

**FACTORS INFLUENCING DELIVERY OF QUALITY
RESIDENTIAL HOUSES: A CASE OF ZIMMERMAN
ESTATE IN NAIROBI, KENYA**

KHATERA, MAURICE MUNYIFWA

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

2014

DECLARATION

This Research Project is my original work and effort; it has not been submitted for the award of a degree at the University of Nairobi and or at any other university.

Sign _____

Date _____

Khatera, Maurice Munyifwa.

L50/61476/2011

This Research Project has been submitted for examination with my approval as University Supervisor.

Sign _____

Date _____

Mrs. Margaret Mwago

Lecturer

Department of Extra Mural Studies

School of Continuing and Distance Education

University of Nairobi

DEDICATION

To my beloved father Zachariah Lichina Munyifwa who saw it wise to send me to school and continuously encouraged me in the midst of all the challenges , and to my supervising lecturer Margaret Mwago for her patience and encouragement that has enabled me to complete this management research paper despite the many problems and challenges I have encountered.

ACKNOWLEDGEMENT

The process of developing this research project has been very invaluable. Different institutions and individuals have been very supportive and indeed have largely influenced this document in being what it is today.

I wish to acknowledge with deep gratitude the University of Nairobi for giving me the opportunity to further my education in the prestigious institution. I am specifically grateful for the involvement of my supervisor Margaret Mwago in encouraging and guiding me tirelessly.

TABLE OF CONTENTS

	Page
DECLARATION	ii
DEDICATION	ii
DEDICATION	iii
ACKNOWLEDGEMENT	iv
LIST OF TABLES	ix
LIST OF FIGURES	x
LIST OF ABBREVIATIONS AND ACRONYMS	xi
ABSTRACT.....	xii
CHAPTER ONE: INTRODUCTION.....	1
1.1 Background to the study.....	1
1.1.1 The Global Housing Need.....	3
1.1.2 Kenya Housing Needs.....	5
1.2 Statement of the problem	6
1.3 Purpose of the study	7
1.4 Objectives of the study	8
1.5 Research questions	8
1.6 Significance of the study	8
1.7 Basic assumptions of the study	9
1.8 Limitations of the study.....	10
1.9 Delimitations of the study	11
1.10 Definition of significant terms used in the study	12
1.11 Organization of the study	13
CHAPTER TWO: LITERATURE REVIEW	14
2.1 Introduction	14

2.2 An overview of housing situation in Kenya.....	14
2.3 Factors influencing quality of residential houses.....	16
2.3.1 Sources of project funding in Kenya	16
2.3.2 Stakeholder involvement	22
2.3.3 Existing laws of the land	25
2.3.4 Market forces	27
2.4 Theoretical Framework	30
2.5 Conceptual Framework	32
2.6 Summary of Literature Review	34
CHAPTER THREE: RESEARCH METHODOLOGY	37
3.1 Introduction.....	37
3.2 Research Design.....	37
3.2.1 Research Site.....	37
3.2.2 Research Design	38
3.3 Target Population	39
3.4 Sample Size and Sampling Procedure.....	40
3.4.1 Sampling Frame.....	40
3.4.2 Sample Size	40
3.4.3 Sampling procedure.....	41
3.4.4 Method of Data Collection.....	41
3.5 Research Instrument.....	41
3.5.1 Piloting of the instrument	42
3.5.2 Instrument Validity	42
3.5.3 Instrument Reliability	43
3.6 Data collection method.....	43

3.7 Data Analysis	44
3.8 Ethical considerations	44
3.9 Operationalization Table of Variables.	44
CHAPTER FOUR: DATA ANALYSIS, PRESENTATION ,INTERPRETATION	
AND DISCUSSION	47
4.1 Introduction	47
4.1.1 Response Rate	47
4.1.2 Reliability Results	47
4.1.3 Validity Outcomes.....	48
4.2 General Information	48
4.2.1 Whether Owner or Agents.....	48
4.2.3 Number of floors, including ground floor	49
4.2.4 Total number of rooms	49
4.2.5 Estimated number of people per room.....	50
4.2.6 Gender of Respondents.....	50
4.2.7 Estimated age of building (years).....	51
4.3 Source of project funding.....	51
4.3.2 Was the money adequate to complete the project	52
4.3.3 Was there a clear schedule of funds draw down	52
4.3.4 Responsibility of Buying Building materials.....	53
4.3.5 Whether lenders visited the site to confirm proper usage of funds.....	54
4.3.6 Correlation on source of project funding and Quality of Residential Houses...	54
4.4 Stakeholder Engagement.....	55
4.4.1 Stakeholders attended site meetings for this project.....	55
4.4.2 State who coordinated the whole project.....	56

4.4.3 Correlation on engagement of key stakeholders and Quality of Residential Houses.....	56
4.5.1 Laws governing building industry.....	57
4.5.1 Approval of building plan	57
4.5.2 City County officials ever visit the residential site	58
4.5.3 Importance of approval requirement of building plans important	58
4.5.4 Modify the approved plan at all while building	59
4.5.5 Correlation on Existing laws governing and Quality of Residential Houses	60
4.6 Market Forces.....	60
4.6.1 Availability of services	60
4.6.2 State of security	61
4.6.3 General state of the house.....	62
4.6.4 Level of occupancy by tenants.....	62
4.6.5 General level of rent charges in this estate.....	63
4.6.6 Correlation on market forces and Quality of Residential Houses.....	64
CHAPTER FIVE: SUMMARY, CONCLUSIONS AND RECOMMENDATION.....	65
5.1 Introduction	65
5.2 Summary of the Findings	65
5.2.1 Source of project funding.....	65
5.2.2 Stakeholder Engagement	66
5.2.3 Laws.....	66
5.2.4 Market Forces	67
5.3 Conclusions of the Study	68
5.4 Recommendations of the Study	70
5.5 Recommendation for further Study	71

LIST OF TABLES

Table 2. 1: World Bank report number No. 63391-KE May 2011	19
Table 4. 1: Reliability Results.....	47
Table 4. 2: Ownership status.....	48
Table 4. 3: Whether the Houses were occupied.....	49
Table 4. 4: Building completion Status.....	50
Table 4. 5: Gender status	50
Table 4. 6: Estimated age of building (years)	51
Table 4. 7: Source of funding for construction	51
Table 4. 8: money adequate to complete the project	52
Table 4. 9: Was there a clear schedule of funds draw down.....	52
Table 4. 10: Who bought building material, in most cases?.....	53
Table 4. 11: Correlation on source of project funding and Quality Houses	54
Table 4. 12: Stakeholder Engagement	55
Table 4. 13: State who coordinated the whole project.....	56
Table 4. 14: Correlation on engagement of key stakeholders and Residential Houses.....	57
Table 4. 15: Whether there Respondents had an approved building plan	57
Table 4. 16: Visit the site to review the construction	58
Table 4. 17: Importance of approval requirement of building plans important.....	58
Table 4. 18: Modify the approved plan at all while building.....	59
Table 4. 19: Correlation on Existing laws on building and Quality Houses.....	60
Table 4. 20: Availability of services	60
Table 4. 21: State of security	61
Table 4. 22: General state of the house.....	62
Table 4. 23: Level of occupancy by tenants	62
Table 4. 24: General demand for houses in this estate	63
Table 4. 25: General level of rent charges in this estate	63
Table 4. 26: Correlation on market forces and Quality of Residential Houses	64

LIST OF FIGURES

Figure 1: Conceptual Framework	28
--------------------------------------	----

LIST OF ABBREVIATIONS AND ACRONYMS

AMCHUD	-	African Ministerial Conference on Housing and Urban Development
CPM	-	Construction Project Manages
ERB	-	Engineers Registration Board
GaWC	-	Globalization and World Cities Study Group and Network
GDP	-	Gross Domestic Product
GOK	-	Government of Kenya
KAPM	-	The Kenya Association of Project Managers
KNBS	-	Kenya National Bureau of Statistics
MAAK	-	Member of the Architectural Association of Kenya
NHC	-	National Housing Corporation
NEMA	-	National Environment Management Authority
NGO	-	Non Governmental Organizations
PMBOK	-	Project Management Body Of Knowledge
PMP	-	Project Management Professional
PMI	-	Project Management Institute
RBA	-	Retirement Benefits Authority
SCDE	-	School of Continuing and Distance Education
SDLC	-	Software Development Life Cycle
SP10	-	Sessional Paper No. 10 of 1965
UNPF	-	United Nations Population Fund
USCB	-	United States Census Bureau

ABSTRACT

Quality housing is a basic need for the world's population estimated by both USCB and UNPF at 7.104 billion. The study sought to identify factors influencing delivery of quality residential houses: a case of Zimmerman estate in Nairobi, Kenya. The study was guided by the following research objectives: to find out the extent to which source of project funding influences delivery of quality residential houses; to establish the level of engagement of key stakeholders during the life of the project in ensuring delivery of quality residential houses; to find out the extent to which existing laws governing the building industry influence delivery of quality residential houses; to find out the extent to which market forces influence delivery of quality residential houses. This study was supported by a comprehensive literature review in chapter two. The study adopted a descriptive research survey design, and used a questionnaire as a tool to collect the required data from a population sample of 160 residential house owners. Data was analyzed through descriptive statistics by use of percentage and frequency tables where necessary. The research used Statistical Package for Social Sciences (SPSS) software version 17.0. The findings were presented in the form of tables. Based on the results, the study made appropriate recommendations. The study concluded that the most common source of funds for house projects was bank loan, personal savings, and borrowing from SACCOs respectively. The study concluded that inadequacy in fund affects the quality of house projects. The study concluded that although there was clear schedule of funds drawings, there existed ineffective scheduling of fund drawings that could affect quality of house projects. The study also concluded that the owners of the house projects were the most parties who buy the buildings materials. This study clearly indicated that the buying of materials was left in the hands of the owners of the house projects yet they lacked capacity to ascertain the quality of building materials. The study revealed that the lenders failed to visit the site to confirm proper usage of funds, thus affecting quality of house projects. The study concluded that not all the stakeholders attended the site meetings where the owners attended. Other stakeholders such as project managers, supervising masons, architects and quality surveyors attended the site meetings sometimes, clearly indicating that not all the stakeholders were made to attend all site meetings affecting quality of house projects. The study concluded that the owners were the most coordinators of the house projects, architect also coordinated houses projects, project managers were sometime coordinators of house project. The study concluded that there had been approved building plans, although there still existed house projects that were built without being approved compromising on quality of the houses built. The study concluded that the City County officials visited the site to review the construction while in some cases they failed to do so. The failure by the county official to inspect the site of house projects affected the quality of the houses. The study concluded that failure to follow approval requirement of building plans was hindering quality attainment in building house projects.

CHAPTER ONE

INTRODUCTION

1.1 Background to the study

Housing is a basic human need for the world population estimated by the United States Census Bureau (USCB) to number 7.104 billion . The USCB estimates the world population growth rate at slightly below 1.1 % by 2012 estimates, projected to reach between 8.3 and 10.9 billion by 2050(USCB, July 2012–July 2013). These estimates are confirmed separately by the United Nations Population Fund (UNPF), that the World's 'seven billionth baby' was born on 31st October 2011. There are approximately 1.4 Billion households in the world as of 2010, (The Guardian, October 31, 2011).

Of the seven world continents, Asia with 4.2 billion inhabitants has the biggest burden of providing quality shelter for its people; it is the most populous continent, accounting for over 60% of the world population. The world's two most-populated countries alone, China and India, together constitute about 37% of the world's population (Adelekan, 2009). Africa is the second-most-populated continent, with around 1 billion people, or 15% of the world's population. Europe's 733 million people make up 11% of the world's population, while the Latin American and Caribbean regions are home to around 600 million (9%). Northern America, primarily consisting of the United States and Canada, has a population of around 352 million (5%). and Oceania, the least-populated region, has about 35 million inhabitants (0.5%). Though it is not permanently inhabited by any fixed population, Antarctica has a small, fluctuating international population, based mainly in polar science stations. This population tends to rise in the summer months and decrease

significantly in winter, as visiting researchers return to their home countries. (USCB, July 2012–July 2013).

Kenya has responsibility to provide quality shelter for its population of 38,610,097 people, estimated to be growing at the rate of 1 million people, 2.59%, per year , projected to reach 61 million by 2030, with half of the number residing in towns where housing need is more critical, (KNBS, 2011 census report). The World Bank estimated the population of Kenya in 2010 at 40.9 million inhabitants making it the 8th most populous country on the African continent. World Bank estimates indeed confirm Kenya own population census. The population has grown rapidly from just 6 million in 1950, and is forecast to reach 85 million by 2050. (World Bank, May 2011).

Zimmerman estate, the focus of this research is in Nairobi County which, as per 2009 census, has to provide quality housing for its population of 3,138,369 people including the population of its suburbs. Nairobi population of 3,138,295 people is spread over 985,016 households, an average of 3.19 people per household, compared to the Kenya national average of 4.40 people per household from a population of 38,610,097 people over 8,767,954 households; Nairobi is the most populated County in Kenya, the most populous city in East Africa and the 12th largest city in Africa. Home to thousands of Kenyan businesses and over 100 major international companies and organizations, including the United Nations Environment Programme (UNEP) and the main co-coordinating and headquarters for the UN in Africa & Middle East, the United Nations Office in Nairobi (UNON), Nairobi is an established hub for business and culture. The Nairobi Stock Exchange (NSE) is one of the largest in Africa and the second oldest exchange on the continent. It is ranked 4th in terms of

trading volume and capable of making 10 million trades a day (KNBS census report, 2011).

1.1.1 The Global Housing Need

Huck Rorick (2004) summarized the global housing problem as “big” The need is big. The demand is big. The opportunity is big. The cost of giving everyone the same value house as in high income countries would be on the order of \$211,000 billion.

The world is experiencing a global housing crisis, where an estimated 1.6 billion people live in substandard housing and 100 million are homeless (Kothari & Miloon 2005). These people are increasingly urban residents, and every week more than a million people are born in, or move to, cities in the developing world (Kissick, D. et al, 2006). According to the UN Habitat (2008), 1 billion people, 32% of the global urban population, live in urban slums, deplorable conditions where people suffer from one or more of the following basic deficiencies in their housing: lack of access to improved water; lack of access to improved sewage facilities, not even an outhouse; living in overcrowded conditions; living in buildings that are structurally unsound; or living in a situation with no security of tenure, that is, without legal rights to be where they are, as renters or as owners (Alvesson, & Skoldberg, 2000). An estimated 35% of the world’s rural population lives in unacceptable conditions. Overall more than 2 Billion people are in desperate need of better housing. If no serious action is taken, the United Nations reports that the number of slum dwellers worldwide will increase over the next 30 years to nearly 2 billion (UN-Habitat, 2003, 2005, 2008).

In this poor housing people face many unmet needs. For example many are living in overcrowded conditions with inadequate living space. These people do not have much space, and what they have is often of poor quality. According to the World Bank &

UN-Habitat Housing Indicators Program, people in high income countries, such as Spain, have more than 4 times as much space per person as people in low income countries, the differential with the U.S. is even higher.

According to Lisa Harker (2006), a British housing expert, bad housing has its greatest impact on children. Lisa explains that childhood is a precious time when experiences shape the adults people become, that children who grow up in bad housing are robbed of their future chances, such children have lower educational attainment and a greater likelihood of being impoverished and unemployed as adults. Lisa argues that poor living conditions lead to poor health, which in turn limits a family's ability to earn an income (Armstrong, 2009). Education and healthcare are not free in many countries, and so a limited income means that these are jeopardized; consequently, a family's ability to escape poverty is reduced. Poverty housing perpetuates the poverty cycle for generations.

Joan Clos, UN Habitat Executive Director (UN-Habitat, 2013) argues for the need for a holistic approach to urban development and human settlement which provides for affordable housing and infrastructure and prioritizes slum upgrading and urban regeneration (Bollens, 1998). Government's task for UN-Habitat is to promote an integrated approach to planning and building sustainable cities and urban settlements, support local authorities, increase public awareness and enhance the involvement of local people, including the poor, in decision making, Affordable decent housing for man is therefore a global problem, particularly in developing countries, most of which are on the African continent.

1.1.2 Kenya Housing Needs

In its National Housing Policy (2004), the Government of Kenya (GOK) estimated, based on the 1999 national Population and Housing Census, that there are about 3 million people in urban areas and about 6 million people in rural areas in urgent need of proper housing. Given the average household size of 4 persons from the census, there are about 750,000 households in urban areas and 1,500,000 households in the rural areas that need to be housed. Based on these estimates, the Government was to facilitate an annual output of 150,000 housing units in urban areas and 300,000 units in rural areas in the next five years in order to be able to meet that demand. This excludes additional housing needs arising from increased household formations as well as housing that will become dilapidated from the existing stock, (GOK 2004).

In the World Bank (May 2011) report on Developing Kenya's Mortgage Market, Kenya's housing annual needs are estimated at 206, 000 units, construction is 50,000 units a year, with a large housing gap which is growing every year and is increasingly prevalent in urban areas. The current annual housing deficit is therefore estimated at 156,000 units per annum based on the population growth and urban migration taking place. The deficit is largely filled by the growth in slum dwellings and continued self-construction of poor quality traditional housing (Bonyo, 2010). The housing gap can only be partially financed by mortgages, while other solutions are required for lower income groups such as Housing Micro-finance and rental housing. The shortage in housing has largely contributed to the problem of overcrowding and spread of slums and squatter settlements, this problem is more pronounced in urban areas, (World Bank, 2011).

The annual housing requirement 206,000 units is split between 124,000 units needed in rural areas (60 percent of total) and 82,000 in urban areas (40 percent). This is estimated to rise to over 280,000 units by 2050 at which point, all of the population growth and housing requirements will be in the urban areas of Kenya. The Ministry of Housing estimates that current levels of construction are around 50,000 units annually. This implies an annual housing deficit of some 156,000 units currently. In addition it is estimated that there is a current existing shortage of 2 million units, where households are homeless, living in temporary shelters or in extremely low quality housing in slum areas (Brinkerhoff & Crosby, 2002). In order to reduce this deficit, as well as allowing for natural replacement of units falling into disrepair and to account for a reducing household size, 250,000 or 300,000 units need to be produced annually, (World Bank, May 2011).

1.2 Statement of the problem

Quality housing is a basic need for the world's population estimated by both UNPF (The Guardian, October 31, 2011) and USCB (USCB, July 2012–July 2013) at 7.104 billion people, growing at 1.1% estimated to reach between 8.3 and 10.9 billion by 2050. The responsibility is shared across the continents: Asia 4.2 billion people, over 60% of the world population; Africa 1 billion people, 15% of the world's population. Kenya's population is 38,610,097, growing at the rate of 1 million people, 2.59% per year, it is projected to reach 61 million by 2030, with half of the number residing in towns where housing need is more critical (KNBS 2011). Nairobi County, the focus for this research, needs quality housing for its people, it is the most populated city in East Africa, the most populated County in Kenya with a population of 3million spread over 985,016 households, an average of 3.19 people per household, compared to the national average of 4.40 people per household computed from a

population of 38,610,097 people over 8,767,954 households, (KNBS census report, 2011).

With the growing population, the world is experiencing a global housing crisis, where an estimated 1.6 billion people live in substandard housing and 100 million are homeless (Kothari, 2005). These people are increasingly urban residents, and every week more than a million people are born in, or move to, cities in the developing world (Kissick, 2006). The demand for housing is high as overall more than 2 billion people are in desperate need of better housing. Kenya's annual housing needs are estimated at 206, 000 units, against an annual production of 50,000 unit, with a large housing deficit of 156,000 units a year that is increasingly prevalent in urban areas as growth in slums increases (World Bank, 2011). This research therefore seeks to establish the factors influencing delivery of quality residential houses: a case Zimmerman Estate, Nairobi County. Zimmerman estate has been in the media for collapsed buildings during and even after construction and could provide best opportunity to establish factors hindering provision of quality residential housing as a basic human need.

1.3 Purpose of the study

The purpose of this study was to establish and assess the factors influencing delivery of quality residential houses: a case of Zimmerman Estate in Nairobi, Kenya.

1.4 Objectives of the study

In order to achieve the broad aim, the study had the following objectives:

1. To establish the extent to which source of project funding influences delivery of quality residential houses.
2. To assess the extent to which engagement of key stakeholders influences delivery of quality residential houses.
3. To determine the extent to which existing laws governing the building industry influence delivery of quality residential houses.
4. To find out the extent to which market forces influence delivery of quality residential house.

1.5 Research questions

In order to sufficiently address the purpose and objectives of this study, the research sort to answer the following questions:

1. To what extent does the source of funding for the project influence the final quality of the residential houses?
2. To what extent does the engagement of key stakeholders during the life of the project influence delivery of quality residential houses?
3. To what extent do the existing laws governing the building industry influence final quality of residential houses?
4. To what extent do market forces influence delivery of quality residential house?

1.6 Significance of the study

The findings of this study are important in providing insight into the critical factors that influence delivery of quality residential houses. It is hoped that:

The findings of this study would inform the investors on the extent to which the source of project funding influences the final quality of the residential houses they build.

The findings of this study would help investors in the building industry to ascertain the importance and the extent to which engagement and coordination of all key stakeholders influences delivery of quality residential houses.

The findings would guide and inform the law enforcement agencies in the building industry to appreciate the extent to which existing laws support delivery of quality residential houses so as, where necessary, take appropriate remedial measures.

The findings of this study would inform the investors on the extent to which market forces influence delivery of quality of residential houses.

The study would stimulate interest for further studies in the building industry on how to improve on processes of ensuring delivery of quality and affordable residential houses, especially in urban areas where the problem is more pronounced.

The findings of this study would challenge all stakeholders in the building industry on the need to establish an independent professional body for Project Managers that would facilitate seamless coordination of stakeholders in order to ensure delivery of quality residential houses.

1.7 Basic assumptions of the study

An assumption is any fact a researcher takes to be true without actually verifying (Mugenda and Mugenda, 2003). This study assumed that:

- 1) All respondents had a fair level of education and understanding that would enable them interpret the questionnaire appropriately.

- 2) The respondents would be honest, truthful and accurate in their answers and would not hide material information that would significantly affect final results.
- 3) The research instrument would be administered effectively when collecting data in the field for the research to achieve the intended objectives.
- 4) The research instrument employed in this study would indeed capture and measure some of the factors influencing delivery of quality residential houses.

1.8 Limitations of the study

A limitation is an aspect of a research that may influence the results negatively but over which the researcher has no control (Mugenda and Mugenda, 2003).

- 1) Zimmerman estate, the target area for the purpose of this study, has been in the media in the past several times for the wrong reasons, including but not limited to; failed and collapsed buildings, government threats to demolish the houses because the estate is reported to be built on wetlands. With this history known to the residents, there was likely to be a lot of mistrust and suspicion that could, if not well managed, result in lack of cooperation on the part of a number of respondents, or they would deliberately give misleading and inaccurate information thus seriously compromising the integrity of the final findings, conclusion and decisions based on those findings. To mitigate this limitation, the researcher engaged the community through the community elders and the provincial administration in order to build confidence and win their support.
- 2) The individual bias, as part of human nature, on the part of the researcher could easily influence the results when briefing and guiding respondents on how to

complete the questionnaire. It was expected that the researcher would endeavor to be professional and objective at all times.

- 3) Zimmerman being a fairly informal settlement, there was a high possibility that most of the investors would not be residing within the estate and therefore most of the information would be obtained from their agents who, probably, may not have had accurate and up to date information. The researcher only collected the data from the houses where the owners were available.
- 4) Time and financial constraints could negatively impact data collection, say if the data collection exercise is rushed through. The research was expected to budget and ensure effective management of the same so as to complete the exercise within the planned constraints.

1.9 Delimitations of the study

1. The study sought to establish factors influencing delivery of quality residential houses, and it will target Zimmerman estate in Nairobi.
2. The study aimed to interrogate investors in the residential estate or their agents, but not tenants, to ensure accuracy and reliability of the information obtained.
3. Zimmerman being a highly populated and fairly informal settlement, the study was carried out during the day to minimize risks on the part of the researcher.

1.10 Definition of significant terms used in the study

Household:	Is the basic unit of analysis in many social, microeconomic and government models. The term refers to all individuals who live in the same dwelling. In economics, a household is a person or a group of people living in the same residence.
Invest:	Put money, effort or time into something while aiming to make a profit or get advantage.
Market Forces:	Refers to forces of supply of residential houses and demand of the same residential units by interested tenants or buyers, market forces therefore determine the market price and levels of rent charged by investors on residential houses.
Population:	Refers to a set of data having the same characteristics.
Project:	Temporary endeavor undertaken by people who work cooperatively together to create a unique product or service within an established time frame and within an established budget to produce identifiable deliverables (Filicetti, 2009).
Quality:	ISO 8402-1986 standard defines quality as "the totality of features and characteristics of a product or service that bears its ability to satisfy stated or implied needs.
Residential House	Suitable for or allocated for residence.
Stakeholders:	Are individuals, groups or organizations who, directly or indirectly, stand to gain or lose from a given development activity or policy.
World population:	Is the total number of living humans on Earth.

1.11 Organization of the study

The proposed study will be organized into five chapters. Chapter one will provide a general background into the subject of the study, statement of the problem, purpose of the study, objectives of the study, specific questions to be answered by the research, significance of the study, limitations and delimitations of the study, basic assumptions, definitions of terms and organization of the study.

Chapter two will interrogate the available works and literature on general housing situation in Kenya with specific interest in factors influencing quality of residential houses, under the following topics: Sources of project funding, Stakeholder involvement, Existing laws of the land, Market forces. This chapter will also provide Theoretical Framework of the study and the Conceptual Framework that will outline the relationship between the dependent and the independent variables to be identified in the subject of the study, the chapter will also give a summary of Literature Review.

Chapter three will focus on Research Methodology which will include: Research Design, Target Population, Sample Size and Sampling Procedure, Research Instrument, Piloting of the instrument, Instrument Validity, Instrument Reliability, Data collection method, Method of Data Analysis and Ethical considerations.

Chapter four will present analysis and interpretation of the data to be collected from the field, whereas Chapter five will comprise of summary of key findings of the study, conclusions, recommendations and suggestions for further research. References and Appendices, in this order, will appear at the end of chapter five.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

In this chapter, the researcher reviews available scholarly writings on factors influencing quality of residential houses giving analysis of global, regional and local case scenarios. Compared to methodological or chronological organizational literature review strategies, the researcher in this study opts to adopt thematic organizational review strategy as the most appropriate, it will show subtopics based upon factors that relate to the theme or issue. The literature review, therefore, will be analyzed under four headings in line with the four key research objectives: Sources of project funding, Stakeholder involvement, Existing laws of the land, and Market forces. The chapter also presents theoretical framework of the study, the conceptual framework showing the diagrammatic relationship between the four independent variables and the single dependent variable, and then a brief Summary of Literature Review.

2.2 An overview of housing situation in Kenya

In its National Housing Policy (2004), the Government of Kenya (GOK) estimated, based on the 1999 national Population and Housing Census, that there are about 3 million people in urban areas and about 6 million people in rural areas in urgent need of proper housing. Given the average household size of 4 persons from the census, there are about 750,000 households in urban areas and 1,500,000 households in the rural areas that need to be housed. Based on these estimates, the Government was to facilitate an annual output of 150,000 housing units in urban areas and 300,000 units in rural areas in the next five years in order to be able to meet that demand. This excludes additional housing needs

arising from increased household formations as well as housing that will become dilapidated from the existing stock, (GOK 2004).

In the World Bank (May 2011) report on Developing Kenya's Mortgage Market, Kenya's housing annual needs are estimated at 206, 000 units, construction is 50,000 units a year, with a large housing gap which is growing every year and is increasingly prevalent in urban areas. The current annual housing deficit is therefore estimated at 156,000 units per annum based on the population growth and urban migration taking place. The deficit is largely filled by the growth in slum dwellings and continued self-construction of poor quality traditional housing. The housing gap can only be partially financed by mortgages, while other solutions are required for lower income groups such as Housing Micro-finance and rental housing. The shortage in housing has largely contributed to the problem of overcrowding and spread of slums and squatter settlements, this problem is more pronounced in urban areas, (World Bank, May 2011).

The annual housing requirement 206,000 units is split between 124,000 units needed in rural areas (60 percent of total) and 82,000 in urban areas (40 percent). This is estimated to rise to over 280,000 units by 2050 at which point, all of the population growth and housing requirements will be in the urban areas of Kenya. The Ministry of Housing estimates that current levels of construction are around 50,000 units annually. This implies an annual housing deficit of some 156,000 units currently. In addition it is estimated that there is a current existing shortage of 2 million units, where households are homeless, living in temporary shelters or in extremely low quality housing in slum areas.

In order to reduce this deficit, as well as allowing for natural replacement of units falling into disrepair and to account for a reducing household size, 250,000 or 300,000 units need to be produced annually, (World Bank, May 2011).

2.3 Factors influencing quality of residential houses

This study seeks to establish the extent to which the following factors influence delivery of quality residential house in the building industry, a case of Zimmerman estate in Nairobi, Kenya: source of funds for the project; involvement and engagement of key stakeholders; the laws governing the building industry; market forces.

2.3.1 Sources of project funding in Kenya

This study seeks to establish the extent to which the following sources of funding for projects influence delivery of quality residential houses.

2.3.1.1 Commercial Banks: Mortgage Market

Kenya's mortgage market is the third most developed in Sub-Saharan Africa with mortgage assets equivalent to 2.5 percent of Kenya's Gross Domestic Product (GDP). Only Namibia and South Africa rank higher, with Botswana just slightly smaller. Kenya annual housing need is estimated at 206,000 units against an annual production of 50,000 units. The deficit of 156,000 units is largely filled by the growth in slum dwellings and continued self-construction of poor quality traditional housing. The housing gap can only be partially financed by mortgages, while other solutions are required for lower income groups such as Housing Micro-finance and rental housing (World Bank, May 2011).

Mortgage products are widespread and are offered by virtually all banks. A typical loan would be done at variable rates for around 14 percent for an amount of Ksh 4 million

over a period of 15 years. Although Ksh 4.0 million is a high starting price for an affordable property, there is very limited supply at the bottom end of the market. Those properties that are offered for less, may not meet necessary titling or construction standards to qualify for a mortgage loan. Some flats are increasingly becoming available at prices as low as Ksh 2.0 million but they are in short supply. Based on this, 2.4 percent of the total population could afford a mortgage for a basic house. This rises to 11 percent of the urban population. There is no viable market in rural areas given the low levels of income together with the high costs of developing a distribution network (World Bank, May 2011).

The potential size of the mortgage market is currently around Ksh 800 billion around 13 times the current level. This would mean just over 249,260 loans of an average value of Ksh 3.2 million. Lending on this scale would raise the mortgage debt to GDP level from the current 2.5 percent up to 32.5 percent which is comparable with South Africa and some of the transition economies in Eastern Europe which have grown their mortgage markets over the past two decades. The legal and regulatory framework, although complex, is also adequate; lenders in Kenya have powers to enforce collateral. The power of the mortgagee to sell a property which has been used as collateral for a loan is given by virtue of section 69 of the Transfer of Property Act, 1882, of India, or through section 74 (2) of the Registered Land Act depending on how the property was registered (World Bank, May 2011).

Mortgage Funding is one of the key issues which has to be addressed on the way to developing the mortgage market. According to the World Bank report of May 2011, lenders rated this as the biggest obstacle to market development. The two largest lenders are starting to be liquidity constrained and struggle with the maturity mismatch brought on by long term lending. Kenya benefits from a large investor base arising from its fairly developed pension, insurance and mutual fund sector. Increasingly companies are resorting to the capital markets for equity and debt funding. Most recently the two largest lenders tapped the markets.

There is adequate market infrastructure for mortgage lending in Kenya, a credit bureau is now operational and credit reporting is now mandatory for all banks as of July 2010; there is an active secondary housing market complete with realtors and listing systems; there is an established and qualified valuation profession; and there is adequate insurance coverage for property. All of these provide sound building blocks for further growth in mortgage lending.

However, there are four constraints on the further growth of the mortgage market in Kenya. Most notably is access to long term funds, listed by participating banks as the most important constraint to the mortgage market in Kenya. The absolute low level of incomes/informality; Income levels in Kenya are both low in absolute terms and also very unevenly distributed. This is a common occurrence in the majority of sub-Saharan Africa and is one of the single most difficult barriers to overcome in building a vibrant mortgage market. Low income levels and Credit risk are listed as second and third respectively with high interest rates also being regarded as a major constrain.

As the way forward, if Kenya is to start tackling its unmet housing demand of 156,000 units per annum, it will need to mobilize large amounts of private capital. Growing the size and reach of the mortgage market is part of the solution for the upper and middle income urban segments of the population. Mortgages alone cannot hope to satisfy the entire housing demand. Solutions are also required for lower income groups who do not have access to affordable finance for housing in the form of housing microfinance, rental frameworks and financing for self construction (UN-Habitat, 2008). Likewise mortgages only affect the demand side of the housing equation. Supply side measures are also required to expand the available stock of affordable properties. This should be a collaborative effort between the private sector and government. This problem is further compounded by the uneconomic utilization of prime land for housing around the city (World Bank, May 2011).

Table 2. 1: World Bank report number No. 63391-KE May 2011

TABLE 1: KENYA'S HOUSING FINANCE MARKET—KEY FACTS	
Size of Mortgage Market	Ksh 61.4 billion
Number of Mortgage Loans	13,803
Average Loan Size	Ksh 4 million
Typical Interest Rate	14%
Number of Mortgage Lenders	35
Mortgages as a Proportion of Credit	15%
Mortgage Debt as a Proportion of GDP	2.5%
Current Potential Size of Mortgage Market	Ksh 800 billion
Annual Housing Need	205,823 units
Current Annual Housing Production	50,000 units
Number of Houses Needed Over Next 10 Years	> 2.19 million
Urban Population in 2010	1 in 4
Urban Population in 2050	1 in 2
Urban Population living in Slums	1 in 3
Total Population Who Can Afford a Mortgage	2.4 %
Urban Population Who Could Afford a Mortgage	11.0 %

Source: World Bank report number No. 63391-KE May 2011.

2.3.1.2 Pension Backed Housing Loans

Pension backed housing loans were introduced to Kenya through the passing of the Retirement Benefits (Mortgage Loans) Regulations by the pensions regulator, the Retirement Benefits Authorities (RBA) regulations, in June 2009. The scheme allows pension savers to use up to 60 percent of their accumulated pension savings as collateral guaranteeing a housing loan. These are not mortgage loans and one of the difficulties is in ensuring that the money advanced is used for the purposes of housing. This has been one of the ongoing difficulties in South Africa where the schemes results in substantial 'leakages' where loans are used for purposes other than housing.

A number of lenders have launched products, notably Housing Finance and Stanbic. The latter in fact offers up to 105 percent loan to property value for loans backed by pensions. Such products have largely been banned in developed economies. The risk of a borrower losing both home and retirement benefits was seen as too great and outweighed any benefits which could arise from increased access to housing finance. In emerging economies, these products are seen as providing an additional safeguard on top of the housing collateral; they are a popular product in South Africa. The product can have a beneficial effect but it also has many risks attached to it. It is recommended that a formal review be carried out in the near future to assess whether pension backed loans is achieving benefits in terms of access, and at what cost. It should then consider whether any amendments to the regulations are needed and whether 60 percent of pension benefits is an acceptable level to be used to back such loans (World Bank, May 2011).

2.3.1.3 GOK: National Housing Corporation (NHC)

In the past, the government of Kenya took up the role of housing supplier by controlling planning, land allocation, and development and maintaining housing estates, through the National Housing Corporation (NHC). The NHC is charged with the responsibility of providing subsidized housing and implementing government housing policies and programmes through tenant purchase, mortgages, rental and rural housing loan schemes. The National Housing Corporation was formed as part of Kenya's post colonial housing policy, underscoring the importance of providing decent shelter for all urban workers in the country (Hassanali, 2009). While theoretically this should have been feasible, an acute problem has arisen as central government expenditure on housing has been on a consistent decline, stemming from activities of the parastatals, price controls, inappropriate building regulations and codes as well as a lack of basic planning and provision of services (Otiso, 2003). In 2007, the National Housing Corporation Completed construction of only 309 residential units at an estimated cost of Kshs.507.72 million, with a further 394 units under construction at a cost of Kshs.1,059.9 million. Approved Central Government Expenditure for housing for the year 2007 – 2008 was only Kshs.2.2 billion, compared to private sector investments of approximately Kshs.10 billion (GOK, 2008).

2.3.1.3 Non Governmental Organizations (NGO)

NGO's have come in to fill in the gap in the housing shortage especially for the low income households. Jamii Bora Bank, a deposit taking Micro Finance Institution, provides a wide range of services to the very poor, and is now engaged in a low cost

housing development project for its members, providing housing microfinance loans to the families involved. They are working on a very ambitious KSHs. 300 million housing project in Kaputei, Kajiado District. The housing scheme will consist of 2000 homes built on 293 acres of prime land. Kaputei will be a model for low-income housing development in Kenya and has already generated a lot of interest and excitement not only among the members but also among the relevant authorities (Jamii Bora, 2006).

Habitat for Humanity Kenya and K-Rep Development Agency has also provided limited project-based housing assistance for low income households with less than 500 housing units. Other NGO's involved in policy making and assisting developers in this sector include: National Urban Forum (Kenya), African Ministerial Conference on Housing and Urban Development (AMCHUD), UN Habitat and Shelter Afrique. These housing developers focusing on the low income market cannot adequately meet the needs of the market unless more players from the private sector join in.

2.3.2 Stakeholder involvement in delivery of quality residential houses

Stakeholder identification, engagement and management are critical to the success of every project in every organization (Svinicki, 2010). To ensure delivery of quality shelter and within budget and time constraints, construction of residential houses is run as a project, through the involvement and collaboration of key stakeholders. A project is therefore defined as a temporary endeavor undertaken by people who work cooperatively together to create a unique product or service within an established time frame and within an established budget to produce identifiable deliverables (Filicetti, 2009). Project success has been defined by the criteria of time, budget and deliverables, (Flaman and

Gallagher, 2001). A project is only successful if it is delivered on schedule, within budget, and it achieves the deliverables originally set for it and it is accepted and used by the clients for whom the project was intended, (Antill, 2004).

Brinkerhoff and Crosby (2002) define a stakeholder as individual or group that makes a difference or that can affect or be affected by the achievement of the organization's objectives. Freeman (1984) defines a stakeholder as any group or individual who can affect or is affected by the achievement of the organization's objectives. Legitimacy and urgency are key stakeholder characteristics (Mitchell, Agle and Wood, 1997). Depending on a number of factors such as size, nature and location of the project, stakeholders can vary significantly in their numbers and degree of influence on the project, either positively or negatively. A project manager must therefore have a very good understanding of the stakeholders and their influence on their projects. Since the number and nature of stakeholders vary with the life of the project, the review and identification of stakeholders should be carried out through the life of the project (Moodley 2002). Stakeholder participation can take place in different stages of the project cycle and at different levels of society, and can assume different forms as may be considered appropriate. Participation may be considered a means, process in which people and communities cooperate and collaborate in development projects. Participation may also be considered as an end in itself, a process through which people are empowered by acquiring skills, knowledge and experience, leading to greater self-reliance and self management (Smith, 2006).

In Kenya, various people and institutions contribute in ensuring delivery of quality residential houses. The key players include: Government; that formulates and reviews policies and legislation, and also ensures implementation of the same. The Private Sector: participates in the construction of housing for all categories of the population for both rental and sale. Financial Institutions: provide finance for housing through lending facilities (Siegel & Castellan, 2008). Co-operative Societies: serve as a vehicle for mobilizing both the people and finance for housing especially those in the low and middle income brackets as well as the vulnerable groups (MAAK, 2012). Professionals: Provide professional advice and guidance to clients in the sector. They include: Social workers, Architects, Engineers, Quantity Surveyors, and Project Managers. The Non-Governmental Organizations (NGOs) and Community Based Organizations (CBOs): mobilize and sensitize citizens and communities on modalities of improving their shelter as well as on their rights. International Agencies: support and collaborate in undertaking research, capacity building and financial support. Research Institutions and Academia: provide information and technological knowhow (Macoloo, 1994).

Since stakeholders are directly or indirectly involved or affected by the project, their views, participation and satisfaction are very important in determining the quality of the final product, in this case quality of residential houses. Stakeholder management, therefore, is the responsibility of the Project Manager (Mitullah, 2003).

The project manager is accountable for ensuring that everyone on the team knows and executes his or her role, feels empowered and supported in the role, knows the roles of the other team members and acts upon the belief that those roles will be performed

(Russell, 2011). The specific responsibilities of the Project Manager may vary depending on the industry, the company size, the company maturity, and the company culture. However, there are some responsibilities that are common to all Project Managers: Developing the project plan; Managing the project stakeholders; Managing the project team; Managing the project risk; Managing the project schedule; Managing the project budget; Managing the project conflicts (Berrie, 2009).

In Kenya, there seems to be gaps in the roles and responsibilities of Project Managers. This could possibly account for apparent lack of ownership whenever construction projects fail resulting in collapsed buildings under construction, like has been reported a lot in the media on Zimmerman estate. In the recent past, however, there are deliberate attempts by some three groups of practicing project managers to bring project managers under some professional bodies; hopefully this will help bring order in the discipline. The three bodies are: Kenya Association of Project Managers (KAPM), Kenya Chapter of PMI (Project Management Institute), Construction Project Managers (CPM). The three bodies, however, seem to be competing rather than collaborating. This research will help establish the extent to which these bodies are effective in facilitating delivery of quality residential houses.

2.3.3 Existing laws and their influence in delivery of quality residential houses

The quality of housing in Kenya is governed by the building code and the Public Health Act which specify the building standards that should be observed. The building by-laws and planning regulations are a pre-requisite for safe, health and sustainable living environments (Morka, 2007). Laxity in enforcement of the above instruments has resulted in poor housing standards, deteriorating housing conditions and formation of

informal settlements. While there is greater proportion of the housing stock in rural areas, there are more serious quality problems in these areas than in urban areas. Only 8.1% of households in rural areas live in high and good quality housing, compared to 66.2% in the urban areas. Despite the better housing quality recorded in Urban Areas and particularly Nairobi, a significant proportion of households in slums and informal settlements are exposed to poor sanitary conditions and inadequate water supply. However in the recent past, the issues of slum and informal settlements have been of great concern to both the government and other partners in shelter and human settlements sector, and upgrading efforts currently underway will address the issues of standards in line with the existing instruments. (World Bank, May 2011).

2.3.3.1 Tenure of Households

In Kenya, tenure issues have revolved around owner occupied and rental housing. Owner occupancy was more prevalent in the rural areas than urban areas, where most households are renters. The 1999 census (KNBS 1999) indicates that 71.5% of households are owners of their dwellings and 28.5% are renters. The high owner occupancy rate is prevalent in all provinces except Nairobi where 82.2% of households lived in rented units. The multiplicity of forms of tenure and methods of transfer creates some confusion, adds cost, creates legal uncertainty and is hampering the development of an efficient one-stop shop registry system, (World Bank, May 2011), (KNBS 1999).

2.3.3.2 National Housing Policy

The Sessional Paper No. 3 on National Housing Policy of July 2004 was approved by Parliament. It proposes the facilitation by the Government of an annual delivery of

150,000 housing units in the urban areas and quality improvement of 300,000 units in the rural areas. The Government also sees itself as a catalyst by providing an enabling environment for housing actors. The overall goal of the National Housing Policy of Kenya is to facilitate the provision of adequate shelter and a healthy living environment at an affordable cost to all socio-economic groups in Kenya in order to foster sustainable human settlements (GOK 2004).

2.3.4 Market forces and their influence in delivery of quality residential houses

According to UN-Habitat (2008) report, in the next 25 years, globally over 2 billion people will add to the growing demand for housing, water supply, sanitation and other urban infrastructure services. Close to 3 billion people, or about 40% of the world's population by 2030, will need to have housing and basic infrastructure services. This translates into completing 96,150 housing units per day or 4000 per hour. Financing shelter is important if the world is to secure environmental sustainability, economic prosperity, cultural diversity and social equality (Landman & Napier, 2010). However, in the next 20 years, there is little likelihood that in many developing countries conventional sources of funds will be available for investment on the scale needed to meet the projected demand for urban infrastructure and housing. Annual projections for housing needs for the next ten years are approximately 735,000 new units and an additional 420,000 in need of improvement (UN-Habitat 2008).

In Kenya demand for housing is immense and driven by a growing population and urbanization. The reality has been that slums have grown and the rapid pace of urbanization has undermined the successes that have been achieved. Urbanization has

gradually happened with the growth of Nairobi and Mombasa as major population centers. By 2010, the urbanization rate was 22 percent which compares to a global urbanization level which is just slightly higher than 50 percent. By 2050, Kenya is forecast to have almost equal rural (51.9 percent) and urban populations (48.1 percent). The rate of household formation is based on the assumption that households in rural areas are made up of 5.5 people whilst those in urban areas have 4.0 people. The estimated population of Kenya in 2010 was 40.9 million inhabitants making it the 8th most populous country on the African continent. The population has grown rapidly from just 6 million in 1950, and is forecast to reach 85 million by 2050. This represents a compound annual growth rate of 2.7 percent. Growing prosperity has also increased the demand for larger and better quality housing. The shortage of supply and of new construction exacerbates the unmet demand. One key point to note is the lack of effective demand. This means that while there is an absolute shortage, and a growing one, for housing, consumers do not have the means to act on the demand as financing is often not available or unaffordable, (World Bank, May 2011).

The overall annual demand for housing in Kenya, according to both the World Bank report of May 2011 and the UN Habitat survey projections (UN-HABITAT, 2008), is 206,000 housing units against 50,000 housing units being delivered in the market, deficit 156,000 units. The 206,000 units are split between 124,000 units needed in rural areas (60 percent of total) and 82,000 in urban areas (40 percent). This rises to over 280,000 units by 2050 at which point, all of the population growth and housing requirements are in the urban areas of Kenya. This implies an annual housing deficit of some 156,000 units

currently. In addition it is estimated that there is a current existing shortage of 2 million units, where households are homeless, living in temporary shelters or in extremely low quality housing in slum areas. In order to reduce this deficit, as well as allowing for natural replacement of units falling into disrepair and to account for a reducing household size, 250,000 or 300,000 units need to be produced annually (World Bank, May 2011).

The current annual supply shortage of 156,000 units has left private developers focusing on highest return market segments which are the upper income class. A typical mortgage loan would be done at variable rates for around 14 percent for an amount of Ksh 4 million over a period of 15 years. Although Ksh 4.0 million is a high starting price for an affordable property, there is very limited supply at the bottom end of the market. Those properties that are offered for less, may not meet necessary titling or construction standards to qualify for a mortgage loan. Some flats are increasingly becoming available at prices as low as Ksh 2.0 million but they are in short supply. Based on this, only 2.4 percent of the total population could afford a mortgage for a basic house, and only 11 percent of the urban population (World Bank, May 2011).

It has been cited that the housing problem cannot be solved starting at the bottom because the poor will still be overshadowed. Houses meant for the lower end could still be snapped up by individuals in the higher income class thereby distorting prices and displacing the target market. The solution would be for the government and socially motivated entrepreneurs to offer homes for the bottom end of the market while commercial players and maximum profit driven entrepreneurs take care of the upper

income segment (Macharia, 2011). Demand for housing far surpasses its supply in Kenya, especially in urban areas that have for long suffered from poor planning, resulting in an increase in informal settlements with poor housing and little infrastructure services (UN-HABITAT, 2008). The housing market in Kenya has over the years faced a huge supply challenge for both government and private sector players. With availability of about 35,000 housing units in urban areas, the deficit remains huge from a growing demand of 150,000 units every year (Bonyo, 2010).

Despite some attempts at achieving decent housing, Kenya has, on the whole, failed to address the dire housing conditions of her population. The situation has been partially alleviated through the activities of the private sector housing developers, who have been a key supplier of housing, particularly in Nairobi (Hassanali, 2009).

2.4 Theoretical Framework

A theoretical framework is defined as a collection of interrelated concepts, like a theory but not necessarily so well worked out. A theoretical framework guides the researcher in determining what things to measure, and what statistical relationships to look for (Svinick & Marilla 2010). Theoretical framework enables the researcher to acknowledge the problem from a wider perspective, that the researcher is able to view the problem under study as part of the larger society. The researcher must show how the study in question is related to the theoretical background (Mugenda & Mugenda, 2003). This study aimed to assess factors influencing quality of residential house: a case of Zimmerman estate in Nairobi.

Some of the leading Gurus of TQM (Total Quality Management) include: Walter A. Shewhart (1920-1930) referred to as the grandfather of quality control; W. Edwards Deming (1950) referred to as the father of quality control; Joseph and Juran(1951) besides Deming considered to have had the greatest impact on quality management; Armand & Feigenbaum (1961); Philip B. Crosby (1970), Kaoru Ishikawa , best known for cause – and- effects diagram, also called fishbone or Ishikawa diagrams.

This study will consider the Continuous Quality Improvement (CQI) theory by a statistics professor at New York University in the late 1940s, W. Edwards Deming (1940-1950).This model is also called the PDCA (Plan–Do–Check–Act), Deming cycle. This is a four–step model for carrying out change. PLAN: Design or revise business process components to improve results. DO: Implement the plan and measure its performance. CHECK: Assess the measurements and report the results to decision makers. ACT: Decide on changes needed to improve the process.

Deming argued that 15 percent of quality problems are actually due to worker error, the remaining 85 percent are caused by processes and systems, including poor management. Just as a circle has no end, the PDCA cycle should be repeated again and again for continuous improvement (Kissick, 2006). Deming proposed that business processes should be analyzed and measured to identify sources of variations that cause products to deviate from customer requirements. He recommended that business processes be placed in a continuous feedback loop so that managers can identify and change the parts of the process that need improvements.

The Deming Cycle provides a useful, controlled problem solving process. It is particularly effective for helping implement Kaizen or Continuous Improvement approaches, when the cycle is repeated again and again as new areas for improvement are sought and solved; Identifying new solutions and improvement to processes that are repeated frequently (Harker & Lisa, 2006). In this situation, you will benefit from extra improvements built in to the process many times over once it is implemented; Exploring a range of possible new solutions to problems, and trying them out and improving them in a controlled way before selecting one for full implementation; Avoiding the large scale wastage of resources that comes with full scale implementation of a mediocre or poor solution (Hancock, 2008).

Deming theory, therefore, fits this study because this research seeks to model final quality of residential house as a function of the four factors; source of funding for the project, involvement and engagement of key stakeholders, the laws governing the building industry, and market forces (Guardian, 2011). The four independent variables will be further analyzed to identify which one is the most likely influencing the final quality of residential house.

2.5 Conceptual Framework

Svinicki (2010) defines a conceptual framework as an interconnected set of ideas, theories, about how a particular phenomenon functions or is related to its parts. A conceptual framework helps to clarify concepts and purpose relationships among the variables in the study, provide a context for interpreting the study findings and to explain observations.

This study will examine a total of five variables, four independent and one dependent. The dependent variable is the quality of residential houses whereas the independent variables are; source of project funding, engagement of key stakeholders, prevailing laws and market forces (Golland, 2006). The study will establish whether the four listed independent variables influence the dependent variable, the final quality of the residential house. The four independent variables will be further analyzed to identify which one is the most likely influencing the final quality of residential house (Gichunge, 2001). Below is the conceptual framework on which the intended study is based. The research will seek to model final quality of residential house as a function of the four listed factors.

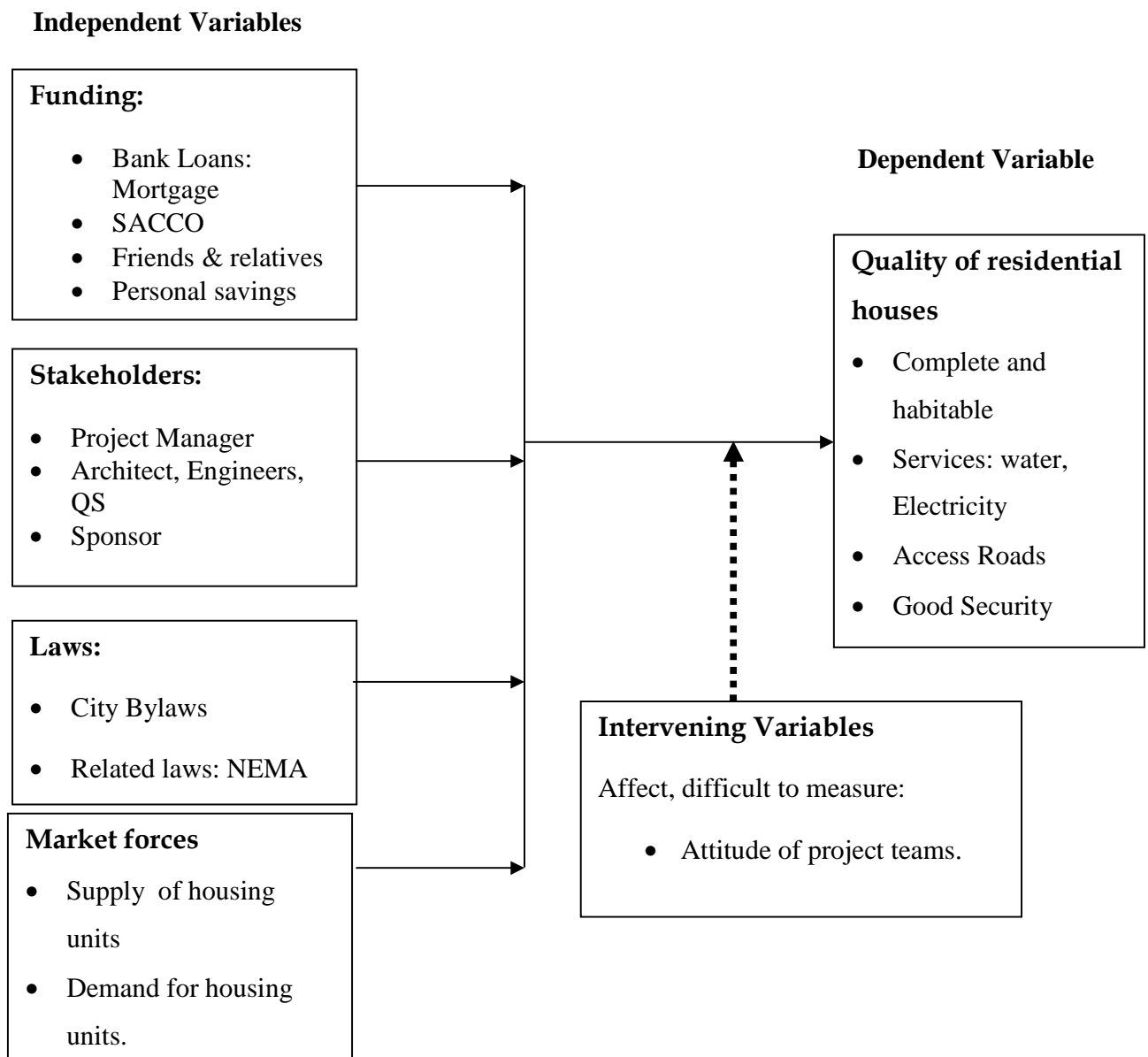


Figure 1: Conceptual Framework

2.6 Summary of Literature Review

This chapter reviews the existing literature on factors influencing quality of residential houses globally, regionally and locally: a case of Zimmerman estate in Nairobi. The conceptual framework that will inform the study on the four factors, independent

variables influencing quality of residential houses, dependent variable, has been presented in this chapter.

There have been several attempts and proposals on most viable source of funds to improve the quality of housing, particularly for low income projects. Some of the proposed Financing Mechanism include: mobilize target groups to register and save with micro finance institution; mobilize target groups to form co-operatives in order to access finance; Set up secondary mortgage market to ensure liquidity; have income generating programmes and activities as part of the project; involve clients, residents in planning to ensure communal maintenance. Proponents of this mechanism argue that this mechanism will improve both the quality of existing housing stock as well as increase housing quantities for low and middle income, while at the same time inhibiting formation of informal settlements. This research will help establish the extent to which all or any of these proposals have been adopted in the building industry, with specific reference to Zimmerman to help facilitate delivery of quality housing for all, as a basic human need.

To ensure involvement and better coordination of key stakeholders towards delivery of quality housing, there are ongoing efforts in Kenya to bring together Project Managers through different initiatives; the Kenya Association of Project Managers (KAPM), PMI (Project Management Institute) Kenya Chapter and the Construction Project Managers (CPM) through the MAAK. This is a move in the right direction that will help in harmonizing the role of the Project Manager in Kenya, specifically in the building industry that has been known for controversies and failed or incomplete projects with no clear ownership of responsibility. However, there is no evidence that the bodies are working together towards achieving this objective, in fact there are strong early

indications that the teams are not collaborating, and there are indications of rivalry. This research will help establish the extent to which the new bodies have achieved support for delivery of quality residential houses through better and professional coordination of project activities by the project manager.

With all the adverse information on failed or collapsed buildings mainly in major towns in Kenya, it is doubtful that the existing laws governing the building industry are currently observed by all stakeholders; of keen interest is Zimmerman estate in Nairobi. Also, in an effort to mitigate the growing housing problem, the government is reported to be working on some three important Bills that are aimed at unlocking growth in housing aimed at mitigating the annual housing deficit of 150,000 units. The bills will help regulate and streamline the construction industry: Build Environment Bill, National Building Maintenance Policy and Building and Planning Regulations. This research aims to establish the extent to which the existing laws adequately support delivery of quality housing for Kenyans.

Due to market forces, Kenya has a shortage of 156,000 housing units arising from an annual supply of 50,000 housing units against the demand of 206,000 units (World Bank, May 2011). The reality therefore is that, globally, there is an acute short of quality houses to give comfort to all the 7billion world population. This research help establish the extent to which market forces have compromised delivery of quality residential houses in Kenya.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter discusses the research design and methodology to be used in this study; it also highlights the full description of the design, the research design variables and provides a broad view of the description and selection of the target population. The sampling procedures, the research instruments, data collection techniques and data analysis procedures used in this study was explained in depth in this chapter.

3.2 Research Design

3.2.1 Research Site

The study was carried out at Zimmerman estate, in Nairobi County. Administratively, Zimmerman is a sub location of Githurai location and is one of the five wards that constitute Roysambu constituency within Kasarani Division, Nairobi County. As per 2009 census, Zimmerman has a population of 38,912 within Roysambu constituency that has a total population of 202,284 people, (KNBS 2011).

The choice of Zimmerman estate as the research site was largely influenced by the fact it has been covered in the media several times, for all the wrong reasons. For instance it was reported to be encroaching on Kenya's wetlands, therefore facing threats from the Ministry of Lands to reclaim wetlands, exposing its huge population of 38,912 people to possible eviction by the government, a delicate and sensitive decision that would have far reaching political implications. There had also been reports in the media of houses either still under construction or already occupied by tenants collapsing in Zimmerman mostly during heavy rains. Some time back a storeyed building fully occupied by tenants was

reported hanging over a supposed underground river. Such unpleasant developments in Zimmerman had continued to expose residents to life threatening risks and points at a major compromise towards delivery of quality residential houses to the residents of Nairobi, the most populated County in Kenya and most populated city in East Africa, and eighth largest city in Africa, hence the choice of Zimmerman as a suitable site for this research.

3.2.2 Research Design

Research Design is defined as the plan and structure of investigation so conceived as to obtain answers to research questions. Plan is defined as the overall scheme or programme of the research (Cooper and Schindler, 2006). The study was conducted by way of a descriptive research survey design. According to Mugenda and Mugenda (2003), a descriptive research determines and reports the way things are. The investigator administered a questionnaire to the respondents. Descriptive survey was used to investigate populations by selecting samples to analyze and discover occurrences. Data obtained can help in determining specific characteristics of a group (Oso and Onen, 2009). Sekaran (2004) defines descriptive research as a study undertaken to ascertain and be able to describe the characteristics of variables of interest in a situation. The goal of descriptive study was to offer the researcher a profile or to describe aspects of the point of interest from an individual, organization, industry or other perspective (Kothari, 2003). Mugenda and Mugenda (2003) describe a survey as an attempt to collect data from members of a population in order to determine the current status of that population with respect to one or more variables.

An exploratory study was conducted on selected residential houses well spread across the estate, complete and partially complete. This research helped to establish the extent to which the quality of residential houses in Zimmerman estate was influenced by the following factors , sources and levels of project funding, involvement and coordination of key stakeholders including the technical support team, laws governing the building industry, forces of supply and demand.

This research employed both qualitative and quantitative research techniques. Qualitative research sought out the ‘why’, not the ‘how’ of the topic through the analysis of the unstructured information. It does not rely on statistics or numbers only, which are the domain of quantitative researchers. Qualitative research on the other hand involves asking people opinions in a structured way so that researchers can establish hard facts and statistics for guidance. To get reliable statistical results, it is important to survey fairly large numbers to ensure they are representative sample of the target population. The process of measurement is central to quantitative research because it provides the fundamental connection between empirical observation and mathematical expression of the quantitative relationships (Hunter et al, 2008).

3.3 Target Population

Target population is defined by Best and Kahn (2006) as a small portion of the population selected for observation and analysis. It also refers to all members of a population to which research findings can be generalized and is an accurate record of the sampling framework from which the sample is to be drawn. In this study, Zimmerman, the research site, is a sub location of Githurai location in Kasarani Division within Nairobi County. As per 2009 census, Zimmerman has a total population of 38,912 people

spread over a geographical area of 7.10 km² (GOK, 2009). At a Nairobi average of 3.19 people per household, Zimmerman has 12,198 households (KNBS, 2011). The residential houses range from single floor of approximately 10 households to five floors of 50 households, all spread over a total of 1600 residential plots (Roysambu Housing Cooperative Society, June 2014). The sample frame was therefore drawn from the 1600 complete residential houses.

3.4 Sample Size and Sampling Procedure

3.4.1 Sampling Frame

This is the source list from which the sample was drawn. Sampling frame involve the actual respondent residential houses that may be issued with the questionnaires. In this case of Zimmerman, 1600 residential houses.

3.4.2 Sample Size

Sampling is the process of selecting a number of individuals or objects for a study in such a way that the individuals or elements represent the larger group, or population from which they are selected. According to Mugenda and Mugenda (2003), the sample must be large enough to represent the salient characteristics of the accessible population and hence the target population. This study was carried out on 160 residential houses, representing 10% of the target population of 1600 residential houses. The sample size is appropriate for the study considering that it was carried out over a period of one week of five days, at an average coverage of 35 residential houses per day. This was also within other budget constraints such as traveling costs, time for obtaining information from mostly very busy and at times even unwilling and very suspicious respondents, expected to be preoccupied with their busy schedules.

3.4.3 Sampling procedure

As per 2009 population census, Zimmerman has a population of 38,912 people spread over 12,198 households, over a geographical area of 7.10km². It has a total of 1600 residential houses (Roysambu Housing Cooperative Society Limited, June 2014), also the target population for the purpose of this study. Simple random sampling was used to identify the 160 residential houses to select from the target population, 10% of target population of 1600. This technique was adopted so that every household in the target population had equal chances of participating (Mugenda and Mugenda 2003).

3.4.4 Method of Data Collection

A structured questionnaire was used as the primary instrument for collecting data. The questionnaire was administered to each of the 160 residential house owners. Considering the expected possibility of carefree attitude amongst most of the targeted respondents in the building industry, the respondents were assisted to complete the questionnaires, collected same day, immediately they were ready.

3.5 Research Instrument

A questionnaire was used as the primary instrument for data collection. Questionnaire is the most appropriate instrument because it consists of a series of questions and other prompts for purposes of gathering information from respondents, it also enables the researcher to explain the purpose of the study and to give meaning of the items that may not be very clear to the respondents (Best and Khan, 2006). A questionnaire is easy to administer and economical to use in terms of time and money since they often have standardized answers that make it simple to complete and analyze (Mugenda and Mugenda, 2003). Questionnaire also allowed the use of both open-ended and closed-ended questions. Open-ended questions allowed the respondents to give their responses

without being constrained by a fixed set of responses. In employing closed-ended questions, respondents' answers are limited to a fixed set of responses; this is intended to reduce bias and irrelevant answers. In this study only one set of questionnaire was administered to all respondents but consisted of different parts that helped answer research questions relating to factors influencing the quality of residential houses, which included the following: Part A captured general information; Part B sources of project funding; Part C stakeholder engagement; Part D Laws governing building industry; Part E market forces.

3.5.1 Piloting of the instrument

Pilot testing means pre-testing the instrument with a few respondents to test its accuracy. The questionnaire was piloted on a sample of the target population, twenty residential house owners randomly selected; the results were used to validate the instrument. However, units involved in the piloting exercise did not participate in the final study. Piloting of the instrument helped identify any problems that respondents would encounter when filling the questionnaire. The results of the pilot facilitated framing the questions in order to ensure objectivity; the questionnaire was approved by the supervisor.

3.5.2 Instrument Validity

Validity is the extent to which research results can be accurately interpreted and generalized to other populations. It is the extent to which research instruments measure what they are intended to measure (Oso and Onen, 2009). Mugenda and Mugenda (2003) define validity as the accuracy and meaningfulness of inferences which are based on the research results. That is to say that validity is the degree to which results obtained from the analysis of the data actually represent the phenomenon under study. In this study the

research instrument was questionnaire which had to be precise and comprehensive enough to collect the required information in relation to the objectives of the study. The questionnaire was subjected to expert judgment; it was reviewed and approved by the supervisor to confirm validity before being administered.

3.5.3 Instrument Reliability

Reliability is defined as a measure of the degree to which the research instrument yields consistent results or data, after repeated trials (Mugenda and Mugenda, 2003). In this study the researcher pre-tested the instrument, questionnaire, by conducting pilot test on twenty respondents. The results of the pilot study were used to calculate the reliability coefficient, using Kuder-Richardson formula. According to Mugenda (2003), computation of a correlation coefficient yields a statistic that ranges from -1 to +1. For instance an instrument that yields correlation coefficient +0.9 is believed to be reliable, -0.5 unreliable. The results guided the researcher, under the supervision of the supervisor, to restructure the questionnaire by incorporating missing information, omitting irrelevant questions and details and paraphrasing questions that appeared ambiguous to respondents.

3.6 Data collection method

The researcher obtained a letter for identification purpose from the University of Nairobi, School of Continuing and Distance Education (SCDE), and use the letter to obtain permission from the provincial administration, before commencing the study. A letter of transmittal was written to introduce the researcher to the respondents, assuring them of confidentiality. In consideration of the nature of the target respondents in this study, Zimmerman being a fairly informal settlement, the researcher personally delivered the

questionnaire and waited for completion, clarified to respondents where necessary. This study targeted a total of 160 respondents, residential house owners.

3.7 Data Analysis

Data was analyzed based on the questions administered to respondents. According to Kothari (2009), after data had been collected, it has to be processed and analyzed in accordance with the outline laid down for that purpose at the time of developing the research plan. Analysis of data collected was done through both qualitative and quantitative techniques. Watson (1994) defines qualitative data analysis as systematic procedure followed in order to identify essential features, themes and categories. Data was analyzed through descriptive statistics by use of percentage and frequency tables. The purpose of descriptive statistics is to summarize sets of scores so that features are seen and understood more easily (Linn and Miller 2005). It is only after descriptive analysis that it is possible to make meaningful interpretation of the data collected. Checks for errors and inconsistencies were carried out before data entry. Survey responses were recorded using a coded system and subsequently entered into a database on the computer and analyzed using Statistical Package for Social Sciences (SPSS) using SPSS version 17.0. A Further inferential correlation analysis was carried out to establish the relationship between dependent and independent variables.

3.8 Ethical considerations

Ethics refers to matters of what is right and wrong. Anyone involved in any form of research should be aware of agreements shared by researchers and participants about what is proper and improper in the conduct of the research (Babbie & Mouton 2001). The ethical considerations include, but not limited to; respect for the respondents privacy and

freedom, the right to self-determination, autonomy, volunteerism, confidentiality and safety. The researcher in this study sought voluntary informed consent of the participants before administering the questionnaire, and without subjecting them to any form of threat or undue influence. The respondents were assured that their participation was kept confidential and used solely for purpose of this research. The participants remained anonymous; they did not write their identities when completing the questionnaire. Appropriate chain of command was observed, such as obtaining prior government approval, before commencing process of collecting data.

3.9 Operationalization Table of Variables.

In order to achieve the schedule and cost objectives, project quality is sometimes overlooked. Although many studies have recognized the importance of maintaining and doing quality projects these aspects are sacrificed in lieu of achieving short-term objectives, such as handing over of some critical structures, or only part of the structures falling in the critical path. Barnes (1987) emphasizes that the control of the performance of the installation, building or engineering structure should be managed in the same way as the management of time and cost. In a recent survey conducted among construction professionals, it has also been found that, out of the five commonly used project quality criteria compliances to schedule, cost, quality, no-dispute and safety– the quality compliance has come second next to schedule compliance.

Table 3. 1: Operationalization Table of Variables

Objectives					
	Variables	Indicators	Method of collecting data	Scale of measurement	Data analysis Techniques
To find out the extent to which source of project funding influences delivery of quality residential houses.	Funding:	Loans: Mortgage RBA GOK (NHC) NGO	Questionnaire	Nominal, ordinal, interval, likert	Percentage, Correlation, Frequencies
To find out the extent to which engagement of key stakeholders influences delivery of quality residential houses.	Stakeholders Engagement	Project Manager Architect, Engineers, QS Sponsor	Questionnaire	Nominal, ordinal, interval, Likert	Percentage, Correlation, Frequencies
To find out the extent to which existing laws governing the building industry influence delivery of quality residential houses.	Laws	City Bylaws Related laws: NEMA	Questionnaire,	Nominal, ordinal, interval, Likert	Percentage, Correlation, Frequencies
To find out the extent to which market forces influence delivery of quality residential house.	Market forces	Supply of housing units Demand for housing units	Questionnaire	Nominal, ordinal, interval, Likert	Percentage, Correlation, Frequencies
Quality of the residential houses		-Complete and habitable -Services: water, Electricity -Tarmac --Access Roads -Security	Questionnaire	Nominal, ordinal, interval, Likert	Percentage, Correlation, Frequencies

CHAPTER FOUR

DATA ANALYSIS, PRESENTATION, INTERPRETATIONS AND DISCUSSION

4.1 Introduction

This chapter discusses the presentations and interpretations of the research findings based on the main objective of this study to establish and assess the factors influencing quality of residential houses: a case of Zimmerman Estate in Nairobi, Kenya.

4.1.1 Response Rate

The sample size for the study was 160 where 129 respondents answered and returned the questionnaires. This constituted a response rate of 81%. Mugenda and Mugenda (2003) indicated a respondent rate of 50% to 70% was sufficient for a study. Therefore for this study, a respondent rate of 81% was highly acceptable.

4.1.2 Reliability Results

Table 4.1 illustrates the study findings on reliability analysis.

Table 4. 1: Reliability Results

Variable	Crobranch	No. of Items
Funding	0.7227	5
Stakeholders	0.8692	5
Laws:	0.8449	5
Market forces	0.8340	5

A pilot study was conducted whereby questionnaires were administered to twenty respondents from Zimmerman. From the findings in Table 4.1, coefficient of funding was 0.7227 making question items reliable. The Cronbach Alpha of stakeholders was 0.8692 making items concerning stakeholders reliable. The questions concerning law had a

Cronbach's Alpha coefficient of 0.8449 while that of market force was 0.8340. This clearly indicated that the instrument was reliable.

4.1.3 Validity Outcomes

Mugenda and Mugenda (1999) stated that in order to enhance validity of a questionnaire, data should be collected from reliable sources. Validity was enhanced through the collection of data from appropriate respondents. Prior permission to collect the data was sought from the University of Nairobi and then from the owner of the residential houses at Zimmerman area. Language used on the questionnaire was kept simple to avoid any ambiguity and misunderstanding.

4.2 General Information

This section included questions on: ownership of the house, whether people stay in the house, number of floors per building, total number of rooms, estimated number of people staying per room, whether the building is complete, gender of owner and estimated age of building.

4.2.1 Whether Owner or Agents

The respondents were requested to indicate their ownership status. The findings were as indicated in Table 4.2.

Table 4. 2: Ownership status

Ownership Status	Frequency	Percent
Owner	129	100
Agent	0	0
Total	129	100

From the findings, 100% of the respondents were owners of the houses. This implied that information on factors influencing quality of residential houses at Zimmerman Estate in Nairobi was collected from relevant respondents who were in a position to offer valid information to answer the research questions.

Table 4. 3: Whether the Houses were occupied

Houses were occupied	Frequency	Percent
Yes	127	99
No	2	1
Total	129	100

The respondents were requested to indicate whether or not people were staying in the houses. From the finding 99% of the respondents indicated that the house was occupied while 1% indicated otherwise. This clearly indicated house was in demand and the response on 1% who indicated that the houses were not occupied could be because they were not completed.

4.2.3 Number of floors, including ground floor

The respondents were requested to indicate the number of room including the ground floors. From the finding majority 52% of the respondents indicated that their houses had between 5-6 floors, 32% of the respondents indicated that their houses had 3-4 floors, 16% indicated that the houses had 1-2 floors.

4.2.4 Total number of rooms

The respondents were requested to indicate the total number of rooms. From the findings, majority 45% of the respondents indicated that the number of rooms of the building ranged from 100-150 room, 38% indicated 50-99 rooms, 10% indicated 30-49 room while 7 % of the respondents indicated less than 30 rooms.

4.2.5 Estimated number of people per room

The respondents were requested to indicate the estimation of people who leave per room.

From the finding, 43% the respondents indicated between 5-10, 29% indicated 3-4, 28% indicated 1-2 people per room.

Table 4. 4: Building completion Status

Completion Status	Frequency	Percent
Complete	105	81
Partially complete	24	19
Total	129	100

The respondents were requested to indicate the completion status of the buildings. From the findings, 81% of the respondents indicated that their houses were complete while 19% indicated that the houses were partially completed.

4.2.6 Gender of Respondents

The respondents were requested to indicate their gender status. The findings were as indicated in Table 4.5.

Table 4. 5: Gender status

Gender Status	Frequency	Percent
Male	115	89
Female	14	11
Total	129	100

From the findings, majority 89% of the respondents were male, 11% were female, this implied that housing sector was a male dominant sector where men were majority owners of house projects, and the information was collected from both men and female.

4.2.7 Estimated age of building (years)

Table 4. 6: Estimated age of building (years)

Age of Building	Frequency	Percent
1-4 years	4	3
5-10 years	60	47
11-15 years	21	16
16-20years	37	29
Over 20 years	7	5
Total	129	100

The respondents were requested to Estimate age of building. From the findings, 47% of the respondents indicated that the buildings were built between 5-10 years ago, 29% indicated that the buildings were aged between 16-20 years, 16% of the respondents indicated the building were aged 11-15 years old, while 5% indicated that the houses were aged over 20 years while only 3% of the building were aged 1-4 years. This implied that houses were in high demand hence more building of houses.

4.3 Source of project funding

Table 4. 7: Source of funding for construction

Source of funding for construction	Frequency	Percentage
Bank Loan	114	89
Personal Savings	66	51
Friends & Relatives	43	34
Saccos	27	21

The respondents were requested to indicate the source of funding for their house project. From the findings, 89% indicated bank loans, 51% indicated personal savings, 34% indicated friends and relatives while 21% of the respondents indicated SACCOs as the source of funding for their house projects respectively. This clearly indicated that bank loans were the main sources of funding houses that were complete.

4.3.2 Was the money adequate to complete the project

Table 4. 8: money adequate to complete the project

Adequacy of Funds	Frequ ency	Percent
No	121	94
Yes	8	6
Total	129	100

The respondents were requested to indicate whether the funds were adequate. From the findings, 94% of the respondents indicated that the fund was not adequate while 4% of the respondents indicated otherwise. This clear inadequacy in funds affects the quality of house projects.

4.3.3 Was there a clear schedule of funds draw down

Table 4. 9: Was there a clear schedule of funds draw down

Existence of clear schedule of funds draw down	Frequ ency	Percent
Yes	107	83
No	22	17
Total	129	100

The respondents were requested to indicate whether there was clear schedule of funds draw down. From the findings, 83% of the respondents indicated that there was clear schedule of funds draw down while 17% of the respondents indicated otherwise. This clearly indicated that although there was clear schedule of funds drawings, there existed ineffective scheduling of fund drawings that could affect quality of house projects.

4.3.4 Responsibility of Buying Building materials

Table 4. 10: Who bought building material, in most cases?

Who bought building material, in most cases?	Frequency	Percentage
Owner	91	71
Project Manager	17	13
Architect	13	10
Quantity Surveyor	5	4
Supervising Mason	3	2
	129	100

The respondents were requested to indicate who bought building material, in most cases. From the findings, 71% of the respondents indicated that the owners of the house projects was buying the buildings materials, 13% indicated it was the project managers who were buying building materials, 10% of the respondents indicated that architects were buying the building materials, 4% of the respondents indicated quantity surveyors bought building materials while 2% of the respondents indicated that supervising mason bought the building materials. This clearly indicated that the buying of materials was left in the hands of the owners of the house projects to buy building materials who could not ascertain the quality of building materials.

4.3.5 Whether lenders visited the site to confirm proper usage of funds

The respondents were requested to indicate whether where the money was borrowed, the lenders visited the site to confirm proper usage of funds. From the findings, 86% of the respondent indicated that where the money was borrowed, the lenders visited the site to confirm proper usage of funds while 14% of the respondents failed to attend the site of the house projects affecting quality of house projects. The finding concurred with Filicetti, (2009) who found that the risk of a borrower losing both home and retirement benefits was seen as too great and outweighed any benefits which could arise from increased access to housing finance affecting funding of residential houses .

4.3.6 Correlation on source of project funding and Quality of Residential Houses

The study sought to establish the extent to which source of project funding influences delivery of quality residential houses.

Table 4. 11: Correlation on source of project funding and Quality of Residential Houses

		Quality of Residential Houses
Source of project funding	Pearson Correlation	0.680(*)
	Sig. (2-tailed)	0.001
	N	129

The study establish that there existed a significant positive correlation between source of project funding and Quality of Residential Houses as correlation coefficient $r=0.680(*)$, $P=0.001 < 0.05$. This clearly indicated that effective sources of funding would positively influence quality of residential houses. The findings concurred with World Bank (2011)

found that funding constraints on the further growth of the mortgage market in Kenya hindering provision of quality residential houses.

4.4 Stakeholder Engagement

4.4.1 Stakeholders attended site meetings for this project

Table 4. 12: Stakeholder Engagement

stakeholders attended site meetings for this project	Frequency	Percentage
Owner	129	100
Project Manager	104	81
Architect	84	65
Quantity Surveyor	75	58
Supervising Mason	102	79

The respondents were requested to state the stakeholders attended site meetings for their project. From the findings, 100% of the respondents indicated that the owners attended site meetings, 81% of the project managers attended meetings, 79% indicated that supervising masons attended site meetings, 65% of the respondents indicated that architects attended the site meetings while 58% of the respondents indicated that quality surveyors attended the site meetings. This clearly indicated that not all the stakeholders attended all site meetings affecting quality procedure of developing house projects. The finding were similar with Moodley (2002) who found that stakeholder engagement including project managers, owners, quantity officers must therefore have a very good understanding of the stakeholders and their influence on their projects..

4.4.2 State who coordinated the whole project

Table 4. 13: State who coordinated the whole project

State who coordinated the whole project	Frequency	Percentage
Owner	70	54
Project Manager	15	12
Architect	30	23
Quantity Surveyor	8	6
Supervising Mason	6	5
Total	129	100

The respondents were requested to indicate who coordinated the whole project. From the findings, majority 54% of the respondents indicated that the owners were the coordinators of the house projects, 23% indicated that the architect were coordinators of the houses projects, 12% project managers were the coordinators of house project, 6% indicated that the quantity surveyor were coordinators of house projects while 5% of the respondents indicated that the supervisory Manson were coordinator of house projects. This implied that by virtue of unqualified officers being coordinators of the house projects affects quality of the house projects.

4.4.3 Correlation on engagement of key stakeholders and Quality of Residential Houses

The study sought to establish the extent to which engagement of key stakeholders influences delivery of quality residential houses.

Table 4. 14: Correlation on engagement of key stakeholders and Quality of Residential Houses

		Quality of Residential Houses
Engagement of key stakeholders	Pearson Correlation	0.484(*)
	Sig. (2-tailed)	0.002
	N	129

The study established that there existed a significant positive correlation between engagement of key stakeholders and Quality of Residential Houses as correlation coefficient $r=0.484(*)$, $P=0.002 < 0.05$. This clearly indicated that engagement of key stakeholders would positively influence quality of residential houses. The finding concurred with Filicetti, (2009) who found that stakeholder engagement influences delivery of quality shelter and within budget and time constraints. Construction of residential houses is run as a project, through the involvement and collaboration of key stakeholders

4.5.1 Laws governing building industry

4.5.1 Approval of building plan

Table 4. 15: Whether there Respondents had an approved building plan

Approval of building plan	Frequency	Percent
Yes	122	95
No	7	5
Total	129	100

The respondents were requested to indicate whether the respondents had an approved building plan. From the findings, 95% indicated that they had an approval building plan

while 5% indicated that they had no approval building plan. This clearly indicated that there still existed houses project that were built without being approved compromising on quality of the houses built.

4.5.2 City County officials ever visit the residential site

Table 4. 16: Visit the site to review the construction

Visit the site the Construction	Frequency	Percent
Yes	114	89
No	15	11
Total	129	100

The study sought whether City County officials ever visit the site to review the construction. From the findings, 89% of the respondents indicated that City County officials visited the site to review the construction while 11% indicated that City County officials had never visited the site to review the construction. This implied that the failure by the county official to inspect the site of house project affected the quality of the house project being built.

4.5.3 Importance of approval requirement of building plans important

Table 4. 17: Importance of approval requirement of building plans important

Importance of approval	Frequency	Percent
Yes	109	85
No	20	15
Total	129	100

On whether respondents find the approval requirement of building plans important, 85% indicated that they found approval requirement of building plans important while 15% indicated that they do not find any importance of approval requirement of building plans

important. This implied that there houses that were built without clearly following set of approval plan hindering quality attainment in building house projects. The finding were similar to World Bank (2011) who found that building by-laws and planning regulations were a pre-requisite for safe, health and sustainable living environments that improve quality of residential houses.

4.5.4 Modify the approved plan at all while building

Table 4. 18: Modify the approved plan at all while building

Modify the approved plan	Frequency	Percent
Yes	113	88
No	16	12
Total	129	100

The respondents were requested to indicate whether they modified the approved plan at all while building. From the findings, 88% indicated that they did not modify the approved building plans, while 12% indicated that they modified the approved building plans. This clearly indicated sometime the houses being built were not to the approved standards due to alteration of approved building plans. The finding concurred with World Bank, (2011) reports that the overall goal of the National Housing Policy of Kenya is to facilitate the provision of adequate shelter and a healthy living environment at an affordable cost to all socio-economic groups in Kenya in order to foster sustainable human settlements. The finding concurred with World bank (2011) reports which found that laxity in enforcement of the building laws and regulations instruments had resulted in poor housing standards, deteriorating housing conditions and formation of informal settlements.

4.5.5 Correlation on existing laws and Quality of Residential Houses

The study sought to establish the extent to which existing laws governing building influences delivery of quality residential houses.

Table 4. 19: Correlation on Existing laws governing building and Quality of Residential Houses

Quality of Residential Houses		
Existing laws governing	Pearson Correlation	0.612(*)
	Sig. (2-tailed)	0.002
	N	129

The study establish that there existed a strong significant positive correlation between existing laws governing building and Quality of Residential Houses as correlation coefficient $r=0.612(*)$, $P=0.01 < 0.05$. This clearly indicated that provision of effective existing laws governing residential houses constructions would positively influence quality of residential houses. The finding concurred with findings by GOK (2004) who found that provision of effective regulation and law governing the residential houses should creates an enabling environment for housing actors to enhance provision of quality houses.

4.6 Market Forces

4.6.1 Availability of services

Table 4. 20: Availability of services

Availability of services	Frequency	Percentage
Electricity	126	98
Tarmac road	112	87
All weather Road	104	81

The respondents were requested to indicate the extent to which the given services were available.

From the findings, majority 98% of the respondents indicated that electricity was available, 87% of the respondents indicated that tarmac road was also available while 81% indicated that there was all weather road in the area. This clearly indicated that availability of tarmac, electricity and all weather roads improve quality of house project in the areas. The finding concurred with UN-HABITAT, (2008) who found that housing market in Kenya has over the years faced a huge supply challenge for both government and private sector players due to lack of effective infrastructure such as sewerage line and good road network.

4.6.2 State of security

Table 4. 21: State of security

State of security	Frequency	Percentage
Very Good	54	42
Good	112	26
Average	35	24
Very Bad	10	8
Total	129	100

The respondents were requested to indicate the state of security of the estate. From the findings, 42% indicated that the state of security was very good, 26% indicated that the state of security was good, 24% of the respondents indicated that the state of security was average while 8% of the respondents indicated that the state of security was very bad. This clearly indicated that the security of the Zimmerman estate may be relatively good.

4.6.3 General state of the house

Table 4. 22: General state of the house

General state of the house	Frequency	Percentage
Complete	100	79
Partially Complete	28	20
Far from Complete	1	1
Total	129	100.0

The respondents were requested to indicate the general completion state of houses. From the findings, 79% of the findings indicated that their house were complete, 20% indicated that they were partially complete while 1% indicated that their houses were far from being complete. This indicated that majority of house project were completed.

4.6.4 Level of occupancy by tenants

Table 4. 23: Level of occupancy by tenants

Level of occupancy by tenants	Frequency	Percentage
Fully occupied	100	78
Reasonably full	29	22
Total	129	100

The study sought the level of occupancy of the tenants. From the findings, 78% of the respondents indicated that the houses were fully occupied, 22% indicated that the house were reasonably full. This clearly indicated that the houses were on high demands.

Table 4. 24: General demand for houses in this estate

Level of house demand	Frequency	Percentage
Very High	74	58
High	42	33
Fair	9	7
Low	4	2
Total	129	100

The respondents were requested to indicate level of general demand for houses in this estate. From the findings, 58% of the respondents indicated that the level of general demand for houses in this estate was very high, 33% indicated that the level of general demand for houses in this estate was high, 7% indicated that level of general demand for houses in this estate was fairly high while 2% of the respondents indicated that the level of general demand for houses in this estate was low.

4.6.5 General level of rent charges in this estate

Table 4. 25: General level of rent charges in this estate

Level of Education	Frequency	Percentage
Very High	9	7
High	73	50
Fair	45	35
Low	10	8
Total	129	100

The respondents were requested to indicate level of rent charge in their estate. From the findings, 50% of the respondents indicated that the level of rent charges in their estate was high, 35% indicated that the level of rent charges in the estate was fairly high, 8%

indicated that the level of rent charges in this estate was low while 7% of the respondents indicated that the level of rent charges in this estate was very high.

4.6.6 Correlation on market forces and Quality of Residential Houses

The study sought to establish the extent to which market forces influences delivery of quality residential houses.

Table 4. 26: Correlation on market forces and Quality of Residential Houses

		Quality of Residential Houses
Market forces	Pearson Correlation	0.527(*)
	Sig. (2-tailed)	0.002
	N	129

The study establish that there existed a strong significant positive correlation between market forces and Quality of Residential Houses as correlation coefficient $r=0.527(*)$, $P=0.01 < 0.05$. This clearly indicated that market forces such as demand and income level of population would positively influence quality of residential houses. The findings concurred with Macharia, (2011) findings who found that demand for housing far surpasses its supply in Kenya, especially in urban areas that have for long suffered from poor planning, resulting in an increase in informal settlements with poor housing and little infrastructure services.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATION

5.1 Introduction

This chapter provides a summary of the findings from chapter four, conclusions and recommendations of the study based on the study objectives. The main objective of this study was to determine factor influencing delivery of quality house projects in Nairobi, a case of Zimmerman estate, Nairobi County.

5.2 Summary of the Findings

This study sought to establish the extent to which the following factors influence delivery of quality residential houses.

5.2.1 Source of project funding

The study established that bank loan was the most common source of project funding as indicated by 89% of the respondents, followed by personal savings and borrowings from friends and relatives while 21% of the respondents indicated SACCOs as their source of finding for their house projects respectively. On whether the project funds were adequate the study established that funding was not adequate clearly indicating that inadequacy in funding affects the quality of house projects.

The study revealed that there was clear schedule of funds draw down while 17% of the respondents indicated otherwise and therefore although there was clear schedule of funds drawings, there existed ineffective scheduling of fund drawings that could affect quality of house projects.

The study revealed that the owners of the house projects was buying the buildings materials, 13% indicated it was the project managers who were buying the buying

building materials, 10% of the respondents that architects were buying the building materials while 4% of the respondents indicated quantity surveyors buy materials while 2% of the respondents indicated that supervising mason bought the building materials. This clearly indicated that the buying of materials was left in the hands of the owners of the house projects, who could not ascertain the quality of building materials. The study revealed that the lenders failed to visit the site to confirm proper usage of funds therefore affecting quality of house projects.

5.2.2 Stakeholder Engagement

The study established that the owners attended site meetings, 81% of the project managers attended meetings, 79% indicated that supervising masons attended site meetings, 65% of the respondents indicated that architects attended the site meetings while 58% of the respondents indicated that quantity surveyors attended the site meetings clearly indicating that not all the stakeholders attended all site meetings affecting quality procedure of developing house projects.

On who coordinated the whole project, the study revealed that the owners were the most coordinators of the house projects, then architect were coordinators of the houses projects, project managers were sometime coordinators of house project. . This implied that by virtue of unqualified officers being coordinators of the house projects that affected quality of the house projects.

5.2.3 Laws

On whether the respondents had an approved building plan, majority 95% indicated that they had an approved building plan while 5% indicated that they had no approved

building plan. This clearly indicated that there still existed house projects that were built without being approved compromising on quality of the houses built.

The study established that City County officials visit the site to review the construction as indicated by 89% of the respondents while 11% indicated that City County officials had never visited the site to review the construction implying that the failure by the county official to inspect the site of house project affected the quality of the houses built.

The study revealed that the approval requirement of building plans was important as indicated by 85% of the respondents. However, 15% indicated that they do not find any importance of approval requirement of building plans, implying that there are houses that were built without clearly following set of approval plan thus hindering quality attainment in building house projects. The study revealed that 88% of the respondents indicated that they did not modify the approved building plans, while 12% indicated that they modified the approved building plans clearly revealing that sometime the houses being built were not to the approved standards due to alteration of approved building plans.

5.2.4 Market Forces

The study revealed that there was availability of services such as electricity as indicated by 98% of the respondents, tarmac roads as well as all weather road in the area. This clearly indicated that availability of tarmac, electricity and all weather roads improve quality of house project in the areas

The study revealed that security of the estate improves quality of house project. From the findings, over 68% of the respondents indicated that the state of security was good. This

clearly indicated that the security of the Zimmerman state may be relatively good. The study further established that most houses were complete while 20% indicated that they were partially complete. From the findings, the study revealed that the level of occupancy was fully occupied, 22% indicated that the houses were reasonably full. This clearly indicated that the houses were in high demand. The study found that the level of general demand for houses in the estate was very high, 33% indicated that the level of general demand for houses in the estate was high clearly indicating that the level of general demand for houses in this estate was high. The study established that the level of rent charge in their estate was high. From the findings, 50% of the respondents indicated that the level of rent charges in their estate was high.

5.3 Conclusions of the Study

The study concluded that the most common source of fund for house projects was bank loan, personal savings and borrowing from SACCOs, respectively. The study concluded that project funds were not adequate hence inadequacy in fund affects the quality of house projects. The study concluded that although there was clear schedule of funds drawings, there existed ineffective scheduling of fund drawings that could affect quality of house projects.

The study also concluded that the owners of the house projects were the most parties who buy the buildings materials. This clearly indicated that the buying of materials was left in the hands of the owners of the house projects to buy building materials who could not ascertain the quality of building materials. The study revealed that the lenders failed to visit the site to confirm proper usage of funds hence failure to attended the site of the house projects affecting quality of house projects

The study concluded that not all the stakeholders attended the site meetings where the owners attended all site meetings. Other stakeholders such as project managers, supervising masons, architects and quantity surveyors attended the site meetings sometimes, clearly indicating that not all the stakeholders attended all site meetings, affecting quality procedure of developing house projects.

The study concluded that the owners were the most coordinators of the house projects, then architect, project managers were sometime coordinators of house project. The owner could be unqualified officers being coordinators of the house projects thus affecting quality of the house projects.

The study concluded that there had been approved building plans, although there still existed houses project that were built without being approved compromising on quality of the houses built. The study concluded that the City County officials ever visited the site to review the construction while in some cases failed to do so City County officials had never visited the site to review the construction implying that the failure by the county official to inspect the site of house project affected the quality of the house project being built.

The study concluded that failure to follow approval requirement of building plans was hindering quality attainment in building house projects. This was because respondents indicated that they modified the approved building plans clearly revealing that sometime the houses being built were not to the approved standards due to alteration of approved building plans.

The study concluded that there was availability of services such as electricity , tarmac roads as well as all weather road in the area clearly indicated that availability of tarmac, electricity and all weather roads improve quality of house project in the areas . The study concluded that security of the housing project improves quality of house projects clearly indicated that the security of the Zimmerman state may be relatively good. The study further concluded that most house projects were complete and level of general demand for houses in the estate was very high clearly indicating that the level of general demand for houses in this estate was high. The study finally concluded that the level of rent charge in their estate was high.

5.4 Recommendations of the Study

The study recommends that the most source of fund for house projects should be bank loan, and credit from SACCOs as the source to ensure adequate fundings to enhance developing of quality of house projects through buying of quality building material, schedule of funds drawings and ensure completion.

The study recommends that lenders should visit the site to confirm proper usage of funds as failure to attend the site of the house projects affects quality of house projects. The City County officials needed to visit the site and approve the house projects plans and offer regulations to be followed to develop a quality house projects.

The study recommend that all the stakeholders , owners , project managers, supervising masons, architects and quality surveyors should attended the site meetings to agree on relevant decisions to enhance improve quality of house project. Leaving the owner to be the coordinators of the house projects could affects the quality of the house projects and

therefore the study recommends that coordination of the house project be carried out by qualified personnel such as project managers.

The study recommend that approval requirement of building plans should be adhered to as building house project without clearly following set of approval plan hindering quality attainment in building house projects. The approved building plans should also not be modified, as alteration of approved building plans could affect quality level of the house projects.

The study finally recommends availability of services such as electricity, tarmac roads as well as all whether road in the area to improve the quality of house projects.

5.5 Recommendation for further Study

This research project recommends that a further study is carried out to establish factors that influence housing project success. A further study could be carried out to determine factors that could influence provision of quality house project in Nairobi. A further study could be carried out to determine how availability of service utilities affects provision of quality housing in Kenya. The study also recommends that a further study could be carried out to determine the extent to which project staff capacity affects provision of quality house projects in Kenya.

REFERENCES

- Adelekan, I. (2009). Vulnerability of Poor Urban Coastal Communities to Climate Change in Lagos, Nigeria . *Paper Presented at the Fifth Urban Research Symposium*, Marseille, 28-30 June, 2009.
- Alvesson, M., & Skoldberg, K. (2000). *Reflexive Methodology*. New Vistas for Qualitative Research. London: Sage.
- Antill, V. (2004). Making projects a success, *Communications of the ACM*, Vol. 43 NO.3, pp.57-61.
- Armstrong, M. (2009). *Human Resources Management Practice* (11th Edition) Kogan page limited.
- Babie, E & Mouton J (2001). *The Practice of Social Research*. Cape Town : Oxford University Press.
- Berrie, Michele (2009). *Project Manager Responsibilities*, PM Hut. Accessed 17. Oct 2009.
- Best, J.W. & Khan, J.V. (2006). *Research In Education* (10th edition) New Jersey, Pearson Education Inc.
- Bollens, S. (1998). Urban Planning Amidst Ethnic Conflict: *Jerusalem and Johannesburg*. *Urban Studies* 35(4):729-750.
- Bonyo, J. (2010). Business Section, *Daily Nation*.
- Brinkerhoff, D. and Crosby, B. (2002), 'Citizen Participation in the Policy Process', chapter 3 in 'Managing Policy Reform: Concepts and Tools for Decision-Makers in Developing and Transitioning Countries', Kumarian Press, Connecticut, USA.
- Bryman, A. & Cramer, D. (2001). Quantitative Data Analysis with SPSS Release 10 for Windows, London: Routledge.
- Cooper D.R & Schindler P.S. (2006). *Business Research Methods* (9th Edition). Tata McGraw Hill publishing company, New York
- Creswell, J. W. (2009). *Research design: qualitative, quantitative, and mixed methods approach*. 3rd ed. University of Nebraska-Lincoln: SAGE Publications, Inc
- Erguden, S. (2001), Low cost housing: Policies and constraints in developing countries, *International conference on spatial development for sustainable development, Nairobi*.

- Filicetti, J. (2009). *Project Planning Overview*. PM Hut Last accessed 8 November 2009.
- Flaman, G. & Gallagher U. (2001). *Assessment and Control of project Risks*. Englewood Cliffs: Prentice-Hall.
- Gichunge, H. (2001). Factors that contribute to the cost of provisions of low cost housing in Nairobi, Kenya. Unpublished paper
- GOK (2004). *National Housing Policy*.
- Golland, A. (2006), Housing supply, profit and housing production: The case of the United Kingdom, Netherlands and Germany, *Journal of Housing and the Built Environment*, vol.11, no.1.
- Government of Kenya (1999), Analytical report on Housing Conditions and Household Amenities, *Kenya National Bureau of Statistics*.
- Government of Kenya (2007), Housing Sector Incentives and Market Re – Engineering Measures, Ministry of Housing.
- Government of Kenya (2008), Statistical Abstract, *Kenya National Bureau of Statistics*.
- Government of Kenya (2009), Building and construction Sector – Industrial profiles and opportunities for private investment, *Ministry of Tourism, Trade and Industry*.
- Government of Kenya (2009), Strategic Plan (2006-2011), *Ministry of Housing*.
- Guardian (2011). *World's 'seven billionth baby' is born"*.
- Habitat for Humanity (2013). *Great Britain, 46 West Bar Street, Banbury OX16 9RZ*
T: 01295 264240 F: 01295 264230.
- Hancock T. (2008), Caveat partner: Reflections of Partnership with the Private sector, *Health promotion international*, vol. 13, no. 3.
- Harker, Lisa (2006). Chance of a lifetime: *the Impacts of Bad Housing on Children's Lives"*, *Shelter*, September 2006.
- Hassanali, F.M. (2009). *Understanding reduced Private – sector participation in Low Income Housing delivery in Nairobi*
- Ichangai, A. (2008). Application of By-Laws in Construction of Buildings, B.A. Thesis, University of Nairobi.

- Ileri, F. (2010 July 19). Monday View, *Daily Nation*, p.27
- Jamii Bora Trust (30 June 2006). Annual Financial Report. Kenya Association of Project Managers (KAPM)
- Kissick, D (2006). *Housing for All: Essential for Economic, Social, and Civic Development, a 28 page manuscript prepared for the World Urban Forum III by PADCO/AECOM, June 2006.*
- KNBS (2011). *Kenya National Bureau of Statistics*
- Kombo, K.D. & Tromp, D.L. (2006). Project and thesis writing. Nairobi: Paulines Publication Africa.
- Kothari, C.R. (2003). *Research Methodology: Methods and Techniques*. New Delhi: Willey Eastern Ltd.
- Kothari, C.R. (2004) *Research Methodology-Methods and Techniques* (2nd Ed.) New Delhi. New Age International Ltd Publishers.
- Landman, K. and Napier, M. (2010). Waiting for a House or Building Your Own? Reconsidering State Provision, Aided and Unaided Self-Help in South Africa. *Habitat International* 34:299-305. 50
- MAAK (2012). Architectural Association of Kenya Construction Project Managers (CPM)
- Macharia, K. (2011). February 24 Opinion, *Business Daily*, p. 15
- Macoloo, G. (1994), The changing nature of financing low income urban housing development in Kenya, *Housing Studies*, Volume 9, Issue 2, pages 189-281.
- Mitchell, Agle and Wood (1997).
- Mitullah, W. (2003), Urban Slums Report: The case of Nairobi, Kenya, *Understanding Slums: Case Studies for the Global Report on Human Settlements*.
- Morka, F. (2007). A Place to Live: A Case Study of the Ijora-Badia Community in Lagos, Nigeria . Case Study Prepared for Enhancing Urban Safety and Security: Global Report on Human Settlements 2007.

- Mugenda, A. and Mugenda, O. (2003). *Research Methods: Quantitative and Qualitative Approaches*
- Nabutola, W. (2004), Affordable Housing in Kenya: A Case study of Policy on Informal Settlements, Land Administration and Housing Issues in Informal Environments, 3rd FIG Regional Conference, Jakarta, Indonesia.
- NHC, (2010), Housing Finance and Housing delivery systems in Kenya: Bottlenecks, recent developments and the way forward, *Housing Finance International*.
- Orodho, J. O. (2005). Elements of Education and Social Science Research Methods. Nairobi: Masola Publishers.
- Otiso, K M. (2002), Forced Evictions in Kenyan cities, *Singapore Journal of Tropical geography* 23 (3).
- Patton, M. Q. (2002). *How to use qualitative methods in evaluation*. Newbury Park, CA: Sage Publishers.
- PMBOK (2004). *Guide*, Third Edition 2004 p.12
- Renaud, B. (2007), Financing Shelter, Shelter, settlement and development, Allen and Unwin, Boston.
- Rorick, H. (2004). CAN THE GLOBAL HOUSING PROBLEM BE SOLVED?
- Roysambu (2014). *Residential houses and plots at Roysambu Housing Cooperative Society Limited*.
- Russell, PMP, D. (2011). *Accountability. In Succeeding in the project management jungle: How to manage the people side of projects* (29). New York, NY: AMACOM.
- Sekaran (2004): *Research Methods for Business*. New York: John Wiley & sons, Inc
- Siegel, S. & Castellan, N.J. (2008). *Nonparametric statistics for the behavioral sciences* (2nd Ed.). New York, NY: McGraw-Hill.
- Smith, D.A. (2006), Housing the World's Poor, The four essential roles of government, *Harvard International Review*.
- Svinicki, M. D. (2010). *A Guidebook on Conceptual Frameworks for Research in Engineering Education: University of Texas*
- Thalmann, P. (2006), Triggers for Housing development.
- UN-Habitat (2005). *Financial Urban Shelter*
- UN-Habitat (2008). *Global Report on Human Settlements. The Challenge of Slums*.

UN-Habitat. (2010). *The State of African Cities 2010: Governance, Inequality and Urban Land Markets*. Nairobi: UN-Habitat.

USCB (2012–July 2013). *U.S. Census Bureau – World POPClock Projection*". The number on this page is automatically updated daily. www.census.gov.

World Bank (2011). *Developing Kenya's Mortgage Market*, May 2011, Report No. 63391-KE

APPENDICES

Appendix I: Letter of Introduction

Maurice Munyifwa Khatera

P. O. BOX 1603-00232

NAIROBI, KENYA

MOBILE 0717 444 623

24th July 2013

Dear Respondent

Re: Data Collection For Research: Request To Fill Questionnaire

I am a student at the University of Nairobi pursuing a Master of Arts degree in Project Planning and Management; currently I am carrying out a research on housing at Zimmerman estate. The research aims to assess some of the factors influencing the quality of residential houses built in Nairobi, with specific reference to Zimmerman; you have been selected to participate in this study. The data collected and the findings thereof will be kept strictly confidential and used purely for educational research purpose, it is not meant to be used against any respondent, personal details will be kept anonymous.

Thanks very much in advance for your kind cooperation and participation.

Yours faithfully,

Khatera, Maurice Munyifwa

Reg. No. L50/61476/2011

Appendix II: QUESTIONNAIRE

Factors Influencing Quality of Residential Houses: a case of Zimmerman estate in Nairobi

This questionnaire is designed to facilitate collection of data that will assist in assessing the factors influencing quality of residential houses built in Kenya, with specific reference to Zimmerman estate in Nairobi County. The researcher is a student at the University of Nairobi pursuing a Masters degree in Project Planning and Management. Kindly respond to all questions by ticking the options you consider appropriate, please also provide required information as briefly as possible in the spaces provided. The information obtained in this study will be used for academic purpose only and will be treated with strict confidence; personal details will be kept anonymous.

SECTION A: General information

1. State whether you are owner of the house or agent (Tick):

Agent () Owner ()

2. Are people staying in the building?

Yes () No ()

3. Number of floors, including ground floor.....

4. Total number of rooms.....

5. Estimated number of people per room.....

6. Building complete or still under construction (tick):

Complete () Partially complete () Not complete ()

7. Gender of owner (tick):

Male () Female ()

8. Estimated age of building (years).....

SECTION B : Source of project funding

1. Source of funding for construction? (Tick):

Bank Loan ☐

Personal Savings ☐

Friends & Relatives ☐

Saccos ☐

Other sources ☐

2. Was the money adequate to complete the project?

Yes ☐ No ☐

3. Was there a clear schedule of funds draw down?

Yes ☐ No ☐

4. Who bought building material, in most cases?

Owner ☐

Project Manager ☐

Architect ☐

Engineer ☐

Quantity Surveyor ☐

Supervising Mason ☐

Other ☐

5. Where the money was borrowed, did the lenders visit the site to confirm proper usage of funds?

Yes ☐

No ☐

Not applicable where funds not borrowed ☐

SECTION C: Stakeholder Engagement

1. State which of the following stakeholders attended site meetings for this project (Tick)

Owner	<input type="checkbox"/>
Project Manager	<input type="checkbox"/>
Architect	<input type="checkbox"/>
Engineer	<input type="checkbox"/>
Quantity Surveyor	<input type="checkbox"/>
Supervising Mason	<input type="checkbox"/>
Other	<input type="checkbox"/>

2. State who coordinated the whole project (Tick)

Owner	<input type="checkbox"/>
Project Manager	<input type="checkbox"/>
Architect	<input type="checkbox"/>
Engineer	<input type="checkbox"/>
Quantity Surveyor	<input type="checkbox"/>
Supervising Mason	<input type="checkbox"/>
Other	<input type="checkbox"/>

SECTION D : Laws governing building industry

1. Do you have an approved building plan?

Yes ☐ No ☐

2. Did City County officials ever visit the site to review the construction?

Yes ☐ No ☐

3. Do you find the approval requirement of building plans important?

Yes ☐ No ☐

If No, please give your reason.....

4. Did you modify the approved plan at all while building?

Yes ()

No ()

If Yes, please give your reason modification:

SECTION E: Market Forces

1. State which of the following services are available (Tick)

Water ()

Electricity ()

Tarmac road ()

All weather Road ()

No standard Road ()

2. State of security:

Very Good ()

Good ()

Average ()

Bad ()

Very Bad ()

3. General state of the house (Tick)

Complete ()

Partially Complete ()

Far from Complete ()

4. Level of occupancy by tenants (Tick)
- Fully occupied ()
- Reasonably full ()
- Partially occupied ()
- Empty ()
5. General demand for houses in this estate (Tick)
- Very High ()
- High ()
- Fair ()
- Low ()
6. General level of rent charges in this estate (Tick)
- Very High ()
- High ()
- Fair ()
- Low ()
5. Any observable problem or concern about the building in general

THANK YOU FOR YOUR TIME AND YOUR COOPERATION