

**FACTORS INFLUENCING PROVISION OF LOW COST  
HOUSING IN NAIROBI COUNTY, KENYA**

**REWEL KARIUKI MAIGUA**

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Management of the University of Nairobi**

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**DECLARATION**

This project is my original work and has not been presented for a degree in any other University

Signature:.....

Date:.....

Rewel Kariuki Maigua

L50/64012/2010

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

Signature:.....

Date:.....

Dr. Kyalo D. Ndunge

Senior Lecturer,

Department of Extra Mural Studies

University of Nairobi

## **DEDICATION**

This project is dedicated to my wife Joan Wanjiku for the much needed support and encouragement.

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I wish to record my sincere gratitude to all those who contributed in various ways towards the completion of this study.

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## TABLE OF CONTENT

DECLARATION .....	ii
DEDICATION .....	iii
ACKNOWLEDGEMENTS .....	iv
TABLE OF CONTENT .....	v
LISTS OF TABLES .....	viii
LIST OF FIGURES .....	ix
ABBREVIATIONS/ACROMNYS .....	x
ABSTRACT .....	xi
<b>CHAPTER ONE: INTRODUCTION .....</b>	<b>1</b>
1.1 Background to the Study .....	1
1.1.1 Low Cost Housing Market Players .....	2
1.2 Statement of the Problem .....	3
1.3 Purpose of the Study .....	4
1.4 Objectives of the Study .....	4
1.5 Research Questions .....	5
1.6 Significance of the Study .....	5
1.7 Delimitation of the Study .....	6
1.8 Limitation of the Study .....	6
1.9 Assumptions of the Study .....	6
1.10 Definitions of Significant Terms .....	6
1.11 Organization of the Study .....	7
<b>CHAPTER TWO: LITERATURE REVIEW .....</b>	<b>8</b>
2.1 Introduction .....	8
2.1.1 Housing Needs and Demand for Low- Cost Housing .....	8
2.2 Empirical Review .....	9
2.3 Factors Influencing Provision of Low Cost Housing .....	11
2.3.1 Building Materials and Low-Cost Housing .....	12
2.3.2 Availability of Land and Low-Cost Housing .....	15
2.3.3 Cost of Land and Low-Cost Housing .....	18

2.3.4 Infrastructure Development and Low-Cost Housing .....	20
2.4 Theoretical Review .....	22
2.4.1 Theory of Housing Adjustment .....	22
2.4.2 The Economic Theory of Housing Tenure Choice .....	24
2.5 Conceptual Framework.....	25
2.6 Summary of Literature.....	27
2.7 Research Gap of the Study.....	27
<b>CHAPTER THREE: RESEARCH METHODOLOGY .....</b>	<b>29</b>
3.1 Introduction.....	29
3.2 Research Design.....	29
3.3 Target Population.....	29
3.4 Sampling Procedure .....	30
3.5 Data Collection Instrument .....	30
3.6 Validity and Reliability.....	31
3.6.1 Pilot Study.....	31
3.6.2 Validity of the Instruments .....	31
3.6.3 Reliability of the Instruments.....	31
3.7 Data Analysis .....	32
3.8 Operationalization Table of Variables .....	33
<b>CHAPTER FOUR: DATA ANALYSIS, PRESENTATION, INTERPRETATION AND DISCUSSION .....</b>	<b>36</b>
4.1 Introduction.....	36
4.2 Response Rate.....	36
4.3 Background Information.....	36
4.4 Factors Affecting Provision of Low Cost Housing .....	39
4.4.1 Availability of Building Materials Influence Provision of Low cost houses.....	39
4.4.2 Availability of land .....	44
4.4.3 Cost of Land.....	46
4.4.4 Infrastructure and Housing .....	49
4.5 Correlation Analysis .....	51

4.6 Regression Analysis.....	52
4.6.1 Model Summary of Regression Analysis .....	52
4.6.2 ANOVA (b) .....	53
4.6.3 Regression Coefficients (a).....	54
<b>CHAPTER FIVE:SUMMARY, CONCLUSIONS AND RECOMMENDATIONS..</b>	<b>56</b>
5.1 Introduction.....	56
5.2 Summary of the Findings.....	56
5.3 Conclusion of the Findings .....	58
5.4 Recommendation .....	59
5.5 Recommendation for Further Studies .....	60
<b>REFERENCES.....</b>	<b>61</b>
<b>APPENDICES .....</b>	<b>64</b>
Appendix I: Letter of Introduction.....	64
Appendix II: Questionnaire.....	65

## LISTS OF TABLES

Table 3.1: Operationalization Table of Variables.....	34
Table 4.1: Company’s Category .....	37
Table 4.2: Respondents Working Period .....	37
Table 4.3: Type of Properties Provided by the Company.....	38
Table 4.4: Availability of Building Materials Influence.....	39
Table 4.5: Use Alternative Building Materials .....	41
Table 4.6: Influence of Building Materials on Provision of Low Cost Housing in Nairobi County.....	43
Table 4.7: Extent to Which Availability of Land Influences Provision of Low Cost Housing.....	44
Table 4.8: Influence of Availability of Land on Provision of Low Cost Housing in Nairobi County.....	45
Table 4.9: Influence of Cost of Land on Provision of Low Cost Housing in Nairobi County.....	48
Table 4. 10: Influence of Infrastructure Development on Provision of Low Cost Housing in Nairobi County .....	50
Table 4. 11: Correlations Analysis.....	51
Table 4. 12: Model Summary .....	52
Table 4.13: ANOVA (b) .....	53
Table 4.14: Coefficients (a) .....	54

## LIST OF FIGURES

Figure 1: Conceptual Framework .....	26
Figure 2: Gender of the Respondents.....	36
Figure 3: Number of housing units put up.....	38
Figure 4: Percentage Building Materials Contribute to Cost of Housing.....	40
Figure 5: Cost Savings by the Use of the Alternative Building Materials.....	42
Figure 6: Current Land Prices in Nairobi County.....	46
Figure 7: Whether Pricing of Land Affected Provision of Low Cost Housing Solutions .	47
Figure 8: Influence of Infrastructure Development on Provision of Low Cost Housing in Nairobi County.....	49

## **ABBREVIATIONS/ACROMNYS**

MDGs	-	Millennium Development Goals
NHC	-	National Housing Corporation
UN	-	United Nations
UNCHS	-	United Nation Cultural Housing System
WHO	-	World Health Organization
NGOs – Non	-	Governmental Organizations

## **ABSTRACT**

Housing is the leading component of urbanization and access to quality, affordable housing is critical in any society. The housing situation in Nairobi city just like in most cities in developing countries is such that housing demand far outstrips supply. The housing market providers have been unable to provide affordable housing to middle and low income earners in Nairobi. This problem has often been linked to land acquisition problem, low income levels of the individuals in this category and their inability to access funds, high cost of building materials, statutory regulations and non-use of locally available building materials. The purpose of this study was to investigate factors influencing provision of low cost housing in Nairobi County in Kenya. The study adopted descriptive survey design. The target population of this study was 120 property development entities in Nairobi County, Kenya. A sample size of 30 was drawn from the target population through simple random sampling. A questionnaire was used as primary data collection instrument. Data was then be coded and tabulated to enable the responses to be grouped into various categories using Statistical Package for Social Science (SPSS). Frequency distribution tables were summarized where percentages and other diagrams such as bar charts, grouped frequency distributions and pie charts were used for data presentation. Descriptive statistics such as means, standard deviation and frequency distribution were used to analyze the data. Inferential statistics correlation and regressions analysis was done to establish the extent to which the said factors influence provision of low cost housing solutions in Nairobi County. The study discovered that cost and availability building materials, cost and availability of land and levels of infrastructure development influenced provision of low cost housing. The study recommended that that a comprehensive and well-coordinated support infrastructure is central to the provision of low cost housing. The high expense of developing houses due to high costs of building materials, land and infrastructure which has kept off potential developers from the low cost housing sector needs to be addressed. Increased use of alternative and cheaper building materials needs to be encouraged and the Government needs to facilitate development of off-site infrastructure and land servicing which is a critical component of the realization of low cost housing.

## **CHAPTER ONE**

### **INTRODUCTION**

#### **1.1 Background to the Study**

Housing is paramount to human existence as it ranks among the top three needs of man. The provision of adequate housing in any country is very vital as housing is a stimulant of the national economy (Erguden, 2001). Housing is a set of durable assets, which accounts for a high proportion of a country's wealth and on which households spend a substantial part of their income. Housing has been a concern of individual, families, group and government since the dawn of urban civilization. This problem has often been linked to land acquisition problem, low income of the individual, high cost of building materials, statutory regulations, non-use of locally available and cheap alternative building materials. It is usually a situation of either the government has failed in meeting up with its obligations or that the individuals had remained for some times incapacitated to be able to break through various bureaucracies in land acquisition procedure. One of the greatest problems in the world today is that of provision of shelter (Golland, 2006).

Kenya is experiencing rapid urban growth in a context of limited economic growth and restricted land supply. Rental housing is expanding as only a few people can afford their own homes. Rental accommodation in Kenyan towns has usually been associated with low-income households but it has also become the main form of housing for middle-income households (Mwangi, 1997). The shelter situation in Nairobi city just like in most cities in developing countries is such that housing demand far outstrips supply. The low house market providers have been unable to provide low and affordable housing to middle and low income earners in Nairobi. The need for new housing in urban areas currently stands at 150,000 units annually while only 23 per cent of this demand is being met. The gap between supply and demand is more relevant to low and middle income households who represent 48 percent of the required new houses. The lack of appropriate housing has resulted in the expansion of informal settlements such as slums. Many people are forced into overcrowded establishments or are left completely homeless. Some researchers suggest that over 60% of Nairobi's population resides in slums. The current

living situation of many Kenyans has resulted in insufficient facilities, poor health standards, lack of infrastructure and environmental degradation. Without the security of a safe home, it is difficult to maintain employment, attend school, care for a family and ensure both mental and physical health. The economic, social and physical welfare of a household and community is strongly related to their access to decent and affordable housing.

Despite some attempts at achieving decent housing for Kenyans, Kenya has, on the whole, failed to address the dire housing conditions of her population. Past governments had tended to leave this important sector almost entirely to private sector effort, concentrating itself on the provision of limited number of residential quarters for its deserving officers. 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).

There are however very few players in the low cost housing industry and there seems to be a minimal interest of other private sector housing developers to venture in. These private sector developers are successful in the middle and high income housing markets and this implies that they may have the capacity and skill set to supply the low-income housing required to reduce the housing shortfall in the country (Hassanali, 2009). They have however, shied away from the low income market mainly because the profitability margins are lower as compared to housing developments for the other markets.

### **1.1.1 Low Cost Housing Market Players**

The construction of low cost and affordable homes for the lower and middle income workers in the greater Nairobi Metropolitan City is being undertaken by various housing developers. In the year 2007, the private sector commenced construction of housing units worth Kshs. 9.8 billion and registered growth of 6.9% over the previous year (Statistical Abstract, 2008). But despite intensive overall private-sector activity, these private developers have mainly concentrated in the middle and upper segments of the market

with relatively little focus on the low-income market. The low income housing units currently constitutes less than 30% of the private development portfolio, yet this is the segment where the need is particularly acute (Otiso, 2002).

In the past, the government 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 (NHC, 2010). 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).

NGO's have had to come in to fill in the gap in the housing shortage especially for the low income households. 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.

A few other development agencies have also emerged seeking to address the problem of poor urban dwellers. 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.

## **1.2 Statement of the Problem**

With increased urbanization adequate, affordable and decent housing in Nairobi has become a mirage with the most affected being the low and middle income earners who form the majority of Nairobi's urban population. Urban planning has not been able to keep up with the rapid urbanization in Kenya and the demand of housing far exceeds the

supply. The need for new housing in urban areas currently stands at 150,000 units annually while only 23 per cent of this demand is being met. The gap between supply and demand is more relevant to low and middle income households who represent 48 percent of the required new houses. Ideally, the state of increased urban population would seem as a great opportunity for developers as it translates to increased demand for housing; however, this isn't the case. Many developers have mainly concentrated in the middle and upper segments of the market with relatively little focus on the low-income market. The low income housing units currently constitutes less than 30% of the private development portfolio, yet this is the segment where the need is particularly acute (Otiso, 2002).

This research sought to bring out factors that influence provision of low cost housing solutions from the perspective of existing and potential housing developers in this market.

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

The purpose of this study was to investigate the factors influencing provision of low cost housing in Nairobi County in Kenya.

### **1.4 Objectives of the Study**

This study sought to achieve the following objectives:

- i. To establish how the building materials influence provision of low cost housing in Nairobi County
- ii. To examine how cost of land influences provision of low cost housing in Nairobi County
- iii. To examine how availability of land influences provision of low cost housing in Nairobi County
- iv. To examine how infrastructure development influences provision of low cost housing in Nairobi County

## **1.5 Research Questions**

The following research questions guided the study;

- i. How does building materials influence provision of low cost housing in Nairobi County?
- ii. How does cost of land influence provision of low cost housing in Nairobi County?
- iii. How does availability of land influence provision of low cost housing in Nairobi County?
- iv. How does infrastructure development influence provision of low cost housing in Nairobi County?

## **1.6 Significance of the Study**

The findings of this study were found to be of great important to various stakeholders in the construction and housing industry. Property developers are able to gain insight on the factors influencing provision of low cost housing solutions which will enable them to define measures that will enhance provision of low cost houses in the County. Potential home owners will gain insight on what factors to consider when making choice for the ideal low-cost housing.

Our Governments Vision 2030 is founded on three pillars; economic pillar, social pillar and political pillar. In its Social pillar, the Government is to plan for adequate and affordable housing for its citizens. The study was fond to be significant to the government, mainly the housing policy makers as they gain insight on challenges facing provision of low income housing development in the county and the country at large. This will enable the policy maker to formulate housing policies that will enhance provision and development of quality, adequate and affordable houses.

The findings of the study were also significant to scholars and researchers as they will broaden the knowledge on factors influencing provision of low cost housing solutions in urban areas. The study also forms the foundation for further research on the field.

### **1.7 Delimitation of the Study**

The study sought to identify factors influencing provision of low cost housing solutions in Nairobi County, Kenya. The study was undertaken in Nairobi County, Kenya and sought this from the relevant stake holders in the housing industry.

### **1.8 Limitation of the Study**

The study was limited in seeking to identify factors influencing provision of low cost housing solutions in Nairobi County, Kenya. The study would have covered more counties but limited time and financial resources constrained the study. The researcher drew a time schedule and a budget that enabled the study to be completed using the budget drawn and within the required time of the study.

### **1.9 Assumptions of the Study**

Assumptions made on this research were that the results that were collected from the senior staff working in the housing development entities would be a good representation of the entire housing sector in Nairobi County.

### **1.10 Definitions of Significant Terms**

**Affordable housing** - is housing that is appropriate for the needs of a range of low to moderate income households and priced so that low and moderate incomes are able to meet their other essential basic living costs.

**Low income earners** - Low income earners can be divided into two categories, namely, the low income earners who have no gainful employment and the low income earners who are employed junior workers in government and other private establishments. They can also be self-employed.

**Urban low cost housing** - is regarded as housing comprising a minimum of two habitable rooms, cooking area and sanitary facilities, covering a minimum gross floor area of 40 square meters for each household.

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

The study was organized into five chapters. Chapter one covers the background of the study, statement of the problem, purpose of the study, research question, significant of the study, limitations of the study, delimitation of the study, definition of significant terms and the organization of the study.

Chapter two consist of the literature review which is sub-divided into different sub-headings concerning factors influencing provision of low cost housing in Nairobi County in Kenya. Chapter three cover the research methodology divided into; research design, target population, sample and sampling procedures, research instrument, validity of the instrument, reliability of the instruments, data collection and data analysis. Chapter four represents research findings, analysis and discussion of the findings. Chapter five focus on the summary of the study, conclusions and recommendations.

## **CHAPTER TWO**

### **LITERATURE REVIEW**

#### **2.1 Introduction**

This chapter presents a review of literature on provision of low cost housing. The chapter discusses general theoretical and empirical review on provision of low cost housing. Past studies on factors that affects provision of low cost housing. A conceptual framework is drawn and discussed to emphasize on the factor influencing provision of low cost housing.

##### **2.1.1 Housing Needs and Demand for Low- Cost Housing**

Housing need is defined by the UN to include demographic, replacement and vacancy elements (Rakodi, 1992). In other words, housing needs result from population growth and new household formation, overcrowding and when households are paying more than they can afford for housing. Housing need is considered to be an instrumental need because one cannot fulfill instrumental housing need without meeting our basic need (King, 1999). King distinguished instrumental needs and basic needs. The former occurs because of particular ends we choose and the later is what we have by being human. However, King argues that, need is a relative term and is best defined individually within a particular cultural context and that, if one chooses housing with high level of amenity he must also fulfill his basic need as those high level ones. For example, according to UNCHS (1996), low-cost houses peoples spent more proportion of their income on housing than upper-income households and that the low-income groups have diversity of demand for housing. This diversity arises from the fact that the low-income groups may have nothing to spend on housing because all their income is spend on daily necessities (basic needs) and therefore how much income is available for housing affects their demand for housing. Again, the decision on how much to spend on housing is influenced by location, size and quality of housing, infrastructure and services.

## **2.2 Empirical Review**

Greene and Rojas (2004) argue that, the land value constitutes a significant proportion of the total cost of financing incremental housing construction process and that access to low cost land is very essential in making the overall process viable. As indicated above, land prices are determined mainly by location and development potential of the land. The location factor determines city growth and it is influenced by the construction of trunk infrastructure which further determines the supply of serviced land in the urban setting. The development potential of land is influenced by land use and building standards which can either limit land available for development or increase the supply. Because of the great influence of these two factors on land prices especially in central locations in urban areas, it stands to reason that, low-cost land can only be located at the periphery of these areas where there is lack of infrastructure and other basic social services. This explains why many incremental housing constructions process takes place at the periphery of cities. It is only in few circumstances that incremental housing construction take place in central location and this happens because of illegal occupation of public lands where the occupants do not really pay for the full cost of the land.

Population growth and its implications on urban low-income housing in the developing countries and its environment population is a critical factor in planning to provide the urban low-income groups in developing countries with low-income housing. Accordingly, Asiama (1990) suggested that in Ghana two people per room indicated crowding, and overcrowding occurs when there are 2.5 or more people per room. His study indicates that roughly 44.5% of all households live in overcrowded housing in West Africa. This situation has serious implications for unhealthy environments both in the short and long run. The current housing conditions in Enugu, the Capital City, are far from ideal.

With some perceived inadequacies in housing policies and programs of various governments in Enugu since the civilian regime. After the Civil War of 1967, there have

often been housing policy and programs implemented on an ad-hoc basis lacking sound empirical analysis. It goes beyond hindering sustainable development because development usually has major effects on the environment. The Asiama review stands as the first step in attempts to improve the housing situation in Enugu and to suggest policies that may aid in improving the housing balance to be within the reach of the low-income group in Enugu. However, both population-growth and poverty are growing rapidly in the urban centers of the developing countries without economic growth.

Magnus (1998) noted that there should be some cautions in the solid waste services throughout Sub-Sahara Africa, due to the population growth which has effects on the consumption patterns.” Increase in population, he mentions reflects to the expansion of cities, which however does not have effects on the financial resources due to the poor states of living and income per head, It then results in slum dwelling where solid waste generated by the dwellers cause devastation to the environment because there was no solid waste management. Magnus continues by saying that this urbanization and population growth should be controlled by providing them with affordable housing. Solid waste management would greatly help to minimize the environmental pollution.

Houses are not available for all low-income earners in the urban centers of Nigeria more specifically, the Enugu metropolitan areas of this country. The rapid migration of the low-income people to this city for sustainable living worsened the housing situation. To improve the situation of urban low-income housing situation, Enugu state government must be able to provide low-income housing for the existing population, and additional houses for the increase in population.

According to Hassanali (2009) low income housing projects are sited in areas of low land cost and high density building permissibility. This allows reduction of the land cost constituent of each residential component, facilitating sale at lower prices. In looking for areas with lower land costs, developers have had to undertake low income housing schemes in locations that are peripheral to urban centers where benefit is gained from the nearness to cities but land costs are significantly lower (Hassanali, 2009). Given the likely scale and

location of any low income housing development, embedded infrastructure such as water, sewerage, roads, electricity, social services and security are a vital component of housing provision and are fundamental to the success of any housing scheme.

Akas (2003) work parallels this position by pointing out that since 1946, the planning authorities in most states of Nigeria had concentrated on building control and not on city planning. Effective city planning can address the need to build and maintain urban infrastructures, services provision, growth management, zoning, subdivision regulation, urban design, sewages, economic development, and waste disposal. Planning in some areas in Enugu slums lack some infrastructures and social services. In Nigeria it involves the problems of poor maintenance of the urban environment which is due to limited financial resources, inadequate urban management machinery, and a lack of public support for planners to make a difference. Accordingly, urban infrastructure in most Nigerian cities is in an unsatisfactory condition because most urban environments are infested with dilapidated buildings with no space for light and air between them, broken roads and streets, environmental pollution from poor drainage, sewage system, and uncollected garbage from industrial, commercial and domestic establishments. He calls on the city planners to engage their energies in city mending rather than city planning. Local government and planners should engage citizens with some necessary orientation for policy formulation, implementation and management on how to work communally in road building, drainage and sewage repairs, and communal garbage collection and disposal to minimize environmental pollution, since the shortage of funds for the urban and regional development planning is prevalent.

### **2.3 Factors Influencing Provision of Low Cost Housing**

Housing has been a concern of individual, families, group and government since the dawn of urban civilization. This problem has often been linked to land acquisition problems, levels of infrastructure development, rigid and unfavorable building regulations. These factors are discussed more in this section.

### **2.3.1 Building Materials and Low-Cost Housing**

Building materials constitute the largest single input in housing construction. While Adedeji(2010) observed that about sixty (60) per cent of the total housing expenditure goes for the purchase of building materials, Arayela (2005) averred that the cost of building materials constitute about 65 percent of the construction cost. Ogunsemi (2010) opined that building materials form the main factors that restricts the supply of housing and ascertained that they account for between 50-60 percent of the cost of buildings. Thus, Adedeji (2002) rightly observed that one main barrier to the realisation of effective housing in Nigeria as revealed in successive government efforts has been the cost of housing in the country. He argued that in the early periods, shelter in countries like Nigeria was easily affordable as building materials were sourced from man's immediate environment at affordable costs. Though, housing delivery efforts have evidently been inhibited by prohibitive costs of building materials, this problem cannot be reasonably and reliably overcome by merely resorting to the use of locally available materials costs without due considerations to the applicable initiative, the cost of processing and sustainability of the local materials. One of the most important components of a sustainable building is the material efficiency. Correct selection of building materials can be performed by taking into account their complete life time (i.e. from cradle to grave) and by choosing products with the minimal environmental impacts. For instance, González and Navarro (2006) estimated that the selection of building materials with low environmental impacts can reduce carbon dioxide (CO<sub>2</sub>) emissions by up to 30%. The use of renewable and recycled sources is widely encouraged as the life-cycle of a building and its elements can be closed (Chwieduk, 2003).

The other factors that greatly affect the selection of building materials are their costs and social requirements such as thermal comfort, good mechanical properties aesthetic characteristics and an ability to construct quickly. Ideally, the combination of all environmental, economic and social factors can give a clear description of a material, and thus helps in a decision making process regarding the selection of the materials suitable for buildings (Abeyundara, *et. al.*, 2009). The process of housing development should be

based on sustainability principles, which could be applied in the conception, construction and use of the buildings. The goals of the process are to decrease the environmental costs incurred by inadequate constructive systems and solutions, minimizing the impacts on natural resources, and improving users' comfort (Amado, *et al.*, 2007).

Gilkinson & Sexton (2007) defined sustainable housing as a form of affordable housing that incorporates environmentally friendly and community-based practices. It attempts to reduce the negative impact that homes can have on the environment through choosing better building materials and environmental design. Sustainable housing provision requires proper definition of housing needs, and the participation of the end users to ensure their satisfaction. These standards procedures can determine the types of building materials, skills and construction techniques to be used and conditions for minimum housing standards to be applied to low cost houses. There are some regulatory instruments on place and a lot of missing ones. The city and government need to invest in production of comprehensive sets of building acts, regulations and codes (Kironde, 2004).

Building codes and standards also influence selection of building materials. Building codes are a systematic collection of statutes which define the quality of the environment in regard to the quality of construction, the type of material to be used, the quality of services that can be offered including tolerable levels of toxicity. According to Gichunge (2001), these define the quality of construction, types of materials including sizes of spaces in a building. The building code does not cater for appropriate or indigenous materials. It covers conventional materials. The building code therefore inhibits the provision of low cost housing. Building codes are restrictive in that, they increase the cost of housing by specifying materials and building techniques that must be used in the construction which in most cases exceed what is necessary to ensure that buildings are safely occupied (Rubinowitz, 1974). Gichunge (2001) also argues that, specification of materials to be used denies developers the opportunity to use locally available materials

which may increase the price of materials due to transportation costs if the latter have to be imported from other areas.

Kironde, (2004) noted that although having had an official requirement to comply with formally-articulated technical standards for several decades, the national building code has resulted to hindering provision of low cost houses in countries such as Jamaica . Building developments are generally controlled by the bodies that have building bylaws which authorize the councils to approve or reject building applications. According to Greene and Rojas (2004), housing development codes are established to ensure that the public health, safety and welfare of the people are maintained with respect to design and construction by provision of appropriate minimum standards.

Perceptions and capabilities of local people in relation to housing and especially materials is of critical importance when instituting housing programmes. Local communities have valuable experience in building materials, a special understanding of their environment, their local building resources and the ways of making the best uses of them. Thus housing that will be properly rooted in the cultural, climatic, socio-economic circumstances of the people can only emanate from within the communities. This is because local communities are in the best position to identify their needs, and order their priorities. Attitudes towards space, use and organization of space, are all linked to cultural traditions, which are often best understood by the local people themselves. In Nigeria for example is a multi-ethnic nation with over 250 tribal groups. Despite striking uniformity and sameness visible in the various house forms in the country, each tribal group has created its own unique mode of housing, which is sympathetic to its environment, and mode of life of the people (Olotuah, 2009).

Building materials should pose no or very minimal environmental and human health risks and rational use of natural resources, energy efficiency, elimination or reduction of generated waste, low toxicity, water conservation affordability. Availability of building materials can offer a set of specific benefits to the owner of a building such as reduced

maintenance and replacement costs, energy conservation, improved occupant's health and productivity, lower costs associated with changing space configurations, and greater flexibility in design.

### **2.3.2 Availability of Land and Low-Cost Housing**

Land constitutes a significant proportion of the total cost of financing incremental housing construction process and access to low cost land is very essential in making the progressive housing development process viable. Access to land determines how land is made available for residential development to all income groups. It is conditioned by land tenure which is inextricably linked with historical, cultural, legal and economic factors that affect people's perceptions and behaviour. It is related to location, the nature and distribution of employment centres, transportation and other public infrastructural services (Payne, 2002).

Land should be made available for residential development to all income groups. The first step to solving housing problems involves access to land by the low income households in suitable locations. Access to land makes it possible for low income families to construct their dwelling and access to other basic services and employment opportunities within the urban area (Greene and Rojas, 2004). Access to land is conditioned by land tenure which is inextricably linked with historical, cultural, legal and economic factors that affect people's perceptions and behaviour. It is related to location, the nature and distribution of employment centres, transportation and other public infrastructural services (Payne, 2002). Payne argues that for the very poor urban households, their priority is to obtain access to land where they can maximise their livelihoods opportunities and this is usually in prime locations in urban areas where there is very high competition for land and land prices are very high. Payne further posits that, for more established low income households, their ability to cover transport cost influences their decision to construct their dwelling at less central locations in the urban areas and the type of tenure that afford this, becomes an important element for access to services and credit.

Developments in urban centers are regulated through land use controls. In most countries, legislature has delegated the power to regulate land use to local authorities. The latter use regulatory powers to prevent the construction of housing that would serve the low income group. The most important land use controls in terms of their exclusionary effects are zoning ordinances and fiscal zoning. Zoning Ordinances refer to policy measures which regulate land use, population density and intensity of land use. Under these, land is divided into areas and delineated into types of land use, for example residential, commercial or industrial and minimum standards are specified for each area. Population density is regulated through minimum plot sizes and the inclusion of multi-dwelling (Morris, 1978). Local authorities determine land use policies without supervision or intervention by any other government body and as such tend to regulate developments in ways that amount to exclusionary zoning. Exclusionary zoning is the array of zoning ordinances and practices which keep away housing within the reach of the low income group. Zoning ordinances limit the land available for residential purposes (Gichunge, 2001).

Fiscal Zoning is a system which local authorities employ to increase property tax. The National Commission on urban problems in USA described the process thus, “The game of fiscal zoning requires the players, like zoning jurisdiction to attract uses which add more to property taxes or local taxes that they require in expensive public services and exclude uses which do not pay their own way (Rubinowitz, 1974). Local authorities seek commercial and industrial uses including luxury housing, hence discouraging such uses as housing for low income people. The reason being that low income housing contributes little in property taxes due to their low assessed value. Due to this, we find that both formal and informal low cost housing developments are often located on the margins of cities. Land on the periphery is cheaper and more affordable for low income development. The subsidy does not adequately provide for land costs in developing countries. These developments are usually mono-functional settlements, removed from employment, economic, social and transport opportunities. This has a range of

implications with regard to time spent away from home, time travelling to and from opportunities, and the related cost implications thereof (Hancock, 2008).

The unbearable burdens on low-income households in the form of high travelling costs and unnecessarily long travelling times, the extreme costs on authorities for providing bulk services to remote areas, and high environmental costs relating to wasteful land utilization patterns and an excessive transportation sector (Hassanali, 2009). For the poor, location is often more important than housing quality, as it directly impacts on the accessibility of urban opportunities and underpins social networks critical for survival (Nabutola, 2004). Residential areas also continue to be isolated on the basis of social class or status, which encourages low-income housing on the periphery of the city. Furthermore, acquisition of land in the Western Cape South Africa has been hindrances to provision of low income housing in realizing functionally and physically integrated human settlements where the poor and vulnerable are located on land which improves access to opportunities.

The irreversible trends of urbanization and concentration of poverty in some cities have affected housing affordability as well as created significant shortages of land for affordable housing (Nabutola, 2004). While land for housing is mostly provided through the market with a variety of long-term urban planning strategies in place to ensure 20-25 year land supply for new housing, many high growth regions need coordinated planning by all levels of government in cooperation with civil society and commercial interests to respond to a deepening shortage of land for affordable housing (Otiso, 2002). A number of regional and local governments have experimented with density bonusing, inclusionary zoning, land trusts and land lease arrangements to increase the availability of land supply for affordable (social) housing.

In South Africa, Local governments have no consistent strategies for acquiring land for low income housing as they were limited to provision of housing land acquisition and partially because of a disjuncture between spatial plans and housing strategies

(Department of Local Government and Housing, 2005). Public land is particularly difficult to acquire, partially because the national and provincial state land is determined to which particular government department it belongs, partially because disposal of state land is driven by market forces, and partially because a considerable amount of public land is now owned by parastatals such as Transnet (Department of Local Government and Housing, 2005).

Another approach was to encourage putting up of more housing units on the available land - the high density housing approach. Given the scarcity of available land in South Africa, a private sector company, General Motors (GM), explored different ways to address the housing backlog by developing a variety of models for former shack-dwellers. Its most ambitious experiment fifteen years ago in Missionvale, Port Elizabeth was one of the first low-cost housing models in the country to use the higher-density approach. Higher-density models made it possible to house more people on less land.. The result was the Sakhasonke Housing Village, a refined higher-density model that translated into a contained, customized living space for the poor.

Land regulation and property titles are at the cornerstone of housing. In Kenya, land and property regulations have been inherited from colonial times and involve a rather complex tenure mechanism framed in many difference laws. By-and-large, land tenure was administered through a system of customary laws and can vary depending on ethnic groups, predominant land use or cultural practices (World Bank, 2011).

### **2.3.3 Cost of Land and Low-Cost Housing**

Land is a key factor of production. Access to land is a critical element in providing low income housing (UN, 1984). The supply of land is very limited coupled by the need to for it as a public utility for low cost housing, makes it very scarce. Consequently there is a growing class of landless whose access to land and shelter is becoming more difficult every day. This is a notable fact as in the past; land for low income housing was provided or allocated easily which in most cases is no longer the case. Nabutola (2004) cites that

land in urban areas is highly valued and is mostly in the hands of the central government and the local authorities. The only other landowners are speculators seeking to make a quick buck. This makes land inaccessible to the majority who need it most but cannot afford its premium price.

The price of land depends on many factors including location; distance from services and amenities, nearness to commercial, academic, health facilities, availability of public transport. The further land is from the city centre, the cheaper the price of land is likely to become. At the city peripherals land prices may end up being low enough to be afforded by low income groups. Unfortunately in such locations there will be inadequate or no facilities in terms of services and amenities.

Deininger, Castagnini and González (2004), in comparing the effectiveness of land markets and land reform in Colombia, found that land rental and sales markets were more effective in transferring land to the productive producers, than to the low income earners. The fact that land transactions were all of a short-term nature and that little land was transferred from large to small land owners or the landless, suggested that there may be scope for policies both to improve the functioning of land markets and to facilitate greater land access by the most disadvantaged. This assisted in producing an analysis of the factors associated with success in a sample of land transfers from large to small land users. This analysis yielded informed identification of key elements for policies in both respects (Deininger et al , 2004).

The absence of robust credit markets in developing countries is a significant impediment to solve the housing problems. To most families, housing is the largest investment in their lifetime and need financing to finance investments in homes. However, in developing countries, dreams of decent homes run against most people's inability to obtain loans. Traditional mortgages often require full legal title as a security, while the urban poor live in a condition of insecure tenure, or with intermediate forms of tenure (UN-HABITAT 2003). Financial institutions perceive few incentives to lend to the poor. Small loan

amounts, high transaction costs, extra work in verifying creditworthiness all militate against innovation to reach the urban poor. Moreover, Governments lack adequate funds to finance housing. This has been a major constraint in the construction of sufficient houses particularly in the developing countries. In most developing countries, existing public financial institutions do not fulfill requirements for financial resources which are needed as critical inputs in construction. The development of institutions to provide the finance needed to build and purchase housing is closely tied to the general sophistication of a country's financial system. The latter also depends closely on the general economic development globally. The growth of housing finance institutions is retarded by the government's regulations such as those which direct credit selectively to some segments of the economy.

#### **2.3.4 Infrastructure Development and Low-Cost Housing**

Development of supporting infrastructure is a critical component of the realization of the right to adequate housing. Urban development investment has been largely uncoordinated, with responsibility being spread among too many institutions, including local government, sector ministries, quasi-private companies and utility services (Hakijamii 2012).

Local government facilitation of off-site infrastructure and land servicing (i.e. development of trunk infrastructure, water & sanitation, etc.) is critical for affordable housing to be achieved. Indeed, it is not uncommon that due to the lack of responsiveness of utilities and local authorities, developers have to incur infrastructure costs themselves. In economic terms, although the developers are compensated for it by charging the buyers, it should be noted that some of this infrastructure has externalities which are not accounted for in favour of the developer. For instance, building a several kilometres long road in order to access an estate will also benefit surrounding populations which however will not incur any burden as only the estate's residents will pay for it. Beyond this consideration, the implication of low/slow local government action to support real estate

developments is that off-site infrastructure becomes an even scarcer service which acquires a higher value, ultimately paid for by buyers.

Adequate sanitation is the foundation of social development. According to the World Health Organization (WHO), a decent toilet or latrine is an unknown luxury to half of the people on earth. Almost 3 billion individuals do not have access to a decent toilet, and many of them are forced to defecate on the bare ground or queue up to pay for the use of a filthy latrine (UNICEF, 2001: 9). Neglect of sanitation exposes people to unhygienic conditions which leads to dangerous diseases especially diarrhea. To achieve the sanitation Millennium Development Goal (MDG) is a major challenge with an additional 2 billion people needing access to sanitation by 2015 (UN, 2004:7).

Installation of services in the form of roads, water supply, sewerage, drainage and other utilities are part of the components for suitable housing. The capital required to install these services is high, and the further these services have to be carried the more expensive they become to install because of the long distance. The city does not have enough financial capacity to service all land, especially land occupied by low income households. Most low income households are usually located on undesirable land which may require large capital to install services. The cost of providing infrastructure is therefore directly proportional to availability of serviced land and accessibility thereof. Access of such facilities to low income households is very costly.

Infrastructure in the high income districts of the city is decidedly better than in the poorer neighborhoods, but these areas still suffer from power shortages, lack of adequate water and sewer systems and poor road upkeep. Not only has the poor state of Kampala's infrastructure created inefficiencies that have negatively affected opportunities for economic growth, it has had a definite impact on land values in and around the city and its suburb. The provision of basic residential infrastructure in Kampala has been shaped greatly by the patterns of land tenure in the city. Large areas of the city are very poorly serviced by paved roads, water and sanitation systems and electricity. Areas of the central

part of the city and the higher-end residential neighborhoods, which have traditionally been leased to private interests by the Kampala City Council (KCC), are much better serviced by basic infrastructure.

Due to the often poor cost recovery for services, municipalities can often not afford delivering services at a higher level (Khan & Ambert, 2003). Conversely, it is generally stated that protest politics spawned a culture of non-payment. The Masakhane Campaign is, in the main, couched in terms of a type of discipline wherein the culture of non-payment and the (supposed post-apartheid) culture of entitlement; combine, thereby worsening the plight of the poor and undermining the authority and delivery capacity of the state. The Campaign maintains that good patriotic citizens pay their rates and services fees, thus contributing to reconstruction (McDonald, 2002 cited in Khan & Ambert, 2003).

## **2.4 Theoretical Review**

According to Cedric Pugh, (1986) it was not until the late 1960s that housing attracted much attention from academic social scientists. But since that time the literature has expanded widely and diversified, establishing housing with a specialised status in economics, sociology, politics, and in related subjects. The new literature covers a technical, statistical, theoretical, ideological, and historical range. Housing studies have been derived selectively from diverse bases in conventional theories in economics or sociology, or politics. Others have their origins in less conventional social theory, including neo-Marxist theory which has had a wider intellectual following in the modern democracies since the mid-1970s. A number of thoughts regarding urban housing have been developed during the recent decades, set within the market economy and socialist context (Mitullah, 2003).

### **2.4.1 Theory of Housing Adjustment**

This study will be based on theory of housing adjustment that was first discovered by Morris and Winter. The theory deals with how households think and behave in performing

their housing behavior (Morris and Winter, 1996). Morris and Winter theory purports that if a household is below the norms of the society, that household feels dissatisfied and seeks to change its situation. The major components of the theory are housing norms and constraints that affect the household ability to act. When a household recognizes housing deficit possible corrective measures to be taken by the household is to move to a different house, do a household adaption whereby the household makes its own changes such as reducing needs and removing constraints (Sherman and Combs, 1997). The theory of household adjustment mainly focuses on relationships among specific variables which may influence a person's job satisfaction and overall life satisfaction. In many cases this theory has been used to study constraints and residential satisfaction among low income earners and single parent families (Bruin and Cook. 1997).

Abdul, (2008), Adeniyi,(2007), Bourne,(2007) & Chatterjee, (2008)} acknowledged too that housing problem manifest itself in many ways which include: conspicuous and residual house rent situation, an absolute scarcity of housing, the evolvment and proliferation of slums and squatter settlements especially in large cities, lack of finance on the part of the citizen to construct their own house. The summary of Adamu's assertion is that housing problem, especially in the metropolis is virtually a function of the irregularities of urban land administration. This ugly situation according to him had unavoidably matured to a poor tenancy situation.

The average urban dweller seems to be exhausted of all the possible options. Egunjobi, (2007) noted that the majority of low income earners find it difficult to secure the loan or other form of assistance for building their own houses. Undoubtedly, the issue of building standard is one of the central problems in providing shelter for large majority of low income earners. On his critical observation of the general urban housing problem, Liman (1989) condemns that a policy that cannot guarantee every access to residential land by the poor, but rather encourages speculation and turn back to question the validity of individual tenure certainly erodes the basis of its acceptability. This is undoubtedly a chaining situation as far as urban land acquisition is a concern. The attendant problem

here is that land, though seem to be abundant but it is shared among the high income individuals.

#### **2.4.2 The Economic Theory of Housing Tenure Choice**

Within the theory of housing markets, one may broadly distinguish three approaches which roughly correspond to the historical development of the discipline. The first retains the assumption of a perfect, frictionless, competitive market mechanism when addressing issues of localization, heterogeneity, durability and housing taxation (Smith, 2006). This line of research reached a considerable degree of maturity in the mid-eighties. It has greatly improved our understanding of urban spatial structure, the determinants of housing supply and demand, and the measurement of prices for heterogeneous goods. Given the assumption of a perfect mechanism for the allocation of housing, however, the welfare implications remain humdrum. With the possible exception of neighborhood externalities, housing markets appear efficient, provided that all agents are forward-looking and rational (Thalmann, 2006).

The second approach emphasizes imperfect competition and frictions resulting from search cost, mobility cost and contractual incompleteness. A central question is how markets actually achieve coordination in the absence of a Walrasian auctioneer, given all the particularities of housing. Stimulated by the advances in the theory of imperfect information, incomplete contracts, optimal search and matching markets, this strand of research ‘took off’ in the eighties and has made substantial achievements since then. The literature deals with a broad range of issues e.g. the role of real estate agents, the purpose of the various features of rental contracts, vacancy rates, optimal pricing strategies and search behavior etc. This approach delivers a more realistic picture of the institutions and mechanisms through which coordination is achieved and adds a cautious note with respect to the welfare properties of the housing market (Otiso, 2002).

Due to search and mobility cost, competition is imperfect even with a large number of agents on both sides of the market. Search externalities give rise to vacancy rates which

deviate from first–best, and incomplete contracts create subtle turnover externalities. Not surprisingly, the policy implications tend to be more exciting. In principle, efficiency can often be enhanced through appropriate state intervention, though practically, the very same features which prevent the market from achieving first–best efficiency make the desirability of government intervention moot.

A large number of households have suffered low affordability in developing countries. After the urban housing reform in developing countries has shifted from the planned economy and try to develop more market oriented housing measures under the control of the local government. But in reality housing reform has made houses more expensive and at the lower end of the market there exist a strong demand for affordable housing. The primary housing reform initiative has created a large gap among the affordability of the populace (Ichangai, 2008). Different policy measures like HPF scheme has only benefited the higher income groups and others have just relied on the work units. Therefore state owned work units play the major role in the market.

## **2.5 Conceptual Framework**

Conceptual framework is a schematic presentation which identifies the variables that when put together explain the issue of concern (Peters, Elmendorf, Kandola & Chellaraj, 2000). It is a set of broad ideas used to explain the relationship between the independent variables (factors) and the dependent variables (outcome) (Coulthard, 2004).

## Independent variables

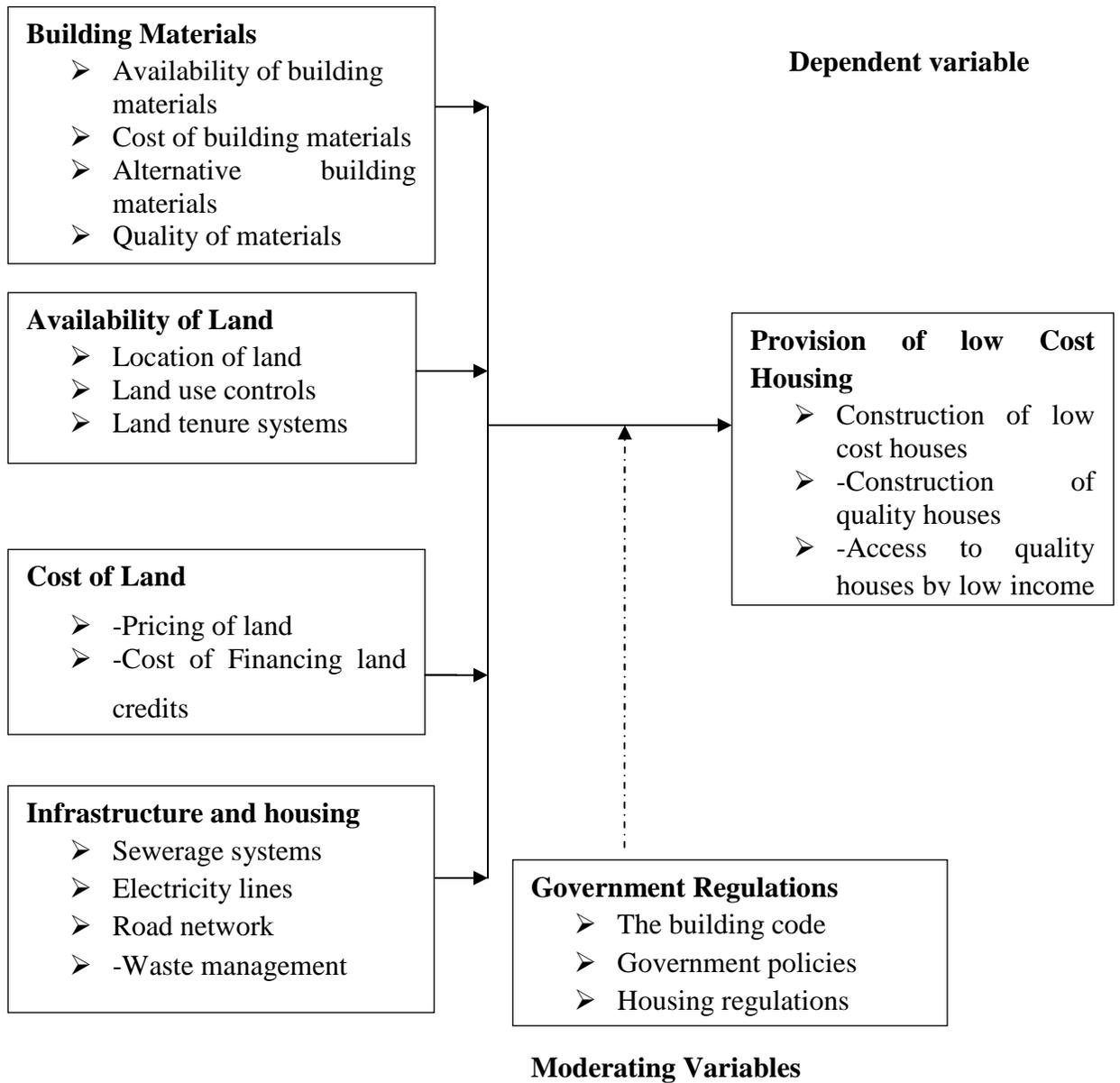


Figure 1: Conceptual Framework

## **2.6 Summary of Literature**

Despite the emphasis being laid on housing provision by people and various governments, this basic human need has continued to elude many. In developing countries such as Nigeria governments have been making attempts at providing adequate housing to the low-income earners but studies have shown that this category of households are not well benefited (Sani 2003). Indeed, in many developing countries, the provision of shelter, particularly for the low-income group, is grossly inadequate. Despite the shelter programmes, projects and other forms of government action taken in many countries, the shelter problem prevails with increasing dimensions.

Government involvement in the shelter sector ranges from the provision of completed housing units to several forms of supportive measures. The review of the study indicates that the cost of production of the houses by government is almost doubled that by an individual himself. The review of the study also revealed that low-income housing problems through allocation of Site and Serviced plots and direct construction of mass houses, such projects allocated to the Low-cost house provision, end with land speculators and requires long and complicated bureaucratic procedures and costs before they can be developed, thereby forcing the Low-income earners to look outside the government land allocation system to the informal ones. The housing process in legislation, planning, design, financing, construction and maintenance is unnecessarily too lengthy, complicated and has lots of un-necessary bureaucratic bottlenecks. The inadequate and, sometimes, negative effects of public-sector intervention in the shelter-delivery process can be summed up as problems of insufficient coverage, affordability by beneficiaries, lack of replicability and, to a lesser degree, social acceptability low housing provision.

## **2.7 Research Gap of the Study**

Adequate, affordable and decent housing for low income households is clearly in short supply. The players in housing industry are too few and there seems to be a minimal interest of other private sector housing developers to provide low income housing units. From the review of the literature, most studies encountered have focused on challenges and proposed

solutions to the low income housing problem in developing countries. The literature review shows that there is no study that has been done focusing on factors influencing low cost housing provision in Nairobi County, Kenya. This study therefore seeks to fill the existing research gap by determining factors influencing provision of low cost housing in Nairobi County, Kenya.

## **CHAPTER THREE**

### **RESEARCH METHODOLOGY**

#### **3.1 Introduction**

This chapter of the research provides details on how the study was carried out. It includes the research design, the target population, sampling method, the sources of data and the various tools and techniques that will be employed in gathering the data. The chapter also provides the methods that were adopted in the data processing, analysis and reporting.

#### **3.2 Research Design**

The study adopted descriptive survey design. A descriptive survey typically seeks to ascertain respondents' perspectives or experiences on a specified subject in a predetermined structured manner. Survey research consists of structured questions to assess behaviors, beliefs or attitudes within a population. According to Kothari (2004), a descriptive design involves planning, organizing, collection and analysis of data so as to provide information being sought. Descriptive research design portray the variables by answering who, what, and how questions. The design was deemed appropriate for this study because the main interest is to explore factors influencing provision of low cost housing in Nairobi County.

#### **3.3 Target Population**

According to Cooper and Schindler (2008), a population is a well defined set of people, services, elements, and events, group of things or households that are being investigated. The target population of this study was 120 property development entities in Nairobi County as listed by the Kenya Property Developers Association (KPDA). By population the researcher means complete census of the sampling frames. The population of interest in this study is homogeneous everyone has equal chance to be included in the final sample that is drawn.

### **3.4 Sampling Procedure**

The sampling plan describes the sampling unit, sampling frame, sampling procedures and the sample size for the study. The sampling frame describes the list of all population units from which the sample is selected.

A sample of 25% was drawn from the target population through simple random sampling. This constituted 30 property development entities in Nairobi. According to Mugenda and Mugenda (2000) a representative sample is one which is at least 10% or 30% of the population therefore the choice of 25% was considered as representative for the study.

The study collected data from project managers in property development outfits making a total of 30 respondents. The choice of project managers as respondents was because they are involved in the day to day housing developing decisions hence they are in a better position of offering relevant information that was required to answer research questions.

### **3.5 Data Collection Instrument**

A questionnaire was used as primary data collection instrument. The questionnaire was designed to give a brief introduction of the factors influencing provision of low cost housing in Nairobi County. The questionnaire was divided into two sections one addressing the general information of the respondents whiles the second section representing the main issues of the study variables adopted for the study. The questionnaire included closed and open ended questions which sought views, opinion, and attitude from the respondents which might not have been captured by the closed ended questions.

The questionnaires were administered through drop and pick method to the respondents. The questions were designed to collect qualitative and quantitative data. The open ended questionnaires gave unrestricted freedom of answer to respondents.

### **3.6 Validity and Reliability**

Reliability measures the extent to which a research instrument can produce the same results over and over again while validity describes the extent to which the instrument measures what it purports to (Kothari, 2004).

#### **3.6.1 Pilot Study**

A pilot study was done to test validity and reliability of the instrument. According to Mugenda (2008), pilot testing involves conducting a preliminary test of data collection tools and procedures to identify and eliminate problems, allowing programs to make corrective revisions to instruments and data collection procedures to ensure that the data that was collected was reliable and valid. The pilot study enabled the researcher to be familiar with research and its administration procedure as well as identifying items that require modification. The result helped the researcher to correct inconsistencies arising from the instruments to ensure the instrument measure what is intended to measure.

#### **3.6.2 Validity of the Instruments**

Validity is the degree by which the sample of test items represents the content the test is designed to measure. Content validity was adopted for this study and measured of the degree to which data collected using a particular instrument represents a specific domain or content of a particular concept. The usual procedure in assessing the content validity of a measure is to use a professional or expert in a particular field. To establish the validity of the research instrument the researcher sought the opinions of experts in the field of study especially the researcher's supervisor and lecturers. This facilitated the necessary revision and modification of the research instrument thereby enhancing validity.

#### **3.6.3 Reliability of the Instruments**

Reliability refers to the consistency of measurement and was assessed using the test-retest reliability method. The questionnaire was issued to same respondents two times. The first administration was done during the pilot study, sometime was allowed to elapse,

long enough to eliminate response by remembering responses given in the first round. The scores on the two sets of measures were then correlated to obtain an estimated coefficient of reliability. The reliability coefficient was computed using the Karl Pearson's product moment coefficient of correlation (r). The items were scored individually and aggregated to get the total score on the whole instrument for both test and re-test administrations.

$$r = \frac{n\sum xy - \sum x \sum y}{\sqrt{\{n\sum x^2 - (\sum x)^2\} \{n\sum y^2 - (\sum y)^2\}}}$$

Where r= Reliability c

n = Number of respondents

x= Total scores of test administration

y= Total score of retest administration

A high value of r is considered to yield high reliability coefficient for the instrument used.

### 3.7 Data Analysis

For collected data to be understood by the common man easily, analysis of data was done data to summarize the essential features and relationships of data in order to generalize from the analysis to determine patterns of behaviour and particular outcomes. The researcher used qualitative and quantitative techniques in analyzing the data.

Before processing the responses, the completed questionnaires were edited and classified for completeness and consistency. Data was then coded and tabulated to enable the responses to be grouped into various categories using Statistical Package for Social Science (SPSS version 17). Data was analyzed into frequency distribution to indicate variable values and number of occurrences in terms of frequency. Descriptive statistics such as means, standard deviation and frequency distribution were used to analyze the data. Frequency distribution tables were summarized where percentages and other diagrams such as bar charts, grouped frequency distributions and pie charts were used during the analysis. The organized data was interpreted on account of concurrence, mean

and standard deviation to objectives. A content analysis and descriptive analysis was employed. The content analysis was used to analyze the respondents' views about the challenges affect provision of low cost housing solutions. Inferential statistics correlation and regressions analysis were done to establish the extent to which factors affects provision of low cost housing solutions in Nairobi. A multiple regression model was developed to establish the relationship between the dependent and independent variables (Sekaran, 2003). The relationship equation was represented by the linear equation below:

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

Y= Provision of low cost housing

$\alpha$  = Constant

$\mu$ = Error

$\beta$ = Coefficient of the independent variables

$X_1$ = Cost of land

$X_2$ = Availability of land

$X_3$ = infrastructure development and housing

$X_4$ =Availability of Building materials

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

This Operationalization framework hypothesizes that there is a relationship between the building materials, cost of land, land availability and infrastructure factors and provision of low cost housing. This section defines the variable in terms of measurable indicators. The independent and the dependent variables are operationalized as shown in table 31.

**Table 3.1: Operationalization Table of Variables**

Objectives	Variables	Indicators	Method of collecting	Data analysis
To establish how building materials influence provision of low cost housing in Nairobi County	Building materials	<ul style="list-style-type: none"> <li>➤ Availability of building materials</li> <li>➤ Cost of building materials</li> <li>➤ Alternative building materials</li> <li>➤ Quality of materials</li> <li>➤ Local culture</li> </ul>	Questionnaire	Mean, Standard deviation, Percentage, Correlation, Regression, Frequencies
To examine how cost of land affects provision of low cost housing in Nairobi County	Cost of land	<ul style="list-style-type: none"> <li>➤ Pricing of land</li> <li>➤ Cost of Financing land credits</li> </ul>	Questionnaire	Mean, Standard deviation, Percentage, Correlation,
To examine how availability of land affects provision of low cost housing in Nairobi County	Availability of land	<ul style="list-style-type: none"> <li>➤ Location of land</li> <li>➤ Land use controls</li> <li>➤ Land tenure systems</li> </ul>	Questionnaire	Mean, Standard deviation, Percentage, Correlation, Regression, Frequencies

To examine how infrastructure development affects provision of low cost housing in Nairobi County	Infrastructure development	<ul style="list-style-type: none"> <li>➤ Sewerage systems</li> <li>➤ Electricity lines</li> <li>➤ Road network</li> </ul>	Questionnaire	Mean, Standard deviation, Percentage, Correlation, Regression,
Provision of low cost housing solutions	Low cost Housing Provision	<ul style="list-style-type: none"> <li>➤ Construction of low cost houses</li> <li>➤ Construction of quality houses</li> <li>➤ Access to quality houses by low income earners</li> </ul>	Questionnaire	Mean, Standard deviation, Percentage, Correlation, Regression, Frequencies

## CHAPTER FOUR

### DATA ANALYSIS, PRESENTATION, INTERPRETATION AND DISCUSSION

#### 4.1 Introduction

This chapter focuses on data analysis, presentation, interpretation and discussion. Analysis is done on the basis of the data which has been collected in this study. Data has been collected through questionnaires which were hand-delivered and collected by the researcher from a sample of 30 respondents.

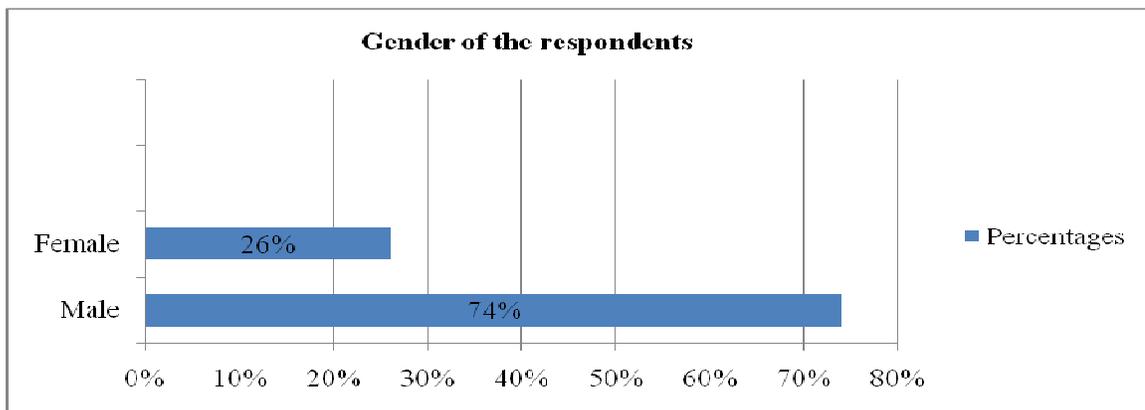
#### 4.2 Response Rate

All 30 questionnaires were completed and returned. This represents a 100 percent response rate. The aforementioned data has been analyzed through a Statistical Package for Social Science (SPSS version 17). The programme is very advanced and accurate. The results of the analysis are given below.

#### 4.3 Background Information

##### Gender of the Respondents

**Figure 2: Gender of the Respondents**



When the respondents were asked their gender, the following data was obtained and presented on Figure 2. Majority 74% of the respondents were male while 26% of the respondents were female. It is evident from the research findings that this study had more male respondents than the female respondents. This shows that the property development market has more male employees than female employees.

## **Company's Categorization**

**Table 4.1: Company's Category**

<b>Category</b>	<b>Frequency</b>	<b>Percentage (%)</b>
Private company	26	87
Non-governmental	4	13
Total	30	100

The study sought to find out the category in which the company fall in and Table 4.1 above represents the distribution. Majority 87% of the respondents indicated that their companies were private owned companies while 13% were non-governmental. From the study researcher realized that these were two main categories of the companies that were involved in property development in Nairobi County.

## **Respondent's Position in the Company**

The respondents were requested to indicate their position in the company. From the findings respondents were project managers, construction managers, programme and cost managers and development managers. The respondents are the ones that dealt with the day to day management of construction projects being handled by their firms. They are thus deemed to be very conversant with the housing industry and would therefore give the collect information on the factor influencing provision of low cost housing in Nairobi County.

## **Respondents Working Period**

**Table 4.2: Respondents Working Period**

<b>Response</b>	<b>Frequency</b>	<b>Percentage (%)</b>
Above 10 years	16	52
7-10 years	10	34
4-6 years	4	14
Total	30	100

The study sought to investigate the period of time in which the respondents had been working in the organization. From the findings, majority of the respondents 52% of the respondents had been working in the organization for a period of 10 years and above, 34% of the respondents had been working in the organization for 7-10 years while 14% of the respondents had been working in the organization for a period of 4-6 years.

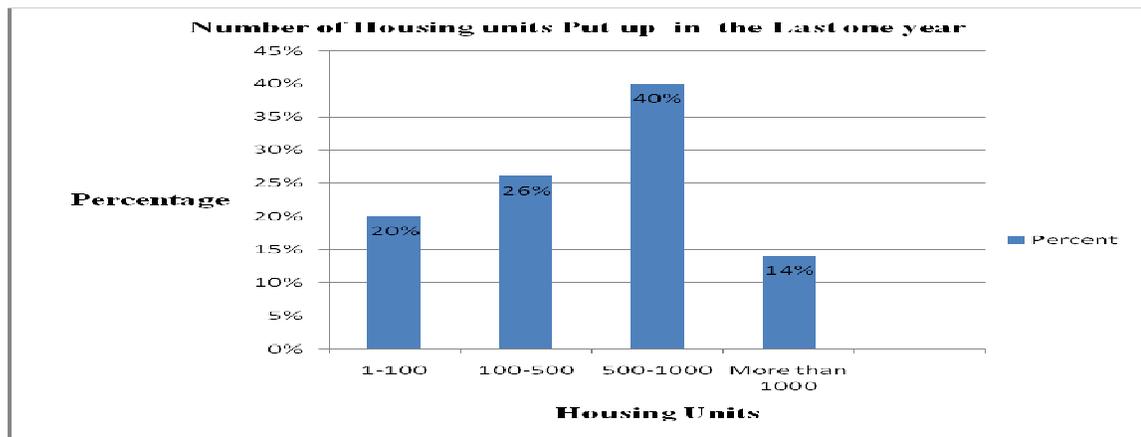
### Type of Properties Provided by the Company

**Table 4.3: Type of Properties Provided by the Company**

Response	Frequency	Percentage (%)
Low Cost Residential	4	13
Middle Income Residential	18	60
High end Residential	8	27
Total	30	100

The study sought to know the type of properties the company mainly provided. From the findings, majority 60% of the respondents provided middle income residential properties, 27% provided high end residential properties while 13% of the respondents indicated that they provided low cost residential houses. This indicated that provision of low cost housing was low in Nairobi County.

### Number of Housing Units Put up



**Figure 3: Number of Housing Units Put Up**

The respondents were requested to indicate the number of housing units put up by the company in the last one year. From the findings, most 40% of the respondents indicated that the company had put 500-1000 housing units for the last one year. 26% of the respondents indicated that the company had put between 100-500 housing units for the last one year, 20% of the respondents indicated that the company had put 1-100 and 14% of the respondents indicated that the company had put up more than 1000 housing units. From the study researcher realized that there was a high number of housing units put up for the last one year.

#### **4.4 Factors Affecting Provision of Low Cost Housing**

The respondents were requested to indicate the extent to which the various factors influenced provision of low cost houses in company.

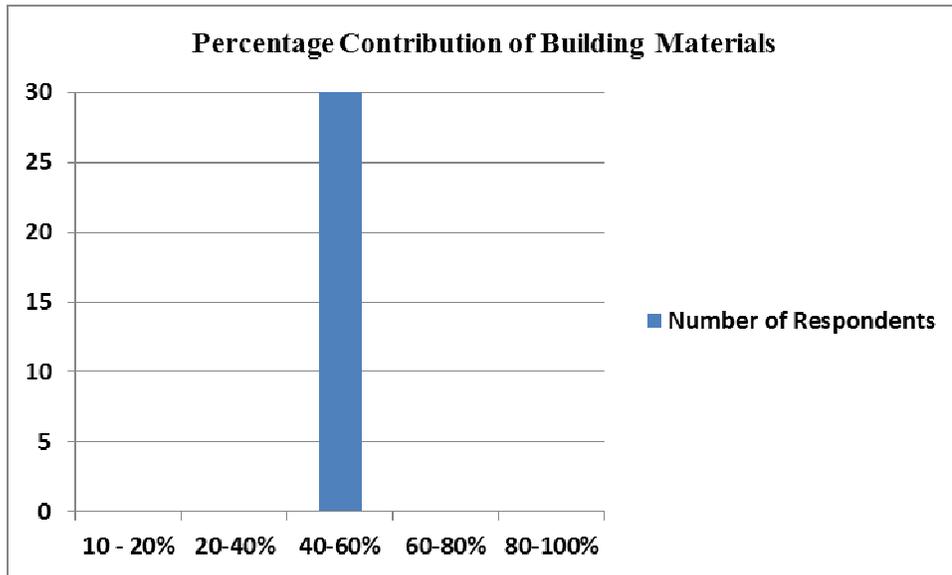
##### **4.4.1 Availability of Building Materials Influence Provision of Low cost houses**

**Table 4.4: Availability of Building Materials Influence**

<b>Response</b>	<b>Frequency</b>	<b>Percentage (%)</b>
Very great extent	17	56
Great extent	10	34
Moderate extent	3	10
Less Extent	0	0
No Extent	0	0
Total	30	100

The respondents were requested to indicate the extent to which the availability of building materials influences provision of low cost houses in company. From the findings presented in table 4.4, 56% indicated that availability of building materials influences provision of low cost houses in company to a very great extent, 34% indicated to a great extent while 10% of the respondents indicated that availability of building materials influences provision of low cost houses in company to a moderate extent.

### Percentage Building Materials Contribute to Cost of Housing



**Figure 4: Percentage Building Materials Contribute to Cost of Housing**

The study requested to the respondents to indicate the percentage that the building materials contribute to the total cost of a housing unit. From the findings as shown on Figure 4, all the respondents indicated that 40 – 60 % to the total cost of a housing unit is contributed by building. Respondents stated that houses built with the modern building materials are expensive. The building materials used in the development of houses for the low income earners are mostly sand and cement materials with corrugated iron roofing sheets. This implies that building materials constitute the largest factor in the construction of a house in some cases accounting for as much as 60% and above of the total cost. This is in line with Adedeji (2010) observed that about sixty (60) per cent of the total housing expenditure goes for the purchase of building materials.

## Use of Alternative Building Materials

**Table 4.5: Use Alternative Building Materials**

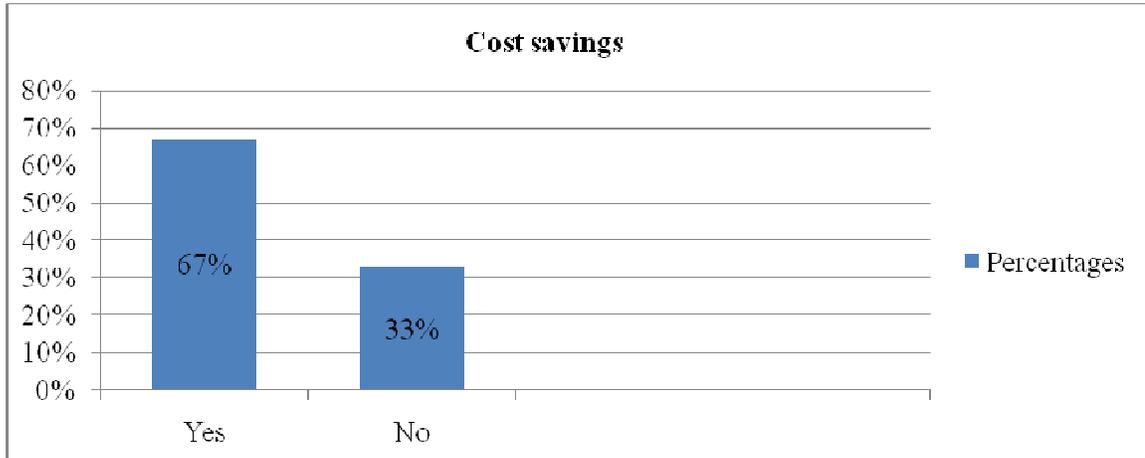
<b>Response</b>	<b>Frequency</b>	<b>Percentage (%)</b>
No	22	72
Yes	8	28
Total	30	100

Table 4.5 presents the results on whether respondents used of alternative building materials and solutions in their projects. From the findings, majority of the respondents indicated that they haven't used alternative building materials and solutions in their projects while 28% of the respondents indicated that they had used alternative building materials and solutions in projects. Respondents stated that they choose to use natural stones, because they perceive them to be durable and of favorable maintenance quality. They also stated that as much as many wished to use alternative building materials, they lacked information on other viable products, especially the researched options. Local Architects and designers were also blamed for being too conservative when it comes to specifying use of alternatives to the conventional building materials and technology.

Respondents who confirmed having used alternative building materials mentioned the use of Expanded Polystyrene (EPS) panels, stabilized soil blocks and modular housing solutions.

## Cost Savings by the Use of the Alternative Building Materials

**Figure 5: Cost Savings by the Use of the Alternative Building Materials**



Respondents who indicated they had used alternative materials were further requested to indicate whether they attained any cost savings by the use of the alternative building materials. From the findings, majority 67% of the respondents indicated that they attain cost savings by the use of the alternative building materials while 33% of the respondents said that they did not attain any cost savings by the use of the alternative building materials.

Respondents who reported having used Expanded Polystyrene (EPS) panels mentioned that they were able to cut costs up to 30% in relation to use of ordinary masonry blocks. Those who used stabilized soil blocks mentioned attaining costs savings of up to 40%. Those who had used modular housing solutions however cited having not attained any cost savings in the total construction cost.

**Influence of building materials on provision of low cost housing in Nairobi County**

**Table 4.6: Influence of Building Materials on Provision of Low Cost Housing in Nairobi County**

Statement	Mean	Standard Deviation
Nonuse of locally available building materials affects provision of low cost housing.	4.57	0.52
Specification of building materials in the building code denies developers the opportunity to use locally available and alternative building materials and affects provision of low cost housing.	4.00	0.29
Culture and beliefs affect people’s choice of building materials and thus affects provision of low cost housing.	4.20	0.24
Low acceptability of affordable alternative building materials affects provision of low cost housing.	4.72	0.66

The respondents were requested to indicate the extent to which they agreed with the given statement concerning building materials and how they influence provision of low cost housing in Nairobi County. From the findings as presented in Table 4.6, majority of the respondent agreed that low acceptability of affordable alternative building materials and non-use of locally available building materials influences provision of low cost housing to a very great extent as indicated by a mean of 4.72 and 4.57 respectively. Most respondents also agreed that culture and beliefs do affect people’s choice of building materials as indicated by a mean of 4.20. Poor cultural perception on some proposed alternative building materials like soil blocks hinders their use. This they explained has an impact on the building cost and thus influencing provision of low cost housing. Respondents also agreed that specification of building materials in the building code denies developers the opportunity to use locally available and alternative building materials to a great extent as indicated by a mean of 4.00. The building code regulations restrict the use of some affordable locally available and alternative building materials.

#### 4.4.2 Availability of land

##### Extent to which availability of land influences provision of low cost housing

**Table 4.7: Extent to Which Availability of Land Influences Provision of Low Cost Housing**

<b>Response</b>	<b>Frequency</b>	<b>Percentage (%)</b>
Very great extent	26	88
Great extent	4	12
Moderate extent	0	0
Less Extent	0	0
No Extent	0	0
Total	30	100

The study sought to investigate the extent to which the availability of land influences provision of low cost housing in Nairobi County in Kenya. From the findings, majority 88% of the respondents indicated that availability of land influences provision of low cost housing in Nairobi County in Kenya to a very great extent while 12% of the respondents indicated that availability of land influences provision of low cost housing in Nairobi County in Kenya to a great extent.

## **Influence of Availability of Land on Provision of Low Cost Housing in Nairobi County**

**Table 4.8: Influence of Availability of Land on Provision of Low Cost Housing in Nairobi County**

<b>Statement</b>	<b>Mean</b>	<b>standard deviation</b>
The bureaucratic land acquisition procedures hinders availability of land for low cost housing developers	4.26	0.46
Ineffective special planning affects availability of enough land for low cost housing developers	4.62	0.54
Ineffective zoning regulations affects availability of enough land for low cost housing developers	4.34	0.48
Cultural ties to land hinders availability of land	4.56	0.49
Ineffective land tenure systems hinders land accessibility for provision of low cost housing	4.68	0.62
Weak land allocation systems hinder availability land for provision of low cost housing solutions	4.78	0.65
Existing high levels of competition for suitable land in Nairobi makes land more unavailable for development.	4.42	0.51
High urban population levels influence availability of land	4.78	0.65

Respondents were requested to indicate the extent to which they agreed with the given statements concerning availability of land factors and how they influence provision of low cost housing solutions in Nairobi County. They were asked to rate them on a 5-point Likert scale where 1=No extent, 2=Less extent, 3=Moderately Extent, 4= Great Extent and 5= Very Great Extent. From the findings of the study it was discovered that high urban population levels, coupled with weak land allocation systems, ineffective land tenure systems, ineffective special planning and Cultural ties to land affects availability of enough land for low cost housing developers thus influencing the provision of low cost housing in Nairobi county to a very great extent as indicated by a mean of 4.78, 4.78,

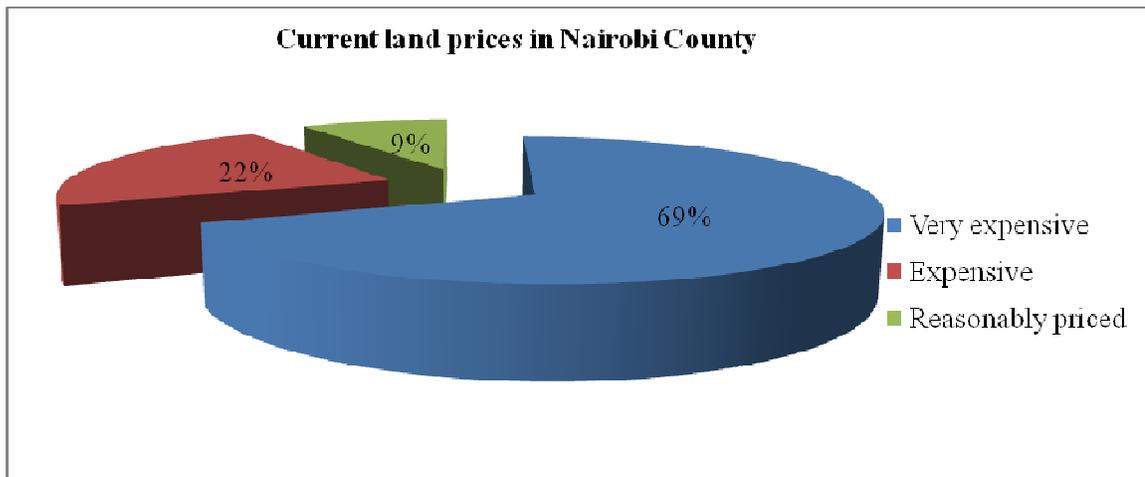
4.68, 4.62 and 4.56 supported by standard deviation of 0.65, 0.65, 0.62, 0.54 and 0.49. Respondents also indicated that existing high levels of competition for suitable land in Nairobi, ineffective zoning regulations, and the bureaucratic land acquisition procedures makes land more unavailable for development hindering provision of low cost housing to a great extent as indicated by a mean of 4.42, 4.34 and 4.26 supported by standard deviation of 0.51, 0.48 and 0.46.

All this is in line with Greene and Rojas, (2004) who stated that access to land is conditioned by land tenure which is inextricably linked with historical, cultural, legal and economic factors that affect people's perceptions and behaviour.

#### 4.4.3 Cost of Land

##### Current Land Prices in Nairobi County

**Figure 6: Current Land Prices in Nairobi County**

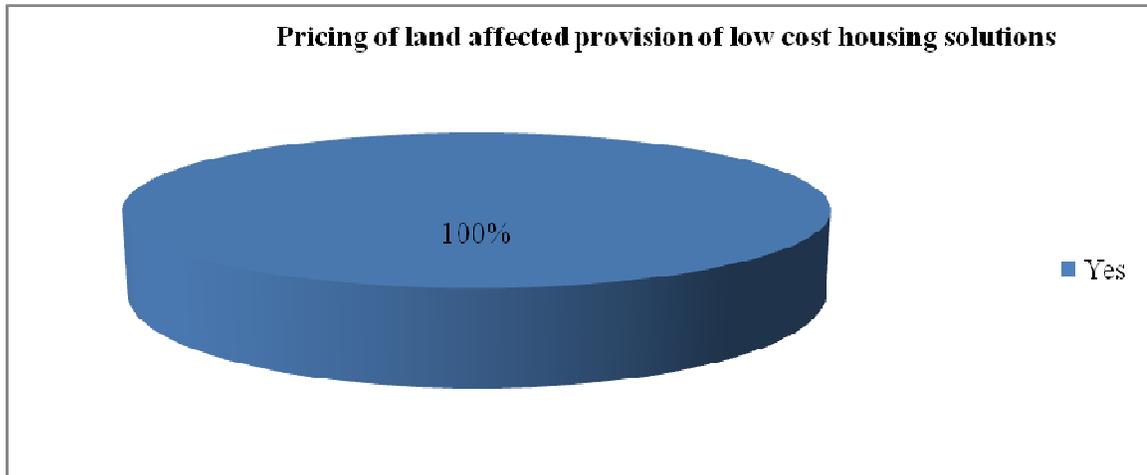


The study sought to investigate respondent's perspective regarding the current land prices in Nairobi County. Majority 69% of the respondents felt that the current land prices in Nairobi County are very expensive, 22% felt the prices are expensive while only 9% of the respondents feel the prices are reasonably priced. Respondents further explained that cost of land highly depends on proximity to the central business district, with land

becoming cheaper as one moves further away from the city. This implies that the current land prices in Nairobi are a big barrier to provision of affordable housing.

### **Whether Pricing of Land Affected Provision of Low Cost Housing Solutions**

**Figure 7: Whether Pricing of Land Affected Provision of Low Cost Housing Solutions**



The Figure 7 shows the response on whether pricing of land has affected provision of low cost housing solutions. From the findings, all the respondents indicated that pricing of land has affected provision of low cost housing solutions. Respondents explained that the price of land depends on the distance from services and amenities, nearness to commercial, academic, health facilities and availability of public transport and the distance the land is from the city centre.

## **Influence of Cost of Land on Provision of Low Cost Housing in Nairobi County**

**Table 4.9: Influence of Cost of Land on Provision of Low Cost Housing in Nairobi County**

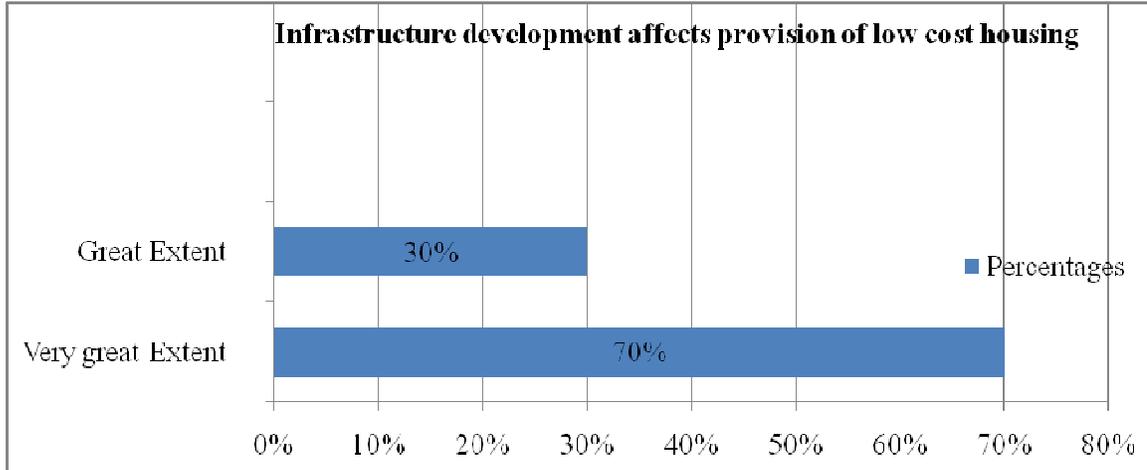
<b>Statement</b>	<b>Mean</b>	<b>Standard deviation</b>
High demand for suitable development land affects cost of land	4.40	0.45
Scarcity of suitable development land in Nairobi County affects cost of land	4.54	0.58
The bureaucratic land acquisition procedures in Nairobi affect the cost of land	4.72	0.67
High land transaction costs of affects land prices in Nairobi	4.66	0.63
Cultural ties to land affects cost of land	4.32	0.43
Unregulated property market in Nairobi affects land prices	4.21	0.37
High land rates and levies affect cost of land in Nairobi	4.81	0.78

The study sought to investigate the extent to which respondents agreed with the given statements concerning cost of land and how they affects provision of low cost housing in Nairobi County. From the findings, majority of the respondents agreed to a very great extent that high land rates and levies, bureaucratic land acquisition procedures, high land transaction costs and scarcity of suitable development land in Nairobi County affects cost of land as indicated by a mean of 4.81, 4.72, 4.66 and 4.54 with standard deviation of 0.78, 0.67, 0.63 and 0.58. Most of the respondents agreed to a great extent that high demand for suitable development land, cultural ties to land and unregulated property market in Nairobi affects cost of land as indicated by a mean of 4.40, 4.32 and 4.21 with standard deviation of 0.45, 0.43 and 0.37.

#### 4.4.4 Infrastructure and Housing

### Influence of Infrastructure Development on Provision of Low Cost Housing in Nairobi County

**Figure 8: Influence of Infrastructure Development on Provision of Low Cost Housing in Nairobi County**



The study sought to investigate on the extent to which infrastructure development affects provision of low cost housing. From the findings, majority 70% of the respondents indicated that infrastructure development affect provision of low cost housing to a very great extent while 30% of the respondents indicated that infrastructure development affect provision of low cost housing to a great extent. This implies that failure by the government to provide relevant infrastructure forces the private developers to bear the cost of infrastructure which has made the provision of low-cost housing untenable. This is in line with Hakijamii (2012) who stated that development of supporting infrastructure is a critical component of the realization of the right to adequate housing.

**Influence of Infrastructure Development on Provision of Low Cost Housing in Nairobi County**

**Table 4. 10 Influence of Infrastructure Development on Provision of Low Cost Housing in Nairobi County**

<b>Statement</b>	<b>Mean</b>	<b>Standard deviation</b>
Availability of electric power affects provision of low cost housing	4.76	0.62
Availability of roads affects provision of low cost housing	4.79	0.68
Availability of sewerage system affects provision of low cost housing	4.70	0.52
Availability of water affects provision of low cost housing	4.73	0.54
Availability of solid waste management system affects provision of low cost housing	4.57	0.50
Cost of providing infrastructure amenities is very high in Nairobi County	4.85	0.71

The study sought to establish the extent to which respondents agreed with the given statements concerning infrastructure development and how it influences provision of low cost housing in Nairobi County. From the findings, majority of the respondents agreed to a very great extent that cost of providing infrastructure amenities is very high in Nairobi County and that availability of roads, electric power, water, sewerage system and solid waste management system does influence provision of low cost housing as indicated by a mean of 4.85, 4.79, 4.76, 4.73, 4.70 and 4.57 with standard deviation of 0.71, 0.68, 0.62, 0.54, 0.52 and 0.50. This implies that the high expense a developer would incur in developing suitable infrastructure has to be borne by the house buyer, which makes the prices for houses to go up and become un-affordable to many. A comprehensive and well-coordinated support infrastructure is central to the provision of low cost housing.

#### 4.5 Correlation Analysis

**Table 4. 11: Correlations Analysis**

		Cost of land	Availability of land	Infrastructure development	Building materials
Cost of land	Pearson Correlation Sig. (2-tailed)	1			
	N	30			
Availability of land	Pearson Correlation Sig. (2-tailed)	-.547**	1		
	N	30	30		
Infrastructure development	Pearson Correlation Sig. (2-tailed)	-.463**	.218	1	
	N	30	30	30	
Building materials	Pearson Correlation Sig. (2-tailed)	-.657**	.471**	.463**	1
	N	30	30	30	30

Correlation analysis was used to establish the strength of association between variables as shown on Table 4.11. From the findings, the strength of association between availability of land and provision of low cost housing solutions in Nairobi County in Kenya was strong and negative having scored a correlation coefficient of 0.547 and a 99% precision level. The correlation was statistically significant since it had a P-Value of 0.01 which is less than 0.05 hence statistically significant.

The study found that there existed a strong and negative correlation between infrastructure development and provision of low cost housing solutions in Nairobi County in Kenya. Correlation coefficient of 0.463 and a 99% precision level was statistically significant since it had a P- Value of 0.04 which is less than 0.05.

Building materials and provision of low cost housing solutions in Nairobi County in Kenya correlated positively with a correlation coefficient of 0.657 which was statistically significant since it had a P- Value of 0.02 which is less than 0.05.

#### 4.6 Regression Analysis

The study sought to establish the extent to which study variables building materials, cost of land, availability of land and infrastructure development and housing led to disparity in provision of low cost housing in Nairobi County in Kenya.

The linear regression used in this model was:

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

Where;

Y= Provision of low cost housing

$\alpha$  = Constant

$\mu$  = Error

$\beta$  = Coefficient of the independent variables

$X_1$  = Building materials

$X_2$  = Cost of land

$X_3$  = Availability of land

$X_4$  = Infrastructure development and housing

##### 4.6.1 Model Summary of Regression Analysis

**Table 4. 12: Model Summary**

Model	R	R Square	Adjusted R Square	Std. Error	Change Statistics				
					R Square Change	F	df1	df2	Sig. F Change
1	.93(a)	.865	.857	0.18	0.841	6	5.117	6.141	.001(a)

a Predictors: (Constant) Building materials, Cost of land, Availability of land and Infrastructure development

Dependent: Provision of low cost housing

The study sought the variability of the variables in the model and results were presented in Table 4.12. Adjusted  $R^2$  is called the coefficient of determination which indicates how provision of low cost housing varied with variation factor which included building materials, cost of land, availability of land and infrastructure development. From the Table 4.12, the value of adjusted  $R^2$  was 0.865. This implied that 86.5% of provision of low cost housing varied with variation in the factors affecting provision of low cost housing solutions and which was statistically significant with P-Value of 0.001 less than 0.05 at a confidence level of 95%.

#### 4.6.2 ANOVA (b)

**Table 4.13: ANOVA (b)**

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	3.541	8	.307	2.390	0.01(a)
	Residual	8.704	22	.059		
	Total	12.245	30			

a Predictors: (Constant) Building materials, Cost of land, Availability of land and Infrastructure development

Dependent: Provision of low cost housing

The study sought to determine the goodness of fit of the data in the model and the results were indicated in Table 4.13. From the results, the mean of the dependent variable differs significantly among the respondents. The strength of variation of the predictor values significantly affects the provision of low cost housing as  $P=0.01 < 0.05$ .

### 4.6.3 Regression Coefficients (a)

**Table 4.14 Coefficients (a)**

Model		Un-standardized		Standardized	t	Sig.
		Coefficients		Coefficients		
		B	Std. Error	Beta		
1	(Constant)	7.675	.275		1.600	0.01
	Building materials	-.696	.390	0.672	1.634	0.01
	Cost of land	-.783	.205	0.778	1.831	0.02
	Availability of land	-.613	.146	0.529	3.703	0.04
	Infrastructure development	-.908	.120	0.751	1.786	0.03

a Predictors: (Constant) Building materials, Cost of land, Availability of land and Infrastructure development

Dependent: Provision of low cost housing

$$Y = 7.675 - 0.696X_4 - 0.783X_1 - 0.613X_2 - 0.908X_3 - e$$

Where  $X_1$ = Building materials,  $X_2$ =Cost of land,  $X_3$ = Availability of land and  $X_4$ = Infrastructure development

The study sought to determine the coefficients of variables in the multiple regression models and findings were indicated in Table 4.14. From the regression model, it was found that provision of low cost housing would be at 7.675 holding building materials, cost of land, availability of land and infrastructure development constant at Zero. The findings in Table 4.30 indicated that a unit increase in cost of land would lead to an unit decrease in provision of low cost housing by a factor of 0.783 with P value of 0.02 ( $r = -0.783$ ,  $P = 0.02 < 0.05$ ).

The finding on extent to which building materials affected provision of low cost housing as indicated in Table 4.14 shows that a unit decrease in building materials would led to decrease in provision of low cost housing by factor of 0.696 with P value of 0.01 ( $r = 0.791$ ,  $P = 0.01 < 0.05$ ).

The study found that a unit decrease in availability of land would lead to decrease in provision of low cost housing by a factor of 0.613 with P value of 0.04 ( $r = 0.613$ ,  $P = 0.04 < 0.05$ ). This implied that there exist a negative relationship between inavailability of land and provision of low cost housing. The results in Table 4.13 on Infrastructure development indicated that a unit decrease in Infrastructure development would lead to a unit decrease in provision of low cost housing by factor of 0.908 with P value of 0.03 ( $r = 0.908$ ,  $P = 0.03 < 0.05$ ).

This clearly indicated that there existed a negative relationship between the building materials, cost of land, availability of land and infrastructure development and provision of low cost housing.

## **CHAPTER FIVE**

### **SUMMARY, CONCLUSIONS AND RECOMMENDATIONS**

#### **5.1 Introduction**

This chapter contains a summary of the findings, discussions, conclusions and recommendations inferred from the findings. This research was carried out with a main purpose of investigating factors influencing provision of low cost housing solutions in Nairobi County in Kenya. The study was guided by the following research objectives; to examine how building materials, cost of land, availability of land and infrastructure development influence provision of low cost housing in Nairobi County. This chapter also contains the recommendations for further studies made at the end of the study.

#### **5.2 Summary of the Findings**

The study established that provision of low cost housing in Nairobi County in Kenya is influenced by un-availability of building materials. This coupled by the law of supply and demand leads to a situation where building materials cost is very high. It was established that building materials constitute the largest cost factor in the construction of a house in some cases accounting for as much as 60% and above of the total cost of construction. Due to the increasing cost of materials, there have been attempts to develop cheap, alternative building materials for years. The study established that the use of alternative building materials has not been well embraced in Nairobi County, with only 28% of the respondents indicating that they had used alternative building materials and solutions in their projects. Respondents who confirmed having used alternative building materials mentioned the use of Expanded Polystyrene (EPS) panels, stabilized soil blocks and modular housing solutions and they indicated that they attained reasonable cost savings of upto 40% by the use of the alternative building materials as compared to the conventional materials like masonry blocks. Respondents however stated that as much as they would have wished to use alternative building materials, they lacked information on viable products to use, especially the researched options. Local Architects and designers were blamed for being too conservative when it comes to specifying use of alternatives to the conventional building materials and technology. It was discovered that people's

culture and beliefs do affect people's choice of building materials. Poor cultural perception on some proposed alternative building materials like soil blocks hinders their use. Rigid specification of building materials in the building code denies developers the opportunity to use locally available and alternative building materials which would be cheaper.

The study also established that provision of low cost housing in Nairobi County in Kenya is influenced by insufficient suitable land for development. High levels of urban population have led to increased levels of competition for suitable land for development. It was established that, for low cost housing to make sense, there must be mass development of housing units so as to absorb the cost of land which was found out to be very high. Finding land in Nairobi County for developing mass housing units, without creating a slum is almost impossible. It was also found out that location of land, nature and distribution of employment centers, availability of transportation and other public infrastructural services do affect suitability of development land. It was discovered that weak land allocation systems, ineffective land tenure systems, ineffective special planning and cultural ties to land limit availability of suitable development land thus affecting the provision of low cost housing in Nairobi County to a very great extent. High levels of competition for suitable land in Nairobi and the bureaucratic land acquisition procedures also hinder availability of land for development.

The study established that cost of land for housing development in the Nairobi County has been a major challenge in addressing provision of low cost housing for the low and middle income class. This was evidenced by how the respondents felt that the current land prices in Nairobi County were very expensive. These high costs of land will have to be absorbed by the buyers of these housing units and this will not make business sense if the target is low cost housing. Pricing of land and availability of land was found to be determined by the distance from services and amenities, nearness to commercial, academic, health facilities and availability of public transport and therefore the further land is from the city centre. High land rates and levies, bureaucratic land acquisition procedures, high land transaction costs and scarcity of suitable development land in

Nairobi County affects cost of land. On the other hand high demand for suitable development land, cultural ties to land and unregulated property market in Nairobi affects cost of land.

The study established that failure by the County and National Governments to provide the requisite infrastructure services has made the provision of low-cost housing untenable to a very great extent. High cost of providing infrastructure amenities, availability of roads, electric power, water, sewerage system and solid waste management system affects provision of low cost housing. Lack of Local government's facilitation of off-site infrastructure and land servicing (i.e. development of trunk infrastructure, water & sanitation, etc.) has led to developers having to incur infrastructure costs themselves and then charging the buyers for it to compensate the costs. The effect of this is high sale prices for housing units which will be unaffordable to many.

The study established that 86.5. % of provision of low cost housing varied with variation in factors influencing provision of low cost housing solutions and which was statistically significant with P-Value of 0.001 less than 0.05 at a confidence level of 95%. It was clearly revealed that there existed a negative relationship between the building materials, cost of land, availability of land and lack of infrastructure services and provision of low cost housing in Nairobi County.

### **5.3 Conclusion of the Findings**

Through the course of this study it became clear that main factors influencing provision of low cost housing are building materials, availability land, costs of land and infrastructure development.

The study concluded that availability and cost of building materials, un-availability of suitable land for development coupled with high costs of land and low levels of infrastructure development directly influence provision of low cost housing. Land is scarce, is increasingly expensive, which makes owning or even renting prohibitive, unless

social housing is available, the low income households have no choice but to either live in overpriced rental housing. Cost of land contributes significantly to the total cost of providing a housing unit. Unavailability of land which is conditioned by inefficient land tenure systems which is inextricably linked with historical, cultural, legal and economic factors and it influences provision of low cost housing. Majority of developers find difficulties in finding suitable land to put up low income schemes and if such land is available the cost will be prohibitive for a low cost housing development. Provision of low cost housing has also been hugely affected by inadequate infrastructure services. High cost of providing infrastructure amenities and lack of Local government's facilitation of off-site infrastructure and land servicing has led to developers having to incur infrastructure costs themselves and then charging the buyers leading to high housing prices which is unaffordable to many.

#### **5.4 Recommendation**

From the findings and the conclusion the study recommends that a comprehensive and well-coordinated support infrastructure is central to the provision of low cost housing. The high expense of developing houses due to high costs of building materials, land and infrastructure which has kept off potential developers from the low cost housing sector needs to be addressed.

There needs to be encouraged use of alternative building materials and technologies. Construction consultants should direct the industry towards embracing the new technologies that will see developers achieving substantial savings in the cost of development. Research should be encouraged to develop alternative building materials from locally available raw materials.

Land and housing markets should have protective but flexible regulations as regulations in the country often lack flexibility and adaptability to the local urban development circumstances bearing a significant relevance to land and housing markets. Property

prices should be regulated as the country has an unregulated property market which has seen property rates escalate to levels that the majority of the population cannot afford.

Local and National Government should facilitate development of off-site infrastructure and land servicing (i.e. development of trunk infrastructure, water & sanitation, etc.) which is a critical component of the realization of the right to adequate housing. Incentives like tax exemption on infrastructure projects should be put in place by the Government to motivate private developers where they have to incur the cost of putting up off site infrastructure services.

### **5.5 Recommendation for Further Studies**

This study recommends further study to be carried out to determine how to address the factors that hinder provision of low cost housing so as to facilitate provision of low cost housing.

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## APPENDICES

### Appendix I: Letter of Introduction



**UNIVERSITY OF NAIROBI**  
COLLEGE OF EDUCATION AND EXTERNAL STUDIES  
SCHOOL OF CONTINUING AND DISTANCE EDUCATION  
DEPARTMENT OF EXTRA-MURAL STUDIES  
NAIROBI EXTRA-MURAL CENTRE

Your Ref:

Main Campus  
Gandhi Wing, Ground Floor  
P.O. Box 30197  
NAIROBI

Our Ref:

Telephone: 318262 Ext. 120

21<sup>st</sup> July, 2014

REF: UON/CEES//NEMC/18/377

### TO WHOM IT MAY CONCERN

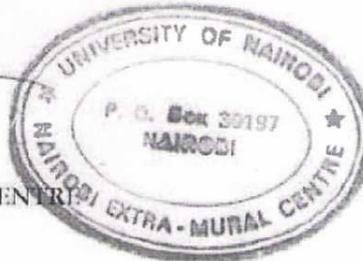
RE: REWEL KARIUKI MAIGUA - REG. NO L50/64012/2010

This is to confirm that the above named is a student at the University of Nairobi College of Education and External Studies, School of Continuing and Distance Education, Department of Extra- Mural Studies pursuing Master of Arts in Project Planning and Management.

He is proceeding for research entitled "factors influencing provision of low cost housing in Nairobi County".

Any assistance given to him will be highly appreciated.

CAREN AWILLY  
CENTRE ORGANIZER  
NAIROBI EXTRA MURAL CENTRE



## Appendix II: Questionnaire

### INTRODUCTION

Dear respondent all information given in this questionnaire will be treated with utmost confidentiality. Please tick (✓) the box that matches your answer to the questions and give the answers in the spaces provided as appropriate.

### SECTION A: BACKGROUND INFORMATION

1. Gender
  - i. Male
  - ii. Female
2. In which category does your company fall in?
  - i. Private company
  - ii. Non-governmental
  - iii. Government agency
3. Kindly indicate your position in the company .....
4. Indicate the period of time you have been working in your organization
  - i. 1-3 years
  - ii. 4-6 years
  - iii. 7-10 years
  - iv. Above 10 years
5. Kindly indicate the type of properties you mainly provide
  - i. Low Cost Residential
  - ii. Middle Income Residential
  - iii. High end Residential
6. What was the number of housing units put up by your company in the last one year
  - i. 1 – 100
  - ii. 100 – 500
  - iii. 500 – 1000
  - iv. More than 1000

**SECTION B: FACTORS INFLUENCING PROVISION OF LOW COST HOUSING IN NAIROBI COUNTY**

**BUILDING MATERIALS**

7. To what extent does availability of building materials influence provision of low cost houses in your company?

- i. Very great Extent [ ]
- ii. Great Extent [ ]
- iii. Moderately Extent [ ]
- iv. Less Extent [ ]
- v. No Extent [ ]

Explain your answer.....

8. From your experience, what percentage do building materials contribute to the total cost of a housing unit?

- i. 10 – 20 % [ ]
- ii. 20 – 40 % [ ]
- iii. 40 – 60 % [ ]
- iv. 60 – 80 % [ ]
- v. 80 – 100% [ ]

9. Have you encountered the use of alternative building materials and solutions in any of your projects?

- Yes [ ] No [ ]

If yes, what alternative building materials / solutions were used .....

.....

10. If your answer in 9. (Above) is yes, did you attain any cost savings by the use of the alternative building materials?

- Yes [ ] No [ ]

11. To what extent do you agree with the following statement concerning building materials and how they influence provision of low cost housing in Nairobi County? (1=No extent, 2=Less extent, 3=Moderately Extent, 4= Great Extent and 5= Very Great Extent)

Statement	1	2	3	4	5
Nonuse of locally available building materials affects provision of low cost housing.					
Specification of building materials in the building code denies developers the opportunity to use locally available and alternative building materials and thus affects provision of low cost housing.					
Culture and beliefs affect people's choice of building materials and thus affects provision of low cost housing.					
Less or non-acceptability of affordable alternative building materials affects provision of low cost housing.					

#### AVAILABILITY OF LAND

12. To what extent is availability of land affecting provision of low cost housing in Nairobi County in Kenya?

- i. Very great Extent [ ]
- ii. Great Extent [ ]
- iii. Moderately Extent [ ]
- iv. Less Extent [ ]
- v. No Extent [ ]

Explain your answer.....

13. To what extent do you agree with the following statements concerning availability of land and how they affect provision of low cost housing solutions in Nairobi County? (1=No extent, 2=Less extent, 3=Moderately Extent, 4= Great Extent and 5= Very Great Extent)

Statement	1	2	3	4	5
The bureaucratic land acquisition procedures hinders availability of land for low cost housing developers					
Ineffective special planning affects availability of enough land for low cost housing developers					
Ineffective zoning regulations affects availability of enough land for low cost housing developers					
Cultural ties to land hinders availability of land					
Current land tenure systems in Nairobi County hinders land accessibility for provision of low cost housing					
Weak land allocation systems hinder availability land for provision of low cost housing solutions					
Existing high levels of competition for suitable land in Nairobi makes land more unavailable for development.					
High urban population levels influence availability of land					

**COST OF LAND**

14. How do you rate the current land prices in Nairobi County?

- i. Reasonably priced [ ]
- ii. Expensive [ ]
- iii. Very expensive [ ]

Explain your answer.....

15. Has pricing of land affected provision of low cost housing solutions

i. Yes [ ]

ii. No [ ]

Explain your answer.....

16. To what extent do you agree with the following statement concerning cost of land and how it affects provision of low cost housing in Nairobi County? (1=No extent, 2=Less extent, 3=Moderately Extent, 4= Great Extent and 5= Very Great Extent)

Statement	1	2	3	4	5
High demand for suitable development land affects cost of land					
Scarcity of suitable development land in Nairobi County affects cost of land					
The bureaucratic land acquisition procedures in Nairobi affect the cost of land.					
High land transaction costs of affects land prices in Nairobi					
Cultural ties to land affects cost of land					
Unregulated property market in Nairobi affects land prices					
High land rates and levies affect cost of land in Nairobi					

**INFRASTRUCTURE AND HOUSING**

17. To what extent does infrastructure development affect provision of low cost housing?

i. Very great Extent [ ]

ii. Great Extent [ ]

iii. Moderately Extent [ ]

iv. Less Extent [ ]

v. No Extent [ ]

18. To what extent do you agree with the following statements concerning infrastructure development and how it influences provision of low cost housing in Nairobi County? (1=No extent, 2=Less extent, 3=Moderately Extent, 4= Great Extent and 5= Very Great Extent)

<b>Statement</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
Availability of electric power influences provision of low cost housing					
Availability of roads influences provision of low cost housing					
Availability of sewerage system influences provision of low cost housing					
Availability of water influences provision of low cost housing					
Availability of solid waste management system influences provision of low cost housing					
Cost of providing infrastructure amenities is very high in Nairobi County					

**\*\* Thank you\*\***