

**INFLUENCE OF RISK MANAGEMENT STRATEGIES ON DELIVERY
OF URBAN HOUSING PROJECT IN KENYA: A CASE OF AFFORDABLE
HOUSING PROGRAM IN NAIROBI COUNTY**

OBILLO SEBBY ORANGA

**A Research Project Submitted In Partial Fulfillment of the Requirements for
the Award of the Degree of Master of Art in Project Planning and
Management of the University of Nairobi**

2020

DECLARATION

This research project is my original work and has not been submitted for examination to any other University.

Signed _____  _____

Date 16th November, 2020 _____

Obillo Sebbi Oranga

L50/10994/2018

This research project has been submitted for examination with my approval as the University Supervisor.

Signed _____  _____

Date 17th November, 2020 _____

Prof. Dorothy Ndunge Kyalo

School of Open and Distance Learning

University of Nairobi

DEDICATION

This research project is dedicated to my family especially my wife and children for their constant inspiration and forbearance during my academic tussle and my father and mother for laying foundation for me in the academic endeavor. May the Almighty God Bless you.

ACKNOWLEDGEMENTS

The completion of this research project would have been impossible without the material and moral support from various people. It is my obligation therefore to extend my gratitude to them. First of all I thank the Almighty Deity for giving me virtuous fitness, and maintaining me both health wise and financial wise throughout my academic journey.

I am also greatly grateful to Prof. Dorothy Ndunge Kyalo who is my supervisor for her incredible supervision, devotion, accessibility and proficient advice.

I am grateful to the University of Nairobi for according me an opportunity to further my studies in the institution. Special thanks go to the library staff members in the University of Nairobi who have been very supportive in providing the necessary literature materials that made this research project a success.

I extend my appreciation to my lecturers who taught me in project planning and management program.

Not forgetting my colleagues in the University of Nairobi for their support and encouragement all through my study.

Finally I extend my appreciation to the entire management of State Department of Housing and Urban Infrastructure Development within the Ministry of Transport, Infrastructure, Housing and Urban Development in Kenya for their cooperation in availing the data requested. I say thank you and I pray that may the Almighty God bless you abundantly.

TABLE OF CONTENTS

DECLARATION.....	ii
DEDICATION.....	iii
ACKNOWLEDGEMENTS	iv
TABLE OF CONTENTS	v
LIST OF TABLES	viii
LIST OF FIGURES	ix
ABBREVIATIONS AND ACRONYMS.....	x
ABSTRACT.....	xi
CHAPTER ONE	1
INTRODUCTION.....	1
1.1 Background of the Study	1
1.2 Statement of the Problem.....	6
1.3 Purpose of the study.....	7
1.4 Objectives of the Study.....	7
1.5 Research Questions.....	7
1.6 Hypotheses of the Study	8
1.7 Significance of the Study	8
1.7 Limitation of the Study	9
1.8 Delimitation of the Study.....	9
1.9 Basic Assumption of the Study.....	9
1.10 Definition of Significant Terms	10
1.11 Organization of the Study	11
CHAPTER TWO	12
LITERATURE REVIEW	12
2.1 Introduction.....	12
2.2 Delivery of Affordable Housing	12
2.3 Project Risk Management Strategies	13
2.3.1 Risk Avoidance Strategy and Delivery of the Urban Housing Project.....	14
2.3.2 Risk Control Strategy and Delivery of the Urban Housing Project.....	15
2.3.3 Risk Transfer Strategy and Delivery of the Urban Housing Project	17

2.3.4 Risk Retention Strategy and Delivery of the Urban Housing Project	19
2.4 Theoretical Framework.....	20
2.5 Conceptual Framework.....	23
2.6 Summary of the Literature Review and Research Gap.....	24
CHAPTER THREE	29
RESEARCH METHODOLOGY	29
3.1 Introduction.....	29
3.2 Research Paradigm.....	29
3.2.1 Research Design.....	29
3.3 Target Population.....	30
3.4 Sample Size and Sampling Procedure	30
3.5 Research Instruments.....	31
3.6 Pilot Study.....	32
3.7 Data Collection Procedures.....	34
3.8 Data Analysis	35
3.9 Ethical Considerations	36
3.10 Operationalization of Variables	37
CHAPTER FOUR.....	38
DATA ANALYSIS AND INTERPRETATION OF THE RESULTS.....	38
4.1 Introduction.....	38
4.2 Response Rate.....	38
4.3 Pilot Study Results.....	39
4.4 Demographic Information.....	39
4.5 Study Variables.....	43
4.5 Regression Analysis.....	52
CHAPTER FIVE	58
SUMMARY, CONCLUSIONS AND RECOMMENDATIONS	58
5.0. Introduction.....	58
5.1. Summary of the findings.....	58
5.2. Conclusions.....	59
5.3. Recommendations.....	60

5.4 Suggestions for Further Research	61
REFERENCES.....	62
APPENDICES	66
Appendix I: Letter of Transmittal	66
Appendix II: Research Questions	67
Appendix III: University of Nairobi Letter.....	76
Appendix IV: Research Permit	77

LIST OF TABLES

Table 4.1 Response Rate	38
Table 4.2 Pilot Study Results	39
Table 4.3: Gender of the respondents.....	40
Table 4.4: Age Group of the Respondents	40
Table 4.5: Designation at the Department in the Ministry	41
Table 4.6: Period of continuous serve at the Ministry	41
Table 4.7: Period Worked in Present Capacity	42
Table 4.8: Period Worked for Public Institutions	42
Table 4.9: Respondents' level of Education.....	43
Table 4.10: Relationship between risk avoidance strategy and project delivery	44
Table 4.11: Risk Control Strategy and Project Delivery.....	47
Table 4.12: Relationship between risk retention strategy and project delivery	49
Table 4.13: Relationship between risk transfer strategy and project delivery	51
Table 4.14 Multiple Regression Model Summary	53
Table 4.15 ANOVA Results.....	54
Table 4.16 RegressionCoefficients	55

LIST OF FIGURES

Figure 2.1: Conceptual Framework.....	25
---------------------------------------	----

ABBREVIATIONS AND ACRONYMS

ABMT	-	Appropriate Building Materials and Technologies
AHP	-	Affordable Housing Programme
CEO	-	Chief Executive Officer
CIA	-	Central Intelligence Agency
CPM	-	Critical Path Method
CSHS	-	Housing-Civil Servants Housing Scheme
EVA	-	Earned Value Analysis
GoK	-	Government of Kenya
IT	-	Information Technologies
KENSUP	-	Kenya Slum Upgrading Programme
KISIP	-	Kenya Informal Settlement Improvement Programme
NACOSTI	-	National Council of Science and Technology
NHIF	-	National Hospital Insurance Fund
PMC	-	Programme Management Consultant
POOGI	-	Process of Ongoing Improvement
RoK	-	Republic of Kenya
SDHUD	-	State Department for Housing and Urban Development
SPSS	-	Statistical Package for Social Sciences
TOC	-	Theory of Constraints
WBS	-	Work Breakdown Structure
MGI	-	McKinsey Global Institute

ABSTRACT

Affordable housing is a universal challenge for cities in both developing and developed economies. In the global scene, an estimated 330 million urban households face a shortage of decent housing. In Kenya, the housing deficit is estimated to be 1.85 million units. To alleviate this problem, Kenya's Affordable Housing Programme (AHP) was launched in December 2017. The State Department for Housing and Urban Development (SDHUD) was tasked with program. However, the phase one of 228 Affordable Housing Programme (AHP) is complete and has suffered a time overrun of sixteen days. Additionally, the second phase scheduled to be complete by July 2020 is yet to be completed. Therefore project shows indicators of poor project delivery due to minimal adoption of project risks management strategies. This research project therefore sought to find out the influence of risk management strategies on delivery of urban housing project in Kenya. The objectives of this study were: to examine the influence of risk avoidance, risk control, risk retention and risk transfer strategies on the delivery of this project. The research design was exploratory descriptive survey. The target population for this study was 87 upper and middle level managers working at the Department. The study used stratified and simple random sampling technique and Yamane's formulae to arrive at a sample size of 72 respondents. The study used semi-structured questionnaires to collect data. The findings were presented in form of tables. A pilot study was conducted to test validity and reliability of the research instruments. Content validity was used as validity test and cronbach's alpha coefficient used to establish the reliability of each section of the questionnaire. The data collected was analyzed using descriptive statistics including mean, percentages and frequencies and inferential statistics that is multiple regression models. The findings indicated that risk avoidance ($\beta = 0.172$; $p < 0.05$), risk control ($\beta = 0.456$; $p < 0.05$), risk transfer ($\beta = 0.207$; $p < 0.05$), and risk retention ($\beta = 0.175$; $p < 0.05$) were significant factors that delivery of urban housing project in Kenya. The study concluded that there is a significant positive relationship between risk avoidance strategy, risk control strategy, risk retention strategy and risk transfer strategy and delivery of urban housing project in Kenya. The study recommended that the department ensure that the ongoing and future projects have a re-insurance contract and that the department further increase the adoption of risk avoidance, risk control and risk retention strategy in order to ensure project delivery and finally it should put more effort in improving adoption of risk transfer strategies

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

A report released by McKinsey Global Institute (MGI) (2015) observes that affordable housing is a universal challenge for cities in both developing and developed economies. The report states that 330 million urban households in the global scene today face a shortage of either decent housing or are financially strained by housing costs that they relinquish other basic needs such as food, health care and education for their children. Among our key findings of the report indicate that: an estimate of 330 million urban households around the world live in substandard housing or are financially stretched by housing costs. The report indicate further that some 200 million households in the developing world live in slums and in the developed countries such as United States, the European Union, Japan and Australia, more than 60 million households are financially stretched by housing costs; based on current trends in urban migration and income growth, it is estimated that by 2025, about 440 million urban households around the world would occupy crowded, inadequate, and unsafe housing or will be financially stretched. In addition, the housing affordability gap is equivalent to \$650 billion per year, or 1 percent of global GDP. In some of the least affordable cities, the gap exceeds 10 percent of local Gross Domestic Product (GDP) (MGI, 2015).

The report further advises that to replace today's substandard housing, additional units needed by 2025 would require an investment of \$9 trillion to \$11 trillion for construction; with land, the total cost could be \$16 trillion. Of this, \$1 trillion to \$3 trillion may have to come from public funding. The report identifies four ways to reduce the cost of delivering affordable housing by 20 to 50 percent that are; to unlock land at the right location (the most important lever), reduce construction costs through value engineering and industrial approaches, increase operations and maintenance efficiency, and reduce financing costs for buyers and developers. These largely market-based measures can benefit households in all income groups and, with some cross subsidies, can reduce costs sufficiently to make housing affordable (at 30 percent of income) for households earning 50 to 80 percent of area median income (Aduma&Kimutai, 2018).

In the local context, Kenya's Affordable Housing Programme (AHP) was launched in December 2017 as one of the national government's four pillars of growth, in the Big Four Plan. The AHP promises to deliver 500,000 affordable homes over a five year period and involves a number of incentives and supports to enable the delivery of affordable housing in Kenya (GoK, 2019). The AHP is the responsibility of the State Department of Housing and Urban Infrastructure Development within the Ministry of Transport, Infrastructure, Housing and Urban Development. The housing deficit is estimated to be 1.85 million units and the government projects that it will need to facilitate the provision of 200,000 units a year to progressively cater for the shortfall and house new entrants into urban areas. The AHP has an ambitious target of delivering 500,000 houses within five years (GoK, 2019).

As part of Vision 2030, Kenya has been undertaking large-scale infrastructure developments, such as stepping up programs to address the housing supply deficit and to improve urban settlements through programs such as the Kenya Slum Upgrading Programme (KENSUP) and Kenya Informal Settlement Improvement Programme (KISIP) (Wenanga, 2019). While these are positive, encouraging developments, there is more to be done to fulfil the right to adequate housing. As part of this vision, the State Department for Housing and Urban Development (SDHUD) has been mandated to deliver the Affordable Housing Programme (AHP) and will manage the delivery throughout the project lifecycle. The Government of Kenya will act as the key facilitator and will provide state owned land for free or at a low cost and develop or subsidize bulk infrastructure for identified sites that will be part of the Affordable Housing Program (Wenanga, 2019).

The Kenya's Affordable Housing Programme (AHP) has identified the following risks to the project: site risk, design, construction and commissioning risk, financial risk, regulatory risk, force majeure risk, right of way and land acquisition risk, inflation risk and foreign exchange risk, insolvency risk, subcontractor risk and interface (Wenanga, 2019). Koirala (2015) states that risks in housing and real estate in construction projects are the chances of occurrences of events which affect the objectives of the project life cycle. Furthermore, risk can be defined as a scenario where there is a possibility of an adverse deviation from the expected outcome resulting from uncertainty (Koirala, 2015). Therefore, this study sought to find out influence of risk management strategies

on delivery of urban housing project in Kenya. A case of affordable housing project in Nairobi County.

1.1.1 Delivery of the Urban Housing Project

Urban populations are growing at a rate much faster than can be absorbed and managed, causing demands on services and infrastructure that massively outstrip supply. In many emerging market cities, this leaves the majority of residents with few options but to live in slums. Increasing access to high quality affordable housing has a profound impact, both for the individual and society at large (Van Noppen, 2016). Yet, housing is a challenging and capital-intensive sector characterized by delays and regulatory difficulties, and as a result, it rarely gains the limelight for impact investors and social entrepreneurs. Twenty-two percent of Kenyans live in cities, and the urban population is growing at a rate of 4.2 percent every year (World Fact book, 2010). With this level of growth, Nairobi requires at least 120,000 new housing units annually to meet demand, yet only 35,000 homes are built, leaving the housing deficit growing by 85,000 units per year. As a result of this mismatched supply and demand, housing prices have increased 100 percent since 2004(Hass Consult Property Index, 2011). This pushes lower income residents out of the formal housing market and into the slums (Van Noppen, 2016).

It is against this challenge that the Government of Kenya (GoK) through the State Department for Housing and Urban Development (SDHUD) has been mandated to deliver the Affordable Housing Programme (AHP) by managing the delivery throughout the project lifecycle. Within a period between 2017 –2022, the programme targets a delivery of 500,000 affordable housing units all over Kenya (RoK, 2018). Construction of the projects under the Affordable Housing Programme is being undertaken by the developer, private investor or contractor and supervised by the Programme Management Consultant (PMC) on behalf of the SDHUD.

Programme Management Consultant (PMC) are tasked with monitoring activities on site and report progress on cost, time and quality of the project, as well as escalating risks and performance issues to SDHUD. The housing project has put in place effective project controls to increase the certainty of outcome and identify areas of underperformance early to allow for effective mitigation measures to be implemented. The key areas of project controls covers planning and scheduling;

cost estimating; cost control; progress and performance measurement; and document control and management. The PMC implements and monitors the project controls requirements of the SDHUD that each developer, private investor or contractor agrees to adhere to as part of the procurement process. The SDHUD develops a standardized Work Breakdown Structure (WBS) that facilitates consistent reporting and capturing of schedule activities and associated Earned Value Analysis (EVA). All schedules are cost and resource loaded by the contractor and monitored by the PMC (RoK, 2018).

Kishk and Ukaga (2016) states that the degree of risk management process undertaken during the project lifecycle impacts directly on the project success. Failure to manage construction risks in a systematic way makes the project suffer in cost overruns, delayed completion, non-completion or may fail to meet the quality specifications and the benefits they were intended for. Management of construction projects involves a great deal of managing risks. Managing risks involves: planning, identifying, analyzing, developing risk response strategies, monitoring and control. Project team members particularly clients, consultants and contractors should eliminate /mitigate delays when playing their respective roles. Risk response is the strategic option focusing on actions to reduce project risk and enhancing project profitability. Many researches and agencies have defined risk response in different ways with ultimate objective of project profitability (Kaur and Singh, 2018).

Project Management Institute, (2018) defined risk response as the process of identifying, evaluating, selecting, and implementing effective actions in order to reduce the likelihood of occurrence of risk events and/or lower the negative impact of those risks. Risk response strategies play vital role in mitigation of negative impact of risk on project objectives (Zou,Zhang and Wang, 2017). Risk response strategies include four types of actions namely risk avoidance, risk retention, reduction, and transfer, which are taken to reduce the likelihood of occurrence of risk events and/or lower the negative impact of those risks (Kaur and Singh, 2018).Risk can be avoided by eliminating the cause of threat. Risk avoidance is also known as risk elimination or risk reduction (Perry, 2016). Risk can be avoided by changing the exposed area. Avoidance of risk means looking actor chooses other alternatives in the project. The better option to avoid the risk is to change the scope of project, procedural changes, regular inspections and site investigation, different methods

of construction, more detailed planning, more training and skill development programs(Cooper et al., 2015).

Risk retention entails absorbing risks. The reason for retaining that risk could be because the risk may be controllable or uncontrollable, or when only option to retain the risk, cause the risk prevention or transfer is impossible, avoidance is undesirable, possible financial loss is small, probability of occurrence is negligible and transfer of risk is uneconomic (Perry, 2016).

In regard to risk transfer, Kaur and Singh, 2018) suggested four transfer routes of risk in construction projects namely; from client to contractor or designer; contractor to subcontractor; client, contractor, subcontractor or designer to insurer and contractor or subcontractor to surety. The essential characteristics of conveying risk and sharing the consequences with party other than client and the premium should be paid by the client for the recovery of loss which occurred from the risk event. The literature has revealed the risk situations as handling customer complaints, production facility hurdles, new product development, overseas market expansions, handling new real estate project (March &Shapira, 2017).

According to Royer (2019) suggested brainstorming sessions with project team, clients and experts to respond to project risks., revealed alignment of risk handling strategy with project characteristics (project size, knowledge regarding similar projects, project complexity, weak technical skill background, complexity, large project scale, tight project schedule, environment, political, legal, regulations and economic aspects). Further, they perform optimization analysis to derive a minimum-cost risk handling strategy for a particular risk event and link project characteristics and risk situation to select suitable risk-handling strategy. There are two types of risk response actions which can be taken through the risk response strategy namely, risk prevention and risk adaption. Fan, Lin and Sheu (2016) risk prevention means when project managers take actions at the planning stage to condense the likelihood of incidence of risk events. Risk adaption is taken at the stage of execution of project. Kartam and Kartam (2018) explored that there are two types of risk management actions: preventive actions and adaptive actions, former actions taken at early stage of project to reduce the occurrence of risk and latter is used reduce to loss of the effect of risk. Conducting a market survey can be helpful in providing more information and thereby reduce the probability of project failure.

1.2 Statement of the Problem

The Government of Kenya (GoK) endeavors to provide various public programmes with an aim of stimulating sustainable economic development for the country through its Big Four agenda. One of the pillars of the Big Four Agenda is affordable housing. As part of this endeavor, the State Department for Housing and Urban Development (SDHUD) has been directed to deliver the Affordable Housing Programme (AHP) and manage the delivery during the course of the project lifespan. The GoK will act as the key enabler and will create an environment that marshals private sector resources by de-risking projects. In the initial stage, the affordable housing programme recognized site risk, design, construction and commissioning risk, financial risk, operations and maintenance risk, regulatory risk, inflation risk and foreign exchange risks as the major impediments to the successful delivery of this program. These risks may surge and be classified into further detail during the project introduction stage (Gok, 2018). The allocation and possible mitigation strategies are suggestions and preferences but can be subject to discussions and negotiations, depending on the varying circumstances affecting each project (Gok, 2018). Embarking on a construction project like the Affordable Housing Programme (AHP) in Kenya, involves taking and facing risks (Gok, 2018). Sawczuk (2016) observes that no matter how small or simple a project is, it is still can go wrong as soon as the two parties, the client and the contractor signed a contract they have taken onboard the risk (Sawczuk, 2016). Therefore, the initial phase of the affordable housing program in Kenya suffered risks related to cost overrun and delayed schedule.

The phase one of 228 Affordable Housing Programme (AHP) in Kenya is no exception and it has suffered from time overrun as can be seen from the scheduled completion date to the actual completion date of the project. For instance the phase one of Kenya's affordable housing project units, consisting of 228 houses, was planned to be completed by the end of December 2019 (Koech, 2020). However, this phase one was completed 16th January 2020 and was handed to the Kenyan Government by China State Construction with a time lag of sixteen days as reported by Cytonn Investments report (2020). Secondly, the second phase consisting of 260 units was scheduled to be complete by mid-2020, however, the program has missed this target. Recently, the State Department For Housing and Urban Development in Kenya has cited the following challenges as

the indicators for the poor delivery of the program: the bureaucracy and slow project approval processes; the pending operationalization of the Integrated Project Delivery Unit which was tasked with being a single point of regulatory approval for developments, infrastructure provision and developer incentives; failure to fast track incentives provided in support of the affordable housing initiative; ineffectiveness of Public-Private Partnerships, and, the current economic slowdown due to the ongoing pandemic (Cytonn Investments report, 2020). Among the reasons that can be deduced for this poor project delivery is due to minimal adoption of project risks management strategies in the affordable housing program. Therefore it is against this backdrop, that this study sought to find out the influence of risk management strategies on delivery of urban housing project in Kenya.

1.3 Purpose of the study

The purpose of this research project was to assess the influence of risk management strategies on delivery of urban housing project in Kenya. A case of affordable housing project in Nairobi County

1.4 Objectives of the Study

- i. To establish how risk avoidance influence the delivery of urban housing projects in a case of affordable housing project in Nairobi County
- ii. To assess the influence of risk control on the delivery of urban housing projects in a case of affordable housing project in Nairobi County
- iii. To evaluate the influence of risk retention on the delivery of urban housing projects in a case of affordable housing project in Nairobi County
- iv. To analyze the influence of risk transfer on the delivery of urban housing projects in a case of affordable housing project in Nairobi County

1.5 Research Questions

In order to achieve the objectives, the following research questions were formulated to support the investigation:

- i. To what extent does risk avoidance influence the delivery of urban housing projects in Nairobi County?
- ii. How does risk control influenced the delivery of urban housing projects in Nairobi County?

- iii. To what extent does risk retention influenced the delivery of urban housing projects in in Nairobi County?
- iv. How does risk transfer influenced the delivery of urban housing projects in in Nairobi County?

1.6 Hypotheses of the Study

H₀₁: There exist no significant relationship between risk avoidance and the delivery of urban housing projects in Nairobi County

H₀₂: There exist a significant relationship between risk control and the delivery of urban housing projects in Nairobi County

H₀₃: There exist no significant relationship between risk retention and the delivery of urban housing projects in Nairobi County

H₀₄: There exist a significant relationship between risk transfer and the delivery of urban housing projects in Nairobi County

1.7 Significance of the Study

The research project sought to assess the influence of risk management strategies on delivery of urban housing projects was envisaged to help the government of Kenya to accelerate the successful completion the project in Nairobi and elsewhere in the country. This is so because, Nairobi, Kenya's capital city with about four million residents, has been growing so fast that the housing needs of many citizens are not adequately met. The demand for decent homes outstrips the supply by far, the services and infrastructure provided are inadequate, the environmentally fragile areas are negatively affected, and planning in some areas is haphazard as the informal settlements continue to grow.

Furthermore the findings of this study gave insights and recommendations on how the bottlenecks arising from lack of proper risk management can be eliminated and this in turn will benefit more Nairobi residents who live in informal settlement to own a decent home. Currently there exists a shortfall of housing supply for the low income as it is usually met through the proliferation of slums and informal settlements.

Finally, the findings contributed to knowledge in the area by empirically demonstrating that proper utilization of risk management response strategies has a statistically significant influence on housing construction project delivery. Thus study was useful to scholars and researchers in who were interested in studying further the relationship between risk management response strategies on delivery of housing projects.

1.7 Limitation of the Study

The study was limited by the untimely response from respondents due to their busy schedule. This prolonged the study period. Secondly the study limitation was the reluctance among target respondents in giving information due to the sensitivity of the information being sought as they feared that it may be used against them. This was mitigated by releasing a declaration of consent that outlines the application of the information obtained. The consent clearly stated the importance of the respondent's participation in the research and the steps taken to ensure privacy and confidentiality.

1.8 Delimitation of the Study

In order to counter the delimitations for this research project such as poor timely response the researcher tried to establish respondents' free time and engaged them during this period. This was only possible by making prior arrangements before the interview date with the respondents. In order to overcome the reluctance among target respondents in giving information due to the sensitivity of the information being sought, the researcher assured the respondents of confidentiality of information given.

1.9 Basic Assumption of the Study

This research project assumed that the State Department for Housing and Urban Development in Kenya has an elaborate risk management system in place. Secondly the study assumed that the existing risk management system had a direct relationship with delivery of the affordable housing

program. Finally the study assumed that the management State Department for Housing and Urban Development in Kenya were to cooperate and avail reliable data during data collection.

1.10 Definition of Significant Terms

Risk management strategies	These are risk management responses that include risk retention, risk reduction, risk transfer and risk avoidance, or a combination of all these mechanisms. These involve accepting a known risk and/or taking steps to mitigate the impact and likelihood of the occurrence of risks, to minimize the threats and maximize the opportunities.
Project delivery	The means a method in in which a construction project is designed and constructed is an important consideration prior to beginning a project, as it has a significant impact on cost, risk and the overall schedule.
Risk management process	It entails planning, identifying, analyzing, developing risk response strategies, monitoring and control of risks
Risk response strategies	The process of developing strategic options, and determining actions, to enhance opportunities and reduce threats to the project's objectives.
Risk avoidance	Entails executing the project in a different way which will achieve the same objectives but which insulates the project from the effect of the risk
Risk control	Reducing the risk in order to make it more acceptable to the project or organization, by reducing its impact can be termed as mitigation of risk.

Risk retention

Recognizing that residual risks will exist and responding either actively by allocating appropriate contingency, or passively doing nothing except monitoring the status of the risk

1.11 Organization of the Study

This research project is organized in to five chapters. Chapter one discusses background of the study, statement of a problem, purpose of the study, objectives of the study, research questions, hypothesis of the study, significance of the study, limitation of the study, delimitation of the study, basic assumption of the study, definition of terms and the organization of the study. Chapter two presents the introduction, theoretical literature review, empirical literature review, research gap, conceptual framework and summary of literature. Chapter three presents the research methodology which includes; the introduction, research Paradigm, research Design, target population, sample size and sampling procedure that is sample size and sampling technique, research instrument that is questionnaires and key informant interview guide, pilot study that will entail testing the validity and reliability of the data collection instrument, Data Collection procedures, Data Analysis and presentation, Ethical Considerations and operationalization of variables. Chapter four presents analysis of data collected, analysis and inferential statistical methods for each variable and the findings. Chapter five covers the discussions data findings, conclusion drawn from the findings and recommendations.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter reviewed the literature related to risk response strategies and project delivery. The chapter begins with reviewing empirical literature, discussing theoretical literature, then proceed to presenting the conceptual framework and culminate by identify the research gaps in the study.

2.2 Delivery of Affordable Housing

Housing is a challenging and capital-intensive sector characterized by delays and regulatory difficulties and as a result, it rarely gains the limelight for impact investors and social entrepreneurs. According to Van Noppen (2016), twenty-two percent of Kenyans live in cities, and the urban population is growing at a rate of 4.2 percent every year according to the (World Factbook, 2010). With this level of growth, Nairobi requires at least 120,000 new housing units annually to meet demand, yet only 35,000 homes are built, leaving the housing deficit growing by 85,000 units per year. As a result of this mismatched supply and demand, housing prices have increased 100 percent since 2004(Hass Consult Property Index, 2011). This pushes lower income residents out of the formal housing market and into the slums (Van Noppen, 2016).

The Government of Kenya has defined the "Big Four" transformation agenda for the Nation which identifies four priority initiatives to be implemented in years 2017 –2022, core among them the Delivery of 500,000 Affordable Housing Units. The State Department for Housing and Urban Development has been charged with the mandate of structuring and delivering the Affordable Housing Programme covering major urban areas across the country and will incorporate innovative, cost effective and efficient delivery models. These will entail the use of affordable building materials, efficient construction technologies and use of environmentally friendly building materials and techniques (GOK, 2017).

One of the Key functions of the State Department for Housing and Urban Development is to address the issue of high building costs and which it does by promoting collaborative research, development, and, utilization of Appropriate Building Materials and Technologies (ABMT). Towards this end, the State Department intends to hold an exhibition in Nairobi, for Innovative

Building Materials and Technologies. This presents an opportunity for exhibitors to showcase their innovative, affordable building materials and technologies, which could be employed in the construction of the 500,000 affordable housing units.

Programme Management Consultant (PMC) are tasked with monitoring activities on site and report progress on cost, time and quality of the project, as well as escalating risks and performance issues to SDHUD. The housing project has put in place effective project controls to increase the certainty of outcome and identify areas of underperformance early to allow for effective mitigation measures to be implemented. The key areas of project controls covers planning and scheduling; cost estimating; cost control; progress and performance measurement; and document control and management. The PMC implements and monitors the project controls requirements of the SDHUD that each developer, private investor or contractor agrees to adhere to as part of the procurement process. The SDHUD develops a standardized Work Breakdown Structure (WBS) that facilitates consistent reporting and capturing of schedule activities and associated Earned Value Analysis (EVA). All schedules are cost and resource loaded by the contractor and monitored by the PMC (RoK, 2018).

2.3 Project Risk Management Strategies

According to Ward and Chapman (2017), risk in project management is defined in terms of uncertain events and their impact on a project's objectives. Ward and Chapman (2017) discuss the concept of risk in greater detail and suggest using a more general concept of uncertainty. They argue that the term 'risk' is often associated with adversity and focus on threats, not opportunities. According to Smith, Tony and Jobling (2016) all project risks can be divided into three main categories: known risks, known unknowns and unknown unknowns. The difference between the categories is the decreasing ability to predict or foresee the risks. Taking into account the probability of the occurrence and the consequence for project objectives, those events that have high probability and high impact are subject to risk management. Risk management is a systematic process of identifying, assessing and responding to project risk (PMI, 2018). The overall goal of the risk management process is to maximize the opportunities and minimize the consequences of a risk event. A variety of risk management models with different numbers of stages can be found

in the literature. The international standard Project risk management IEC (2016) offers a model with four steps: risk identification, risk assessment, risk treatment, and risk review and monitoring. Having identified and assessed the project risk, the third step entails responding to the project risk identified. The risk response process is directed at identifying a way of dealing with the identified and assessed project risks. There are four main risk response strategies: risk avoidance, risk reduction, risk transfer and risk retention (Smith, Tony and Jobling, 2016). Risk avoidance deals with the risks by changing the project plan or finding methods to eliminate the risks. Risk reduction aims at reducing the probability and/or consequences of a risk event. Those risks that remain in the project after risk avoidance and reduction may be transferred to another party either inside or outside the project. Risk retention or acceptance indicates that the risk remains present in the project. Two options are available when retaining the risk: either to develop a contingency plan in case a risk occurs, or to make no actions until the risk is triggered. Several studies (Lyons and Skitmore 2018) have identified risk reduction as the most frequently used technique within the construction industry.

2.3.1 Risk Avoidance Strategy and Delivery of the Urban Housing Project

Risk avoidance strategy refers to not accepting the risk or any activity to ensure that risk will not occur (Dorfman, 2015). It is important to review project aim and just in case risk has a negative impact on the entire project, then the suitable remedy is to avoid it by either canceling entire project or changing the scope (Potts, 2016). In his study Kimani, (2017), assessed recent practices of risk analysis and management embraced in Florida construction industry by contractors and compared it with other states construction industries that are considered highly profitable and modern. The findings from the study reveal that most favorite risk strategy adopted by contractors in Florida is risk avoidance with the response rate of 85%. The study also reveals that most companies eliminate risks by bidding at a very high price or not bidding for the job. Risk avoidance strategy was found to be one of the favored methods of management of risk in Florida, however, the respondents proposed this practice can lead low quality, low productivity, and delay of projects.

According to Ploywarin and Song (2014), avoiding risks refers to taking an initiative to refuse project that may lead to risk. They also argue that construction project cannot eliminate all risk but by a method of risk aversion is suitable so as to reduce its occurrences which can cause damage.

Also in their study, Ploywarin and Song (2014) analyzed risk response based on railway construction project in Thailand. The finding of research showed that contractor does not consider risk aversion in government construction program because the improvements in terms of probability are less. The research showed that there are many risk factors that contractor does not take into account as they consider a possibility of occurrence of risk small or even not happened.

In another study on the influence of risk management strategies on the performance of selected international development organization based in Nairobi city by Wabomba (2015) indicated that risk avoidance involves changing project plan so as to protect objectives of the project from repercussion of risk by eliminating the condition that causes the risk. The study finding shows the existence of the statistically strong connection between avoidance of risk and the performance of the project. This was clearly shown by utilization of techniques in an effort to avoid risks which include the use of contingency plans, use of work plan in an implementation of projects, implementation of the safety plan and regular inspection to ensure no eventuality occurs that may interfere with the performance of the project.

2.3.2 Risk Control Strategy and Delivery of the Urban Housing Project

Risk control strategy refers to minimizing chances of the loss from happening Gorrod, (2004 as cited by Kimani (2017)). Moreover, risk reduction may time, require resources and thus presents a tradeoff between not doing anything versus the cost of reducing the risk (Kimani, 2017). A study conducted by Bhoola, Hiremath and Mallik (2014 as cited by Kimani (2017) assessed risk treatment strategies practiced in software development projects in India. They involved 302 project managers from various IT firms. The results from the study revealed that risk reduction strategy had the most significant success in software development projects. Other strategies of risk management like avoidance, transference, and acceptance were only reflected in the form transparency in communication to stakeholders.

In their study, Roque and de Carvalho (2016) assessed the risk management impact on the performance of projects in Brazil. The main study objective was to understand risk assessment outcome on the performance of information technologies (IT). The survey was done in 415 different projects in various industrial sectors in various states in Brazil. The study findings showed positive results of adopting risk management control to reduce the occurrence of a risk factor.

As indicated by Goble and Bier (2013) intermittent communication of risk appraisal results can alleviate project risk. They also suggested that risk assessments are chance evaluations of organized data and a medium for correspondence. Consequently, the reasonable utilization of risk appraisal apparatuses with sufficient communication can reduce risk very much (Veil and Husted, 2012). According to Alexandra-Mihaela and Danut (2016), internal communication is a very significant factor for project management success, therefore, managers of the project adopt internal communication to ensure the project is delivered in an expected manner. One approach to reducing risk in a project is to add an expenditure that can give benefits in the long run. Some people invest in projects that they are sure of their success or they may hire a specialist to manage very risky undertakings. Those specialists may discover solutions that the project group has not considered (Darnall & Preston, 2015). Risk reduction is all about identifying those risks that may hinder achievement of objectives of the project and find ways of reducing this risk to levels that are acceptable. Risk reduction strategy can be accomplished by use of contingency plan.

Ondara (2017) conducted a study titled; risk management strategies and performance of construction firms in selected Counties in Kenya. The general objective of this study was to determine how risk management strategies influenced performance of construction firms in selected counties in Kenya. The specific objectives were to determine the influence of resource risk management strategies, personnel risk management strategies, project control risk management strategies, litigation risk management strategies and insurance risk management strategies on the performance of construction firms in selected counties in Kenya.

The findings led to the conclusion that resource risk, personnel risk and project control risk management strategies had a significant influence on firm performance, implying that any effect on firm performance was not solely due to chance. Litigation risk management and insurance risk management strategies did not have a statistically significant effect, implying that any effect on firm performance was solely due to chance. Government policy and regulation of the construction sector had a statistically significant moderating effect on the relationship between risk management strategies and firm performance. The study recommended that, from a policy perspective, in order to further entrench risk management practices in the construction sector, construction firms in selected counties in Kenya need to increasingly engage in capacity building activities in risk management and construction project management in general. The government

should also encourage activities that encourage proper risk management and risk sharing cross the entire construction value chain. The beneficiaries of the findings of the research will include Government policy makers, construction firm management and business and academic research.

2.3.3 Risk Transfer Strategy and Delivery of the Urban Housing Project

Risk transfer strategy according to Mhetre, Konnur and Landage (2016) entails sourcing another party who is prepared and willing to take its management control and financial responsibility when the risk occurs. They also argued that transferring risk does not eliminate it, as the risk will still exist but it is managed and possessed by another individual. In fact, according to them, risk reduction is the best strategy to deal with risk exposure. Mhetre, Konnur and Landage (2016) also concurred that the main of transferring risk is to make sure that is owned and handled by the best party. These parties should be willing to accept the risks and also have the financial stability to sustain the consequences (Abednego & Ogunlana, 2006).

Rahman and Kumaraswamy (2015) stated that some risks for effective management they require a collaboration of contracting parties so that they can be managed effectively. They categorized joint risk management under relational contracting principles. These principles are important under various undertakings, which include the alliance of project and joint venturing (Jones 2008). Potts (2016) contended that that risk can be transferred to parties who can manage it properly. According to him, risk can be transferred to various actors which include; the client, subcontractor, contractor, designer and insurer depending on characteristics of risks. He also said that this could result in additional work and higher cost usually referred to as the premium. According to Darnall and Preston, (2015) shifting risks is the only alternative when risk cannot be controlled by project management team. Sometimes the situation consist unpredictable calamities which are rare in certain conditions. Unpredictable calamities should be transferred through insurance policies since they are beyond environmental control (Winch 2016).

In his study Koolwijk (2015), observed that most risks items are difficult to anticipate during planning and design stage of construction. He also observed that some risks need to be a collaborative effort for many contracting parties for good management. They also found a list 16 risks items suitable for joint risk management. Koolwijk (2015) also investigated risk items shared between a client and a contractor in two different project alliances.

Ahamed and Azhar (2016) in their study assessed recent practices of risk scrutiny and management embraced by contractors in Florida construction industry. The study findings also revealed that risk transfer strategy was adopted by more than 55% of respondents in Florida as their strategy of managing risk. Findings also reveal that contractors of Florida use both risk transfer through financial means such as insurance or to specialty subcontractor, however, favors transferring the risks to specialty sub-contractor when the loss expected is higher. Finally, the study also reveals that risk transfer sometimes can lead to poor quality, low productivity and project delays.

In their study, Renault and Agumba (2016) related the concept of risk and risk management in construction industry. In their study, they disclosed management of risk involves identifying, evaluating, prioritizing risks by monitoring and using capital in order to reduce the effect of risk so as to achieve project objectives. Moreover, risk management may result in many advantages which include increased confidence in attaining objectives of the project, improving the likelihood of success and identification of good alternative course of action. The findings of the study further revealed that risk must be identified before it is mitigated or controlled. The study also revealed that risk avoidance, risk reduction, risk retention and transfer as techniques commonly used in responding to risks.

In their paper Bryan and Shapiro (2016), review the use of construction contracts and design as the best method of transferring risk in the construction industry which can have the effect of reducing costly and acrimonious disputes. According to them the party that is stronger tends to allocate unwanted risks that it does not want to incur into a weaker party and this does not always give efficient risk management process. Furthermore, improperly allocated risk can affect both stronger and weaker party. Bryan and Shapiro (2016) also advocated that transferring risk to the best party who are able to manage it inexpensively, effectively and easily will result to more profitable, successful project and consequently improve the performance of construction project.

Ondara (2017) conducted a study titled; risk management strategies and performance of firms in selected Counties in Kenya. The general objective of this study was to determine how risk management strategies influenced performance of construction firms in selected counties in Kenya. The specific objectives were to determine the influence of resource risk management strategies, personnel risk management strategies, project control risk management strategies, litigation risk management strategies and insurance risk management strategies on the performance

of construction firms in selected counties in Kenya. The findings of this study indicated a beta coefficient of .083, while the p-value was .284, which was not statistically significant at the 5 percent level of significance. This implied that the null hypothesis was not rejected therefore insurance risk management strategies (risk transfer) had no significant effect on the performance of construction firms.

2.3.4 Risk Retention Strategy and Delivery of the Urban Housing Project

Risk retention strategy is the option when the risk cannot be transferred or avoided. Nonetheless, it must be controlled so as to reduce its impact (Potts, 2016). According to Thomas (2009), retention can also be the only choice when other risks management strategies are uneconomical. Risk retention it is all about accepting the existence certain circumstance of risk and formulation of serious resolution to allow the related level of risk, and not taking any unique treatment to limit risks (Kerzner, 2015). Likewise, any measure of likely loss above the insured total called retained risk. Moreover, if the probability of huge loss is minimal or if the insurance cost is too high such that it will interfere with organizational goals (Gorrod, 2004 as cited by Kimani 2017). Passive evaluation occurs due to an absence of decision-making, ignorance or through neglect, for instance, the risk at tendering phase has not been determined and therefore contractor performing work must bear the consequences. While active retention method is an intentional management action plans after the grim assessment of likely losses.

In their survey, Ploywarin and Song (2014) analyzed risk response based on railway construction project in Thailand. They divided risk retention into passive and active risk retention. Active risk retention means the risk identified consciously in a planned way, while passive risk retention which the project managers don't realize during the planning and are ready to deal with it. They also found that in engineering construction risk retention is mostly due to risk identification or analysis of respective errors and they proposed that risk management personnel should do their best to reduce the errors of risk identification and risk evaluation. In addition, Ploywarin and Song (2014) proposed that risk management personnel should make risk decision and implement these decisions on time for completion of significance and large construction projects. The study also found that risk retention measure is one of the common risk management strategies with 53.49 percent.

In another study, Aduma and Kimutai (2018) conducted a study to find out the impacts of Project risk management strategies on project performance at the National Hospital Insurance Fund in Kenya. The purpose of the study was to establish the effect of project risk management techniques on project performance at National Hospital Insurance Fund (NHIF) in Kenya. The study findings indicated that risk retention has a moderate effect on NHIF project performance. The study recommended that more research should be dedicated to the field of risk management in order to unearth even some more methods of risk management that can be influential in terms of helping project managers meet the deliverables that are desired within the set time and budget limits and that the management of NHIF should put in place cost-effective measures for timely risk identification and effective risk mitigation.

2.4 Theoretical Framework

This section reviews theoretical foundations that discuss and explain risk management strategies. The theories assist in appreciating how various risk management responses influence the delivery of housing projects. The theories discussed are; uncertainty theory and theory of constraints.

2.4.1 Uncertainty Theory

Uncertainty theory was introduced by Liu (2002) 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 (Mwangi and Ngugi, 2018). 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 (Mwangi and Ngugi, 2018). Progress tracking demands monitoring not only with 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 (Zwikael&Ahn, 2011). This theory indicates that all risks emanate from uncertainties that a foreseen in the implementation of a project. Therefore, for the delivery of urban housing projects in a case of affordable housing project in Nairobi County construction project, the theory supports monitoring, management and mitigation of risks associated with design, legal, contract and actual project implementation of the affordable housing program in Nairobi County.

2.4.2 Theory of Constraints

The Theory of Constraints (TOC) is a management paradigm that suggests that any manageable system faces a number of constraints that limit the achievement of its organizational goals (Ondara, 2017). The TOC largely takes a process based view of firm performance and identifies the rate determining steps, that is, those that are most critical in affecting project performance, and by extension, firm performance. When these are resolved, they have a net effect of enhancing the flow of work and effective allocation and distribution of firm resources. At the minimum, TOC holds

that there is at least one constraint and proposes the use of a focusing process to identify the constraint and organize the rest of the processes around it. In identifying the constraint or constraints, TOC proposes measurement and control using three key parameters, namely, the throughput, operational expense and inventory. Inventory represents the financial costs of all items necessary in production; operational expense, on the other hand, is the cost of production (converting inventory into throughput); while throughput refers to the rate at which the system generates sales revenues.

According to TOC, if there were no constraints inhibiting an organization from achieving its throughput, its performance would be infinite. This is however impossible in a real life system, and only by optimizing flow through the constraints, can overall output be maximized. Constraints can be internal, where the system fails to generate sufficient supply to match demand, conversely, external, where supply exceeds demand. In order to focus processes through the constraints, TOC proposes five key steps, namely, identification of the systems constraints, formulating strategies on exploiting the identified constraints, prioritizing these strategies, increasing the constraints throughout capacity and monitoring and elevating with the necessary feedback loops. The five focusing steps are known as the Process of Ongoing Improvement (POOGI) and the centroid of their implementation is the identified system constraints (Goldratt, 1990).

. In practice, in the initial definition of construction project risks, project management focuses on the identification of the most critical risks involved (Steyn, 2015). Risk events are thus prioritized according to their potential impact at any given stage in a project. This implies that, along the project life cycle, different risks tend to assume different levels of criticality as the project progresses. Using the feedback loop implied in the last focusing step of TOC approach ensures that risk events are effectively managed by continually reducing the most critical current risk, thereby ensuring that the overall risk is reduced gradually, continually and systematically. This will ensure that scarce resources in the delivery of urban housing projects in a case of affordable housing project in Nairobi County are directed at managing the risks that may impact adversely on the project at any given point, and that emergent risks obtain the required attention, in terms of resource allocation, at the right stage. Ultimately, this will speed up project delivery.

2.4.3 Summary of Theoretical Review

Uncertain theory underscores the need for foreseen uncertainty to be assigned disciplined risk management comprising of 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.

The Theory of Constraints (TOC) as proposed by Goldratt, (1990) suggests that any manageable system faces a number of constraints that limit the achievement of its organizational goals. In the context of affordable housing project, there is recognition of the fact that existing and future constraints are liable to become project risks.

2.5 Conceptual Framework

A conceptual framework for this research project depicts major variables and categories, connected by lines and arrows to show relationships and interactions. The dependent variable for this research project was project delivery and the independent variables were; risk avoidance strategy, risk control strategy, risk retention strategy and risk transfer strategy. Figure 2.1 below shows the relationship between risk management strategies and delivery of urban housing projects in a case of affordable housing program in Nairobi County.

.

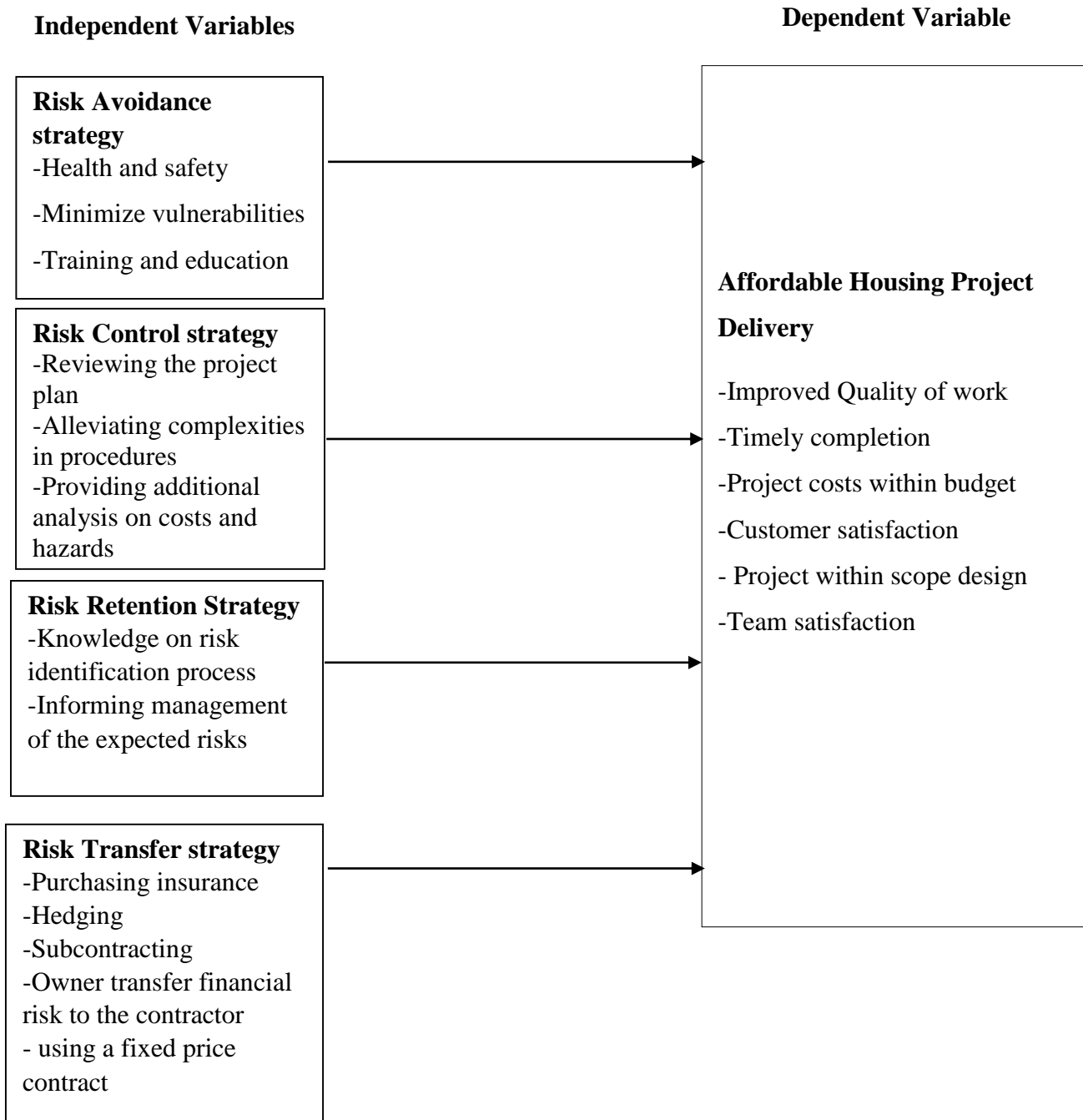


Figure 2.1: Conceptual Framework

2.6 Summary of the Literature Review and Research Gap

Study title	Author	Findings	Research gap
Nawaz et al., (2019)	An innovative Framework for Risk Management in Construction Projects in Developing Countries: Evidence from Pakistan.	The study found out that risk management is a comparatively new field and there is no core system of risk management in the construction industries of developing countries.	This study failed to assess the relationship between project delivery and risk avoidance strategy, risk control strategy, risk retention strategy and risk transfer strategy
Kimani, 2017	Risk analysis and management embraced in Florida construction industry	Finding revealed that that most companies eliminate risks by bidding at a very high price or not bidding for the job. Risk avoidance strategy was found to be one of the favored methods of management of risk in Florida, however, the respondents proposed this practice can lead low quality, low productivity, and delay of projects.	The study only assessed the risk avoidance strategy but failed to study other strategies such as; risk control strategy, risk retention strategy and risk transfer strategy
Wabomba (2015)	Influence of risk management strategies on the performance of selected international development organization	finding showed the existence of the statistically strong connection between avoidance of risk and the performance of the project	The study also only assessed the risk avoidance strategy but failed to study other strategies such as; risk control strategy, risk retention strategy and risk transfer strategy

	based in Nairobi city.		
Bhoola, Hiremath and Mallik (2014)	Risk treatment strategies practiced in software development projects in India.	The results from the study revealed that risk reduction strategy had the most significant success in software development projects.	Strategies like avoidance, transference, and acceptance were only reflected in the form transparency in communication to stakeholders.
Carvalho (2016)	Risk management impact on the performance of projects in Brazil	The study findings showed positive results of adopting risk management control to reduce the occurrence of a risk factor.	The study also only assessed the risk control strategy but failed to study other strategies such as; risk avoidance strategy, risk retention strategy and risk transfer strategy
Ondara (2017)	Risk management strategies and performance of construction firms in selected Counties in Kenya.	The findings showed that resource risk, personnel risk and project control risk management strategies had a significant influence on firm performance, implying that any effect on firm performance was not solely due to chance. Risk control strategy and insurance risk management strategies did not have a statistically significant effect	The study assessed risk control strategy and insurance risk management strategies on project performance. However the study did not consider risk avoidance strategy, risk retention strategy.
Koolwijk (2015)	Risks shared and allocated by construction	Findings indicated risks need to be a collaborative effort for many	The study considered collaborative effort for many contracting parties but

	clients and contractors in Dutch Project Alliances	contracting parties for good management.	failed to study the influence of risk avoidance strategy risk control strategy and risk retention strategy
Ahamed and Azhar (2016)	Assessment of recent practices of risk scrutiny and management embraced by contractors in Florida construction industry	Findings revealed that contractors of Florida use both risk transfer through financial means such as insurance or to specialty subcontractor, however, favors transferring the risks to specialty sub-contractor when the loss expected is higher	The study assessed risk transfer strategy but failed to assess the influence of risk avoidance, risk control strategy and risk retention strategy
Ploywarin and Song (2014)	Risk response based on railway construction project in Thailand.	The study found that in engineering construction risk retention is mostly due to risk identification or analysis of respective errors and they proposed that risk management personnel should do their best to reduce the errors of risk identification and risk evaluation.	The study considered risk retention strategy but failed to consider risk avoidance, risk control strategy and risk transfer strategy
Aduma and Kimutai (2018)	Impacts of Project risk management strategies on project performance at the National Hospital Insurance Fund in Kenya	In regard to risk retention, the study findings indicated that risk retention have a moderate effect on NHIF project performance	The study only considered risk retention but did not study how risk avoidance, risk control strategy and risk transfer strategy influence project performance

Table 2.1: Literature Review and Research Gap

Looking at the studies reviewed, it is evident that there exist no studies that have been conducted to assess influence of risk management strategies on delivery of urban housing projects in Kenya a case of affordable housing project in Nairobi County. This study therefore sought to fill this specific gap.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter describes the research design, target population, sampling strategy, data collection tools and procedure, nature of pilot study, reliability and validity of research instruments, data analysis and presentation methods and ends with the ethical considerations.

3.2 Research Paradigm

This research project adopted the positivist research philosophy based on its relevance to proposed study. The research project used data gained from positive verification of observable experiences rather than introspection or intuition. In addition, the positivist approach tends to exclusively rely on theories that can be directly tested (Bhattacharjee, 2012). Studies by Creswell (2015) assert that the positivist research approach belief on prediction and control; This research project is embedded on cause and effect to be used as a basis for predicting and controlling natural phenomena and the goal to discover these phenomena.

3.2.1 Research Design

This research project adopted a descriptive research design. Orodho (2015) argues that a descriptive research design is a way of collecting data by administering a questionnaire to a sample of respondents. The main purpose of a descriptive survey is to detail the situation as is, that is, the researcher reports the findings (Kombo and Tromp 2016). This method is suitable when collecting information about peoples' attitudes, habits or variety of education and social issues (Orodho and Kombo, 2017). The reason for applying descriptive research design is because, it is an effective method to analyze non-quantified topics and issues, it offers an opportunity to observe the phenomenon in a completely natural and unchanged natural environment and it offers the opportunity to integrate the qualitative and quantitative methods of data collection. Therefore, owing to the wide range of benefits, definitions, descriptions and strengths, descriptive survey design was used in this study. A descriptive research design was applied to collect views and opinions of the personnel working in State Department of Housing and Urban Infrastructure

Development within the Ministry of Transport, Infrastructure, Housing and Urban Development in Kenya. The design was used because it allowed for an in-depth investigation on the influence of risk management strategies on delivery of urban housing project in Nairobi County

3.3 Target Population

This study targeted eighty seven (87) respondents drawn from upper and middle managers working in the State Department For Housing and Urban Development in Kenya who are tasked the functions of among others; housing policy management, development and management of affordable housing, management of building and construction standards and codes, national secretariat for human settlement, management of civil servants housing scheme, development and management of government housing, building research services and registration of contractors and materials suppliers building research services.

Table 3.1: Target Population

Categories	Population	Percentages (%)
Housing-Civil Servants Housing Scheme	17	19.54
Kenya Building Research Centre	14	16.09
Urban Development (Housing, Disaster and Safety Management)	16	18.39
Urban Planning, Policy and Research	14	16.09
Urban Infrastructure and Services	18	20.69
Urban Management	8	9.20
Total	87	100

(State Department for Housing and Urban Development, 2020)

3.4 Sample Size and Sampling Procedure

A sample is a subset of the total population that is of interest for the study topic. A sample must be of the required size in order to have the required degree of accuracy in the results as well as to be able to identify any significant difference/association that may be present in the study population (Israel, 2014). The other important issue related to sampling is the sampling technique which entails selecting the required sample size in a manner, so that the sample is representative

of the study population (Schutt& Engel, 2014). The following therefore are the sample size and sampling procedure for this study:

3.4.1 Sample Size and Sampling Technique

The researcher used stratified and simple random sampling technique. Stratified sampling was used to group the target population into stratas in the State Department for Housing and Urban Development in Kenya namely; Housing-Civil Servants Housing Scheme, Kenya Building Research Centre, Urban Development (Housing, Disaster and Safety Management), Urban Planning, Policy and Research, Urban Infrastructure and Services and Urban Management. From each category, representative samples will be drawn through simple random methods. This method ensures that all the individuals in the target population have an equal chance of being included in the sample. This help to eliminate biasness. The study sample was computed using the Yamane formula from the target population as shown below.

$$n = N / (1 + Ne^2)$$

Where;

n = Sample size

N= Total population

e = Level of Precision at 95% Confidence interval

Using the above formula, the sample size is:

$$n = 87 / (1 + 87 * 0.05^2)$$

$$n = 72$$

Therefore, the sampling frame consists of 72 respondents were selected to participate in the study from a sample size of 87 respondents)

3.5 Research Instruments

Research instruments are the fact finding strategies or tools for data collection (Annum, 2019). In educational research, data collection, forms an essential component of the research process. This

is because it enables the researcher to obtain relevant information or gain the experience of others from which help to learn lessons for the enrichment of the research report. This study used questionnaires as data collection tool as discussed here below:

3.5.1 Questionnaires

The study used semi-structured questionnaires to collect primary data from the respondents. Questionnaires were chosen as the ideal data collecting tool because they allow collection of responses in a standardized way, thus, questionnaires are more objective, certainly more so than interviews. Secondly, it is generally relatively quick to collect information using a questionnaire (Choudhury, 2018). The questionnaires were prepared by the researcher and administered on all the respondents. The questionnaire contained two sections: The respondents' profile and an analysis influence of risk management strategies on delivery of urban housing projects in a case study of affordable housing program in Nairobi County. To do this the questionnaire had five sections that sought answers to the influence of risk management strategies on delivery of urban housing project; of risk avoidance on the delivery of urban housing project; the relationship between risk control and the delivery of urban housing project; the relationship between risk retention and the delivery of urban housing project and the relationship between risk transfer and delivery of urban housing project. The questionnaires had open ended questions and likert scales to gather data. The five point likert scales were used to measure attitudes or opinions. With this scale, respondents were asked to rate items on a level of agreement with various statements. A Likert scale assumes that the strength/intensity of an attitude is linear, i.e. on a continuum from strongly agree to strongly disagree, and makes the assumption that attitudes can be measured. The researcher sought permission to collect data from the respondents through an introduction letter. The questionnaires were delivered to each of the respondents through research assistants and some of the questionnaires were sent via email so as to ensure that all the selected respondents are reached.

3.6 Pilot Study

A pilot study is a minor study that is conducted before the main study with the objective of assessing both the study feasibility and the suitability of the data collection tool. A pilot test is further stated to be a small scale trial run of all procedures planned for use in the main study (Monette, Sullivan & DeJong, 2013). The latter is examined through determination of both validity

and reliability of the research instrument. The pilot study was conducted among randomly selected employees. The respondents in this minor study were 7 who were approximately 10% of the unit of analysis (Creswell, 2017).

3.6.1 Validity of the Instrument

To establish the validity of the research instrument the study sought opinions of experts in the field of study especially the study’s supervisor and lecturers in the department of project management. This facilitated the necessary revision and modification of the research instrument thereby enhancing validity. A four-point scale given in Table 3.3 shows the criteria for determining validity.

Table 3.3: Criteria for Determining Validity

Criteria	Rating
Relevance	1 = not relevant 2 = item need some revision 3 = relevant but need minor revision 4 = very relevant
Clarity	1 =not clear 2 = item need some revision 3 = clear but need minor revision 4 = very clear
Simplicity	1 = not simple 2 = item need some revision 3 =simple but need minor revision 4 = very simple
Ambiguity	1 = doubtful 2 = item need some revision 3 = no doubt but need minor revision 4 = meaning is clear

Then, for each item in the research instrument, CVI will be computed as the number of experts giving a rating of either 3 or 4, divided by the total number of experts (Denise and Beck, 2006; Muij’s, 2004). Consequently, the content validity index (CVI) of each of the items in the research instruments will be calculated using equation 6.

$$CVI = \frac{E_{r3.4}}{E_T} \dots \dots \dots (6)$$

Where, CVI is the content validity index

$E_{r3.4}$ is the expert rating of either 3 or 4

E_T is the total number of experts

The items that will have CVI over 0.75 will be retained (Yaghmale, 2003), while the rest will be modified, based on the experts' opinions.

3.6.2 Reliability of the Instrument

This research adopted the Cronbach's alpha (Cronbach, 1951), also known as the reliability coefficient to determine the internal consistency/ reliability of the Likert-type scales used in the research instrument. This is an index of reliability associated with the variation accounted for by the true score of the underlying construct. Reliability is said to be the extent to which a measurement gives results that are consistent (Kothari, 2012). When reliability is upheld, then the research instrument should collect similar data when administered to different sampled populations exhibit related characteristics. The study employed the Cronbach alpha (α) coefficient to test the reliability of the research instrument. The Cronbach's reliability coefficient above 0.70 was considered as an indication that the items on the questionnaire are reliable.

3.7 Data Collection Procedures

The first stage for the researcher was to get the introduction letter from the School of Open and Distance Learning in the University of Nairobi. The researcher then proceeded to the National Council of Science and Technology (NACOSTI) for a research permit. The management of State Department for Housing and Urban Development in Kenyawas contacted, requested and informed about the study to be carried out at their department for approval and the interview dates were then fixed before engaging the respondents on the details. After agreement on the on the interview dates, the researcher went and organized logistics of data collection. Upon the day of interview, the researcher hired two research assistants to interview and capture data in the interview guide. The responses from the questionnaire were collected later after giving the respondents some time

to respond. Therefore, the procedure for administering the questionnaires to the selected respondents was drop and pick method and it entailed self-introduction and subsequent presentation of introduction letter from University of Nairobi. The study analysed primary data relying on the questionnaires in the collection of the primary data.

3.8 Data Analysis

According to Zikmund, Babin, Carr & Griffin (2017), data analysis refers to the application of reasoning to understand data that has been gathered with the aim of determining consistent patterns and summarizing the relevant details revealed in the investigation. The data collected was analyzed by use of the Statistical Package for Social Sciences (SPSS) program. Quantitative methods like mean, percentages, frequencies and standard deviation were used to describe the findings while inferential statistics like correlation analysis were used to establish relationships between the independent and dependent variables. The findings were presented in frequency tables. A multiple regression model was used to measure the level of significance of the influence of the independent variables on the dependent variable.

The multiple regression model for this study will be:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \varepsilon$$

Where;

Y= Project Delivery (dependent variable)

β_0 = Constant

$\beta_1, \beta_2, \beta_3,$ and β_4 are regression coefficients

X_1 = Risk Avoidance strategy

X_2 = Risk Control strategy

X_3 = Risk Retention Strategy

X_4 = Risk Transfer strategy

ε is error term, that is, a surrogate for all variables influencing market share

Using statistical software, this regression model was tested to see how well it fit the data. The significance of each independent variable was also be tested. Fischer distribution test that is called F-test was be applied. It refers to the ratio between the model mean square divided by the error mean square. F-test was also used to test the significance of the overall model at a 5 per cent level of confidence. The p-value for the F-statistic was applied in determining the robustness of the

model. F-test was used to compare the two standard deviations of two samples and check the variability unlike a t-test which is used to test the hypothesis whether the given mean is significantly different from the sample mean or not.

3.9 Ethical Considerations

The CEOs/Head of department of State Department of Housing and Urban Infrastructure Development were contacted to provide a written consent before the research assistants are allowed to collect the data. The raw data and the findings was stored in computer folders that are password protected to avoid unauthorized access. The meetings between the research assistants and the respondents were scheduled at the convenience of the respondents. The respondents were briefed on the purpose and significance of the study before the questionnaires were administered. All the respondents were assured of their confidentiality. Any respondent who was not willing to participate in the study was accorded their rights. The researcher also sought informed consent from the respondents to participate in the study and those who did not wish to participate were exempted from the study and also those who wished to withdraw from the study were allowed to do so. Moreover, the information provided by the respondents as agreed was only used for academic purposes and the purpose of the study was explained to them in a language that they could understand.

3.10 Operationalization of Variables

Objectives	Variables	Indicators	Scale	Data collection on tools	Data Analysis Techniques
To establish how risk avoidance influence the delivery of urban housing projects in a case of affordable housing project in Nairobi County	Risk Avoidance	-Health and safety -Minimize vulnerabilities -Training and education	Ordinal	Questionnaire	Descriptive and inferential analysis
To assess the influence of risk control on the delivery of urban housing projects in a case of affordable housing project in Nairobi County	Risk Control	-Reviewing the project plan -Alleviating complexities in procedures -Providing additional analysis on costs and hazards	Ordinal	Questionnaire	Descriptive and inferential analysis
To evaluate the influence of risk retention on the delivery of urban housing projects in a case of affordable housing project in Nairobi County	Risk Retention	-Knowledge on risk identification process -Informing management of the expected risks	Ordinal	Questionnaire	Descriptive and inferential analysis
To analyze the influence of risk transfer on the delivery of urban housing projects in a case of affordable housing project in Nairobi County	Risk Transfer	-Purchasing insurance -Hedging -Subcontracting -Owner transfer financial risk to the contractor - using a fixed price contract	Ordinal	Questionnaire	Descriptive and inferential analysis

CHAPTER FOUR

DATA ANALYSIS AND INTERPRETATION OF THE RESULTS

4.1 Introduction

The main objective of this study was to find out the influence of risk management strategies on delivery of urban housing project in Kenya. a case of affordable housing program in Nairobi county. This chapter presents the analysis of the results and their interpretation and discussion of the results.

4.2 Response Rate

The study used simple and stratified random sampling to select 72 respondents drawn from the upper and middle level management in the State Department for Housing and Urban Development in Kenya. The analysis of findings is according to the returned questionnaires indicated that, out of the 72 questionnaires sent to the sampled subjects, 64 were filled and returned which translated to 88.8% response rate. This commendable response rate was made a reality after the researcher made personal calls and visits to remind the respondent to fill-in and return the questionnaires. Mugenda and Mugenda (2003) indicated that a response rate of 50%, 60% or 70% of the response rate was sufficient for a study.

Table 4.1 Response Rate

Questionnaires	No.	%
Questionnaires received	64	88.8%
Questionnaires not received	8	11.2%
Total	72	100%

4.3 Pilot Study Results

The study assessed the internal consistency of the research questionnaires, Cooper and Schilder (2011) agree that the respondents used in pilot test should constitute 10 percent of the sample used in data collection. Therefore 7 questionnaires were administered in pilot testing to test the degree of accuracy of the instrument used. The pilot study was done among randomly selected employees. The results of analysis are shown in Table 4.2.

Table 4.2 Pilot Study Results

Variable	Test Items	Cronbach's Alpha
Risk avoidance strategy	8	.829
Risk Control strategy	9	.772
Risk Transfer strategy	8	.821
Risk retention Strategy	4	.757
Delivery of the Urban Housing Project	9	.840

The pilot results indicated that the reliability of risk avoidance strategy was 0.829 using Cronbach's alpha test of reliability; the reliability of risk control strategy was 0.772; the reliability of risk transfer strategy was 0.821; the reliability of risk retention strategy was 0.757 and the delivery of the Urban Housing Project was 0.840. The study results revealed that all the variables gave an alpha test value of greater than 0.70, therefore all the items were regarded reliable. This was according to Zikmund, Babin, Carr and Griffin (2010), who stated that a cronbach's alpha of 0.7 as a minimum level is acceptable.

4.4 Demographic Information

Respondents were asked to provide information regarding their demographic profile which included; gender, age, designation, period of continuous service at the ministry, number of years worked in present capacity, period worked for public institutions and level of education since these characteristics could have confounding effects on risk management strategies and delivery of urban housing project in Kenya.

4.4.1 Gender

The study sought to assess the gender distribution of the respondents drawn from the upper and middle level management in the State Department for Housing and Urban Development in Kenya. This is because different gender has different opinions about various issues. From the findings, 75% of the respondents were male while 25% were female as shown in Table 4.1:

Table 4.1: Gender of the respondents

Gender	Percentage	No. of respondents
Male	75%	48
Female	25%	16
Total	100%	64

4.4.2 Age Group of the Respondents

The study sought to find out the age group of the respondents working at the State Department for Housing and Urban Development in Kenya, from the findings, 19% of the respondents were below 30 years, a further 19% were between 30-34 years, 22% were between 35-39 years, 26% were between the ages of 40-44 and 14 % were 45 years and above as shown in Table 4.2:

Table 4.2: Age Group of the Respondents

Age group of the respondents	Percentage	No. of respondents
Below 30 years	19%	12
30-34 years	19%	12
35-39 years	22%	14
40-44 years	26%	17
Above 45 years	14%	9
Total	100%	64

4.4.4 Designation at the Department in the State Department for Housing and Urban Development in Kenya

The study sought to find out the designation of the respondents at the State Department for Housing and Urban Development in Kenya. Findings indicate that majority (60%) hailed from the middle level management while 40% were from the senior level management as shown in the Table 4.3 :

Table 4.3: Designation at the Department in the Ministry

Designation at the Department in the Ministry	Percentage	No. of respondents
Senior level management	40%	26
Middle level management	60%	38
Total	100%	64

4.4.5 Period of Continuous Service at the Ministry

The study sought to find out the respondent's period of continuous service at the Ministry of Transport, Infrastructure, Housing and Urban Development in Kenya, from the findings 12% of the respondents had worked for 5 years and below, a further 35% had worked between 6-10 years, 20% had worked between 11-15 years and 25% had worked for 16-20 years and 5% had worked for 21 years and above as shown in the Table4.4:

Table 4.4: Period of continuous serve at the Ministry

Period of continuous service at the Ministry	Percentage	No. of respondents
Less than 5 years	12%	8
6-10 years	35%	22
11-15 years	20%	13
16-20 years	25%	16
Over 21 years	8%	5
Total	100%	64

4.4.6 Period Worked in Present Capacity

The study sought to find out the period worked at the current capacity in the State Department for Housing and Urban Development in Kenya. From the findings 10% of the respondents had worked for less than 3 years, a further 30% had worked between 3-5 years, 40% had worked between 6-9 years and 20% had worked for 10 years and above as shown in the table 4.5:

Table 4.5: Period Worked in Present Capacity

Period worked at the current capacity	Percentage	No. of respondents
Less than 3 years	10%	7
3-5 years	30%	19
6-9 years	40%	26
Over 10years	20%	12
Total	100%	64

4.4.7 Period worked for Public institutions

The study sought to find out the period worked in the public institutions in Kenya. According to the study findings, 13% of the respondents had worked for 1-2 years, 35% had worked between 3-5 years, 20% had worked between 6-10 years, 25% had worked between 10-15 years and 7% had worked for over 15 years as shown in the Table4.6:

Table 4.6: Period Worked for Public Institutions

Period worked in the public institutions in Kenya	Percentage	No. of respondents
1-2 years	13%	8
3-5 years	35%	22
6-10 years	20%	13
10-15 years	25%	16
Over 15 years	7%	5
Total	100%	64

4.4.8 Level of Education

The study sought to find out the level of education, from the findings 15% had a diploma, 45% had an undergraduate degree, and 35% had a master's degree while 5% had a Doctorate as shown in the Table 4.7:

Table 4.7: Respondents' level of Education

Level of Education	Percentage	No.
Diploma	15%	10
Undergraduate degree	45%	29
Master's degree	35%	22
Doctorate	5%	3
Total	100%	64

4.5 Study Variables

The respondents were asked to rate their opinions on the risk management strategies on delivery of urban housing project in Kenya, their responses are analyzed in the sections that follow.

4.4.1 Risk Avoidance Strategy and Project Delivery

The study sought to find out the area in which risk avoidance/prevention influence the project delivery in construction of affordable housing program. All the respondents (100%) indicated that risk avoidance/prevention strategies ensures project quality, customer satisfaction, effective management of resources and effective project planning. In regard to the frequency of application of risk avoidance/prevention approach in construction of affordable housing project, the respondents indicated that risks avoidance approach is applied on continuous basis and it is reviewed weekly. When asked the reason for choosing risk avoidance/prevention as an appropriate approach for the project, all respondents indicated that it is chosen based on the project manager's decision and also due to experience in construction projects of such nature. When asked who is responsible for adoption of risk avoidance strategies, the Director of Urban Development Housing, Disaster and Safety Management indicated that the contractors are responsible for the adoption of risk avoidance strategies.

Table 4.8: Relationship between risk avoidance strategy and project delivery

Items	Mean	Std. Deviation	Skewness	Kurtosis
Risk avoidance ensure project quality which in turn improves delivery	4.46	.721	-1.441	2.429
Risk avoidance helps in efficient management of resources	4.05	.944	-1.169	1.388
In this project risks avoidance entails adjusting the project plan so that the conditions triggering a risk event are no longer present and the risk is eliminated	4.14	.902	-1.113	1.122
The project uses proven and existing technologies to lower the project costs	4.12	.899	-1.133	1.219
The project chooses suppliers with a proven track record in order to eliminate the risks associated with poor material quality and non- delivery	4.22	.859	-1.238	1.754
Information displayed on the screen during electronic banking is clear, well organized and easy to read.	4.11	.885	-.979	.715
The project uses health and safety measures to ensure smooth running of the project delivery process	4.06	.983	-.945	.259
The project managers ensures that workers are get training and education in order to ensure quality delivery of the project	4.10	.908	-1.336	2.142
The project directors have put in place measure to minimize vulnerabilities such as accidents	4.17	.905	-1.358	1.868

As it can be seen from the Table 4.1, the findings indicate that risk avoidance ensure project quality which in turn improves delivery (mean = 4.46, standard deviation= 0.721, skewness=-1.441, kurtosis= -0.429). Similarly, Risk avoidance helps in efficient management of resources (mean= 4.05, standard deviation= 0.944, skewness= -1.169, kurtosis= 1.388).

Moreover, risk avoidance entails adjusting the project plan so that the conditions triggering a risk event are no longer present and the risk is eliminated (mean= 4.14, standard deviation= 0.902, skewness=-1.113, Kurtosis= 1.122). The implication is that the project uses proven and existing technologies to lower the project costs (mean = 4.12, standard deviation= 0.899, skewness= -1.133, kurtosis= 1.219). Consequently, respondents had it in mind that the project chooses suppliers with a proven track record in order to eliminate the risks associated with poor material quality and non-delivery (mean = 4.22, standard deviation= 0.859, skewness= --1.238, kurtosis= 1.754).

In addition, the respondents stated that, information displayed on the screen during electronic banking is clear, well organized and easy to read (mean = 4.11, standard deviation= 0.885, skewness= -0.979, kurtosis= 0.715). On the issue that the project uses health and safety measures to ensure smooth running of the project delivery process, the results summed up to a mean of 4.06, a standard deviation of 0.983, skewness of -0.945 and kurtosis of 0.259. Furthermore, the project managers ensures that workers are get training and education in order to ensure quality delivery of the project with (mean=4.10, standard deviation= 0.908, skewness= -1.336, kurtosis of 2.142). Lastly, the results on the project directors have put in place measure to minimize vulnerabilities such as accidents summed up to a mean of 4.17, standard deviation of 0.905, skewness of -1.358 and kurtosis of -1.868. This finding implies that that respondents agreed on the influence of risk avoidance/prevention on project delivery in construction of affordable housing program.

This concurred to the findings by Kimani, 2017) who revealed that most favorite risk strategy adopted by contractors in Florida is risk avoidance with the response rate of 85%. The study also reveals that most companies eliminate risks by bidding at a very high price or not bidding for the job. Risk avoidance strategy was found to be one of the favored methods of management of risk, however, the respondents proposed this practice can lead low quality, low productivity, and delay of projects. Ploywarin and Song (2014), stated that avoiding risks refers to taking an initiative to refuse project that may lead to risk. They also argue that construction project cannot eliminate all risk but by a method of risk aversion is suitable so as to reduce its occurrences which can cause damage.

4.4.2 Risk Control Strategy and Project Delivery

The sought to find out the criteria considered as a measure of risk control vis-à-vis to project delivery. The study findings indicated that project cost, project completion time, client satisfaction and quality of the project are considered as the most important measures of risk control to ensure project delivery. When asked to rate the percentage to which risk control regulate project delivery, 10% of the respondents indicated that risk control regulate project delivery to about 30-50%; 55% of the respondents indicated that indicated that risk control regulate project delivery to about 50-70% and 35% of the respondents indicated that indicated that risk control regulate project delivery to over 70%. When asked to state whether risk control/loss control influence project delivery, majority of the respondents (85%) strongly agreed that risk control/loss control influence project delivery and 15% agreed that risk control/loss control influence project delivery. When asked to explain why risk control/loss control influence project delivery, majority of the respondents stated that the risk control actions of taking early arrangements, adopting less complex processes, conducting more tests, choosing more stable supplies and reducing redundancy contributes to project delivery.

Table 4.9: Risk Control Strategy and Project Delivery

Items	Mean	Std. Dev	Skewness	Kurtosis
Controlling the risk of financial failure and delays in payments to contractors, reduces the risk of cost overruns and thereby improves project delivery	3.93	1.070	-.858	-.097
Ensuring optimal ground and site conditions reduces the risk of defects and cost and time overruns hence improves project delivery	3.68	1.157	-.676	-.531
Ensuring good quality of construction materials through an efficient supply chain reduces the risk of quality defects hence improves project delivery	3.46	1.281	-.439	-.923
Effective supervision of project personnel reduces risk of time overruns hence improves project delivery	3.55	1.209	-.578	-.687
Adherence to technical plans improves project delivery	3.54	1.215	-.541	-.760
Continual schedule revisions reduces the risk of time overruns	3.63	1.177	-.749	-.374
Monitoring the quality of non-conformance report against an agreed quality standard ensures minimal variation from quality specification	3.68	1.217	-.742	-.493
Providing additional analysis on costs and hazards reduces project cost overrun	4.01	0.989	-.787	-.138
The project directors have devised strategies to alleviate complexities in procedures which reduces time overruns	3.85	1.012	-.523	-.445

As it can be seen from the table 4.2 above, the findings indicate that the respondents agreed that controlling the risk of financial failure and delays in payments to contractors, reduces the risk of cost overruns and thereby improves project delivery, their enterprise has generated high sales (mean = 3.93, SD = 1.070, skewness=-0.858, kurtosis= -0.097). Likewise, ensuring optimal ground and site conditions reduces the risk of defects and cost and time overruns hence improves project delivery (mean = 3.68, standard deviation = 1.157, skewness= -0.637, kurtosis= -0.531).

Ensuring good quality of construction materials through an efficient supply chain reduces the risk of quality defects hence improves project delivery (mean= 3.46, standard deviation = 1.281, skewness= -0.439, kurtosis= -0.923).

Furthermore, the respondents indicated that effective supervision of project personnel reduces risk of time overruns hence improves project delivery (mean = 3.55, standard deviation = 1.209, skewness= -0.578, kurtosis= -0.687). The results on adherence to technical plans improves project delivery summed up to a mean of 3.54, a standard deviation of 1.215, skewness of -0.541 and kurtosis of -0.760.

The results that the continual schedule revisions reduces the risk of time overruns summed up to a mean of 3.63, a standard deviation of 1.177, skewness of -0.749 and kurtosis of -0.374. On the issue that monitoring the quality of non-conformance report against an agreed quality standard ensures minimal variation from quality specification summed up to a mean of 3.68, a standard deviation of 1.217, skewness of -0.742 and kurtosis of -0.493. Providing additional analysis on costs and hazards reduces project cost overrun (mean = 3.68, standard deviation = 1.157, skewness= -0.637, kurtosis= -0.531). Lastly, the project directors have devised strategies to alleviate complexities in procedures which reduces time overruns (mean= 3.46, standard deviation = 1.281, skewness= -0.439, kurtosis= -0.923). The above findings are as presented in Table 4.7 below

This implied that the level of agreement on statements regarding the relationship between risk control strategy and project delivery. This concurred to the findings by Rahman and Kumaraswamy (2015) stated that some risks for effective management they require a collaboration of contracting parties so that they can be managed effectively. They categorized joint risk management under relational contracting principles. These principles are important under various undertakings, which include the alliance of project and joint venturing (Jones 2008). Potts (2016) contended that that risk can be transferred to parties who can manage it properly. According to him, risk can be transferred to various actors which include; the client, subcontractor, contractor, designer and insurer depending on characteristics of risks.

4.4.3 Risk Retention Strategy and Project Delivery

The study sought to find out the challenges which may have been caused by lack of risk retention strategy in this project. Majority of the respondents (90%) indicated that the likely risks due to lack of risk retention strategy on project delivery include cost overruns, contractor-client conflict and poor quality. When asked to rate the percentage to which risk retention strategies regulate project delivery, 20% of the respondents indicated that risk retention strategies regulate project delivery to about 30-50%; 30% of the respondents indicated that indicated that risk retention strategies regulate project delivery to about 50-70% and 50% of the respondents indicated that indicated that risk retention strategies regulate project delivery to over 70%. When asked to state whether risk retention strategies influence project delivery, majority of the respondents (75%) strongly agreed that risk retention strategies influence project delivery and 25% agreed that risk retention strategies influence project delivery. When asked to state contributions of risk retention strategies on the project delivery, all respondents (100%) cited time, cost, quality and reduced schedules as the contribution of risk retention strategies on project delivery.

Table 4.10: Relationship between risk retention strategy and project delivery

Items	Mean	Std. Deviation	Skewness	Kurtosis
Use of appropriate technology helps in retaining risk and thereby positively influences project delivery	4.46	.721	-1.441	2.429
The government (Ministry) self-insures for small risks to ensure better project delivery through reducing costs	4.05	.944	-1.169	1.388
I understand most of the operations I perform during any transaction	4.14	.902	-1.113	1.122
The project has enough knowledge on risk identification process	4.12	.899	-1.133	1.219

As it can be seen from the Table 4.3, the findings indicate that use of appropriate technology helps in retaining risk and thereby positively influences project delivery (mean = 4.46, standard

deviation= 0.721, skewness=-1.441, kurtosis= -0.429). Similarly, the government (Ministry) self-insures for small risks to ensure better project delivery through reducing costs (mean= 4.05, standard deviation= 0.944, skewness= -1.169, kurtosis= 1.388). Moreover, the respondents agreed at understand most of the operations I perform during any transaction (mean= 4.14, standard deviation= 0.902, skewness=-1.113, Kurtosis= 1.122). Lastly, they agreed that the project has enough knowledge on risk identification process (mean = 4.12, standard deviation= 0.899, skewness= -1.133, kurtosis= 1.219). This implied that, risk retention influence the delivery of urban housing projects in Nairobi County

This concurs to the findings by Ploywarin and Song (2014) who stated, that in engineering construction risk retention is mostly due to risk identification or analysis of respective errors and they proposed that risk management personnel should do their best to reduce the errors of risk identification and risk evaluation. In addition, Ploywarin and Song (2014) proposed that risk management personnel should make risk decision and implement these decisions on time for completion of significance and large construction projects

4.4.4 Risk Transfer Strategy and Project Delivery

When asked the reason for choosing risk transfer strategy as an appropriate approach for the project, all respondents indicated that it is chosen based on client's wish, nature of work and previous experience in construction projects of such nature. The study also sought to find out the extent to which respondents agreed on the influence of risk transfer strategy on project delivery. The study findings indicated that 70% of the respondents strongly agreed the risk transfer strategy influences project delivery, 15% of the respondents agreed the risk transfer strategy influences project delivery, 10% disagreed that risk transfer strategy influences project delivery and 5% strongly disagreed that risk transfer strategy influences project delivery.

Table 4.11: Relationship between risk transfer strategy and project delivery

Items	Mean	Std. Deviation	Skewness	Kurtosis
Fixing material prices through forward contracts reduces risk of cost overruns through reducing price volatilities hence improving project delivery	4.37	.792	-1.710	4.108
Favourable policy wording increased project delivery	4.25	.846	-1.558	3.176
Lack of re-insurance negatively influences project delivery	4.11	.919	-1.020	.774
The project uses fixed price contracts to reduce cost overruns	4.31	.836	-1.606	3.256
Service quality management influences project delivery.	4.04	.998	-1.099	.883
The project has adopted a strategy of transferring financial risk to the contractors to reduce cost overruns	4.03	.954	-1.025	.835

As it can be seen from the table 4.4 above, the findings indicate that the fixing material prices through forward contracts reduces risk of cost overruns through reducing price volatilities hence improving project delivery, this is attested by the results (mean= 4.37, standard deviation= 0.792, skewness= -1.710, kurtosis=4.108). Similarly, they agreed that favourable policy wording increased project delivery (mean= 4.25, standard deviation= 0.846, skewness= -1.558, kurtosis= 3.176).

The results also reveal that lack of re-insurance negatively influences project delivery (mean= 4.11, standard deviation= 0.919, skewness= -1.020, kurtosis 0.774). In the same way, the results

also reveal that the project uses fixed price contracts to reduce cost overruns (mean= 4.31, standard deviation= 0.836, skewness= -1.606, kurtosis= 3.256).

The results also revealed that Service quality management influences project delivery (mean= 4.04, standard deviation=0.998, skewness= -1.099, kurtosis of 0.883). Lastly, the results also revealed that the project has adopted a strategy of transferring financial risk to the contractors to reduce cost overruns (mean= 4.03, standard deviation=0.954, skewness= -1.025, kurtosis of 0.835). It therefore implied that the respondents agreed on the influence of risk transfer on the delivery of urban housing projects in a case of affordable housing project in Nairobi County.

This concurred to the findings by Renault and Agumba (2016) related the concept of risk and risk management in construction industry. In their study, they disclosed management of risk involves identifying, evaluating, prioritizing risks by monitoring and using capital in order to reduce the effect of risk so as to achieve project objectives. Ahamed and Azhar (2016) revealed that contractors of Florida use both risk transfer through financial means such as insurance or to specialty subcontractor, however, favors transferring the risks to specialty sub-contractor when the loss expected is higher. Finally, the study also reveals that risk transfer sometimes can lead to poor quality, low productivity and project delays.

4.5 Regression Analysis

Having considered each factor singly a multi-regression was generated to establish the combined risk avoidance strategy, risk control strategy, risk retention strategy and risk transfer strategy. The multiple regression analysis also provided the relative importance of each of the variables in respect to the influence of risk management strategies on delivery of urban housing project in a case of affordable housing program in Nairobi County. The results of multiple regression analysis shown in Table 4.12, table 4.13 and table 4.14.

Table 4.12 Multiple Regression Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.786 ^a	.618	.614	.475

a. Predictors: (Constant), risk avoidance strategy, risk control strategy, risk retention strategy and risk transfer strategy

From Table 4.12, R-Squared is used to evaluate the goodness of fit of a model. In regression, the R square coefficient of determination is a statistical measure of how well the regression line approximates the real data. It measures the proportion of the variation in dependent variable in this case performance of manufacturing firms explained by independent variables. The adjusted R-squared is a modified version of R-squared that has been adjusted for the number of predictors in the model. The adjusted R-squared increases only if the new term improves the model more than would be expected by chance. It decreases when a predictor improves the model by less than expected by chance while the standard error of the estimate is a measure of the accuracy of predictions. In addition, the standard error(S) of the regression provides the absolute measure of the typical distance that the data points fall from the regression line. S is in the units of the dependent variable.

From the results on model summary R= 0.786, R- square = 0.618, adjusted R- square= 0.614, and the SE= 0.47536. The coefficient of determination also called the R square is 0.618. This implies that the effect of the predictor variables (risk avoidance strategy, risk control strategy, risk retention strategy and risk transfer strategy) explains 61.8% of the variations the delivery of urban housing projects in Nairobi County. This implies that a unit change in the predictor variables (risk avoidance strategy, risk control strategy, risk retention strategy and risk transfer strategy) has a strong and a positive effect on delivery of urban housing projects in Nairobi County, Kenya. This study therefore assumes that the difference of 38.2% of the variations is as a result of other factors not included in this study. The standard error is an important indicator of how precise an estimate of the population parameter. As presented in table 4.15 (S=.475) which is 48%. This indicates that the regression model is precise using the units of the dependent variable.

In addition, multiple regression analysis was conducted to test the influence among predictor variables on delivery of urban housing projects in Nairobi County, Kenya. All the four null hypotheses were tested using F statistic. The test results are shown in Table 4.13.

Table 4.13 ANOVA Results

Model	Sum of Squares	df	Mean Square	F	Sig.	
1	Regression	28.063	4	7.016	121.495	.000 ^b
	Residual	3.638	63	.058		
	Total	31.701	67			

a. Dependent Variable: Delivery of urban housing projects

b. Predictors: (Constant), risk avoidance strategy, risk control strategy, risk retention strategy and risk transfer strategy

The findings showed that there was a statistically significant relationship between the independent variables and the dependent variable ($F=121.495$; $p<0.05$). This therefore indicates that the multiple regression model was a good fit for the data. It also indicates that risk avoidance strategy, risk control strategy, risk retention strategy and risk transfer strategy all influence delivery of urban housing projects in Nairobi County, Kenya.

Lastly, the study employed multiple regression analysis to test the hypotheses. Multiple regression analysis was conducted to test the influence among the study variables risk avoidance strategy, risk control strategy, risk retention strategy and risk transfer strategy on delivery of urban housing projects. This was done with a significance level of 0.05, such that when the significance value is less than the 0.05 the null hypothesis is rejected and when it is above 0.05 it is accepted.

Table 4.14 Regression Coefficients

Model	Unstandardized		Standardized	t	Sig.
	Coefficients		Coefficients		
	B	Std. Error	Beta		
(Constant)	.012	.198		.0610	.951
Risk avoidance strategy	.172	.070	.166	2.470	.016
Risk Control strategy	.456	.100	.459	4.551	.000
Risk retention strategy	.207	.071	.212	2.894	.005
Risk transfer strategy	.175	.082	.185	2.133	.037

a. Dependent Variable: Performance

Thus the regression equation becomes;

$$Y = 0.012 + 0.172 X_1 + 0.456 X_2 + 0.207 X_3 + 0.175 X_4 \dots \dots \dots \text{Equation 4.1}$$

From the study, Hypothesis one stated that;

H₀₁: There exist no significant relationship between risk avoidance and the delivery of urban housing projects in a case of affordable housing project in Nairobi County

The study findings indicated that risk avoidance was positive and significant relationship with delivery of urban housing projects in Nairobi County ($\beta = 0.172$; $p < 0.05$). Therefore the null hypothesis was rejected. This implies that risk avoidance enhance delivery of urban housing projects in Nairobi County. In addition, it is confirmed that for each unit increase in risk avoidance there is 0.172 unit increases in delivery of urban housing projects in Nairobi County.

This study concurs with the study by Kimani, (2017) who revealed that most favorite risk strategy adopted by contractors in Florida is risk avoidance with the response rate of 85%. The study also reveals that most companies eliminate risks by bidding at a very high price or not bidding for the job. Risk avoidance strategy was found to be one of the favored methods of management of risk in Florida, however, the respondents proposed this practice can lead low quality, low productivity, and delay of projects. Ploywarin and Song (2014), stated that avoiding risks refers to taking an

initiative to refuse project that may lead to risk. They also argue that construction project cannot eliminate all risk but by a method of risk aversion is suitable so as to reduce its occurrences which can cause damage.

Hypothesis two stated that;

H₀₂: There exist a significant relationship between risk control and the delivery of urban housing projects in a case of affordable housing project in Nairobi County.

The study findings indicated that there was a positive significant effect of risk control on delivery of urban housing projects in Nairobi County by ($\beta = .456$; $p < 0.05$). The null hypothesis was therefore rejected at 95% level of significance. This implies that risk control enhances the delivery of urban housing projects in a case of affordable housing project in Nairobi County. It was also indicated that for each unit increase in risk control there is 0.456 unit increase in delivery of urban housing projects in a case of affordable housing project in Nairobi County.

These findings are in line with Rahman and Kumaraswamy (2015) stated that some risks for effective management they require a collaboration of contracting parties so that they can be managed effectively. They categorized joint risk management under relational contracting principles. These principles are important under various undertakings, which include the alliance of project and joint venturing (Jones 2008). Potts (2016) contended that that risk can be transferred to parties who can manage it properly. According to him, risk can be transferred to various actors which include; the client, subcontractor, contractor, designer and insurer depending on characteristics of risks.

Hypothesis three stated that;

H₀₃: There exist no significant relationship between risk retention and the delivery of urban housing projects in a case of affordable housing project in Nairobi County.

The study findings also showed that ($\beta = .207$; $p < 0.05$), indicating a positive significant relationship between risk retention and delivery of urban housing projects in a case of affordable housing project in Nairobi County. This implies that risk retention affect delivery of urban housing projects in a case of affordable housing project in Nairobi County. It was also indicated that for each unit increase in risk retention there is 0.315 unit increase in delivery of urban housing projects in a case of affordable housing project in Nairobi County.

These findings concur with Ploywarin and Song (2014) who stated, that in engineering construction risk retention is mostly due to risk identification or analysis of respective errors and they proposed that risk management personnel should do their best to reduce the errors of risk identification and risk evaluation. In addition, Ploywarin and Song (2014) proposed that risk management personnel should make risk decision and implement these decisions on time for completion of significance and large construction projects

Hypothesis four stated that;

H₀₄: There exist a significant relationship between risk transfer and the delivery of urban housing projects in a case of affordable housing project in Nairobi County

The study findings also indicated that ($\beta = .175$; $p < 0.05$), indicating a positive and significant effect of risk transfer on the delivery of urban housing projects in a case of affordable housing project in Nairobi County. These findings meant that the null hypothesis that risk transfer has no significant relationship on delivery of urban housing projects in a case of affordable housing project in Nairobi County was rejected at 95% significance level. This implies that risk transfer affect delivery of urban housing projects in a case of affordable housing project in Nairobi County. It was also indicated that for each unit increase in risk transfer there is 0.175 unit increase in delivery of urban housing projects in a case of affordable housing project in Nairobi County.

These findings concur with Renault and Agumba (2016) related the concept of risk and risk management in construction industry. In their study, they disclosed management of risk involves identifying, evaluating, prioritizing risks by monitoring and using capital in order to reduce the effect of risk so as to achieve project objectives

Ahamed and Azhar (2016) revealed that contractors of Florida use both risk transfer through financial means such as insurance or to specialty subcontractor, however, favors transferring the risks to specialty sub-contractor when the loss expected is higher. Finally, the study also reveals that risk transfer sometimes can lead to poor quality, low productivity and project delays.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.0. Introduction

This chapter highlights the key points of research findings, draw conclusions about risk influence management methods to the affordable housing program, presents recommendations. This chapter presents the research results and discussions as guided by the results of the study.

5.1. Summary of the findings

This study sought to find out the influence of risk avoidance strategy, risk control strategy, risk retention strategy and risk transfer strategy on delivery of urban housing project in a case of affordable housing program in Nairobi County. The findings indicated that risk avoidance was positive and significant relationship with delivery of urban housing projects in Nairobi County. This implies that risk avoidance enhance delivery of urban housing projects in Nairobi County.

In regard to the relationship between risk control strategy and project delivery, the study established that that there was a positive significant effect of risk control on delivery of urban housing projects in Nairobi County. This implies that risk control enhances the delivery of urban housing projects in a case of affordable housing project in Nairobi County. Therefore, this strategy ensures project quality which in turn improves delivery; helps in efficient management of resources; in this project risks avoidance entails adjusting the project plan so that the conditions triggering a risk event are no longer present and the risk is eliminated.

In regard to risk retention and project delivery, findings indicated that risk retention strategy has a positive significant relationship between risk retention and delivery of urban housing projects in a case of affordable housing project in Nairobi County. This implies that risk retention affect delivery of urban housing projects in a case of affordable housing project in Nairobi County. This implied project cost, project completion time, client satisfaction and quality of the project are considered as the most important measures of risk control to ensure project delivery.

In regard to the relationship between risk transfer strategy and project delivery, the study established that; there was a positive and significant effect of risk transfer on the delivery of urban housing projects in a case of affordable housing project in Nairobi County. This implies that risk

transfer affect delivery of urban housing projects in a case of affordable housing project in Nairobi County. Therefore, controlling the risk of financial failure and delays in payments to contractors, reduces the risk of cost overruns and thereby improves project delivery;

5.2. Conclusions

5.2.1 Risk Avoidance and Project Delivery

The study concludes that risk avoidance/prevention strategies ensures project quality, customer satisfaction, effective management of resources, cost control and effective project planning and that in the affordable housing program this strategy is applied on continuous basis and it is reviewed weekly and that the responsibility for choosing risk avoidance strategy lies on project manager's and contractors' based on experience in construction projects of such nature.

5.2.2 Risk Control Strategy and Project Delivery

The study also concludes that risk control strategy contributes to effective project cost, project completion time, client satisfaction and quality of the project and that risk control actions of taking early arrangements, adopting less complex processes, conducting more tests, choosing more stable supplies and reducing redundancy contributes to project delivery to a great extent. The study also concludes that risk control strategy ensures control of the risk of financial failure and delays in payments to contractors, reduces the risk of cost overruns; ensuring optimal ground and site conditions reduces the risk of defects and cost and time overruns; ensures good quality of construction materials through an efficient supply chain reduces the risk of quality defects; effective supervision of project personnel reduces risk of time overruns; ensures adherence to technical plans; ensures continual schedule revisions that reduces the risk of time overruns; and that monitoring the quality of non-conformance report against an agreed quality standard ensures minimal variation from quality specification.

5.2.3 Risk Retention Strategy and Project Delivery

In regard to risk retention strategy and project delivery, the study concludes that the challenges caused by lack of risk retention strategy in this project include; cost overruns, contractor-client conflict and poor quality and that risk retention strategies contributes to project delivery to a great

extent. The study also concludes that retention strategies leads to time savings, cost control, better quality and reduced schedules in the construction of the affordable housing projects. In regard to the relationship between risk retention strategy and project delivery, the study concludes that this strategy ensures project uses of appropriate technology that helps in retaining risk and thereby positively influences project delivery and that the government (Ministry) self-insures for small risks to ensure better project delivery through reducing costs.

5.2.4 Risk Transfer Strategy and Project Delivery

In regard to influence of risk transfer on project delivery, the study concludes that reason for adopting risk transfer strategy emanates from client's wish, nature of work and previous experience in construction projects of such nature. The study concludes further that risk transfer the study concludes that this strategy helps in fixing material prices through forward contracts thus reducing risk of cost overruns through reducing price volatilities; favorable policy wording increases project delivery; high insurance premiums lowers uptake of insurance covers by contractors reducing project delivery; lack of re-insurance negatively influences project delivery and that service quality management influences project delivery. From the regression analysis, the study concludes that risk avoidance strategy contributes most to project delivery and risk transfer the least.

5.3. Recommendations

- i). The study findings indicated that the lack of re-insurance negatively influenced the affordable housing program delivery, therefore this study recommends that the department of housing fast track of making sure the ongoing and future projects have a re-insurance contracts.
- ii). The study also established that risk avoidance strategy, risk control strategy and risk retention strategy contributes more on the affordable housing project delivery, therefore the study recommends that the department further increase the adoption of these strategies in order to ensure more successful project delivery.
- iii). The study findings also indicates that risk transfer strategy scored the least in terms of its contribution to the affordable housing program, therefore this study recommends that in order for the State Department for Housing and Urban Development to further improve project delivery, it should put more effort in improving adoption of risk transfer strategies.

5.4 Suggestions for Further Research

This study sought to find out the influence of risk avoidance strategy, risk control strategy, risk retention strategy and risk transfer strategy on delivery of urban housing project in a case of affordable housing program in Nairobi County. Therefore, the study recommends further study to find out the influence of monitoring and reviewing risks on performance of affordable housing projects in other targeted areas in Kenya. Such a study should seek to find out the influence of implementation of a risk response plan, risks tracking, residual risks monitoring and new risks identification on delivery of affordable housing projects.

REFERENCES

- Aduma, L. K., & Kimutai, G., (2018). Project risk management strategies and project performance at the National Hospital Insurance Fund in Kenya. *International Academic Journal of Information Sciences and Project Management*, 3(2), 80-110
- Alexandra P., & Danut D. D., (2016). The measurement and evaluation of the internal communication process project management; *Annals of the University of Oradea. Economic Science Series*, 22(1).
- Annum, G. Y., (2019). *Research Instruments for Data Collection*. <https://sites.google.com/site/godfredannum/>
- Bhattacharjee, A., (2012). *Social Science Research: Principles, Methods, and Practices*. Scholar Commons, University of Florida, USA.
- Burns, R. A., & Burns, R., (2016). *Business Research Methods and Statistics using SPSS*. London: Sage Publications Ltd.
- Choudhury A., (2018). Questionnaire Method of Data Collection: Advantages and Disadvantages. *Natural Hazards Earth System Science journal*, 9, 1307–1325
- Cohen, D. & Crabtree, B., (2016). *Qualitative Research Guidelines Project*. Retrieved from <http://www.qualres.org/> on 1st December 2016.
- Cooper, D., Grey, S., Raymond, G., and Walker, P. (2015). *Project Risk Management Guidelines: Managing Risk in Large Projects and Complex Procurements*. Chichester: John Wiley & Sons, Ltd.
- Creswell, J. W., (2015). *Research Design; Qualitative, Quantitative and Mixed Methods/Approaches*. Thousand Oaks, CA: Sage Publications Ltd.
- Cytonn Investments report, (2020). China State Construction Hands Over Phase 1 of Park Road Housing Project, January 20, 2020, 8:53 am
- Dorfman, M.S., (2015). *Introduction to Risk Management and Insurance, (9th Eds.)*. Englewood Cliffs, N.J: Prentice Hall.
- Fan, M., Lin, N.P., and Sheu, C. (2016). Risk management in large scale projects. *In Proceedings of International Decision Sciences Institute Meeting*. Chihuahua, Mexico.
- Goble, R., & Bier, V. M., (2015). Risk assessment can be a game-changing information technology but too often it isn't; *Risk Analysis: An International Journal*; 33 (11), 1942-1951.
- GoK (2019). *Kenya's Affordable Housing Programme*. Housing Portal Overview, 20th November 2019
- IEC (2016). *Project risk management Application guidelines*. International Standard. Genève: IEC.

- Israel G. D., (2014). *Determining Sample Size*. Available from: <http://www.edis.ifas.ufl.edu/pdffiles/PD/PD00600.pdf>.
- Kartam, N. A. and Kartam, S. A. (2018). Risk and its Management in the Kuwaiti Construction Industry: A Contractor's Perspective. *International Journal of Project Management*, 19, 325–35
- Kaur, M., & Singh, R., (2018). Risk and Risk-Handling Strategies in Construction Projects. *International Journal of Management Studies*, Vol.–V, Issue –1(4), January 2018
- Kimani, P. M., (2017). *Risk management strategies and performance of construction projects in public secondary schools in Murang'a County, Kenya*. Unpublished research project for the award of the Master Degree of Business Administration (Project Management) of Kenyatta University. September 2017
- Kishk, M., & Ukaga, C., (2016). The impact of effective risk management on project success. *In: Dainty, A (Ed) Procs 24th Annual ARCOM Conference*, 1-3 September 2008, Cardiff, UK, Association of Researchers in Construction Management, 799-808.
- Koeh, G., (2020). *Affordable housing: 228 units ready for allocation*. Star newspaper 16 January 2020
- Koirala, M. P., (2015). Risks in Housing and Real Estate Construction Project. *Journal of the Institute of Engineering*, Vol. 10, No. 1, pp. 34–44
- Kombo, D. K., & Tromp, D. L. (2016). *Proposal and Thesis Writing; an Introduction*. Nairobi: Paulines Publications Africa.
- Kothari, C.R., (2016). *Research Methodology; Methods and Techniques*. New Delhi: New Age International Publishers.
- Kurpius, S.E.R. & Stafford, M.E. (2016). *Testing and Measurement: A user friendly guide. Let the Evidence Speak* organized by UNDP and the Spanish Agency for International Cooperation in Madrid (27-28 November).
- Lavrakas, P. J., (2018). *Encyclopaedia of Survey Research Methods*. (Volume 1). Thousand Oaks, CA: Sage Publications.
- Liu, B, (2002). *Theory and Practice of Uncertain Programming*, Physica-Verlag, Heidelberg.
- Lyons, T., & Skitmore, M., (2018) Project risk management in the Queensland engineering construction industry: a survey. *International Journal of Project Management*, 22 (1), 51- 61.
- March, J.G., and Shapira, Z. (2017). Managerial perspectives on risk and risk taking. *Management Science* 33, 1404–1418
- MGI, (2015). *A blueprint for addressing the global affordable housing challenge*. McKinsey Global, www.mckinsey.com/mgi. Institute

- Mhetre, K., Konnur, B. A., & Amarsinh, B. L., (2016). Risk Management in Construction Industry. *International Journal of Engineering Research*, 5 (1) 153-155.
- Mugenda, A. G., (2016). *Social Science Research; Theory and Principles*. Nairobi: Arts Press.
- Mwangi H. M., & Ngugi, L., (2018). Risk management practices and performance of construction projects in Nairobi City County Government, Kenya. *International Academic Journal of Information Sciences and Project Management*, 3 (2) 111-136
- Nawaz, A., Waqar, A., Shah, S. A. R., Sajid, M., and Khalid, M. I., (2019). An Innovative Framework for Risk Management in Construction Projects in Developing Countries: Evidence from Pakistan. *MDPI, Basel, Switzerland*, 7 (24)
- Ochieng, C. H. O., (2017). Influence of project risk management strategies on the performance of organisations in the motor industry: a case of Isuzu East Africa Limited, Kenya. *International Journal of Novel Research in Engineering and Science* 4 (2) 28-41
- Ondara A. E., (2017). *Risk management strategies and performance of construction firms in selected Counties in Kenya*. *Research Journal of Finance and Accounting*. 3 (1), 1-5.
- Orodho, J. A., (2015). *Elements of Education and Social science Research Methods*. Nairobi: Masola Publishers, p. 31
- Perry, J. G., (2016). Risk management an approach for project managers. *Project Management*. 4(4), 211-216.
- PMI (2018). *A guide to the project management body of knowledge*, Newton Square, Project Management Institute.
- Potts, M., (2016). *Risk Management, Chaos Theory and the Corporate Board Of Directors*. Paper Presented at Loyola University of Chicago academic conference themed "corporate boards: sources of risks, managers of risk.
- Rahman, M., & Kumaraswamy, M., (2015). "Risk management trends in the Construction Industry: Moving towards Joint Risk Management", *Engineering Construction and Architectural Management*, 9 (2) 131-151
- Roque, R., & de Carvalho, Y., (2016). Impact of project risk management, assessment of risks on project performance in Brazillian Vendor companies. *International Journal of Project Management* 21 (2) 97-105.
- Royer, P.S., (2019). Risk management: The undiscovered dimension of project management. *Project Management Journal* 31 (1), 6–13.
- Saunders, M., Lewis, P. & Thornhill, A., (2012). *Research Methods for Business Students 6th eds.*, Essex: Pitman Publishing
- Schutt, R. K., & Engel, R. J., (2014). *Sampling. In: The Practice of Research in Social Work. 3rd ed., Ch. 5*. Washington DC: SAGE Publications

- Shanghverzy T. (2018). *Market and community as strategies for change*. In A. Hargeaves, A. Lieberman, M. Fullan & D. Hopkins (Eds.), *International handbook of educational change* 1 (3) 576-595
- Smith, C. W., & Stulz, R. M., (1985). The Determinants of Firm's Hedging Policies. *Journal of Finance and Quantitative Analysis*, 20(4), 391-405
- Smith, N. J., Tony, M. & Jobling, P. (2006) *Managing risk in construction projects*, Blackwell Publishing.
- Swaczuk, B. (2016). *Risk Avoidance for the Building team*. E & FN, Spon, London.
- Van Noppen, A., (2016). *The ABC's of Affordable Housing in Kenya*. Acumen Fund report.
- Wabomba, W. K., (2015). *Influence of risk management strategies on project performance's survey of selected international development organizations based in Nairobi City, Kenya*. *Afro-Asian Journal of Social Sciences*, 4(4), 1-16.
- Ward, S., & Chapman, C., (2017). Transforming Project Risk Management Into Project Uncertainty Management. *International Journal of Project Management*, 21(2), 97-105.
- Wenanga, T. P., (2019). *Assessment of the Affordable Housing Initiative by the Kenyan Government, 2019*
- Winch, G., (2016). *"Managing construction projects, an information processing approach"*. Oxford: Blackwell Publishing.
- Zikmund, W., Babin, B., Carr, J., & Griffin, M., (2017). *Business Research Methods*. 8th Ed. Mason, OH: South-Western Cengage Learning.
- Zou, P. X.W., Zhang, G., and Wang, J., (2016). *Identifying key risks in construction projects: life cycle and stakeholder perspectives*. [www.prpress.net/papers/Zou risks construction](http://www.prpress.net/papers/Zou%20risks%20construction)
Accessed 4/9/2012
- Zou, P., Zhang, G., & Wang, J., (2017). Understanding the key risks in construction projects in China. *International Journal of Project Management* 25, 601–614.
- Zwikael, O., & Ahn, M., (2011). The effectiveness of risk management: An analysis of project risk management planning across industries and countries. *Risk Analysis*, 31(1), 25-37.

APPENDICES

Appendix I: Letter of Transmittal

Mr. Obillo Sebby Oranga,

Dear Sir/Madam,

Re: Letter of Transmittal of data collection

I am a postgraduate student undertaking a Masters of Art in Project Planning and Management degree at University of Nairobi. I am currently conducting a study titled: Influence of Risk Management Strategies on Delivery of Urban Housing Projects in Kenya. A Case of Affordable Housing Program in Nairobi County.

To this end, I kindly request you to provide the requested information by filling out the attached questionnaire and participating in an interview. The information required is purely for academic research purposes only and in no way will your name or that of your institution be implicated in the research findings. Your cooperation and quick response shall be highly appreciated.

Thank you



ObilloSebbyOranga

Contact 0722540180

Registration Number: L50/10994/18

University of Nairobi, Department of Open Learning

7. Indicate the length of continuous service at the Corporation.

- 5 years and below []
- 6- 10 years []
- 11-15 years []
- 16- 20 years []
- 21 years and over []

8. How long have you been working in your present capacity?

Less than 3 years () 3-5 years () 6-9 years () 10 and above ()

9. How long have you worked for Public institutions?

1 – 2 years () 6 – 10 years () Over15year () 3 – 5 years ()
10 – 15 years ()

10. Highest level of education

- Diploma []
- Undergraduate []
- Masters []
- Doctoral []

Any other (specify) _____

SECTION B: RISK AVOIDANCE STRATEGY AND PROJECT DELIVERY

In construction of affordable housing program which area does risk avoidance/prevention influence the project delivery?

- To ensure quality []
- To ensure customer satisfaction []
- To manage resources []
- To ensure with project plan []

How frequent do you apply risk avoidance/prevention method (approach) in construction of affordable housing program?

- Weekly
- Monthly
- Quarterly
- Other? Specify

Why did you choose risk avoidance/prevention as an appropriate approach for your affordable housing program?

- Project manager's decision
- Client's wish
- Nature of work
- Previous experience

Who is responsible?

- Contractor
- Client
- Consultants
- Other? Specify

Using a scale of 1-5 where 5 = Strongly agree (SA), 4=Agree (A), 3= Neutral (N), 2= Disagree(D), 1= Strong disagree(SD) , Please tick in the appropriate box the extent to which you agree with each of the statements in regard to the relationship between risk avoidance strategy and project delivery

No	Statement	5	4	3	2	1
1.	Risk avoidance ensure project quality which in turn improves delivery					
2	Risk avoidance helps in efficient management of resources					
3.	In this project risks avoidance entails adjusting the project plan so that the conditions triggering a risk event are no longer present and the risk is eliminated					
4	The project uses proven and existing technologies to lower the project costs					
5	The project chooses suppliers with a proven track record in order to eliminate the risks associated with poor material quality and non- delivery					
6	The project uses health and safety measures to ensure smooth running of the project delivery process					
7	The project managers ensures that workers are get training and education in order to ensure quality delivery of the project					
8	The project directors have put in place measure to minimize vulnerabilities such as accidents					

SECTION C: RISK CONTROL STRATEGY AND PROJECT DELIVERY

What are the criteria do you consider as measures of risk control vis-à-vis to project performance?

- Project cost []
- Project completion time []
- Client satisfaction []
- Quality of the project []

At which percentage do you think risk control regulate project performance?

10-30% []

30-50% []

50-70% []

Above 70% []

3. Do you admit that risk control/loss control influence project performance?

Strongly Disagree []

Disagree []

Agree []

Strongly Agree

If you are to the above question, please explain?

.....

.....

.....

.....

Using a scale of 1-5 where 5 = Strongly agree (SA), 4=Agree (A), 3= Neutral (N), 2= Disagree(D), 1= Strong disagree(SD) , Please tick in the appropriate box the extent to which you agree with each of the statements in regard to the relationship between risk control strategy and project delivery

No	Statement	5	4	3	2	1
1.	Controlling the risk of financial failure and delays in payments to contractors, reduces the risk of cost overruns and thereby improves project delivery					
2	Ensuring optimal ground and site conditions reduces the risk of defects and cost and time overruns hence improves project delivery					
3.	Ensuring good quality of construction materials through an efficient supply chain reduces the risk of quality defects hence improves project delivery					
4	Effective supervision of project personnel reduces risk of time overruns hence improves project delivery					
5	Adherence to technical plans improves project delivery					
6	Continual review of project plan reduces the risk of time overruns					
7	Monitoring the quality non-conformance report against an agreed quality standard ensured minimal variation from quality specification					
8	Providing additional analysis on costs and hazards reduces project cost overrun					
9	The project directors have devised strategies to alleviate complexities in procedures which reduces time overruns					

SECTION D: RISK RETENTION STRATEGY AND PROJECT DELIVERY

Have you faced any of these challenges which may have been caused by lack of risk retention strategy in this project?

- | | |
|----------------------------|-----|
| Project delay | [] |
| Excessive cost | [] |
| Contractor-client conflict | [] |
| Bad quality | [] |

Do you acknowledge that risk retention method had had an impact on this project delivery?

- | | |
|-------------------|-----|
| Strongly Disagree | [] |
| Disagree | [] |
| Agree | [] |
| Strongly Agree | [] |

At which percentage do you think risk retention influenced this project delivery?

- | | |
|-----------|-----|
| 10-30% | [] |
| 30-50% | [] |
| 50-70% | [] |
| Above 70% | [] |

4. What are other factors contributed to project performance vis-à-vis to risk retention?

- | | |
|-------------------|-----|
| Time | [] |
| Cost | [] |
| Quality | [] |
| Reduces schedules | [] |

Using a scale of 1-5 where 5 = Strongly agree (SA), 4=Agree (A), 3= Neutral (N), 2= Disagree(D), 1= Strong disagree(SD) , Please tick in the appropriate box the extent to which you agree with each of the statements in regard to the relationship between risk retention strategy and project delivery

No	Statement	5	4	3	2	1
1.	Use of appropriate technology helps in retaining risk and thereby positively influences project delivery					
2	The government (Ministry) self-insures for small risks to ensure better project delivery through reducing costs					
3	The management is always informed on continuous basis on the expected risks and strategies of retaining them					
4	The project has enough knowledge on risk identification process					

SECTION E: RISK TRANSFER STRATEGY AND PROJECT DELIVERY

Why did you choose to transfer risks?

Client’s wish

Nature of work

Previous experience

Other? Specify

2. After transferring risk, have those criteria and factors contributed to better project delivery?

Strongly Disagree

Disagree

Agree

Strongly Agree []

3. Does lack of risk transfer affect project performance?

Strongly Disagree []

Disagree []

Agree []

Strongly Agree []

Using a scale of 1-5 where 5 = Strongly agree (SA), 4=Agree (A), 3= Neutral (N), 2= Disagree(D), 1= Strong disagree(SD) , Please tick in the appropriate box the extent to which you agree with each of the statements in regard to the relationship between risk transfer strategy and project delivery

No	Statement	5	4	3	2	1
1.	Fixing material prices through forward contracts reduces risk of cost overruns through reducing price volatilities hence improving project delivery					
2	Favourable policy wording increased firm performance					
3.	High insurance premiums lowered uptake of insurance covers by contractors reducing firms performance					
4	Lack of re-insurance negatively influences project delivery firm performance					
5	The project uses fixed price contracts to reduce cost overruns					
6	Checking on project costs deviation influences project delivery negatively					
7	Reporting on risks and taking action to influences project delivery negatively					
8	The project has adopted a strategy of transferring financial risk to the contractors to reduce cost overruns					

Appendix III: University of Nairobi Letter



UNIVERSITY OF NAIROBI
OPEN, DISTANCE AND e-LEARNING CAMPUS
SCHOOL OF OPEN AND DISTANCE LEARNING
DEPARTMENT OF OPEN LEARNING
NAIROBI LEARNING CAMPUS

Your Ref:

Our Ref:

Telephone: 318262 Ext. 120

Main Campus
Gandhi Wing, Ground Floor
P.O. Box 30197
N A I R O B I

REF: UON/ODeL/NLC/30/003

13th October, 2020


TO WHOM IT MAY CONCERN

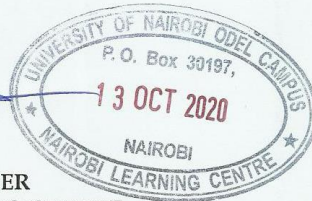
RE: OBILLO SEBBY ORANGA - REG NO: L50/10994/2018

This is to confirm that the above named is a student at the University of Nairobi, Open Distance and e-Learning Campus, School of Open and Distance Learning , Department of Open Learning pursuing Masters of Art in Project Planning and Management.


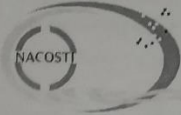

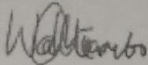

He is proceeding for research entitled "Influence of risk management strategies on delivery of urban housing projects in Kenya. A case study of affordable house program in Nairobi County."

Any assistance given to him will be highly appreciated.


CAREN AWILLY
CENTRE ORGANIZER
NAIROBI LEARNING CENTRE



Appendix IV: Research Permit

 REPUBLIC OF KENYA	 NATIONAL COMMISSION FOR SCIENCE, TECHNOLOGY & INNOVATION
Ref No: 805154	Date of Issue: 16/October/2020
RESEARCH LICENSE	
	
<p>This is to Certify that Mr. obillo Oranga seby of University of Nairobi, has been licensed to conduct research in Nairobi on the topic: INFLUENCE OF RISK MANAGEMENT STRATEGIES ON DELIVERY OF URBAN HOUSING PROJECTS IN KENYA. A CASE STUDY OF AFFORDABLE HOUSING PROGRAM IN NAIROBI COUNTY. for the period ending : 16/October/2021.</p>	
License No: NACOSTI/P/20/7186	
805154 Applicant Identification Number	 Director General NATIONAL COMMISSION FOR SCIENCE, TECHNOLOGY & INNOVATION
	Verification QR Code 
<p>NOTE: This is a computer generated License. To verify the authenticity of this document, Scan the QR Code using QR scanner application.</p>	