure to Plan for risk affects risk reduction hence incompleteness of the Kibera upgrading housing scheme	38	28	30	4.69	0.64
Inappropriate budget allocation for risk management in Kibera upgrading housing scheme	33	27	36	4.11	0.27
Lack of planning for risk led to failure in identification of risk facing Kibera upgrading housing scheme	24	26	40	4.20	0.30
Poor planning for risk lead to failure in recognizing, ranking and filtering of risk facing Kibera upgrading housing scheme	55	17	8	4.78	0.75
Screening of Kibera scheme risks and taking measure influence project being completed within time	19	17	44	4.44	0.38
Effective risk identification process enable organization to take correct measures that influence projects to cost less	17	19	44	4.48	0.47
Ineffective risk management planning delays Kibera scheme	34	16	46	4.31	0.32
The scheme undertake risk allocation mitigating occurrence of project loss	28	14	38	4.35	0.36
Undertaking risk allocation and mitigation reduces occurrence of project failure	34	52	10	4.45	0.39

Regarding how lack of project risk planning affects effectiveness of risk management in Kibera upgrading housing scheme, the study sought respondent's extent of agreement on various given statements. From the findings, Table 4.18 above shows that majority of the

respondents strongly agreed that poor planning for risk lead to failure in recognizing, ranking and filtering of risk, that risk are inadequately controlled due to lack employment of competent staff who fail take correct action, failure to plan for risk affects risk reduction hence incompleteness of the project and that lack of risk planning affects sufficient allocation of resources to mitigate against risks as indicated by a mean of 4.78, 4.75, 4.69 and 4.67 with standard deviation of 0.75, 0.73, 0.64 and 0.59.

Most of the respondents agreed that effective risk identification process enable organization to take correct measures that influence projects to cost less, undertaking risk allocation and mitigation reduces occurrence of project failure, screening of risks and taking measure saves time and that the scheme undertake risk allocation mitigating occurrence of project loss as indicated by a mean of 4.48, 4.45, 4.44 and 4.35 with standard deviation of 0.47, 0.39, 0.38 and 0.36.

Most of the respondents moderately agreed that ineffective risk management planning that delays project, lack of planning for risk that led to failure in identification of risk and inappropriate budget allocation for risk management in Kibera Upgrading housing scheme affects effectiveness of risk management in the scheme as indicated by a mean of 4.31, 4.20 and 4.11 with standard deviation of 0.32, 0.30 and 0.27. The scheme undertakes risk allocation mitigating occurrence of project loss as indicated by a mean of 4.03 with standard deviation of 0.25.

#### **4.8 Project funding**

The study sought to establish the extent to which project funding affected effectiveness of risk management in Kibera Housing Scheme and various dimensions of project funding were examined and the following are the results:-

#### 4.8.1 Budget guidelines established

**Table 4. 19 Budget guidelines**

This table shows the results of respondents on whether budget guidelines in Kibera Housing Scheme were effective.

	Frequency	Percent
Yes	84	88
No	12	12
Total	96	100

On whether the budget guidelines need established prior to project was effective, majority 99% of the respondents indicated that budget guidelines need established was effective while 1% said no as indicated on Table 4.19

#### 4.8.2 Enough amounts allocated for project costs

**Table 4. 20 Project funding allocation.**

This table shows the results of respondents on whether enough amounts were allocated to Kibera Housing Scheme to fund project costs..

	Frequency	Percent
Yes	79	82
No	17	18
Total	96	100

The study sought to know whether the amount allocated for the Kibera Housing Scheme projects cost was enough to fund total costs for implementation of project successfully and results are as presented on Table 4.20 above. Majority 82% of the respondents

indicated that amount allocated for project cost was enough to fund total costs while 18% of the respondents said amount allocated was not enough.

#### **4.8.3 Long project approval budget procedure risk affect effectiveness of risk management**

**Table 4. 21 Budget approval procedures**

This table shows the results of respondents on how long project budget approval procedures affect effectiveness of risk management.

	Frequency	Percent
Very great extent	70	73
Great extent	26	27
Total	96	100

The study sought to know the extent to which long project approval budget procedure risk affect effectiveness of risk management in Kibera Housing Scheme. From the finding on Table 4.21 above, majority 73% of the respondents indicated that long project approval budget procedure risk affect effectiveness of risk management in Kibera Housing Scheme to a very great extent while 27% of the respondents indicated to a great extent. This clearly indicated that long approval procedure in project risk management affects effectiveness of project risk management in Kibera Housing Scheme.

#### **4.8.4 Project cost affect effectiveness of risk management**

**Table 4. 22 Project funding**

This table shows the results of how respondents agreed with given statements on the extent to which various project funding parameters affect effectiveness of risk management.



<b>Project funding</b>	<b>Moderately agree</b>	<b>Agree</b>	<b>Strongly agree</b>	<b>Mean</b>	<b>Standard deviation</b>
Poor project financial management reduces project costs control	27	26	43	4.61	0.55
Stringent approval procedures of additional funding affect risk planning	11	18	67	4.70	0.64
Inappropriate project environment increases project costs	5	26	65	4.73	0.68
Delayed client acceptance	21	18	57	4.51	0.42
Inappropriate project environment	15	26	55	4.65	0.53
Delays in disbursement of funds by financiers lead to ineffective risk management	14	31	51	4.68	0.68
Poor estimation of project costs increases approval time	19	31	46	4.85	0.86
Lack of transparency and accountability in management of project funds lead to conflicts	19	28	49	4.00	0.24
Unrealistic low project budget lead to project failure	21	28	47	4.50	0.40
Timely release of project finances in required amounts promote project success	16	30	50	4.18	0.30
Contractual claims by contractors increases Kibera scheme project budget and can lead to project delays	39	31	26	4.15	0.26

The study sought to investigate the extent to which respondents agreed with the given statement on how Kibera Housing Scheme project funding parameters affect effectiveness of risk management. From the findings, majority of the respondents strongly agreed that poor estimation of project costs increases approval time,

inappropriate project environment increases project costs and stringent approval procedures of additional funding affect risk planning during project implementation as indicated by a mean of 4.85, 4.73 and 4.70 with standard deviation of 0.86, 0.68 and 0.64. Most of the respondents strongly agreed that the delays in disbursement of funds by financiers, inappropriate project environment, poor project financial management reduces project costs control and delayed client acceptance and unrealistic project budget affects effectiveness of risk management as indicated by a mean of 4.68, 4.65, 4.61, 4.51 and 4.50 with standard deviation of 0.68, 0.55, 0.53 0.42 and 0.40. Most of the respondents agreed that timely release of project finances in required amounts promote project success, contractual claims by contractors and lack of transparency and accountability in management of project funds lead to conflicts as indicated by a mean of 4.18, 4.15 and 4.00 with standard deviation of 0.30, 0.26 and 0.24. This implied that project costs affect effectiveness of risk management.

#### **4.8.5 Project lack of timeliness affect effectiveness in risk management**

**Table 4. 23 Project timeliness**

This table shows the results of respondents on the extent to which lack of project timeliness affect effectiveness of risk management

	Frequency	Percent
Very great extent	75	78
Great extent	21	22
Total	96	100

On the extent to which lack of project timeliness affect effectiveness in risk management, Table 4.23 above reveals that majority 78% of the respondents indicated that project lack of timeliness cost hinders effectiveness in risk management to a very great extent. Most 22% of the respondents indicated that lack of project timeliness affect effectiveness in risk management to a great extent. This implied that lack of project timeliness greatly

affected effectiveness of risk management. When a project takes longer to complete than was initially planned for, the delay triggers cost overruns which jeopardizes the success of the project in that these cost overruns were not planned for and the financiers may either not have the extra funding or are not willing to spend more on the project.

#### 4.9 Further analyses

Further to descriptive statistics done where the effect of each independent variable on the dependent variable was established, the study sought to establish the effect of the independent variables held together on the dependent variable by carrying out a correlation/regression analysis in order to establish the extent to which the four variables under study affect effectiveness of risk management in kibera housing scheme and the results are as follows:-

A multiple regression model was developed to establish the relationship between the dependent and independent variables which are the effectiveness of risk management and the factors affecting effectiveness of risk management in housing construction projects in Kenya. The relationship equation was represented by the linear equation below:

$$Y = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \mu$$

Effectiveness of risk management

$X_1$ = Level of project top management Support,  $X_2$ =Competence of project team,  $X_3$ =Project funding,  $X_4$ =Project Risk planning

##### 4.9.1 Model Summary

**Table 4. 24 Model Summary**

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Change Statistics				
					R Square Change	F Change	df1	df2	Sig.F Change
1	.803(a)	.644	.651	0.34	1.741	6	7.207	8.191	.001(a)

a Predictors: (Constant) Level of project top management Support, Competence of project team, Project funding and Project Risk planning.

Dependent: Effectiveness of risk management

From the Table 4.24 above, R is the square root of R-Squared and is the correlation between the observed and predicted values of dependent variable implying that the association of 0.803 between factors affecting effectiveness of risk management in housing construction projects which are level of project top management support, competence of project team, project funding and project risk planning was strong.

R-Squared is the proportion of the variance in the dependent variable effectiveness of risk management that was explained by variations in the independent variable level of project top management support, competence of project team, project costs and project risk planning. This implied that 64.4% of variance or correlation between variables in general but does not reflect the extent to which any particular independent variable level of project top management support, competence of project team, project costs and project risk planning was associated with the effectiveness of risk management.

Adjusted  $R^2$  is called the coefficient of determination which indicates effectiveness of risk management varies with variation in factors affecting effectiveness of risk management in housing construction projects which includes level of project top management support, competence of project team, project costs and project risk planning.

From the table above, the value of adjusted  $R^2$  is 0.651. This implied that, there was a variation of 65.1% of effectiveness of risk management with variation in factors affecting effectiveness of risk management in housing construction projects studied and was statistically significance with  $P = 0.01 < 0.05$ . Other factors not studied contribute to 34.9% of effective risk management and further research should be conducted to establish the same.

#### 4.9.2 ANOVA (b)

**Table 4. 25: ANOVA (b)**

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	3.841	21	.307	5.191	0.01(a)
	Residual	33.159	75	.059		
	Total	37.000	96			

a Predictors: (Constant) Level of project top management Support, Competence of project team, Project funding and Project Risk planning

Dependent: Effectiveness of risk management

This table gives an F-test to determine whether the model had a good fit for the data. The F-Test (F=5.191, P=0.01< 0.05) indicated that the model formed between effectiveness of risk management and factors that affect effectiveness of project risk management had data with significant goodness of fit.

#### 4.9.3 Coefficients (a)

**Table 4.26: Coefficients (a)**

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	0.674	.275		3.640	0.01
	Topmanagement support	-0.683	.405	-.857	2.931	0.03
	Competence	-0.517	.546	-.722	2.803	0.04

Project funding	-0.468	.520	-.791	1.906	0.02
Project Risk planning	-0.691	.690	-.729	1.672	0.01

a Predictors: (Constant) Level of project top management Support, Competence of project team, Project funding and Project Risk planning

Dependent: Effectiveness of risk management

The values, 0.683, 0.517, 0.468 and 0.691 are the unstandardized coefficients. These were the coefficients that the study would obtain when standardization of all of the variables in the regression, including the dependent and all of the independent variables. By standardizing the variables before running the regression, the study put all of the variables on the same scale and compared the magnitude of the coefficients of the independent to determine which one had more effects on effectiveness of risk management. The larger betas were associated with the larger t-values and lower p-values. The column of coefficient shows the predictor variables are constant, level of project top management support, competence of project team, project costs and project risk planning. The first variable constant of 0.674 represented the constant which predicted value of effectiveness of risk management when all other variables of factors affecting effectiveness of risk management in housing construction projects were constant at zero (0). From the above regression model, it was found that effectiveness of risk management would be at 0.674 holding level of project top management support, competence of project team, project funding and project risk planning constant at Zero.

Low level of top management support where management fails to develop project procedures from initiation stage, install training programs, establish project management office and support the quality management would lead to ineffectiveness of risk management by a factor of 0.683 with P value of 0.03. Incompetent project executives and functional members who does not understand the fundamental project requirements,

which include project planning, organizing, motivating, directing and controlling would lead to unsuccessful project risk management by a factor of 0.517 with P value of 0.04.

The study also found that critical project costs issues caused by poor design, price changes, weather conditions, project delay, cost overruns and high inflation inevitably affects the effectiveness of risk management by a factor of 0.468 with P value of 0.02.

Failure to have project risk planning which involves planning approach to perform risk management to ensure that the level, type and visibility of risk management commensurate with size of the risk and importance of the project would result to ineffectiveness of risk management by a factor of 0.691 with P value of 0.01. This clearly indicated that there existed a negative relationship between effectiveness of risk management and deficiency in any of the four independent variables; level of project top management support, competence of project team, project funding and project risk planning in housing construction projects in Kenya and were statistically significant as it had a P-Value of 0.03, 0.04, 0.02 and 0.01 which are smaller than 0.05. The study findings resulted in a linear model.

$$Y = 0.674 - 0.683 X_1 - 0.517 X_2 - 0.468 X_3 - 0.691 X_4$$
 Where  $X_1$  = Top management Support,  $X_2$  = Competence of project team,  $X_3$  = Project funding,  $X_4$  = Project Risk planning

## **CHAPTER FIVE**

### **SUMMARY OF FINDINGS, DISCUSSIONS, CONCLUSIONS AND RECOMMENDATIONS**

#### **5.1 Introduction**

This research was determining the factors affecting effectiveness of risk management in housing construction projects in Kenya. The study was done on construction projects in Kenya, a case of Kibera Housing Scheme. This chapter presents the conclusions from the research and recommendations aimed at improvement of effective risk management in construction projects in Kenya.

#### **5.2 Summary of study findings and discussions**

1. To determine the extent to which project risks affect effective risk management in Kibera Housing Scheme, the study examined various project risks and the following is the summary of the findings and discussions:-

Majority of the respondents indicated that lack of transparency in tendering process, tender award to a contractor without capacity or with tender rates below market rates and corruption affect the effectiveness of risk management to a very great extent as indicated by a mean of 4.73, 4.69, 4.56 and 4.47 with standard deviation of 0.67, 0.58, 0.54 and 0.29. Most of the respondents indicated that poor project management and conflicts among parties affect the effectiveness of risk management of housing construction projects to a great extent as indicated by a mean of 4.53 and 4.53 with standard deviation of 0.47 and 0.48.

This means that not procuring a suitable contractor, not conducting transparency in procurement, poor project management and conflicts among parties are critical project risks that jeopardize project success and affect effectiveness of risk management in public housing construction projects. This is in line with the agency theory where the agents may try to achieve his own gains at the expense of the project success; the agents will try



form cartels and avoid transparency and inclusiveness in procuring the contractors. Such a move by the agents may result in conflicts. This concurs to some extent with Smith, Merna and Jobling, (2006) who stated that lack of project information, particularly in the early stage of a construction project, always leads to a higher degree of risk associated with cost, time and quality.

2. To determine how project top management support affected effectiveness of risk management in Kibera Housing Scheme, the study examined various dimensions and the following is the summary of the findings and discussions:-

Top management in Kibera Upgrading Housing Scheme failed to allocate sufficient resources for project risk planning as indicated by 79% respondents who said that top management failed to allocate sufficient resources to a high and very high extent. This is in line with Keoki, Sears, Clough (2008) who stated that commitment and support from top management plays a key role in influencing the success in almost any initiative within an organization.

On the dimension of top management role, majority of the respondents indicated that commitment of risk management, ensuring of safety in construction site; assisting in establishing a project management office and supporting in risk identification affects effectiveness of risk management in the scheme to a very great extent as indicated by mean of 4.93, 4.65, 4.58 and 4.53 and standard deviation of 1.09, 1.06, 1.03 and 1.13

Majority of the respondents strongly agreed that building cooperation between various stakeholders and involving users in the Kibera Scheme implementation process as well as effective decision making process by management affects risk management in the scheme as indicated by a mean of 4.79 and 4.61 with standard deviation of 0.67 and 0.58. This implies that stakeholder involvement and effective decision making are crucial. This is in line with Young and Jordan (2008) who suggest that the essence of top management support related to effective decision-making to manage risk and to authorize business process change. This is also in line with Libon (2004) who investigated the impact of

contingency factors such as top management support, business vision, and external expertise and found that top management support influences the success level of the organizational systems.

From further analysis in the multiple regression model, compared to the other variables studied, top management is the second most variable that affected effectiveness of risk management in Kibera Housing Scheme as indicated by a coefficient of 0.683 and p value of 0,03 in the multiple regression model generated. There was a strong correlation between this independent variable and the dependent variable.

With lack of commitment and low risk knowledge level the top management is not expected to allocate sufficient resources to something they don't quite understand its importance. Transparency and inclusiveness in risk management in the scheme could be avoided by the top management who want to pursue their own interests in the project. This is in line with the agency theory where the agent may introduce his own interests on top of the set project objectives by the principal.

3. To establish the extent to which competence of the project team affected effectiveness of risk management in Kibera Housing Scheme, the study examined various dimensions and the following is the summary of the findings and discussions:-

The study established that the project team involved in the scheme had technical qualifications for house construction as indicated by 92% of the respondents who said that project officials attain technical experience in performing duties to a a great and very great extent. This implies that engagement was on the basis of established qualifications. This is in line with Munns & Bjeirmi, (1996) who stated that proper emphasis on past experience and multidisciplinary competent project team are success factors proposed to deliver projects and shape the implementation of the project.

However, the study found out that the project team had low level in creativity in assessing risks facing the scheme, low level of skills in risk evaluation, low level of administrative skills, was incompetent in risk control and failed to adopt appropriately risk management strategies which affected effective risk management in the scheme as indicated by of 4.71, 4.69, 4.66, 4.55 and 4.52 with standard deviation of 0.62, 0.59, 0.53, 0.46 and 0.48.

The study also found out that the project team had low level of communication skills as indicated by 65% of respondents who said the project team had low communication skills in risk management. The findings concurred with Coccia (2005) who believes that communication and the promotion of behavioural changes throughout an organization are the key success factors for ERM. It is also in line with Robbins (2001) who stated that the reasons for poor performance often come from the lack of knowledge, skills and abilities of project team members.

Majority of the respondents strongly agreed that delay in provision of drawings to contractors, low level of creativity in assessing risks facing the scheme lead to unsuccessful project and that low level of skills in risk evaluation affects information sharing on risk management leading to delay in completion of Kibera scheme as indicated by a mean of 4.88, 4.86 and 4.77 with standard deviation of 0.76, 0.64 and 0.58.

From further analysis in the multiple regression model, compared to the other variables studied, competence of project team is the second least variable that affected effectiveness of risk management in kibera scheme as indicated by a coefficient of 0.517 and p value of 0.04 in the multiple regression model generated. There was a strong correlation between this independent variable and the dependent variable.

Training in technical courses and seminars for technical staff concentrates only on technical aspects and ignores human skills as well as risk management skills and this is why while the project team is highly qualified in technical expertise they have low administrative, low risk communication and low managerial skills.

4. To establish the extent to which project funding affected effectiveness of risk management in Kibera Housing Scheme, the study examined various dimensions and the following is the summary of the findings and discussions:-

Budget guidelines established were effective with 99% of the respondents indicating that and 82% of the respondents indicated that the amount allocated for project cost was enough to fund total costs. 97% of the respondents indicated that long project approval budget procedures affected effectiveness of risk management in Kibera scheme to a great and very great extent. Most of the respondents strongly agreed that the delays in disbursement of funds by financiers, inappropriate project environment, poor project financial management reduces project costs control and delayed client acceptance and unrealistic project budget affects effectiveness of risk management as indicated by a mean of 4.68, 4.65, 4.61, 4.51 and 4.50 with standard deviation of 0.68, 0.55, 0.53 0.42 and 0.40.

Majority of the respondents strongly agreed that poor estimation of project costs increases approval time, inappropriate project environment increases project costs and stringent approval procedures of additional funding affect risk planning during project implementation as indicated by a mean of 4.85, 4.73 and 4.70 with standard deviation of 0.86, 0.68 and 0.64. The finding concurred with Hamimah (2008) who found that long delay to receive project approval reduces Vietnam's image in the eyes of foreign investor companies interviewed in a survey; 20 percent said that they did not intend to extend their business in the next three years.

The study also found out that lack of project timeliness affected effectiveness of risk management as indicated by 100% respondents who said it affected to great and very great extent. This finding concurred with Cox (1999), who identified that project time variations affect management of project financial risks. The findings also concur with Frimpong (2003) who found that project cost overruns affected effectiveness of project risk management in firms in Ghana.

From further analysis in the multiple regression model, compared to the other variables studied, project funding is the least variable that affected effectiveness of risk management in Kibera scheme as indicated by a coefficient of 0.468 and p value of 0.02 in the multiple regression model generated. There was a moderate correlation between this independent variable and the dependent variable.

Availability of public project funding can be affected by changing political agendas, lack of involvement of all stakeholders and pursuance of personal interests by those in charge of resource allocation.

5. To determine the extent to which project risk planning affected effectiveness of risk management in Kibera Housing Scheme, the study examined various dimensions and the following is the summary of the findings and discussions:.

The study established that there were plans put in place to mitigate occurrence of project risks in Kibera Upgrading housing scheme as indicated by 63% respondents. 88% of respondents indicated that lack of planning for project risk affects projects to a great and very great extent and 80% of the respondents indicated that planning for project risks influence project performance to a great and very great extent. Level of project risk planning was 56% to a low and 44% to a medium level. The study also found out that majority of the respondents strongly agreed that poor planning for risk lead to failure in recognizing, ranking and filtering of risk, that risk are inadequately controlled due to lack of competent staff who failed to take corrective action, failure to plan for risk affects risk reduction hence incompleteness of the project and that lack of risk planning affects sufficient allocation of resources to mitigate against risks as indicated by a mean of 4.78, 4.75, 4.69 and 4.67 with standard deviation of 0.75, 0.73, 0.64 and 0.59. The findings concurred with PMI, (2004) who stated that the project objectives were established and the responsibilities assigned to the relevant parties in the risk planning stage. Respondents were requested to explain in their assessment on other factors that affect effectiveness of risk planning in Kibera Upgrading Housing Scheme. From the findings, employees being unaware a plan exists, presence of gaps during the document's planning

phases, a lack of applicability and slow decay with the passage of time affect effectiveness of risk planning.

Further analysis in the multiple regression model showed that, compared to the other variables studied, project risk planning most affected effectiveness of risk management in kibera scheme as indicated by a coefficient of 0.691 and p value of 0.01 in the multiple regression model generated. There existed a strong correlation between this independent variable and the dependent variable. This is due to lack of commitment on risk management and low risk knowledge level among both the top management and the project team.

The study found out that the four variables studied contributed to 65.1% of effectiveness of risk management as indicated by the adjusted coefficient of determination of 0.651 in regression model which means that other variables not studied contributed 34.9% of effective risk management and further study should be carried out to establish these variables. The regression model shows that there exists a strong negative correlation of 0.803 between effectiveness of risk management and deficiency in the four variables studied. Top management support and project risk planning are the most critical of the four variables studied that affected effectiveness of risk management and this could be due to low level of risk knowledge and lack of commitment in both the top management and project team.

### **5.3 Conclusions**

1. The study concluded that procuring a suitable contractor in a transparent manner, proper project management and corruption/conflict free environment are the key effective risk management success factors.
2. The study also concluded that low level of top management support in risk commitment led to insufficient allocation of resources for risk management. Lack of effective decision making and stake holder involvement by top management

affected effective risk management in kibera housing scheme. Effective risk management should be transparent and inclusive.

3. The study established that poor project management skills in project team affected effective risk management of the scheme despite there being risk mitigation measures in place. Low level of administrative skill and low level of communication skill in risk management amongst project team also affected effective risk management.
4. The study concluded that failure to avail project funding in the required instalments in a timely manner caused delays in project completion, which lead to project cost variations caused by project delay, price changes, weather conditions, and high inflation which inevitably affected the effectiveness of project risk management in Kibera Slum Upgrading Housing Scheme.
5. The study also concluded that there were some project risk plans put in place to mitigate occurrence of project risks in Kibera Upgrading Housing Scheme. However, poor planning and management for risk led to failure in recognizing, ranking and filtering of project risks. Inadequate control of risks was due to lack of competent staffs in risk management who failed to take corrective action. Failure to plan for risk affected risk reduction hence incompleteness of the project as scheduled and insufficient allocation of resources to mitigate against risks. Project risk planning is an important step required to facilitate structured and systematic risk management.

#### **5.4 Recommendations of the study**

1. The study found out that poor procurement of contractors, corruption, conflicts and poor project management affect project success and therefore the study recommends that clear guidelines on procurement of contractors should be strictly adhered to in order to procure the right contractors, corruption /conflicts should be contained and those involved in public construction projects should be trained in

project management on top of technical expertise in order to competently handle all aspects of construction projects.

2. The study found out that there is lack of risk management commitment and low level of risk knowledge to both top management and project team. The study therefore recommends that top management and project team should be continuously trained on project risk management; this will enable them to appreciate the benefits of risk management in construction projects and this will in turn uplift their commitment to risk management in terms of project risk planning and resource allocation.
3. The study also found out that whereas the project team had high technical qualifications, they had low administrative skills and low risk management skills. This is due to absence of units on soft skills and risk management in their training programmes in colleges and therefore the study recommends integration of these skills in their core technical units.
4. The study found out that availability of required funds in untimely manner results in delay in completion of projects and this triggers cost overruns. The study therefore recommends that project funding should be linked to the project Gantt chart to ensure release of funds in the required installments in a timely manner. Project risk management costs should be well recognized and handled as an integral part of project cost management.
5. The study found out that of the four variable studied lack of project risk planning affected effective risk management the most and level of project risk planning in kibera housing scheme was 56% medium and 44% low and therefore it is recommended that training of project risk planning be done to all those involved in construction projects in order to enhance recognizing, ranking and filtering of project risks in order to manage them in a structured and systematic manner.



6. 88% of respondents indicated that lack of project risk planning affects project success to a great and very great extent and it therefore recommends appointment of a project risk manager to assist the project manager in risk management in large, complex construction projects that involve large capital outlay. Many projects have been delayed or exceeded their planned budgets, as project managers could not manage risk effectively (Zou, Zhang & Wang, 2007).

### **5.5 Suggestions for further research**

1. The study found out that the four variables studied; level of top management support, competence of project team, project funding and project risk planning contributed to 65.1% of effective risk management. The study therefore recommends that further study be done to determine the other factors that contribute to the remaining 34.9% of effectiveness of risk management in public housing construction projects in Kenya.
2. The study also found out that there is low commitment in risk management in both the top management and the project team and therefore suggest further study be carried out to establish why this is so.
3. The study suggests that the benefits of effective risk management in public housing construction projects in Kenya may not be clear and therefore a further study should be carried out to determine the influence of effectiveness of risk management on project performance.

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## APPENDICES

### Appendix I: Letter of Introduction

Josphat Ngundo

P.O. BOX 30743-00100

NAIROBI

Dated: June 2014

Dear (Respondent)

I am a post graduate student at University of Nairobi undertaking a research project on, “  
**FACTORS AFFECTING EFFECTIVENESS OF RISK MANAGEMENT IN  
PUBLIC HOUSING CONSTRUCTION PROJECTS IN KENYA: A CASE OF  
KIBERA SLUM UPGRADING HOUSING SCHEME.**

You have been selected for this study and you have been selected to fill the questionnaire. Kindly respond to the questions in the attached questionnaire. The information provided will exclusively and solely be used for academic purposes and will be treated with the confidence it deserves. Upon request, you will be furnished with a copy of the final report.

Your cooperation will be highly appreciated.

Yours Faithfully,



Josphat Ngundo

## Appendix II: Questionnaire:

Please tick (✓) the box that matches your answer to the questions and give the answers in the spaces provided as appropriate. The information you provide will be treated with utmost confidentiality.

### Section A: Background Information

1) Gender

i. Male ☐

ii. Female ☐

2) What is your age category (Tick appropriate range).

i. 30 years and below ☐

ii. 31 – 40 years ☐

iii. 41 – 50 years ☐

iv. Over 50 years ☐

3) Highest level of education attained

i. Diploma Level ☐

ii. Degree ☐

iii. Postgraduate ☐

iv. Any other, kindly specify .....

4) What is your designation in the enterprise? \_\_\_\_\_

5) How long has your organization been in operation

i. 1-5 years ☐

ii. 6-10 years ☐

iii. 11-15 years ☐

iv. Above 15 years ☐

## SECTION: B

6. Rate the extent to which the following project risks affect effective risk management in Kibera Housing Scheme, using a scale of 1-No Extent, 2- Less extent, 3-Moderate, 4-Great Extent and 5- Very Great Extent )

Project risks	1	2	3	4	5
Poor project management					
Political Interference					
Lack of support from parties					
Insufficient funds					
Corruption					
Conflicts among parties					
Lack of transparency in tendering process					
Tender award to a contractor without capacity					
Tender award to a contractor with tender rates below market rates					

### Part 1: Top Management Support

7. To what extent does top management in Kibera Upgrading Housing Scheme fail to allocate resource for project risk planning.

Very great extent [ ]

Great extent [ ]

Moderate extent [ ]

Little extent [ ]

Not at all [ ]

Give reasons for your Answer.....

8. How does the following top management role in Kibera Upgrading Housing Scheme affect effectiveness of risk management in the scheme?

Item	Very Great Extent	Great extent	Moderate extent	Little extent	Not at all
Commitment level to risk management					
Support in risk identification					
Developing project procedure					
Identification of Project scoping					
Assist in establishing a project management office					
Commissioning the right officers to the project					
Identifying uncertainty					
Ensure safety in construction site					
Support quality management of the scheme					
Effective conflict management					
Ineffective communication					
Coordination of scheme activities					

9. To what extent do you agree with the following statement regarding how top management support affects effectiveness of risk management in Kibera Upgrading Housing Scheme .Where, 1=Strongly Disagree,2=Disagree, , 3=Moderately agree, 4= Agree and 5= Strongly agree)

<b>Top management support</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
Effective decision making process by management affects risk management in the scheme					
Approval of project budget					
Solving of conflicts and mediating between groups					
Building cooperation between various stakeholders and involving users in the Kibera scheme implementation process					
Failure to allocate sufficient resources for risk management					

## **Part II: Competence of project team**

10. To what extent do project officials attains technical expertise in performing duties in Kibera Upgrading Scheme?

Very great extent      [   ]

Great extent            [   ]

Moderate extent        [   ]

Little extent            [   ]

Not at all                [   ]

11. What is the level of communication skills of project team in risk management?

Low                      [   ] Moderate            [   ]

High                     [   ] Very high            [   ]

12. To what extent does project officer achieve house construction qualifications to undertake Kibera Upgrading Scheme operations?

Very great extent [ ]

Great extent [ ]

Moderate extent [ ]

Little extent [ ]

Not at all [ ]

Give reasons for your Answer.....

13. To what extent based on a likert scale with values 1-5 do you agree with the following statement concerning competency of project officers and effectiveness of risk management in Kibera Scheme? (1=Strongly Disagree,2=Disagree, 3=moderately agree, 4= Agree and 5= strongly agree)

Competency of project team	1	2	3	4	5
Level of administrative skill of project team members					
Delay in provision of drawings to contractors					
Failure to adopt appropriate risk strategies effect risk management of the success of the schemes					
Low level of skills in risk evaluation affects information sharing on risk management leading to incompleteness Kibera scheme in time					
Low creativity in assessing risks facing the schemes lead to unsuccessful project					
Level of flexibility influence house construction					
Incompetency in risk control lead to ineffective risk management in the scheme					
Incompetent staff of government regulatory agencies					



Level of competency of contractors in risk management determine success in risk control					
Desire by contractors to make easy money through contractual claims affect success of risk management					
Level of team work determine success of risk management					
Style of leadership by the project manager determine level of success of the scheme					

### **Part III: Project risk Planning**

14. Are there plans put in place to mitigate occurrence of project risks in Kibera Upgrading housing scheme?

Yes ☐ No ☐

15. How can you rate the level of project risk planning at Kibera Upgrading housing scheme?

High ☐ Medium ☐ Low ☐

16. To what extent does lack of planning for Kibera Upgrading housing scheme affects the scheme success?

- i. Very great extent ☐
- ii. Great extent ☐
- iii. Moderate extent ☐
- iv. Little extent ☐
- v. No extent ☐

17. To what extent does planning for Kibera Upgrading Housing Scheme risks affects effectiveness of risk management?

- vi. Very great extent ☐
- vii. Great extent ☐
- viii. Moderate extent ☐
- ix. Little extent ☐
- x. No extent ☐

Give reason for your answer

.....

18. To what extent do you agree with the following statement regarding how lack of project risk planning affects effectiveness of risk management in Kibera Upgrading Housing Scheme .Where, 1=Strongly Disagree,2=Disagree, , 3=Moderately agree, 4= Agree and 5= Strongly agree)

Risk Planning	Strongly agree	Agree	Neutral	disagree	Strongly disagree
Lack of Risk planning affects sufficient allocation of resources to mitigate against risks					
Risk are inadequately controlled due to lack employment of competent staff who fail take correct action					
Failure to plan for risk affects risk reduction hence incompleteness of the Kibera Upgrading housing scheme					
Inappropriate budget allocation for risk management in Kibera Upgrading housing scheme					
Lack of planning for risk led to failure in identification of risk facing Kibera Upgrading housing scheme					
Poor planning for risk lead to failure in recognizing, ranking and filtering of risk facing Kibera Upgrading housing scheme					
Screening of Kibera scheme risks and taking measure influence project being completed within time					
Effective risk identification process enable organization to take correct measures that influence projects to cost less					
Effective risk management planning reduces Kibera scheme delays					

The scheme undertake risk allocation mitigating occurrence of project loss					
Undertaking risk allocation and mitigation reduces occurrence of project failure					

19. In your assessment what are other factors affects effectiveness of risk planning in Kibera Upgrading Housing Scheme?

.....  
 .....

#### **Part IV: Project funding**

20. Do you think the budget guidelines need established prior to project was effective?

Yes [ ]

No [ ]

Give reason for your answer

.....

21. Is amount allocated for the Kibera Scheme project cost enough to fund total costs for implementation of project successfully?

i. Yes [ ]

ii. No [ ]

22. To what extent does long project approval budget procedure risk affect effectiveness of risk management in Kibera schemes?

i. Very great extent [ ]

ii. Great extent [ ]

iii. Moderate extent [ ]

iv. Little extent [ ]

v. No extent [ ]

23. To what extent do you agree with the following statement regarding how Kibera Scheme project funding affects effectiveness of risk management .Where, 1=Strongly Disagree,2=Disagree, , 3=Moderately agree, 4= Agree and 5= Strongly agree)

Project funding	1	2	3	4	5
Poor project financial management reduces project costs control					
Stringent approval procedures of additional funding affect risk planning					
Inappropriate project environment increases project costs					
Delays in disbursement of funds by financiers lead to ineffective risk management					
Poor estimation of project costs increases approval time					
Lack of transparency and accountability in management of project funds lead to conflicts					
Unrealistic low project budget lead to project failure					
Timely release of project finances in required amounts promote project success					
Contractual claims by contractors increases Kibera scheme project budget and can lead to project delays					

24. To what extent does lack of project funding timeliness affect effectiveness in risk management

- i. Very great extent [ ]
- ii. Great extent [ ]
- iii. Moderate extent [ ]
- iv. Little extent [ ]
- v. No extent [ ]

30. What is the level of satisfaction of kibera people on performance of the scheme?

Low [ ] Moderate [ ] High [ ] Very high [ ]