A STUDY OF BUILDING RENEWAL IN COMMERCIAL BUILDINGS IN SELECTED TOWNS IN KENYA

BY

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A THESIS SUBMITTED IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE DEGREE OF MASTER OF EDUCATION IN TECHNOLOGY EDUCATION, DEPARTMENT OF TECHNOLOGY EDUCATION, UNIVERSITY OF ELDORET- KENYA

OCTOBER, 2017

DECLARATION

Candidate

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DEDICATION

This thesis is dedicated to my late parents Mr. Charles Muchemi and Mrs Margaret Nyaruai for the educational inspirations they instilled in me. All my educational achievements are largely attributed to their beliefs in the value of education to the personal development.

ABSTRACT

The deterioration of buildings hampers the ability to adequately perform their intended functions. The purpose of the study was to investigate the extent of building renewal in commercial buildings in selected towns in Kenya which included Meru, Embu, Nyeri, Nakuru and Eldoret. The term building renewal means modernizing an existing building so as to make it more functional and improve the aesthetic value. The specific focus was to assess the current extent of building renewal of commercial buildings, reasons for non-renewal of buildings, analyse the building renewal policy and the practice of renewal of buildings in Kenya The study was guided by Building Renewal Theory. The study targeted 85,500 buildings in the selected major town in Kenya, 15 500 building owners, 60 000 occupants and 10 000 building experts. Simple random sampling was used to sample, 69 commercial buildings in the selected towns. Owners of the selected buildings were purposively selected. Convenient sampling was used to select building occupants while building experts were selected using snowball sampling technique. The study respondents were 303 comprising 56 owners of buildings, 210 occupants of buildings and 37 building experts. The instruments for data collection were questionnaire for occupants, interview schedule for building owners and observation checklist. The instruments were piloted with 2 occupants 1 building owners and 1 building expert accounting for 1% representation of the sample. The reliability of the questionnaire was tested using split half formula while the supervisors and other experts in the Department of Technology Education at University of Eldoret ascertained the face and content validity. Quantitative data were cleaned, coded and analysed using SPSS version 21. Qualitative data was discussed thematically. The results were presented in frequency tables and graphs. The study established that conditions of commercial buildings in the selected towns were fairly good. The study established that there was no clear policy on building renewal in Kenya. Demand from users, user generated problems, social environmental considerations among others were found to be the factors influencing decision to undertake renewal. The study indicated that there is need for occupants to request for building renewal from building owners, Government needs to legislate a building renewal policy, periodic inspection of building among others are necessary measures that need to be put in place for adoption of renewal of buildings policy. The study recommends that periodic inspection of buildings be done to maintain their condition. Further, the study recommends putting up of proper regulation of building renewal by the government to guide building owners in carrying out renewal.

TABLE OF CONTENTS

PAGE

LIST OF TABLES

LIST OF FIGURES

OPERATIONAL DEFINITION OF TERMS

Building: Refers to any other structure, whether of a temporary or permanent nature and irrespective of the materials used for accommodation, manufacturing or rendering service.

Building renewal: Refers to modernizing an existing building so as to make it more functional and improve the aesthetic value.

Building owner: in relation to this study refers to a person in whose name the land on which a commercial building is erected.

Commercial building: A building, or that part of the building, constructed or intended to be used for business, trade or entertainment.

Factors: In this study refers to one of the elements contributing to a particular result or situation.

Functional obsolescence: In this study refers to a situation where a particular item may fail to perform their function in the manner which they were created for.

Functional preference: Refers to the set of assumptions related to ordering some alternatives, based on the degree of happiness, satisfaction, gratification, enjoyment, or utility they provide, a process which results in an optimal "choice" .

Functional requirements of commercial buildings: Refers to what a commercial building in towns should be able to do and the functions it should perform.

Influence: Refers to the capacity to have an effect on the character, development, or behaviour of something.

Measures: Refers to a plan or course of action taken to achieve a particular purpose.

Obsolescence: Is the state, process, or condition of being or becoming obsolete.

Occupants: Refers to persons who are using a commercial building, apartment or room within a town centre at a particular time.

Policy: Is a deliberate system of principles to guide decisions and achieve rational outcomes. A policy is a statement of intent, and is implemented as a procedure or protocol.

Public building: A building that belongs to a town or state, and is used by the public

Renovation: Is the process of improving by renewing and restoring a broken, damaged, or outdated structure.

Serviceability: Degree to which the servicing of an item can be accomplished with given resources and within a specified timeframe.

Town: An urban area that has a name, defined boundaries, and local government, and that is generally larger than a village and smaller than a city.

ABBREVIATIONS AND ACRONYMS

BCIS	Building Cost Information Service
BS	British Standards
DECC	Department of Energy and Climate Change
DHW	Department of Housing and Works
EIA	Environmental Impact Assessment
EPA	Environmental Protection Agency
EMCA	Energy Management Conservation Association
GHS	Globally Harmonized System
GPS	Global Positioning System
NEMA	National Environmental Management Authority
SECO	State Energy Conservation Office
SPSS	Statistical Package for Social Sciences
TQM	Total Quality Management
UK	United Kingdom
USA	United States of America
WA	Western Australia

ACKNOWLEDGMENTS

My sincere thanks go to the almighty God who is always there to support me in my life. Special thanks go to my supervisors Dr.Kyalo N.Muthoka and Prof. John Simiyu for their invaluable expert guidance and continued support throughout the study. Their encouraging attitudes and remarks have undoubtedly motivated me to pursue this study.

I wish to extend my appreciation to my wife Catherine Wanjiku, children Doreen, Brian, Sandra and Mark for their patience, love, understanding and support during my studies.

Special gratitude goes to all building owners, occupants and building experts who participated in this study by filling in the questionnaires and providing the vital data for this study.

Special thanks to Joachim Njagi of Fact Link Solutions for his valuable support in typing and editing.

CHAPTER ONE

INTRODUCTION

1.0 Background to the Study

A building fabric is referred to as an "environmental envelope" because it is the means by which the natural or external environment may be modified to produce a satisfactory internal environment for man to live in. The objectives of building renewal according to Alner and Fellows (1990) are to ensure that buildings and their associated services are in a safe condition, ensure that the buildings are fit for use, ensure that the condition of the building meets all statutory requirements, maintain the value of the physical assets of the building stock and maintain the quality of the building. The primary aim of maintaining a building and its environment is to ensure that the building continues to serve the purpose for which it was intended, yield optimum return and ensure safety, health and comfort in its usage Seeley (2005) The advantages of investing in building renewal have been long recognized at more local, community levels (SECO, 2007).In reconstruction efforts, repairing and retrofitting a house may make more sense than demolishing and rebuilding it given the fact that land for constructing new buildings is becoming scarce.

Building renewal is a major activity in most countries. Any reduction in resources applied to building renewal will have a visible effect on the economy (Ahmad and Culp, 2006).Over the years, selected towns in Kenya have witnessed rapid growth of housing construction. The number of modern houses increases and more houses are being constructed. As a result, more renewal work is required in order to cope with this type of construction (BCIS, 2010).Due to the growth of housing with the lack of

building standards, more renewal, rehabilitation, and renovation work have become necessary to ensure the serviceability and safety of the constructed houses. In addition, the existing houses need to be sustained as long as possible. Therefore, ways must be found to reduce the renewal cost works due to ageing of the buildings while keeping the same quality.

In Kenya, commercial buildings consist of both dwelling (residential accommodation) and non-dwelling (office accommodation). Both residential buildings as well as office buildings are prone to defects due to their permanent and lengthy usage. All elements of buildings deteriorate at a greater or lesser rate dependent on materials and methods of construction, environmental conditions and the use of the buildings (Seeley, 2005). According to Seeley (2005), neglect of renewal has accumulative results with rapidly increasing deterioration of the fabric and finishes of a building accompanied by harmful effects on the contents and occupants. The study by Cukovic-Ignjatovicetal (2006) presents alternative enlargement or extension of buildings. Authors note that there are requirements of energy optimization that cannot be treated separately because they would not be economically viable. When combined with the extension of property, they become more attractive to users.

Over the years, there has been increasing abandonment of building projects and infrastructural facilities which has led to the dilapidation, degradation and deterioration of these building structures within the Kenyan contemporary urban metropolis (Onibokun, 1997). In virtually all the towns and city centres in Kenya, buildings and infrastructural facilities are gradually and systematically decaying, dilapidating and deteriorating with reduced or no degree of renewal. From a normal

visual perception in the urban metropolis, it can be noted that majority of the constructed buildings have not undergone renewal (Roth, 2005). Performance deficiencies in existing commercial buildings have also been emphasized in a study conducted by the Berkeley National Laboratory of 643 existing commercial buildings in California (Mills, 2009). The findings of this study have shown that improving existing buildings will yield median energy savings of 16%.

Certain commercial buildings in Kenyan towns were constructed during the pre-colonial era therefore most of these buildings need renewal to make them cope with the customer preferences for use. Many need renewal as they are aged and in dilapidated nature which might not respond positively to modern day customer needs (Amobi, 2006). There are several benefits that could be derived from the renewal of existing old buildings. These include maintaining structures of social or historic value (BCIS, 2010). Meanwhile, remembering the fact that the degradation of a built up environment causes economic and social waste, building renewal has the potential of improving the quality of life of families affected and of towns as a whole. Socially, it is possible to reduce poverty and crime by improving built up environments.

A proportion of existing commercial buildings in Kenya have the problem of partial obsolescence and building renewal is an important measure to improve the quality of life and use of these buildings. Improving the use of existing buildings through renewal reduces the need for new buildings and thereby decreases the need for new urban land, thus, contributing to sustainability (Lee, Zhao and Augenbroe, 2011).

The basic premise of renewal is to improve and prolong the useful life of buildings in a form of retrofitting, avoiding new constructions and thereby reducing the generation of waste, saving natural and financial resources, energy and urban land (Mills, 2009).

The existing old commercial buildings in urban centres in Kenya pose a serious health risk to its inhabitants (Kenya National Bureau of Statistics, 2010). Concerns have particularly been raised on the safety of such buildings (Mwaniki, 1997). The Kenya building regulations are outdated and out of focus with the current realities for renewal thus the existing building regulation in Kenya has not adequately solved the issues of building's safety and land scarcity in towns.

1.1 Statement of the Problem

Many Kenyan commercial buildings have not seen any significant renewal since they were constructed. This has resulted in such buildings being in a dilapidated state with some being abandoned. Some commercial buildings in selected towns in Kenya have cracks on the walls, rotten wooden members, leaking roofs and missing louver blades, faded paint. This lack of renewal by the owners and occupants of these facilities often leads to reduced lifespan of these buildings which invariably defeat the purpose for which they were put up. It is against this background that this study has been conceived to investigate the extent of building renewal in commercial buildings in selected towns in Kenya.

1.2 Main Objective of the Study

The purpose of this study was to investigate the extent of building renewal in commercial buildings in selected towns in Kenya.

1.3 Specific Objectives of the Study

The following objectives guided this study:

i) To assess the current condition of commercial buildings in some selected towns in Kenya.
ii) To determine if there are any gaps in policy as far as building renewal of commercial buildings in Kenya is concerned.
iii) To determine the factors influencing decision to undertake building renewal in selected towns in Kenya.
iv) To investigate measures needed to be put in place for the adoption of policy on renewal of buildings in Kenya.

1.4 Research Questions

This research was guided by the following questions:

i) What is the current condition of commercial buildings?
ii) What are the gaps in policy as far as building renewal of commercial buildings in Kenya is concerned?
iii) Which factors influence the decision to undertake building renewal?
iv) What measures are needed to be put in place for the adoption of policy on renewal of buildings in Kenya?

1.5 Significance of the Study

This study is essential in the sense that it would not only contribute to knowledge and theory, but will also contribute to good practice of building renewal of buildings in Kenya. This is because the study will attempt to find out the factors that have contributed to the present state of non-building renewal of commercial buildings some of which have been abandoned due to deterioration. The study will also come up with

appropriate remedial actions to be taken. Building managers will gain awareness of the current state of their building and its effect on the safety of occupants. Thus they will be in a position to put in place adequate innovative measures to prevent buildings suffer deterioration which ultimately leads to increased cost in restoring these buildings to their original state.

In addition, the study will bring to the fore the major inhibiting factors in the renewal of commercial buildings in Kenya. In emphasis, this project will show the need for proper building renewal schemes for buildings and infrastructures, that will help reduce renewal cost, minimize loss of use, improve safety conditions, improve aesthetic values and improve appearance of buildings thereby reduces the cases of collapse of structures and the inherent dangers to life and investment.

1.6 Scope of the Study

The study focused on commercial buildings in some selected towns in Kenya. These were; Meru, Nakuru, Eldoret, Nyeri and Embu towns in Kenya. The study's main focus was to establish the current condition and state of commercial buildings, factors influencing building renewal and measures for adoption of policy on building renewal in these towns. The study involved building owners, occupants and building experts. The data needed was collected within a period of three months.

1.7 Assumptions of the Study

The researcher made the following assumptions,

i) Respondents were conversant with the aspects of building renewal.

ii) All respondents were cooperative and provided reliable information.

1.8 Limitations of the Study

The study exercise experienced some limitations which to some extent affected the attainment of some of the objectives of the study. These included:

i) Commercial building developers and contractors were rather busy and took long to give their views. In most cases they delegated interview sessions to their caretakers who provided authentic information.

ii) Accessibility to the research areas in terms of authority since property owners would not give authority to access their premises in time. The researcher waited till permission to access the premises was granted

iii) Lack of enough money to enable telephone and travelling expenses to cover the desired area and reach expected number of developers and contractors. The researcher had to seek more finances than initially budgeted for.

1.9 Theoretical Framework of the Study

This study is underpinned in the Building Renewal Theory by Briggs (1991). The theory advances that building renewal aims at balancing the question of how the needed space is to be secured, maintained, increased or disposed of in a cost effective manner under a mixture of decisions and actions. The theory further provides that continuous building improvement is a gradual never-ending change and involves aspects such as Total Quality Management (TQM) which is an integrative philosophy of management for continuously improving the quality of products and processes. TQM is based on the premise that the quality of products and processes is the responsibility of everyone involved with the creation or consumption of the products or services offered by an organization, requiring the involvement of management, workforce, suppliers, and customers, to meet or exceed customer expectations

(Opondo, 2010). Thus building renewal is a concept of constructing buildings to meet customer satisfaction for space and function.

Building renewal is important because it seeks to improve existing buildings so as to improve competitive position (Cohen and Prusak, 2001). This can be achieved by improving quality, efficiency, innovation or any component that is vital to satisfy customer needs. Continuous improvement for buildings in terms of renewal encourages the rapid response to customers ever changing demands with focus on space and functions. Improving the use of existing buildings through renewal reduces the need for new buildings and then decreases the need for new urban land contributing to sustainability. Commercial buildings are most vulnerable for not meeting user satisfaction with time. For example, a room used for office space changing its function to a lecture room may need building renewal to meet the current functional demand. If commercial building owners especially in towns do not continuously improve their buildings to meet customer requirements, customers may stop renting and thus profitability declines. Building renewal strategies and policies have seen the light of day though without winning ground within property owners.

1.10 Conceptual Framework

According to Orodho (2009) a conceptual framework is a type of model that employs drawings/diagrams to explain the interrelationship between variables, especially the independent and dependent variables.

The conceptual framework that presents the interrelationship of the study variables is shown in Figure 1.1

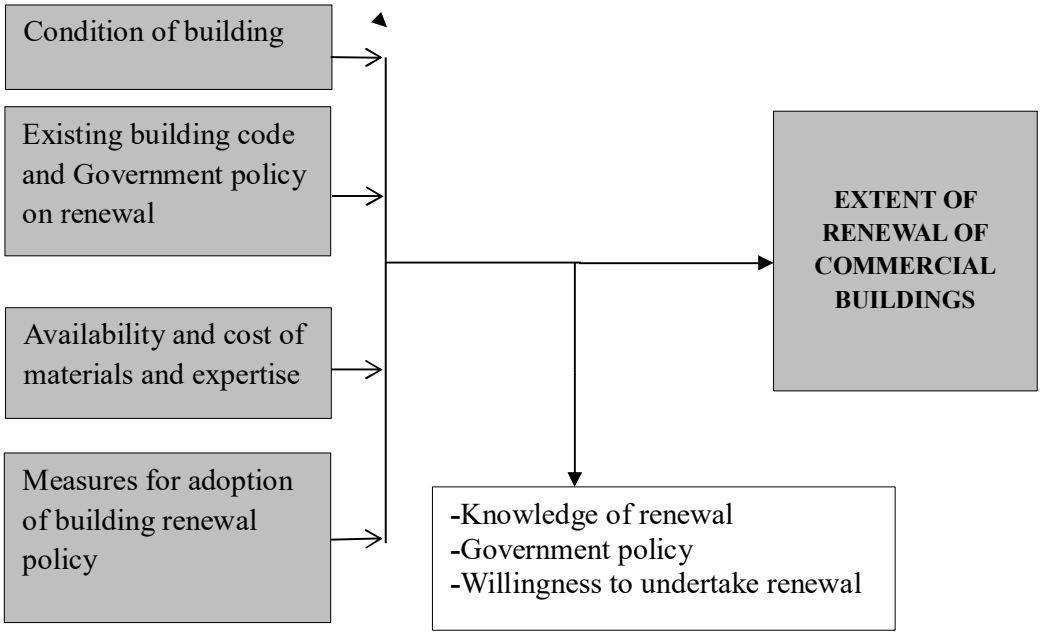

Figure 1.1: Extent of Building Renewal of Commercial Buildings in Towns

Some of the independent variables which directly affect the extent of building renewal include the condition of building elements such as roof, floor, walls, doors, windows, electrical works, plumbing, drainage and painting. Policy gaps in building renewal, factors influencing building renewal as well as the measures needed to be put in place for the adoption of building renewal policy were also part of the independent variables that the study manipulated to establish the extent of building renewal of commercial buildings in selected towns in Kenya. The extent of building renewal can be affected by intervening variables such as knowledge of renewal, government policy and willingness to undertake renewal.

CHAPTER TWO

LITERATURE REVIEW

2.0 Overview of Building Renewal

The Concise Oxford Dictionary definition of renewal is to regenerate, make new again, restore and recover. Renewal focuses on the restoration of vigour, strength and activity within a community and encompasses the dual potential of redevelopment. It has scope for the demolishing of and the rebuilding of communities and/or the physical environment. Couch (1990:1) defines urban renewal as the physical change, or change in the use or intensity of use of land and buildings, that is the inevitable outcome of the action of economic and social forces upon urban areas'. Urban renewal is happening in countries across the world including the UK, USA, New Zealand, Belgium and Australia. There are a number of commonalities between urban renewal programs in the USA, UK and Australia (Carley, 1990).

Recent urban renewal programs in the UK are primarily (but not solely) intended to arrest the decline of inner city neighbour hoods in areas with a high density of people from low socioeconomic backgrounds and high unemployment rates (Carley, 1990). It is also the inevitable outcome of 'political' forces, as governments play an instrumental role in defining areas for development as well as funding and setting policy targets for renewal areas. In the context of WA urban renewal can involve both large scale and partial asset disposal (via sale of stock or demolition) to achieve a greater social mix together with refurbishment strategies to improve existing stock for tenants and to improve suburbs and increase property values. As Parry-Strommen (2001) point out urban renewal in WA refers to 'whole of suburb renewal not

individual sites within suburbs.' Further the DHW considers its urban renewal program 'to be more than just bricks and mortar and asset management, and incorporates many of the aspects outlined in definitions of estates renewal, community renewal and community regeneration.

In the United States and European countries, the building sector accounts for 39% of the infrastructure (EPA, 2008; DECC, 2010a). According to Commercial Buildings Energy Consumption Survey (EIA, 2003), United States has 4.86 million commercial buildings corresponding to 6.4 billion square metres of floor areas, and adds 144 million square metres of new constructed floor areas every year. Owing to the dominant volume of current buildings, renewal of existing buildings is essential to meet population demand. Without enhancing performance of existing buildings, it will be difficult to reach the 2030 challenge of 50% increase in sustainable development in the building sector. An aging property is a building with some degree of obsolescence. The obsolescence of buildings is a phenomenon with several aspects, such as physical (deterioration on performance of building itself), economic (changes on interest for potential users), functional (change in user's objectives and needs), technological, social (fashion or behavioural changes) and legal obsolescence (changes on safety regulations or building ordinances). Too many properties currently present some level of obsolescence and presents lower market values.

In Africa, physical infrastructure constitutes a high proportion of the continents investment. It is therefore of primary importance that these facilities which include public buildings are maintained and renewed in order that they can serve both the architectural and aesthetical functions for which they are built. The physical

appearance of commercial buildings in part constitutes the basis upon which the society makes their initial judgment of the quality of services to be offered. One of the critical problems confronting the housing industry in Africa is the poor renewal practice (Afranie and Osei Tutu, 1999). However, in spite of the heavy investment in commercial buildings, property proprietors allow their structures to "care for themselves" without any sustainable renewal plan to preserve the quality of the buildings. The continued efficient and effective performance of commercial buildings depends on the nature of their buildings in addition to other factors such as enhanced conditions of service and provision of the requisite tools.

2.1 State of Commercial Buildings in Urban Centres

Urban areas are known to have prospered or declined depending on their environment, commercial activities, population growths, and natural resources. The primate urban centres in Kenya such as the city of Nairobi, Mombasa, Kisumu, Eldoret and Nakuru play major roles in nearly all aspects of a nation's development. The principle decision makers of the state, politicians, technocrats, entrepreneurs and landowners live and derive their political material support from these urban centres (Obudho, 1992).

In the developing countries such as Kenya, rapid urban growth which is due to both natural population growth and rural urban migration has resulted in urban segregation and exerted too much pressure on provision of housing and related services. Kenya has been experiencing rapid urbanization at an estimated rate of 7.3 percent per annum. The proportion of Kenyans living in urban centres (defined as towns with a population of 2000 or more inhabitants) increased from 18.3 percent in 1989 to 30 percent in 1999. Currently, Kenya has approximately 194 urban centres with a total population of about 10.0 million representing 34.8 percent of the total population

(Republic of Kenya, 2001). It is estimated that approximately 45 percent of Kenya's urban population lives in rented commercial buildings (Kenya National Bureau of Statistics, 2010).

Urban centres in Kenya have continued to experience expansion in the housing sector to cope with the rising demand for office, learning, business as well residential space among other customer needs (Republic of Kenya, 2010). According to Kayongo (2009) the projected housing demand during the period 1996-2010 indicates that about 348,000 housing units were needed to meet housing demand. The continued expansion and proliferation of building units in urban centres in Kenya is imputable to the rapid rate of growth of the urban population. The result has been a continuous building renewal motivated primarily by rational economic considerations.

A study by Sumila Debabrata and Darby (2010) comparing the condition of the housing stock in Nairobi and Dakar found that the general state of housing is much better in Dakar than in Nairobi. For example, about 96 percent of the houses in Dakar's slums but only 12 percent of those in Nairobi have external walls constructed with permanent materials (brick/stone/concrete blocks). Similarly, about 32 percent of households in Nairobi's slums have dirt floors; the corresponding number in Dakar is only 10 percent.

According to Verhage (2005), the state of many urban buildings in Kenya in terms of meeting customer satisfaction for dynamic change of work functions is far from running away from renewal. Verhage further points that many commercial buildings in urban centres are disadvantaged by spatial segregation to enable for renewal. In considering renewal, Verhage suggests that the state of building in terms of location, user functional preference and rate of obsolescence comes into play (Verhage, 2005).

This study will seek to assess the current condition and state of commercial buildings in some selected towns in Kenya.

In terms of building renewal Lamba (1994) argues that physical planners in urban areas in developing countries are primarily concerned with spatial symmetry and form rather than function and need for space to meet emerging demands for house users. In Kenya for example, there has been rapid expansion of higher education which has seen construction of new buildings and renting of commercial buildings in towns. The Kenya building regulations are outdated and out of focus with the current realities for renewal thus the existing building regulation in Kenya has not adequately solved the issues of building's safety and land scarcity in towns.

If a clear policy on renewal was in place in Kenya, the cost of constructing new buildings and abandoning of old ones would be minimized hence realizing cost effectiveness in the building sector.

2.2 Building Renewal Policy and Practices

A main goal of building regulations, or more specifically building codes, is to protect the public. It is in the public's best interest to have safe buildings; however, at what cost? Most people would agree it is not economically feasible to mandate costly safety precautions on every product that could potentially make a building safer. If we did so, over-regulating could make everything too expensive. Therefore, there needs to be a balance between public safety and financial reasoning (Battenbough, 2009).

Kenya at present has no National building renewal Policy to regulate or control preventive renewal of commercial buildings (Johnson, 2004). However, the public health Act (1965) provides that property owners are responsible for the external renewal of the buildings including: painting, replacement of wooden members and

net, roof, electricity, sewerage, and plumbing. Occupants on the other hand are responsible for the internal renewal of the building such as:

i) Replacement of all burnt-out bulbs, lost keys or locks and broken louver blades.
ii) Keeping service or institutional properties and the surrounding thereof in good sanitary condition, by weeding around and disposing off refuse regularly to avoid any nuisance.
iii) Fumigation of the internal portions of dwelling units to get rid of ants, mosquitoes, cockroaches, flies etc.
iv) Occupants not causing or permitting anything to be done to their dwelling units which will alter the external walls or allow any renovation to be done to any part of the premises without the written consent of the institution.

The Act does not explicitly mention about building renewal.

The survey indicated that all the buildings had a maintenance policy in place to oversee and guide maintenance decisions, operatives and practices. Generally, the policy had provisions for the following elements; resource allocation, performance requirements, execution of work and administrative activities. The survey indicated that execution of works featured prominently in most management companies‟ policy at 80% followed by resource allocation at 70% and performance requirement at 60%. Administration activities scored 50%, while hierarchical structure in terms of the position of the maintenance department within the organization scored the least at 40%.

Maintenance Policy

BS 3811 defines maintenance policy as a strategy within which decisions on maintenance are taken. It is defined as the ground rules for the allocation of resources (materials, workers, finances) between the alternative types of maintenance action that are available to management. In order to make a rational allocation of resources, the benefits of those actions to the organization as a whole must be identified and related to the costs involved. Policies mostly on maintenance directly or indirectly affect the extent to which maintenance work is accorded priority in an organization. Policies deal with setting objectives and means of achieving them. This involves laying down operational and cost objectives for maintenance department starting with identification of maintenance tasks, standards to be achieved and the limits of cost. This helps in; proper balance between preventive and corrective types of maintenance, how far work should be programmed rather than relying on requests, priority to accord different types of works, type of labour sourcing, the extent to which decisions should be decentralized where there is wide coverage. These policies determine the structure of the maintenance organization and the roles and duties of the stakeholders. According to Words with and Reginald, (2007), the question of policy is considered under the following:

Objectives of maintenance policy

What does maintenance have to achieve? This should be viewed in the context of the organizations overall building needs. It combines management, financial, engineering and other practices applied to the physical assets in pursuit of economic life cycle costs. It requires all departments in the organization to co-operate in ensuring that assets of the organization are planned, provided, maintained and disposed of at the total cost to the organization (Njoroge, 2013).

Benefits of maintenance policy

What is to be gained? The benefits may be short term or long term, classified under financial, technical or human. Financial benefits spring from more effective use of the building and reflected in higher productivity, less wastage of materials and improved sales figures (Christensen, 2009). Technical benefits related to the preservation of physical characteristics of the building and its services and reflected in fewer breakdowns, less repairs, fewer accidents, lower future maintenance among others (Bui & Ling, 2010). Human factors are related to psychological effects of the of the building on the user and reflected in such things as lower rate of staff turnover, reduced training costs, better customer relations, improved public image. Abdullah, Aftab, Azis, & Rahman(2010)identifies the common areas requiring policy provision to include the following: -

a) Resource allocation

The proportion of resources to be allocated to building maintenance will have to be determined in a competitive environment. The various resources include; finances, staffing, time etc. The distribution mechanism of the resources is also factored in. The process may have nothing to do with building performance consideration and be beyond influence of staff (Abdullah*et al*, 2010). Resource allocation as a result of an outsourced operation that will have contractual implications is also considered.

b) Performance requirements

From inception there exists a detailed performance model on a buildings expected performance. This relates to technical, operational and financial standards, response time and budgets. All this is defined clearly in the maintenance policy.

c) Execution of work a policy will need to be formulated to indicate how maintenance work is to be executed. This involves consideration of; who executes the work, when

the work is to be executed, how it is to be executed, supervision control and the relationship of the work with other activities in the organization (Abdullah *et al*, 2010)

d) Administrative activities

This requires an assessment of the procedures necessary to administer maintenance operations and this strike at the heart of the maintenance management. The type of maintenance department may be a result of a carefully formulated policy which is a reflection of the original attitude to maintenance of buildings (Abdullah *et al*, 2010).

e) Position of maintenance department within the organization

The degree of importance attached to the maintenance management department in relation to other departments and functions is shown by its position in the organization. A carefully integrated maintenance department indicates a positive policy stance, where building maintenance department has been considered as an important part to achieve the organizational objectives (Abdullah *et al*, 2010).

Legislation Governing Maintenance in Kenya

In Kenya there exist scattered legislations and regulations that require owners and building users to maintain property and the surrounding to a habitable condition and good state of repair. The various legislations include; - Public Health Act, The Sectional Property Act, Factories Act, Rent restriction Act, Landlord and Tenant Act, Occupiers Liability Act, EMCA and others (Billington, Stephen, Keith & Andrew, 2014).

The Public Health Act Cap 242

This Act provides for various requirements which include; requires for the inspection of land, dwellings, buildings, factories and trade premises, and for securing and keeping of the same, clean and free from nuisance so as not to endanger the health of the occupiers or the public. Buildings are required during construction, to meet provision of proper lighting and ventilation and the prevention of over-crowding. The Act also provides for the periodical cleansing and whitewashing or other treatment of dwellings, and the cleansing of land attached thereto, and the removal of rubbish from the building.

The local authority is empowered to carry out inspections with a view to ascertain whether the lands and buildings thereon are in a state to be injurious or dangerous to health, and the preparation, keeping and publication of such records as may be required. Health authorities are required to prevent or remedy danger to public health from unsuitable dwellings. The law stipulates that it is the duty of every health authority to take all lawful, necessary and reasonably practicable measures for preventing or causing to be prevented or remedied all conditions liable to be injurious or dangerous to health arising from the erection or occupation of unhealthy dwellings or premises.

The Rent Restriction Act Cap 296

Section 26 of this Act requires in the absence of any provision to the contrary in the contract of tenancy, that it shall be deemed to be the obligation of the landlord of any premises to maintain and keep the premises in a state of good structural repair and in a condition suitable for human habitation, and it shall be the obligation of the tenant of any premises, other than a tenement house, to maintain the premises in the same state

as that in which the premises were at the commencement of the tenancy, fair wear and tear, damage arising from irresistible force and structural repairs for which the landlord is liable. The Act requires the Rent Tribunal to consider the state of the repair and maintenance in the determination of any matter brought before it for determination.

The Sectional Properties Act No. 21 of 1987

This Act requires the selected corporation to establish and maintain a fund for administrative expenses sufficient, in the opinion of the corporation, for the control, management, and administration of the common property, and for the payment of any insurance premiums, rent, and the discharge of any other obligation of the corporation. The corporation and its members are liable to maintain, repair and replace the common areas and building parts and elements serving more than one unit to an acceptable standard as maybe provided by law.

Landlord and Tenants (Shops, Hotels and Catering Establishments) Act Cap 301

Under the section on schedule terms and conditions to be implied in tenancies, the lesser is responsible for all repairs to roofs, main walls, main drains, main electric wiring and structure, and shall be responsible for all necessary renewals to the premises. On the other hand, the lessee is responsible for all internal repairs and decorations, fair wear and tear exempted. The lessee shall keep the fixtures and fittings in good and tenantable repair. The lessee is obliged to permit the lessor or his agent and his work-men to enter the premises and to examine or repair the same at all reasonable times after giving reasonable notice thereof. The Act requires the Business Premises Rent Tribunal to consider the state of the repair and maintenance in the determination of any matter brought before it for determination.

The Occupiers Liability Act Cap 34

The Act reserves the burden of property maintenance and repairs on the occupiers of the premises and protects lawful visitors from injury arising from defective premises and components. Sub-section 5. (1) states that where premises are occupied by any person under a tenancy which puts on the landlord an obligation to that person for the maintenance or repair of the premises, the landlord shall owe to all persons who or whose goods may from time to time be lawfully on the premises the same duty, in respect of dangers arising from any default by him in carrying out that obligation, as if he were an occupier of the premises and those persons or their goods were there by his invitation or permission.

Environmental Management and Co-ordination Act No 8 of 1999.

This Act empowers the Director of NEMA to cause the property to be inspected to ascertain if the property is maintained to the standards that enhance environmental protection. It concerns solid waste management systems, noise protection, electrical and heating systems. It is a requirement under this law these systems be properly maintained to ensure that the subsequent emissions are not hazardous to the environment.

The Factories Act Cap 514

Various sections oblige the proprietors and contractors of premises where manufacturing is taking place to maintain the structure or structure members and all equipment embedded therein to serviceable condition and make sure that they are in good working order. Factory inspectors are empowered by the Act to prosecute those failing to observe health and safety standards.

2.3 Legislative and Policy Constraints

Governments may lack the policy making apparatus to analyze existing policies and legislations and to develop on new ones. The legislators may lack the necessary experience and skills to assess the maintenance policy framework, evaluate impacts of policies and implement on policies. There are also inadequate maintenance resources such as national building stock, human, financial and tools to carry out, monitor and evaluate maintenance works (Draft National Building Maintenance Policy, 2011).

Maintenance is prioritized low in the agendas of political decision maker due to limited understanding of financial and economic implications of poor maintenance. In Kenya the legislative framework is provided for by uncoordinated Acts of Parliament and subsidiary legislation (Republic of Kenya, 2011). This scenario is bound to get worse with the introduction of county governments. The scattered legislation makes it hard to have a codified standard of maintenance. The legislative framework sets maintenance standards that are not affordable and unachievable within the local setting that are beyond the reach of typical residents.

The main contributors to the dilapidation and decaying environment are; lack of building maintenance policy, existence of outdated multiple legislations and regulations, lack of a single institution to enforce and police compliance, lack of quantifiable and measurable standards, inadequate documented inventory of building stock, lack of resources both financial, human and tools, carrying out maintenance works in ad hoc basis with inadequate records being kept (Republic of Kenya, (2013).

2.4 Factors Influencing Decision to Undertake Building Renewal

Derek, Miles and Syagga (1987) identified the following factors as influencing the decision to carry out building renewal:

2.4.1 Age of the buildings

Houses deteriorate with age, since the lifespan of most buildings are constructed to last at least sixty (60) years, but may exceed this period if the building is well maintained over time. Above 60 years most houses exhibit serious renewal problems which will demand at least major renovation, rehabilitation, replacement or repair. The present state (fair or bad) of commercial buildings in Kenya has been attributed to the age of the buildings since they are over 50 years (Murigu, 1989). Building components have expected life, at the end of which, demolition or replacement would be imperative (Mahmoud, 1994). When building construction is completed; owners must be using their buildings and its components in proper way.

The misuse of components will result in their damage and need for repair, which would be costly (Mahmoud, 1994). Building occupants often pay little attention to keeping building in good working order and are surprised when they fail to give the service they expected. The misuse of building services will result in their damage and the need for repair, which will be costly. Also, the abnormal occupier activities can cause the rapid deterioration.

Buildings and structures consists of materials and components linked together to form a devised unit of accommodation (Basheka & Tumutugyereize, 2012). All such components and materials will start aging from the time they are affixed in the structure. A building thus has a certain life expectancy due to the wearing out of its components which have different lives. The wearing out thus reduces the serviceability of the building and this affects the remaining useful life. A planned

programme of inspections is thus necessary to obtain maximum life out of materials, components, services and equipment in the building.

2.4.2 Lack of Building Renewal Culture

According toBurnett (2005), estate and renewal managers do not undertake regular inspection of the building to ascertain its condition neither do they undertake routine and periodic renewal on the buildings. Burnett (2005) found that building occupants reported that building owners have less eagerness towards renewal of their buildings. Expressing their views on lack of renewal culture by the institutions, four percent of the respondents in a study conducted in Nairobi by Matindi(2013)reported that all that building owners do is to bring in labourers to weed around the compound at regular intervals to the neglect of the building proper.

2.4.3 Inadequate Funds and High Renewal Cost

It is generally acknowledged that inadequate finance is a major constraint on effective property management, partly because renewal budgets are the easiest to cut when money is scarce (Mwaniki, 1997).

According to Gorse and Highfield (2009) renewal expenditure can be absorbed more easily in commercial and industrial organizations where it may account for as little as 0.5% of turnover, but even in these cases renewal is taken for granted except when it threatens production or profitability. However, the situation is more serious in the public sector where damaging effects of poor renewal are less immediately obvious. Also in the case of housing estates, it is common for organizations to emphasize the provision of new houses, with little funding provided for maintaining existing stock. Not are day-to-day repairs neglected, but efforts at improvements and rehabilitation are considered lower priority than new construction. This problem of inadequate

finance indeed results in rapid deterioration of existing stock resulting in increases in the demand for new houses because poorly maintained houses are not only unpopular; but they soon reach the stage where the structure itself deteriorates and rebuilding has to be considered.

The cost of maintenance comprises of direct and indirect costs. The direct cost includes maintenance materials which vary to a great extent and thus costs, labour, transportation costs, etc. The direct cost in maintenance operations ranges from 70-90% of the total costs (Sharma, 2006). Indirect costs are the hidden costs that emerge later in the maintenance stages, they include; safety aspects, hazardous control, storage costs and other overhead costs.

2.4.4 Pressure on Building Facilities by Number of Users

The number of people occupying or living in a house is also seen to have a bearing on the renewal conditions. Generally, the higher the number of people in a house, the more there is pressure on the use of facilities which are in common use such as water, bathrooms, toilet, and kitchen facilities. From the survey, it came out renewal seems to suffer especially with single unit houses where the above facilities are shared between two housing units. In some cases, the large number of occupants living in this house type breeds apathy and competition which all go to affect renewal practice (Gorse & Highfield, 2009).

2.4.5 Poor Building Design

It is not uncommon to find that buildings are inherently expensive to maintain because of inappropriate priorities applied during the design phase (Oyewande, 1992). Poor detailing and the specification of unsuitable components and materials are common complaints. In addition, construction errors arising from inadequate drawings and specifications, coupled with poor workmanship because of contracts

awarded to incompetent contractors are frequent causes of rapid physical deterioration in buildings (Oyewande, 1992). Good design should allow accessibility and adequate working space for essential renewal such as cleaning, and minor repairs to pipes, ducts and cables (Ambrose, 1989).

Hall (1984) ascribed faulty design, faulty execution of work, and use of faulty materials as major causes of structural failures; while Merritt and Ambrose (1989) were of the opinion that overturning of structures due to heavy wind loads, sliding of structures due to high wind, roof uplift or sliding, and building sway due to lateral loads were major factors of failures in buildings. Oyewande (1992) identified additional factors responsible for building collapses in Nigeria; these are design faults, faults on construction site and product failure, with design fault contributing most significantly to such collapses. Other studies by Akinpelu (2002) found that structural failures, environmental changes, natural and human-induced hazards, improper presentation and interpretation in design, deterioration of reinforced concrete occurring as a result of corrosion of reinforcement caused by carbonation and chloride ingress, cracking caused by overloading, subsidence or basic design faults, and construction defects are causes of building collapses.

In 1993, Al-Shiha conducted a research discussing the effect of faulty design and construction factors on building renewal. As a result, the most severe factors which affect the renewal works and causes the high renewal cost are determined as: inadequate structural design such as foundation, hiring unqualified designers, not complying with specification, not relating exterior materials selection to climate conditions, inadequate waterproofing and drainage, unqualified workplace, inability to read the dawning's.

Therefore, at the design stage of a project, the building must be visualized in use, and materials and finishes chosen, capable of withstanding every day wear and tear. The designer must choose materials and building that meets his client's functional needs and meets the budget constraints laid down and can be maintained in good working order for a reasonable time at a reasonable cost. Renewal planning should be started at the design stage and continue throughout the life of that building (Mills, 1980).

Renewal will include all defects that were caused during the early stage of design and particularly in the structural design such as: when designer ignores the spacing for contraction and expansion movement. Such movement causes cracking of the structure, which will result in fractures in pipes or joint failure (Al-Shiha, 1993).

2.4.6 Availability of Physical Resources

Stapleton (2010), in Afranie and Osei-Tutu (1999), relates than the decision to carry out renewal is affected by many factors, among which are:

(a) cost: investors would want to have the most economic method for carrying out renewal work whether, corrective or preventive, thus they look at actual cost of renewal of the building to the cost of maintaining similar buildings; consideration of money spent to achieve acceptable standard at present; cost of maintaining same standard in future and economies of replacing facilities and amount of work available and priority of work to be executed.

The availability or non-availability of physical resources affects decisions in that, when suitable materials for renewal are not available, it becomes difficult to undertake renewal (Adesoji, 2011). Again even if suitable materials are available but not in adequate quantities and the alternative materials are not available, it will deter people

from undertaking renewal activities. The level of craftsmanship in terms of both skills and efficient numbers can also affect decisions to carry out renewal.

(b) Urgency of work: this also affects decisions on renewal in that investors consider whether delayed work in the short run will require more expensive work at a later stage. This usually takes into account safety of building users and possible damage to structure and finishes used in the building (Chanter & Swallow, 2007).

(c) Interference with activities carried out in the building

Seeley (2005) on the other hand according to Afranie and Osei-Tutu (1999), summarizes the principal criteria which could influence the decision to carry out renewal briefly as, cost, age and condition of property, availability of adequate resources, urgency, future use and sociological considerations.

2.4.7 Physical and Ecological Factors

Carley (1996) classified the factors influencing decision to undertake building renewal as physical and ecological factors. Carley (1996) asserts that the need for building renewal stems from the buildings failure to meet its functional performance due to normal wear and tear may be due to physical decay and deterioration of buildings as a result of weathering and even normal use, which are resulting in the need for an abnormal amount of repair and renewal, can be avoided by the exercise of greater care in detailed design at critical points of the structure and a better understanding of the nature and behaviour of materials.

According to (Lee, 1987), the important physical and ecological factors, which contribute to the deterioration of a building necessitating renewal are moisture, natural weathering, corrosion and chemical action, **s**tructural and thermal movement and user wear and tear. Weather condition is often responsible for chemical action on building materials while atmospheric pollution associated with rain, causes rapid deterioration of some building materials thus necessitating retrofitting (Patton, 1990).

2.4.8 Social and Environmental Considerations

Most agencies carrying out maintenance work creating disturbance such as noise, dust, smells, temporary interruption of services etcetera (Chanter & Swallow, 2007). The maintenance work should thus observe these social responsibilities. Little or no harm to the environment is important to consideration. A pleasant environment that is clean and safe should be created by regular and planned maintenance of the building components and structures. Other reasons necessitating building renewal on commercial buildings in towns in Kenya established from open ended questions were; physical and functional and uses of the building (Chanter *et al,*2007). According to Derek (1987), the decision to carry out maintenance work is affected by a number of factors which include:

a) Urgency

Urgency outplays the other factors in decision making in maintenance work. Some tasks may be required urgently otherwise, render components unserviceable thus causing inconvenience (Guha, 2006). Based on how urgent is “urgency”, decisions are made accordingly either immediately within hours or days.

b) Availability of resources

Availability of resources such as finances, time, labour, physical resources is key in determining how maintenance work will be carried out. The physical resources include the materials, components, equipment which is necessary for maintenance. These resources should be incorporated in the maintenance plan (Guha, 2006).

c) Future use

The future use of a building is paramount to consideration in deciding when and how much maintenance to carry out at any given time. For example, if the lease is for a short period and change in occupancy is expected, then the maintenance must be accordingly planned especially if carried out by the tenant. Seeley (2005) on the other hand summarizes the principal criteria which could influence the decision to carry out maintenance briefly as, cost, age and condition of property, availability of adequate resources, urgency, future use and sociological considerations

2.5 Measures to Address the Building Renewal Problem in Towns

According to Oyewande (1992) there is the need for property owners to embrace renewal practices as a high priority rather than ad-hoc renewal. To gain optimum benefits from renewal, building managers should incorporate renewal tasks into a work-order system and keep systematic renewal records, either by computer or manually. Managers should evaluate the renewal program to improve it over time.

Patton (1990) contends that managers and Government should oversee periodic inspections of buildings' conditions and create an inventory of buildings' components and equipment. They should plan building inspection, since proper planning of inspection is a sure way to reduce cost of renewal since doing so can provide insight into future renewal needs and avoid unnecessary costs. This will demand that

taskforce from the Ministry of Works and Housing periodically inspects the condition of building components of public buildings.

Gorse and High Field (2009) argues that there should be a state regulation to affect state renewal and renewal of specific building systems. A state building and renewal code should govern building construction and remodelling. It should also affect accessibility, electricity, energy, fire protection, plumbing and other mechanical components such as elevators. In addition, a National Renewal Policy should be formulated as part of the National Housing Policy to compel people to undertake renewal on the buildings they occupy to avoid the situation where huge sums of taxpayers' money go down the drain through deterioration of public buildings due to lack of renewal.

Sumila, Debabrata and Darby (2010) argues that mangers of commercial buildings should ensure that high quality and durable building materials are used to prolong their life span and minimize the rate of deterioration. Current building designs should also incorporate materials with least renewal problems, for instance tiling of high rise buildings will solve the problem of painting due to the height of the building. Aesthetic value of new buildings should also be taken into consideration to serve as tourist attraction.

This study sought to establish measures to address the building renewal problem in towns with the aim of proposing recommendations that can enhance theory and practice in building construction with regard to building renewal.

2.6 Summary

The reviewed literature shows that building renewal has not been much practiced in developing countries despite the benefits this brings to users and owners. The literature has brought to the fore weak guidelines in building renewal which have left many commercial buildings to pose health risk to occupants. Furthermore, there is limited literature on the status of building renewal on commercial buildings in Developing countries like Kenya. Building renewal clearly comes out as an aspect not given the weight it should deserve. Both building owners and the Kenyan authorities despite investing heavily in construction, little attention Building renewal seems not to get attention it deserves. It is against this background that this study has been conceived to fill this gap.

CHAPTER THREE

METHODOLOGY

3.0 Introduction

In this chapter the researcher presents the research methodology of the study. It describes and justifies the methods and processes that have been used in order to collect data that were used in answering the research questions. The chapter is presented under the following sections namely: research design, location of the study, target population sampling procedure and sample size, instruments and the sources of data, methods of data collection and instruments of data analysis.

3.1Research Design

The research design is the arrangement of conditions for collection and analysis of data in a manner that aims to combine relevance to the research purpose with economy in the procedure (Orodho, 2009). In this study, the researcher adopted across-sectional study research method.

Flyvbjerg (2004) defines across-sectional study as the in-depth study of one or a few events or cases in a given time in order to understand the phenomenon being investigated. In reference to the research at hand, the researcher studied the commercial buildings across selected towns in Kenya. The study gave an in-depth understanding of the building renewal policies and practices and how it impacts on the lifespan of these buildings and the life of the occupants as well as their aesthetic value. Both quantitative and qualitative approaches were employed in the study.

Kothari (2004) defines quantitative research as that which involves generation of data in quantitative form, which is then subjected to rigorous quantitative analysis in a

formal and rigid way. Data collecting techniques included questionnaires, interviews and actual physical observation of the status of the buildings. The open ended questions formed the qualitative aspect of this study.

3.2Area of Study

The study was carried out in Meru, Nakuru, Eldoret, Nyeri and Embu towns in Kenya. These towns have been selected because of their tremendous growth over the past year which makes them to be among the fastest growing agricultural, commercial and industrial towns in Kenya with an average growth rate of 7-8% per annum (Okalebo, 2009). Thus the study location provided the appropriate ground for collecting the information required for this study.

3.3 Target Population

This study targeted a total of 15 500 commercial buildings in the following selected towns: Meru, Nakuru, Eldoret, Nyeri and Embu. The accessible population was 85,000 subjects comprising 15,500 building owners, 60 000 occupants and 10,000 building experts.

3.4 Sampling Procedure and Sample Size

Orodho (2009) defines a sample as part of large population, which is supposed to be a representation of the larger population. Sampling is a process of selecting a number of individuals or objects from a population such that the selected group contains representatives of characteristics found in the entire group. A number of scholars have suggested various ways of arriving at a representative sample size. It is generally agreed that the larger the sample, the smaller the error (Kosomo, 2006). Mugenda and Mugenda (2004) articulate that the sample size must be large enough to represent salient characteristics of the target population. Morgan (2009) provides a table of

sample size determination. The sample size for 85500 subjects according to Morgan's (2009) table is 382 respondents.

Simple random sampling was used to sample 69 commercial buildings in Meru, Nakuru, Eldoret, Nyeri and Embu towns. Simple random sampling was used to select the five towns from a cluster of 47 selected towns in every county in Kenya for the study. These towns have been selected because of their tremendous growth over the past years which make them to be among the fastest growing agricultural, commercial and industrial towns in Kenya with an average growth rate of 7-8% per annum (Okalebo, 2009). The building studied included 14 in Meru, 12 in Nakuru, 12 in Eldoret, 14 in Embu and 12 in Nyeri. Simple random sampling was used to select owners of the selected buildings.

Convenient sampling was used to select building occupants while building experts were selected using snowball sampling technique. The experts were 9 in Meru, 7 in Nakuru, 7 in Eldoret, 7 in Embu, and 7 in Nyeri.The study respondents were 303 comprising 56 owners of buildings, 210 occupants of buildings and 37 building experts.

Table 3.1: The Distribution of the Sample

Respondents	Target population		Calculation of sample size	Sample size
	buildings	respondents		
Building owners	15500	15,500	$\frac{15500}{85500} x 382$	69 buildings and owners
Building occupants	-	60,000	$\frac{60000}{85500} x 382$	268
Building experts	-	10,000	$\frac{10000}{85500} x 382$	45
Total	15500	85,500		382

Source: Ministry of Housing and Urban Development, 2014

The sample of buildings in the selected towns is shown in Table 3.2.

Table 3.2: Sampled Buildings

Town	Population	Sample
Meru	3000	13
Nakuru	3500	16
Eldoret	4000	18
Embu	2200	10
Nyeri	2800	12
Total	**15,500**	**69**

Source: Municipal Council Records for the Selected Towns

3.5.0 Research Instruments

The required information was collected using questionnaires, interview guide and observation checklist.

3.5.1 Questionnaire for Occupants

A questionnaire is a structured set of written questions which are generally answered in the absence of or, at least, not under the direct scrutiny of the person who is collecting the information (Ellington, 1996).The questionnaire for occupants (Appendix A) was organized into five sections. Section A contained questions designed to seek the occupant's bio data. Section B questions sought to establish the condition of buildings, section C sought to determine the causes of building non-renewal, and Section D tried to find out if building renewal policy exists in Kenya while Section E sought to determine measures for the adoption of building renewal. Kiess and Bloomquist (1985) points that questionnaires offer considerable advantage in administration; presents an even stimulus potentiality to large numbers of people simultaneously and provides the investigation with an easy accumulation of data. Gay (1992) maintains that questionnaires give respondents freedom to express their views or opinion and also to make suggestions.

3.5.2InterviewGuide for the Building Owners

The interview guide for building owners (Appendix B) was organized into sections that had structured questions to address the research questions and objectives. Personal interviews were conducted and lasted 30-40 minutes. These were face-to-face encounters in which the researcher asked respondents questions designed to elicit answers pertinent to the objectives. The researcher used a tape recorder to record open ended interviews and then later listened to the recorded interviews to analyze and summarize them.

3.5.3 Observation Checklist

This instrument (Appendix C) was used by the researcher in collecting data on state and condition of buildings, functionality and satisfaction of customers. This was done through field observation.

3.6.0 Pilot Study

Teijlingen and Hundley (2001) confirm that conducting a pilot study gives the researcher advance warning about where the main research project could fail, where the research protocols may not be followed, or whether proposed methods or instruments are appropriate or too complicated. The instruments were field tested by the researcher to assess the relevance of the questions, the understanding of questions by respondents, identify any ambiguities, as well as the general availability of the respondents and the various categories of information needed. Galloway (1997) says that it is difficult to give the exact number for the pilot group, but recommend that researchers pilot 1-5% of the final sample. The research questionnaires and interview guide were piloted with 4 respondents comprising two (2) occupants, one (1) building owner and one (1) building expert in Chuka town located in Meru South Sub-County in Tharaka-Nithi County. The pilot respondents were selected using simple random sampling. The questionnaires were refined by removing questions found to provide unwanted or irrelevant information.

3.6.1 Validity of the Research Instruments

Validity is the degree to which a test actually measures variables it claims to measure (Kathuri & Pals, 1993). Mugenda and Mugenda (2004) support this view when they argue that validity is the degree to which results obtained from the analysis of the data actually represent the phenomenon under study. Relevant and logic items should invoke responses and infer a representative measurement. According to Borg and Gall

(1986) validity is the degree to which a test measures what it purports to measure. To ensure validity of the research instruments, experts in the Department of Technology Education at University of Eldoret evaluated construct validity and face validity of the research instruments and advised accordingly.

3.6.2 Reliability of the Research Instruments

A pilot study was carried out to test the reliability of the research instruments. Reliability is the measure of the degree to which the research instrument yields consistent results or data after repeated trials (Mugenda and Mugenda, 2005). The researcher visited the pilot respondents to book appointments and administered the pilot questionnaires and interviews. Cronbach' alpha formula of reliability testing was employed to test the reliability of the questionnaires. These were divided into two equivalent halves and then a correlation coefficient for the two halves computed. According to Fraenkel and Wallen (2000) a reliability coefficient of 0.7 and above is acceptable for surveys. However, if a reliability coefficient below 0.7 is obtained, the instruments were to be reconstructed and re-piloted. A reliability coefficient of 0.72 with questionnaires for occupants was obtained after conducting Cronbach alpha test. Thus this instrument was deemed reliable for data collection.

3.7 Data Collection

The researcher obtained an introductory letter from University of Eldoret and a research permit from the National Commission for Science, Technology and Innovation. The researcher visited the respondents to introduce and explain the purpose of the study. The researcher booked appointments with the respondents. The researcher personally administered the instruments to all respondents. Each participant personally filled their questionnaire. To minimize attrition (threat to

internal validity) the researcher explained the importance of the study to the respondents before they responded to the items contained in the research instruments.

3.8 Data Analysis

Kerlinger (1986) defines data analysis as categorizing, manipulating and summarizing of data in order to obtain answers to research questions. Questionnaires were checked to discard those with incomplete items and multiple entries. The data collected using questionnaires was cleaned by removing those with omission and errors, coded and entered in the computer for analysis using the Statistical Package for the Social Sciences (SPSS) version 21 for windows. Martin and Acuna (2002) notes that SPSS is able to handle large amount of data, and given its wide spectrum of statistical procedures purposefully designed for social sciences, it is also quite efficient. This research yielded data that required both qualitative and quantitative analysis. Quantitative analysis entails analyzing numbers about a situation by choosing specific aspects of that situation. Descriptive statistics such as frequencies and percentages were used to analyze the quantitative data obtained. Qualitative data gotten from the items in the questionnaire and interviews were organized into themes and reported thematically in line with the objectives of the study. The results of data analysis were presented in frequency tables and percentages.

3.9 Ethical Considerations

Ethical issues in educational research ensure that the rights and welfare of persons and communities that are subjects of the study are protected and guarded (Nachmias, 1992). The purpose of the research was explained to the participants, after which their consent was sought before they are engaged in the study. The interviewees were clearly informed about the reasons for undertaking the research and the aims of the study in order to obtain full cooperation of the participants. Those involved in the study were assured of the confidentiality of the information they gave.

CHAPTER FOUR

DATA ANALYSIS, RESEARCH FINDINGS AND INTERPRETATION OF THE FINDINGS

4.0 Introduction

This chapter presents analysis, interpretations, presentations and discussions of the research findings from the survey questionnaires, observation schedules and interviews of the current study. The first section gives highlights on response rate and background information of the respondents. The second section is organized according to the research objectives.

4.1 Demographic Characteristics of Respondents

In this section demographic data is the biographic and background information of the respondents, which is presented and analysed in order to show their distribution. In this study the demographic characteristics of the respondents include response rate, gender, age, duration of stay in the building and academic qualifications. This information is important to the study because it helps one to understand some issues that may be important in the analysis. The data is presented in tables, figures and text form.

4.1.1 Response rate

For any samples, according to Mugenda (2003) 100% response rate is unlikely and the sample needs to be larger to ensure sufficient responses for the required margin of error. Mugenda insists that there is a need to obtain as high a response rate as possible to ensure that the sample is representative. A total of 268 questionnaires were distributed to the building occupants and 69 building owners, 45 building experts

sought for oral interview. According to Mugenda (2008) a return of 70% and above is acceptable. Instrument response rate is shown in Table 4.1.

Table 4.1: Questionnaire response rate for occupants

Respondents	Response		Non Response	
	Frequency	Percent	Frequency	Percent
Building occupants	210	78.0	58	22.0

Table 4.2: Interview response rate for building owners and experts

Respondents	Response		Non Response	
	Frequency	Percent	Frequency	Percent
Building owners	56	81.0	13	19.0
Building experts	37	82.0	8	18.0

Table 4.3: Observation checklist for assessing condition of commercial buildings

Town	Number of commercial buildings targeted	Number of commercial buildings observed
Meru	14	14
Nakuru	13	12
Eldoret	14	12
Embu	14	14
Nyeri	14	12
Total	69	64

Instrument return rate is the proportion of the respondents available for interview or questionnaires returned after they were issued to the respondents. A return rate of 78% of the questionnaires for building occupants and was achieved and considered acceptable for this study. Out of the 69 building owners and 45 building experts

sampled for the interviews, only56 building owners and 37 building experts were available and interviewed accounting for a response rate of 81% and 82% respectively. This accounts for an average 81.5% response rate well above the 70 percent threshold recommended by Mugenda and Mugenda (2008). The percentage is considered a good representation of responses required by this study.

4.1.2 Gender of the Respondents

The respondents in the study were asked to indicate their gender. The findings are presented in Table 4.4.

Table 4.4: Gender of the respondents

Gender	Building Occupants		Building Owners		Building Experts	
	N	%	N	%	N	%
Male	92	44	29	52	35	95
Female	118	56	27	48	2	5
Total	**210**		**56**		**37**	

Results in Table 4.4 indicate that a significant number of building occupants (56%) were of female gender and (52%) of building owners were of female gender while overwhelming majority (95%) of the building experts were of male gender.

4.1.3 Age of building occupants

Age is technically continuous and ratio variable. A person's age does, after all, have a meaningful zero point (birth) and is continuous if you measure it precisely enough. Therefore, building occupants in the study were asked to indicate their age in categories (age brackets). The reasons for this were based on the fact that people would not always want to reveal their actual age or because they don't remember the actual age. Table 4.5 shows the findings.

Table 4.5: Age of building occupants

Age bracket in years	Number	%
Below 30	21	10
31-40	48	23
41-50	95	45
50 and over	46	22
Total	**210**	**100**

Results shown in Table 4.5 indicate that majority (45%) of the occupants were aged 41 and 50 years followed by 23% aged between 31and 40 while those aged 50 years and above were 22%. Further analysis of age of the building occupants revealed that 10% were below 30 years of age. The results imply that there was diversity in terms of age among the building occupants. Further, the study took interest in the age of occupants to ascertain the age group that is more active in the rental market and its implication on future housing demand. According to Louis & Keith (2005) the construct validity of responses obtained in descriptive research surveys may differ depending on the age groups. How old a person is, often determines his or her knowledge and experience with the focus of the survey.

4.1.4 Duration of stay in the building by the occupants

Occupants of the buildings were asked to indicate the duration they had used the commercial buildings premises. The results obtained are shown in Table 4.6.

Table 4.6: Period Spent in the Buildings by Users

Duration of stay in commercial buildings	Frequency	%
Below 5 years	54	26.0
6-10 years	74	35.0
11-15 years	45	21.0
16-20 years	32	15.0
Above 21 years	5	3.0
Total	**210**	**100.0**

The results show that 26.0%of the occupants had below 5 years stay in the building while majority 35% had stayed for 6-10 years. The results further show that 21% of the occupants had been in the same building for a period between 11and 15 years. The rest 15% and 3% had remained in the same building for between 16 to 20 years and above 21 years respectively. From this, it can be seen that majority of the respondents have been using the property for 11-15 years. The results imply that most of the occupants had witnessed the major developments that had occurred in the buildings.

Fečikova (2004) found that the length of stay of a tenant is influenced by customer satisfaction with the facility. Tenure or length of residency could affect satisfaction with a dwelling unit (Ogu, 2002). According to Varady and Preiser (1998), long-term residents (that is, those who lived at their locations for six years or more) will have stronger social ties to their rental premises. Rental housing today constitutes a significant proportion of the housing stock in commercial towns in Kenya.

When asked to give the purpose for renting space in the commercial buildings, the responses shown in Table 4.7 were obtained.

Table 4.7: Purpose for Which Rental Space Was Needed

Purpose for renting space	Frequency	Percentage
Government Ministries Offices	13	6.0
Private Practitioners' services	44	21.0
Consumer service Shop	75	36.0
Banking Services	7	3.0
Restaurant	50	24.0
Others	21	10.0
Total	**210**	**100.0**

The results show that building occupants rented the buildings for various purposes. For example, 6.0% indicated that they rented the premises to put up offices for Government ministries, 21.0% rented the building they were in to offer consumer services, 36% operated shops, 3% used the rented premises to offer banking services, 24% operated restaurants while rest of the building occupants 10% did other businesses. From this, it can be seen that majority of the respondents had rented the buildings to operate shops. Amobi (2006) identified the following reasons for renting commercial buildings: to satisfy social and economic need and to conduct private and public business.

4.1.5 Owners Duration of investment in Commercial Building

The study investigated the duration building owners had invested in commercial housing sector. Table 4.8 shows the findings.

Table 4.8: Duration of Investment in Housing Sector

Duration of investment in housing sector in years	Frequency	Percentage
Less than 3	3	5.0
4-10	12	22.0
11-20	27	48.0
21-30	10	18.0
31-40	3	5.0
Over 40	1	2.0
Total	**56**	**100.0**

From the landlords who provided information on the duration they had invested in commercial buildings, it was established that the majority 48% had between 11 and 20 years of investing in building rental houses and the least 5% 31-40 years. This implies that variations existed in the number of years that commercial buildings have been put up in towns by different owners. There are landlords who have been in the industry for as less than three years who were 5% and over 40 years 2%.

4.1.6 Area of Specialization of Building Experts

The building experts were asked to indicate their area of specialization in the building construction industry and the responses obtained are shown in Figure 4.3.

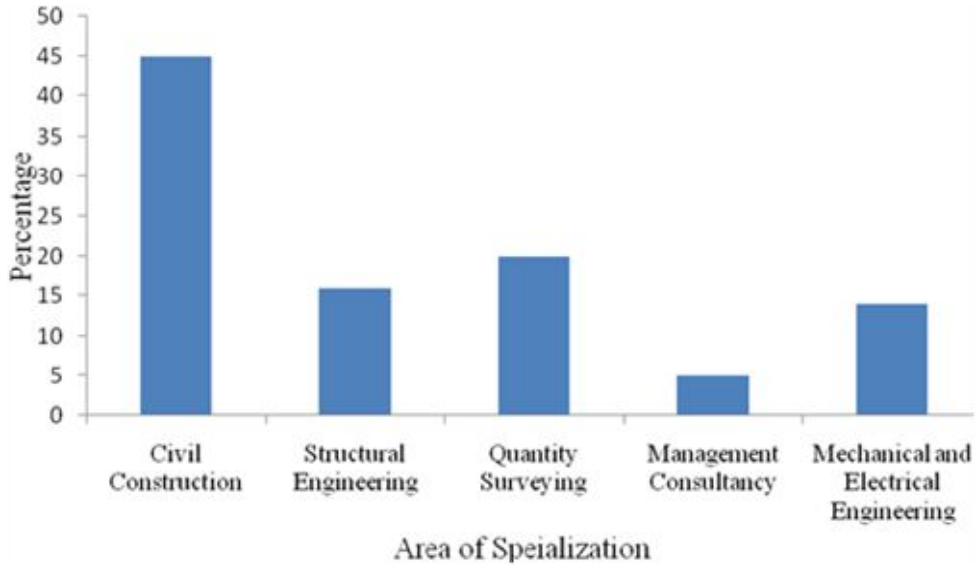

Figure 4.3: Specialization areas of Building Experts in Construction Industry

The results show that majority (45%) of the building experts were specialized in civil construction, 20% in quantity surveying, 16% in structural engineering, 14% in mechanical and electrical engineering and 5% in management consultancy. These are building related fields and therefore the experts were in good position to provide the required information.

4.2 Condition of Buildings

Objective one sought to assess the current condition of commercial buildings in some selected towns in Kenya. Building occupants were asked to rate the current condition of commercial buildings. The responses obtained are shown in Figure 4.4.

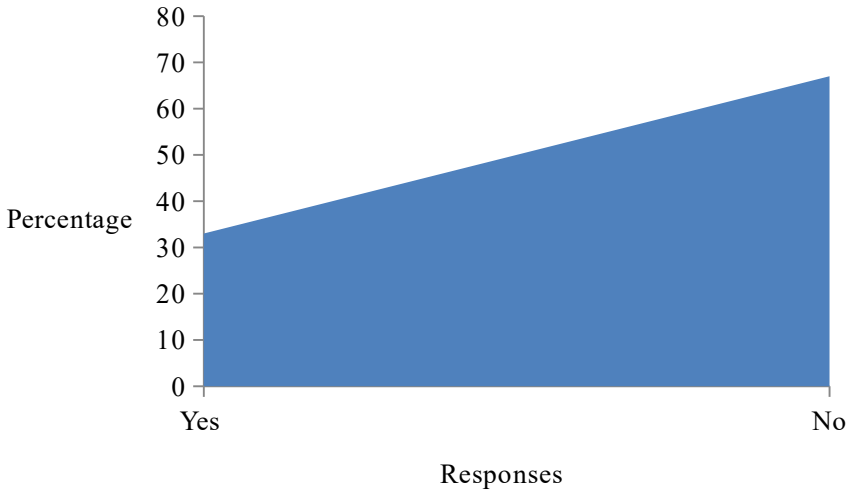

Figure 4.4: Occupants' Responses on Condition of Commercial Buildings

Figure 4.4, shows that majority 67% of the building occupants indicated that they did not know the condition of the building they rented before occupying as opposed to 33% who reported that they were aware of building condition. This view is consistent with Hansen (1992) who underscored by observations that the condition of commercial buildings in America varies widely.

During the investigation period, the researcher used a checklist to help assess the condition of the various building elements of the different selected buildings. The assessed elements include the following; roofs, walls, floors, fixtures and fittings, foundation and building services. Further, occupants were asked to report on the general condition of building they had rented. Responses were classified into excellent, good, fair, poor and very poor.

The responses provided by 210 occupants, 56 building owners and 37 building experts giving a total of 303 respondents were as shown in Table 4.9.

Table 4.9: Condition Rating of the Building Elements

Building elements	Responses (n = 303)					
	Excellent	Good	Fair	Poor	Very Poor	Mean
Roof	120 (40%)	89 (29%)	94 (31%)	0	0	4.08
Walls	87 (29%)	92 (30%)	97 (32%)	27 (9%)	0	3.78
Painting	45 (15%)	83 (27%)	124 (41%)	46 (15%)	5 (2%)	3.39
Windows	156 (51%)	101 (33%)	46 (15%)	0	0	4.36
Doors	160 (53%)	123 (41%)	20 (6%)	0	0	4.46
Electrical installations	67 (22%)	74 (24%)	112 (37%)	50 (17%)	0	3.52
Plumbing	45 (15%)	160 (53%)	29 (10%)	51 (17%)	18 (6%)	3.54
Drainage	48 (16%)	130 (43%)	40 (13%)	47 (16%)	38 (12%)	3.34
Overall rating						**3.66**

Roofs in the last upper floors of storey buildings were rated as good (mean rating4.08). According to the results of the survey, the commercial buildings surveyed were rated as being good as indicated by mean rating of 3.66. In all the buildings surveyed, the floors to all the levels were made of reinforced concrete finished with various finishes such as; ceramic tiles, parquet, smooth cement screeds, terrazzo, wooden blocks or panel boards. Various defects noted on floors included; worn out tiles, cracks on floors, dampness to ground floors and discolouration on floor finishes.

The survey results also show that the respondents rated the condition of walls as good (mean 3.78). The results of observation also show that the main walls to the external and internal areas of the building were made of reinforced columns and beams filled with either concrete blocks or natural stones and finished with plastering and colour washed.

The researcher also observed that the internal room partitions were of timber panels or flashboard panels. Finishes to the external walls in some of the buildings included; tiles, brick or concrete facing, glazing, plastering, painting. Defects that were noted on the main walls included; cracks, surface discolouration, staining and dampness especially to the basement walls. Defects to the internal walls included; ripping off, broken down wooden members.

The survey indicates that painting on buildings was rated into fair (mean 3.39). It was noted through observation that some of the paintings in some buildings appeared faded or worn out. This could probably be the reason why respondents rated this element as being fair. The study evaluated the building fixtures and fittings which included; windows, doors, electric fixtures, water piping and other installations. Most windows had a mean rating of 4.36 and doors 4.46. This translated to overall perception of the condition of windows and doors as good.

From the observation checklist it was noted that most doors to the internal rooms were made of either glazed panels or wooden panels or match boards or flush boards. Windows were mostly glazed casements. Defects noted on these fixtures included; broken glass windows and faulty hinges. Electrical installations were rated as good (mean 3.52). Generally, most commercial buildings surveyed had their electrical fittings and fixtures well maintained and in working condition.

The study further evaluated drainage systems and plumbing works. The results showed that the respondents rated plumbing works as good (mean 3.54) and drainage as fair (mean 3.34). During observation using check list it was noted that most of the drainage problems were associated with leaking water pipes and blocked drainage systems.

When interrogated on how the state of building affected their stay in the building, the occupants provided the responses shown in Table 4.10.

Table 4.10: Effect of Building Condition on Occupants' Stay

Response	Frequency	Percentage
Interruptions to daily use of facilities	44	21.0
Poor state of building cuts short occupants stay	25	12.0
Impossible to effect emerging changes	36	17.0
Reduces aesthetic look of the house	47	22.0
Poses health risks	58	28.0
Total	**210**	**100.0**

Majority (28.0%) of the building occupants reported that the current state of their building poses health risks while 22% cited that the state reduces the aesthetic look of the building. 21% of the occupants were interrupted in their daily usage of facilities while failure to effect upcoming changes in the building and reducing time of occupancy was cited by 17% and 12% respectively.

Building occupants were further asked to provide reasons they thought were responsible for the present state of the building they had rented.

Table 4.11: Occupants Reasons for the Present State of the Commercial Buildings

Responses	Frequency	Percentage
High cost of renewal	27	13.0
Unwillingness of the owners to do renewal	65	31.0
No time allocated to inspect and assess renewal needs	43	20.0
Poor workmanship during construction stage	21	10.0
Lack of renewal policy which can be enhanced by the government	54	26.0
Total	**210**	**100.0**

The study established that majority 31.0% of the commercial building occupants reported that the buildings were in the state they were in because of the unwillingness of the owners to do renewal. Lack of renewal policy which could be enforced by the government in was also cited by 26.0%. 20% of the occupants noted that no time was allocated to inspect and assess renewal needs. High cost of renewal and poor workmanship during construction was also cited by 13% and 10% respectively of the occupants as being one of the reasons for the present state of the commercial buildings.

The researcher sought to know from the occupants how long it took building owners to respond to their requests for building renewal. The results obtained are shown in Table 4.12.

Table 4.12: Time taken for Building Owners to Respond to Tenants Request for Building Renewal

Time taken	Frequency	%
Less than a month	40	19.0
1-3 months	90	43.0
6-12 months	68	32.0
More than 12 months	12	6.0
Total	**210**	**100.0**

The results that majority (43%) of the building occupants reported that it took 1-3 months for building owners to respond to their renewal requests of rented premises. Those who reported that building owner's response was between 6 and 12 months were32%, less than a month were 19% and more than 12 months 6%. This implies that the response rate to tenants request for renewal was not uniform.

This study found that the condition of the building elements surveyed that included roof, floor, walls, painting, windows, doors, electrical installations, plumbing and drainage systems were rated as being good. This information was useful in projecting the need for building renewal of commercial buildings as those that were in a poor condition or showed signs of severe deterioration would indicate need for repairs or corrective maintenance. Buildings in poor conditions in selected towns in Kenya have been a threat to human life.

4.3 Renewal Policy

The second objective sought to determine if there were any gaps in policy as far as building renewal of commercial buildings in Kenya was concerned. Commercial building occupants, owners and building experts were asked to indicate whether they were aware of any Government policy on building renewal. Table 4.13 shows responses obtained.

Table 4.13: Responses to Awareness of Existence of Renewal Policy in Kenya

Responses	Yes (%)	No (%)	Not sure (%)
Building Occupants (n = 210)	0	2	98
Building Owners (n = 56)	0	80	20
Building Experts (n = 37)	0	82	17

From the study, 98% building occupants were not sure about the existence of a building renewal policy in Kenya. The results further show that 80% building owners reported that there was no such policy while 20% said that they were not sure whether a building renewal policy existed in Kenya. Of the 37 building experts who took part in the study, 82% of them indicated that Kenya did not have a building renewal policy in place while 17% were not sure.

The results lead to the conclusion that there is no building renewal policy in Kenya. Consequently, there may be need to create such a policy that would hitherto provide guidelines for building renewal and consequences for non- compliance.

4.4 Factors Influencing Decision to Undertake Building Renewal

The third study objective sought to determine factors influencing decision to undertake building renewal of commercial buildings in selected towns in Kenya.

Building occupants, owners and experts were asked to give reasons that would necessitate building renewal of commercial buildings in towns. Responses obtained are shown in Table 4.12.Establishment of the most significant factors was done by conducting factor analysis using averages of responses on each factor measured on a five-point Likert scale (strongly agree, scored 5; agree, scored 4; undecided, scored 3;

disagree, scored 2; and strongly disagree, scored 1). The primary purpose of factor analysis was data reduction and summarization.

Table 4.14: Factors Necessitating Building Renewal (n =303)

	Responses (n = 303)					
Factors necessitating building renewal	SA	A	UD	D	SD	Mean
Age of the building	65 (21%)	109 (36%)	40 (13%)	40 (13%)	49 (16%)	3.33
Lack of Renewal culture	0	0	57 (19%)	207 (68%)	39 (13%)	2.06
Demand from users	204 (67%)	97 (32%)	0	2 (1%)	0	4.66
Social and environmental considerations	198 (65%)	67 (22%)	30 (10%)	8 (3%)	0	4.50
User generated problems	198 (65%)	67(4)	30 (10%)	8 (3%)	0	4.50
Poor building design	12 (4%)	23 (8%)	34 (11%)	127 (42%)	107 (35%)	2.03
Change of technology	67 (22%)	89 (29%)	13 (4%)	78 (26%)	56 (18%)	3.10
Physical and ecological factors	66 (22%)	86 (28%)	46 (15%)	51 (17%)	54 (18%)	3.43
Overall Mean						**3.45**

From the survey statistics shown in Table 4.14, it can be seen that the most significant factors influencing the decision to undertake building renewal were; Age of the building (mean 3.33), demand from users (mean 4.66), user generated problems (mean 4.50), change of technology (mean 3.10) and physical and ecological factors (mean 3.43).

From the findings of the study it was concluded that factors influencing the decision to undertake building renewal of commercial buildings in Kenya included age of the building, demand from users, social and environmental considerations, user generated problems, change of technology and physical and ecological factors.

4.5 Measures for the Adoption of Policy on Renewal of Buildings

The fourth objective sought to find out measures to needed to be put in place for the adoption of policy on renewal of buildings in Kenya. Establishment of the most significant factors was done by conducting factor analysis using averages of responses on each factor measured on a five-point Likert scale (strongly agree, scored 5; agree, scored 4; undecided, scored 3; disagree, scored 2; and strongly disagree, scored 1)

Table 4.15: Measures Needed to Be Put in Place for the Adoption of Policy on Renewal of Buildings

	Responses (n=303)					
Measures	SA	A	UD	D	SD	Mean
Periodic inspection of buildings	129 (42%)	94 (31%)	32 (11%)	27 (9%)	21 (7%)	3.93
Government regulation of building renewal	118 (39%)	103 (34%)	12 (4%)	30 (10%)	40 (13%)	3.76
Occupants reporting to Government regulator	12 (4%)	17 (6%)	59 (19%)	115 (38%)	100 (33%)	2.10
Occupants requesting for renewal from owners	178 (59%)	56 (18%)	10 (3%)	34 (11%)	25 (8%)	4.08
Building owners obliged to carry out renewal	108 (36%)	113 (37%)	15 (5%)	29 (10%)	38 (12%)	3.74
Overall Mean						**3.52**

From the results shown in Table 4.15, it is evident that most of the respondents suggested a number of measures that can be adopted to address the building renewal problems in selected towns in Kenya among which included; periodic inspection of buildings (mean 3.93), Government regulation of building renewal (mean 3.76), Occupants requesting for renewal from building owners (4.08) and building owners to carry out renewal on their own volition (3.74).

The results of this study therefore imply that periodic inspection of buildings, proper regulation of building renewal by the government and occupants requesting for renewal from building owners as well as building owners fulfilling their obligation to carry out renewal of commercial buildings renewal would be appropriate measures.

CHAPTER FIVE

CONCLUSSIONS AND RECOMMEDATIONS

5.0 Introduction

This chapter presents the summary of the main findings, conclusions and recommendations as well as suggestions for further studies.

5.1 Summary of the Findings from the Study

The purpose of this study was to investigate the extent of building renewal in commercial buildings in selected towns in Kenya. This section summarizes the main findings of the study based on the research objectives.

5.1.1Condition of Buildings

The study sought to evaluate the physical state of building elements and services and the building renewal needs of the facility. Condition assessment generally comprised physical inspection of a building to assess the actual condition of the building and its individual elements and services (such as roof, floor, walls, painting, windows, doors, electrical installations, plumbing and drainage systems). The process included receiving reports of occupants' opinions from questionnaires and responses from building experts about the present condition of the buildings and direct visual inspection of the facility. The findings reported are based on visual evidence available during a diligent inspection of all reasonably accessible areas in the buildings by the researcher. The responses were measured on a five point Likert scale of:

Excellent: Component or system is in "as new" condition, requiring no rehabilitation and should perform in accordance with expected performance.

Good: Component or system is sound and performing its function, although it may show signs of normal wear and tear. Some minor rehabilitation work may be required. *Fair:* Component or system falls into one or more of the following categories: a) Evidence of previous repairs not in compliance with commonly accepted practice, b) Workmanship not in compliance with commonly accepted standards, c) Component or system is obsolete, d) Component or system approaching end of expected performance. Repair or replacement is required to prevent further deterioration or to prolong expected life.

Poor: Component or system has either failed or cannot be relied upon to continue performing its original function as a result of having exceeded its expected performance, excessive deferred maintenance, or state of disrepair. Present condition could contribute to or cause the deterioration of other adjoining elements or systems. Repair or replacement is required.

Very poor: A component or system is completely not enough for what is required, sufficient, suitable, and/or did not conforms to standard construction practices. All ratings were determined by comparison to other buildings of similar age and construction type.

This study found that the condition of the building elements surveyed that included roof, floor, walls, painting, windows, doors, electrical installations, plumbing and drainage systems were rated as being good. The information regarding the condition of building elements was important in the study as was useful in projecting the need for building renewal as buildings whose elements would be classified under poor condition or showing signs of severe deterioration would indicate that these required repairs and corrective maintenance.

The information regarding the condition of building elements was important in the study as was useful in projecting the need for building renewal as buildings whose elements would be classified under poor condition or showing signs of severe deterioration would indicate that these required repairs and corrective maintenance.

Turner (2014) contends that building systems failures causes interruptions to daily use of facilities. Turner (2014) also suggested that the tenants' desires and demands quality infrastructure; they want well designed properties with great finishing and in safe and secure locations and they are willing and have the ability to pay premium prices for their choices.

According to Nzomo (2011) investors in commercial properties have an obligation to ensure that building elements are sufficiently and effectively managed. This is because commercial properties are usually capital intensive and investors usually expect high returns to compensate for high acquisition or construction costs and have a surplus income to enjoy. Maintenance brings about improved utilization of buildings ensuring the highest satisfaction. It must be emphasized that building renewal work is necessary if the value and amenity of the building stock is to be maintained to meet customer satisfaction.

5.1.2 Renewal Policy

The study sought to determine if there was a policy as far as building renewal of commercial buildings in Kenya is concerned. The study established that 69% of the respondents revealed that they were not sure whether a building renewal policy existed in Kenya while 31% indicated the policy was in place.

Interview with building experts and owners revealed that the building code in force in Kenya details the requirements for the erection of buildings in Kenya and silent on

building renewal and focuses more on safety and health standards of buildings. These requirements are contained in the Local Government (Adoptive By-Laws) Building Order 1968 (Generally referred to as Grade I By-Laws) and the Local Government (Adoptive By-Laws) (Grade II) orders, 1968. These two orders are published by the Republic of Kenya in one volume under the title of Building Code and are tantamount to a National Building Code, although it should be noted that they are adoptive and not mandatory and any municipal council may adopt them. To be credible, building codes and building standards should be based on adequate reliable data and envisage technological advancements as well as customer preferences. At the same time, knowledge gaps should not be allowed to unduly impede the development of useful codes and standards. They should be developed as integral parts of general life provisions.

When probed to state their opinions regarding whether the current building code and By-laws in Kenya have been an impediment to delivery of housing and to the entire building and construction sector, the building owners and experts indicated that the maintenance policy currently in place was not enforced but only acted as a tool to guide on maintenance activities. Therefore, the absence of a clear building policy does not in any way hamper progress and development of housing development.

When asked to give their views on how a building renewal policy would be useful, majority 80% of the interviewed building owners and expert's respondents reported that would be an integrated policy framework developed to guide the town's growth and development to ensure customer satisfaction. This would provide a common integrated approach for coordinated sectoral and special development for improved and sustainable housing development in commercial centres in Kenya.

When the building owners and experts were interrogated on whether if a building renewal policy was put in place it would be followed to the letter, it was evident from the interview responses that voluntary compliance may not to work possibly because of the extra cost involved in renewal. Consequently, there may be need to create an enforceable Act providing consequences for violation of which would be punishable to ensure compliance.

5.1.3 Factors Influencing Decision to Undertake Building Renewal

The study sought to determine the factors influencing decision to undertake building renewal in selected towns in Kenya. The study found that the main factors necessitating building renewal were; Age of the building, demand from users, social and environmental considerations and technological changes.

Age of the Building

During interview with building owners, it was found that most commercial buildings had 30 years and above. Houses deteriorate with age, since the lifespan of most buildings are constructed to last at least sixty (60) years (Murigu, 1989), but may exceed this period if the building is well maintained over time. Above 60 years most houses exhibit serious renewal problems which will demand at least major renovation, rehabilitation, replacement or repair. The present state of commercial buildings in Kenya has been attributed to the age of the buildings since they are over 30 years. Building components have expected life, at the end of which, demolition or replacement would be imperative (Mahmoud, 1994). When building construction is completed; owners must be using their buildings and its components in proper way.

Demand from Users

Demand from users was a significant factor identified as one of the factors compelling owners to do building renewal. This is in tandem with the findings by Gorse and Highfield (2009). The functional factors relating to the fit between the building and the user's activities informs the demand for building renewal. In most cases tenants demand re-constructions on existing buildings to suit their ever changing goals and the operations. Generally, the higher the number of people in a house, the more there is pressure on the use of facilities which are in common use such as water, bathrooms, toilet and kitchen facilities.

Social and Environmental Considerations

Social and environmental considerations such as air, water, soil, ecosystem, flora, and fauna, emerged as one of the factors necessitating building renewal. The authors of the book titled "The Environmentally Responsible Construction and Renovation Handbook" published in Canada (ibis) confirm that social and environmental considerations are key when constructing buildings.

Environmental factors are taken into consideration during all project phases involving building construction. Most building experts carrying out renewal works take into consideration emerging issues such as noise from the neighbourhood, dust, smells, temporary interruption of services among others. The renewal works thus observe these social and environment considerations. A pleasant environment that is clean and safe also informs decision to make adjustments to existing building components and structures.

Carley (2006) classified the factors influencing decision to undertake building renewal as physical and ecological factors. Carley (2006) asserts that the need for

building renewal stems from the buildings failure to meet its functional performance due to normal wear and tear may be due to physical decay and deterioration of buildings as a result of weathering and even normal use, which are resulting in the need for an abnormal amount of repair and renewal, can be avoided by the exercise of greater care in detailed design at critical points of the structure and a better understanding of the nature and behaviour of materials.

Technological Changes

Technology is changing the nature and shape of the markets served by the construction sector, just as it is changing specific activities in the construction process. One of the most obvious of these changes is the addition of new markets because of technological progress in general.

Technology is also continuing to change the way we create and modify building codes. In the era before robotics and automation, code-setting required attention to a considerable number of safety factors based on the uncertainties allowed for in many design calculations. Despite the traditional constraints that retard the changing of codes, it is likely that various automated construction technologies will reduce physical quantity requirements and costs considerably, simply by reducing the overprotective limits in some of today's codes.

Stanford University researchers discovered that the impact of technology on construction of buildings is not as strong or consistent compared to impacts on say, manufacturing, for example. In manufacturing, the implementation of a particular technology within a process usually carries through and all products after that are produced using that same technology, or at least until improvements are made.

Kurdinger (2014) argues that when implemented wisely, new technologies and innovations can and will meaningfully improve the construction industry by savings on construction time, increased cost efficiency, less energy and material wastage, ensure safety of construction and decreased pollution (less noise and dust) when components are assembled in a controlled environment.

5.2 Conclusions of the Study

From the findings obtained in this study the following conclusions were drawn according to research questions.

Research question 1: What is the current condition of commercial buildings in some selected towns in Kenya?

The study concluded that the current condition of commercial buildings in some selected towns in Kenya was good though more maintenance and renewal was needed to make them excellent to meet the ever changing needs of the customers.

Research question 2: What are the gaps in policy as far as building renewal of commercial buildings in Kenya is concerned?

The study concluded that there was no clear policy on building renewal in Kenya as the existing building code addressed areas of health and safety but silent on building renewal guidelines.

Research question 3: What factors influence the decision to undertake renewal?

From the findings it was concluded that Demand from users, user generated problems, social environmental considerations, age of the building, physical and ecological factors among others were found to be the factors influencing decision to undertake renewal.

Research question 4: What measures are needed to address the building renewal problems in selected towns in Kenya?

Based on the suggestions provided by the respondents, the study made the conclusion that periodic inspection of buildings, proper regulation of building renewal by the government and occupants requesting for renewal from building owners as well as building owners fulfilling their obligation to carry out renewal, the problems facing building renewal in commercial centres in Kenya would be mitigated.

5.3 Recommendations of the Study

The researcher makes the following recommendations based on the study findings:

i) That the current condition of commercial buildings in some selected towns in Kenya needs maintenance and renewal in order for them to meet the ever changing needs of the customers.

ii) That a clear policy on building renewal in Kenya be developed and integrated in the existing building policy framework to guide the town's growth and development to ensure customer satisfaction. This would provide a common integrated approach for coordinated sectoral and special development for improved and sustainable housing development in commercial centres in Kenya.

iii) That to improve the extent to which building renewal is practiced in Kenya, periodic inspection of buildings, proper regulation of building renewal by the Government and occupants requesting for renewal from building owners as well as building owners fulfilling their obligation to carry out renewal, be advocated.

5.4 Areas of Further Study

The researcher suggests that studies should be conducted in the following areas:

1. Similar study to be carried out within the major suburbs in other selected towns like Mombasa, Kisumu, Machakos and others where there is also a high demand for Commercial rental space.
2. The influence of Government policy on renewal of private and public buildings in Kenya.
3. A comparative study on the extent of building renewal policies and practices in Kenya and East Africa Community Countries.

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APPENDICES

APPENDIX I:
QUESTIONNAIRE FOR OCCUPANTS OF COMMERCIALBUILDINGS

The series of questions in this questionnaire are designed to obtain your response on the status of building renewal (modernizing an existing building so as to make it more functional and improve the aesthetic value) of the premise in which you conduct your business. Please, answer the questions that follow by ticking the appropriate option (if provided) or writing unrestrictedly for open-ended questions. Please answer all questions freely but objectively. The information is for academic purposes only and will be treated with the strictest confidentiality.

Thank You

Section A: General information

In this section I am interested in general information about you and your occupancy in this building. Please, answer the questions that follow by ticking the appropriate option (if provided) or writing unrestrictedly for open-ended questions.

1. Kindly state your gender: Male ( ) Female ( )
2. What is your age bracket?

   Below 20 ( ) 20-30 ( ) 31-50 ( ) Above 50 ( )
3. How long have you stayed in this building? ……
4. What is the purpose for which you have rented space in this building?

   ……

Section B: Condition of Building

5. Did you take inventory of the state and facilities in the building before taking occupancy?

Yes [ ] No [ ]

If no, why?

……

6. How do you consider the current state of the buildings in terms of the following elements and facilities?

Building element	Response	Indicators	Tick
Roof	Excellent	Never leaks, not ripped off, not rusty,	
	Good	Rarely leaks, ripped off and rusty	
	Fair	Sometimes leaks, partly ripped off and partly rusty	
	Poor	Leaks most of the times, ripped off and rusty	
	Very Poor	Leaks all times, ripped off an very rusty	
Floor	Excellent	Not cracked, peeled off and not defective	
	Good	Part of the floor slightly cracked, peeled off and defective	
	Fair	Half of the floor cracked, peeled off and defective	
	Poor	Three quarters of the floor cracked, peeled off and defective	
	Very Poor	Absolutely cracked, peeled off and defective	
Walls	Excellent	Not cracked, peeled off and not tilted	
	Good	Part of the walls are either slightly cracked, peeled off or tilted	
	Fair	Half of the walls are either cracked, peeled off or tilted	
	Poor	Three quarters of the walls are either cracked, peeled off or tilted	
	Very Poor	Walls absolutely cracked, peeled off and	

		tilted	
Painting	Excellent	Very well painted	
	Good	Well painted	
	Fair	Fairly painted	
	Poor	Poorly painted	
	Very Poor	Not painted, very poorly painted or faded	
Windows	Excellent	Not broken at all	
	Good	Slightly broken	
	Fair	Half broken	
	Poor	Three quarters broken	
	Very Poor	Completely broken	
Doors	Excellent	Not broken at all	
	Good	Slightly broken	
	Fair	Half broken	
	Poor	Three quarters broken	
	Very Poor	Completely broken	
Electrical installations	Excellent	Not faulty at all	
	Good	Faulty to a very small extent	
	Fair	Faulty to a small extent	
	Poor	Faulty	
	Very Poor	Faulty to a very great extent	
Plumbing	Excellent	Very well fitted	
	Good	Well fitted	
	Fair	Fairly fitted	
	Poor	Poorly fitted	
	Very Poor	Very poorly fitted	
Drainage	Excellent	Excellent drainage	
	Good	Good drainage	
	Fair	Fair drainage	
	Poor	Poor drainage	
	Very Poor	Very poor drainage	

7. How does the current state of this building affect your stay/life/business in the building?

   ……

8. Please indicate, in your opinion, the reasons responsible for the present state of this building.

   ……

9. How long does your landlord to respond to your request(s) to change designs on the building to suit your purpose?

   Less than a month [ ] 1-3 months [ ] 6-12 months [ ] More than 12 months [ ]

   Other please specify ……..

Section C: Renewal Policy

In this section I am interested in finding out if there is a policy in place on building renewal of commercial buildings in Kenya and the extent to which this regulation is practiced. Please, answer the following questions

13. Are you aware of any Government policy on building renewal?

Yes [ ] No [ ] Not Sure [ ]

14. In your opinion, do you think that the current Building code and By-laws in Kenya have been a hindrance to building renewal in the building construction sector?

15. Do you think that if a building renewal policy is in place, it would be adhered to?

    Yes [ ] No [ ]

Section D: Factors Influencing Decision to Undertake Building Renewal

In this section I am interested in knowing the reasons that necessitate building renewal of commercial buildings in towns. A number of these factors are listed and you are required to put a tick (√) in the correct box after each statement to show your level of agreement with the factors given. Use the following code:

5-Very great extent (VGE); 4-Great extent (GE); 3- Small extent (SE); 2-Very small extent (VSE); 1- No extent (NE).

Factors necessitating building renewal	VGE	GE	SE	VSE	NE
Age of the building					
Lack of renewal culture					
Inadequate funds and high renewal costs					
demands by users					
Change in technology					
Poor building design					
Availability of physical resources					
Physical and ecological factors					

What other reasons do you think necessitate building renewal on commercial buildings in towns in Kenya?

……

……

……

Section E: Measures needed to be put in Place for the Adoption of Building Renewal Policy

In this section I am interested in knowing the measures that are needed to be put in place for the adoption of building renewal policy to address the building renewal problem in towns in Kenya. A number of these measures are listed and you are required to put a tick (√) in the correct box after each statement to show your level of agreement with the factors given. Use the following code:

Strongly Agree (SA), Agree (A), Undecided (UD), Disagree (D) and Strongly Disagree (SD)

Measures for adoption of building renewal policy	SA	A	UD	D	SD
Periodic inspection of buildings					
Government regulation of building renewal					
Use of renewable materials in constructing a building to make it cost effective in the event of renewal					
Occupants reporting to Government regulator					
Occupants requesting for renewal from owners					
Building owners obliged to carry out renewal					

What other measures can be put in place for the adoption of building renewal policy to address the building renewal problem in towns in Kenya?

……

Thank you

APPENDIX II

INTERVIEW GUIDE FOR OWNERS

Introduction

I would like to inform you that your acceptance to participate in this interview where you will be asked questions related to building renewal (modernizing an existing building so as to make it more functional and improve the aesthetic value) is voluntary. Please respond to the interview questions freely. The information gathered is for academic purposes only and will be treated with confidentiality.

Demographic information

1. Gender: Male ( ) Female ( )

2. How long have you been investing in housing sector

……..

Condition of Building

10. How do you consider the current state of the buildings in terms of the following elements and facilities?

Building element	Response	Indicators	Tick
Roof	Excellent	Never leaks, not ripped off, not rusty,	
	Good	Rarely leaks, ripped off and rusty	
	Fair	Sometimes leaks, partly ripped off and partly rusty	
	Poor	Leaks most of the times, ripped off and rusty	
	Very Poor	Leaks all times, ripped off an very rusty	
Floor	Excellent	Not cracked, peeled off and not defective	
	Good	Part of the floor slightly cracked, peeled off and defective	

	Fair	Half of the floor cracked, peeled off and defective	
	Poor	Three quarters of the floor cracked, peeled off and defective	
	Very Poor	Absolutely cracked, peeled off and defective	
Walls	Excellent	Not cracked, peeled off and not tilted	
	Good	Part of the walls are either slightly cracked, peeled off or tilted	
	Fair	Half of the walls are either cracked, peeled off or tilted	
	Poor	Three quarters of the walls are either cracked, peeled off or tilted	
	Very Poor	Walls absolutely cracked, peeled off and tilted	
Painting	Excellent	Very well painted	
	Good	Well painted	
	Fair	Fairly painted	
	Poor	Poorly painted	
	Very Poor	Not painted, very poorly painted or faded	
Windows	Excellent	Not broken at all	
	Good	Slightly broken	
	Fair	Half broken	
	Poor	Three quarters broken	
	Very Poor	Completely broken	
Doors	Excellent	Not broken at all	
	Good	Slightly broken	
	Fair	Half broken	
	Poor	Three quarters broken	
	Very Poor	Completely broken	
Electrical	Excellent	Not faulty at all	

installations	Good	Faulty to a very small extent	
	Fair	Faulty to a small extent	
	Poor	Faulty	
	Very Poor	Faulty to a very great extent	
Plumbing	Excellent	Very well fitted	
	Good	Well fitted	
	Fair	Fairly fitted	
	Poor	Poorly fitted	
	Very Poor	Very poorly fitted	
Drainage	Excellent	Excellent drainage	
	Good	Good drainage	
	Fair	Fair drainage	
	Poor	Poor drainage	
	Very Poor	Very poor drainage	

How old is /are your commercial buildings?

……

Renewal Policy

1. Is there a Government policy on building renewal for commercial building policy?

Yes [ ] No [ ] Not sure [ ]

2. In your opinion does the current building code and By-laws in Kenya hinder building renewal in the building construction industry?

3. Do you think a building renewal policy would be useful in the Kenyan context?

4. In your opinion do you think that if a building renewal policy was put in place, it would be adhered to?

Factors Influencing Decision to Undertake Building Renewal

1. What factors in your opinion are impeding the effective renewal of Commercial buildings this town?

……

……

Measures needed to be put in Place for the Adoption of Building Renewal Policy

1. Do you think building renewal is a good idea?

   Yes [ ] No [ ] don't know [ ]

2. What measures would you suggest could be put in place for the adoption of building renewal policy in Kenya?

……

……

……

APPENDIX III

INTERVIEW SCHEDULE FOR BUILDING EXPERTS

Introduction

I would like to inform you that your acceptance to participate in this interview where you will be asked questions related to building renewal (modernizing an existing building so as to make it more functional and improve the aesthetic value) is voluntary. Please respond to the interview questions freely but objectively. The information gathered is for academic purposes only and will be treated with confidentiality.

Section A: General Information

1. Gender: Male ( ) Female ( )

2. You work in the field of building technology. Exactly what is your area of specialization?

…….

Section B: Condition of the Building

3. How do you consider the current state of the buildings in terms of the following elements and facilities?

Building element	Response	Indicators	Tick
Roof	Excellent	Never leaks, not ripped off, not rusty,	
	Good	Rarely leaks, ripped off and rusty	
	Fair	Sometimes leaks, partly ripped off and partly rusty	
	Poor	Leaks most of the times, ripped off and rusty	
	Very Poor	Leaks all times, ripped off an very rusty	

Floor	Excellent	Not cracked, peeled off and not defective	
	Good	Part of the floor slightly cracked, peeled off and defective	
	Fair	Half of the floor cracked, peeled off and defective	
	Poor	Three quarters of the floor cracked, peeled off and defective	
	Very Poor	Absolutely cracked, peeled off and defective	
Walls	Excellent	Not cracked, peeled off and not tilted	
	Good	Part of the walls are either slightly cracked, peeled off or tilted	
	Fair	Half of the walls are either cracked, peeled off or tilted	
	Poor	Three quarters of the walls are either cracked, peeled off or tilted	
	Very Poor	Walls absolutely cracked, peeled off and tilted	
Painting	Excellent	Very well painted	
	Good	Well painted	
	Fair	Fairly painted	
	Poor	Poorly painted	
	Very Poor	Not painted, very poorly painted or faded	
Windows	Excellent	Not broken at all	
	Good	Slightly broken	
	Fair	Half broken	
	Poor	Three quarters broken	
	Very Poor	Completely broken	
Doors	Excellent	Not broken at all	
	Good	Slightly broken	
	Fair	Half broken	

	Poor	Three quarters broken	
	Very Poor	Completely broken	
Electrical installations	Excellent	Not faulty at all	
	Good	Faulty to a very small extent	
	Fair	Faulty to a small extent	
	Poor	Faulty	
	Very Poor	Faulty to a very great extent	
Plumbing	Excellent	Very well fitted	
	Good	Well fitted	
	Fair	Fairly fitted	
	Poor	Poorly fitted	
	Very Poor	Very poorly fitted	
Drainage	Excellent	Excellent drainage	
	Good	Good drainage	
	Fair	Fair drainage	
	Poor	Poor drainage	
	Very Poor	Very poor drainage	

Section C: Renewal Policy

4. Is there a Government policy on building renewal for commercial building policy?

Yes [ ] No [ ]

5. In your opinion does the current building code and By-laws in Kenya hinder building renewal in the building construction industry?

6. Do you think a building renewal policy would be useful in the Kenyan context?

7. In your opinion do you think that if a building renewal policy was put in place, it would be adhered to?

Section D: Factors Influencing Decision to Undertake Building Renewal

8. What factors in your opinion are impeding the effective renewal of Commercial buildings this town?

……

……

Section E: Measures needed to be put in Place for the Adoption of Building Renewal Policy

9. Do you think building renewal is a good idea?

   Yes [ ] No [ ] don't know [ ]

10. What measures would you suggest could be put in place for the adoption of building renewal policy in Kenya?

……

……

……

APPENDIX IV

OBSERVATION CHECKLIST

Researcher to tick appropriately what he considers to be the state of the building under the following areas:

1) **Purpose or use of building**

   Business [ ]

   Office [ ]

   Recreation [ ]

   Merchandize storage [ ]

2) **Condition of the foundation:**

Building element	Response	Indicators	Tick
Roof	Excellent	Never leaks, not ripped off, not rusty,	
	Good	Rarely leaks, ripped off and rusty	
	Fair	Sometimes leaks, partly ripped off and partly rusty	
	Poor	Leaks most of the times, ripped off and rusty	
	Very Poor	Leaks all times, ripped off an very rusty	
Floor	Excellent	Not cracked, peeled off and not defective	
	Good	Part of the floor slightly cracked, peeled off and defective	
	Fair	Half of the floor cracked, peeled off and defective	
	Poor	Three quarters of the floor cracked, peeled off and defective	
	Very Poor	Absolutely cracked, peeled off and defective	

Walls	Excellent	Not cracked, peeled off and not tilted	
	Good	Part of the walls are either slightly cracked, peeled off or tilted	
	Fair	Half of the walls are either cracked, peeled off or tilted	
	Poor	Three quarters of the walls are either cracked, peeled off or tilted	
	Very Poor	Walls absolutely cracked, peeled off and tilted	
Painting	Excellent	Very well painted	
	Good	Well painted	
	Fair	Fairly painted	
	Poor	Poorly painted	
	Very Poor	Not painted, very poorly painted or faded	
Windows	Excellent	Not broken at all	
	Good	Slightly broken	
	Fair	Half broken	
	Poor	Three quarters broken	
	Very Poor	Completely broken	
Doors	Excellent	Not broken at all	
	Good	Slightly broken	
	Fair	Half broken	
	Poor	Three quarters broken	
	Very Poor	Completely broken	
Electrical installations	Excellent	Not faulty at all	
	Good	Faulty to a very small extent	
	Fair	Faulty to a small extent	
	Poor	Faulty	
	Very Poor	Faulty to a very great extent	
Plumbing	Excellent	Very well fitted	
	Good	Well fitted	

	Fair	Fairly fitted	
	Poor	Poorly fitted	
	Very Poor	Very poorly fitted	
Drainage	Excellent	Excellent drainage	
	Good	Good drainage	
	Fair	Fair drainage	
	Poor	Poor drainage	
	Very Poor	Very poor drainage	

APPENDIX V

RESEARCH AUTHORIZATION

NACOSTI

NATIONAL COMMISSION FOR SCIENCE, TECHNOLOGY AND INNOVATION

Telephone: +254-20-2213471, 2241349, 310571, 2219420
Fax: +254-20-318245, 318249
Email: secretary@nacosti.go.ke
Website: www.nacosti.go.ke
When replying please quote

9th Floor, Utalii House
Uhuru Highway
P.O. Box 30623-00100
NAIROBI-KENYA

Ref: No. **NACOSTI/P/15/9444/6186**

Date: **5th November, 2015**

Muchemi Patrick Wokabi
University of Eldoret
P.O. Box 1125-30100
ELDORET.

RE: RESEARCH AUTHORIZATION

Your letter dated 5th November, 2015 refers.

Your request to include **Embu, Nakuru and Uasin Gishu Counties** on your research titled ***"A Study of the extent of building renewal in commercial buildings in selected major towns in Kenya,"*** for permit number **NACOSTI/P/15/9444/6186** of 5th November 2015 is granted.

You are advised to report to **the County Commissioners and the County Directors of Education, Embu, Nakuru and Uasin Gishu Counties** before embarking on the research project.

On completion of the research, you are expected to submit **two hard copies and one soft copy in pdf** of the research report/thesis to our office.

SAID HUSSEIN
FOR: DIRECTOR GENERAL/CEO

Copy to:

The County Commissioner
Embu County.

The County Director of Education
Embu County.

APPENDIX VI

RESEARCH PERMIT

CONDITIONS

1. You must report to the County Commissioner and the County Education Officer of the area before embarking on your research. Failure to do that may lead to the cancellation of your permit
2. Government Officers will not be interviewed without prior appointment.
3. No questionnaire will be used unless it has been approved.
4. Excavation, filming and collection of biological specimens are subject to further permission from the relevant Government Ministries.
5. You are required to submit at least two(2) hard copies and one(1) soft copy of your final report.
6. The Government of Kenya reserves the right to modify the conditions of this permit including its cancellation without notice

REPUBLIC OF KENYA

NACOSTI

National Commission for Science, Technology and Innovation

RESEARCH CLEARANCE PERMIT

Serial No. A 7083

CONDITIONS: see back page

THIS IS TO CERTIFY THAT:
MR. MUCHEMI PATRICK WOKABI
of UNIVERSITY OF ELDORET, 0-60200
meru,has been permitted to conduct
research in *Tharaka-Nithi County*
Embu, Nakuru & Vasin Gishu Counties

on the topic: *A STUDY OF THE EXTENT OF BUILDING RENEWAL IN COMMERCIAL BUILDINGS IN SELECTED MAJOR TOWNS IN KENYA*

for the period ending:
5th November,2016

Permit No : NACOSTI/P/15/9444/6186
Date Of Issue : 5th November,2015
Fee Recieved :Ksh 1,000

.....
Applicant's Signature

.....
Director General
National Commission for Science, Technology & Innovation