UNIVERSITY OF NAIROBI

FACTORS AFFECTING HOUSING MAINTENANCE MANAGEMENT COST IN KAKAMEGA MUNICIPALITY, KENYA

BY
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DECLARATION

This project report is my original work and has never been presented for any award in any other university.

Signature…… Date……..
Nyayiemi Samwel Kerama
B42/82148/2012

This project report has been submitted for examination with my approval as the university supervisor.

Signature……. Date……..

Catherine Kariuki
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DEDICATION

This project is dedicated to my wife Jackline Kerubo for the moral support she offered to me.

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I would like to express my sincere gratitude to all who contributed generously towards the success of this Research report. I am profoundly grateful to my supervisor Mrs. Catherine Kariuki who spent a lot of her precious time out of her busy schedule to guide, mentor and teach me. Her tireless and steadfast support enabled me successfully complete this research project.

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ABSTRACT

Maintenance costs cover the overall cost or budget, which is allocated to keep the building to its best performance, or to retain the building in good condition. It has been noted that the main objective of maintenance management organization is to ensure the required or acceptable standards and level of services provided in the building continuously at the minimum cost. This research sought to establish the factors affecting housing maintenance management cost in Kakamega Municipality, Kenya. The study objectives were to establish the effect of building characteristics on maintenance management costs in Kakamega Municipality; to establish the effect of tenant factors on maintenance management costs in Kakamega Municipality; to establish the overall effect of maintenance factors on maintenance management costs in Kakamega Municipality and to establish the effect of political factors on maintenance management costs in Kakamega Municipality. The study adopted a descriptive survey design. The target population consisted of 62 employees from Kakamega Municipality and 16 employees from the Ministry of Housing. A sample of 78 respondents were used. Stratified random sampling was used to categorize the Kakamega Municipality and Ministry of Housing while purposive random sampling was used to select the key informants. The tools used in data collection were the questionnaire and interview schedules. The collected data was analyzed using descriptive statistics and presented in form of means, standard deviation, frequency tables. The results will be useful to policy makers, researchers, practitioners, academicians, professionals in the County as well as stakeholders in the Ministry of Housing in Kenya.

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CHAPTER ONE

INTRODUCTION

1.1 Background to the Study

Building maintenance is the combination of technical and administrative actions to ensure the items and elements of a building in an acceptable standard to perform its required function. In order to implement building maintenance tasks efficiently, a proper building maintenance plan and monitoring system is necessary. According to Francis *et al*. (2001), building maintenance management is an operation involving the interaction or combination of technical, social, legal and fiscal determinants that govern and manage the use of buildings. It can be argued that many people do not understand the importance or significance of building maintenance and its management, in particular the realization that the efficiency of a building maintenance system contributes to the income of the company's owning or renting the building (Emma and Syahrul, 2009). It has become a part of a total performance approach, together with several factors such as productivity, quality, safety and environment (Groote, 1995). However, in terms of residential or housing buildings, the building occupants and maintenance team are more focused on the quality, safety and environmental factors. For instance, the best quality and safety performance of building services such as power supply, water supply and fire-fighting systems, are expected in residential or housing buildings.

Total construction workload of repair and maintenance work, including house improvements, increased its proportion from approximately 25 per cent in the 1950s to over 50 per cent in the mid-1980s (Seeley, 1987).Meanwhile, previous Department of Trade and Industry statistics indicated that housing maintenance represents about 50 per cent of repair and maintenance expenditure over all sectors of building maintenance such as commercial, institutional, educational and others (Chanter and Swallow, 2007). The building maintenance was so significant to the economy not only because of the scale of expenditure involved, but also to ensure the nation's stock of buildings (Seeley, 1987). From a Kenyan context, awareness on repair and maintenance works became more important as the development plan allocation for repair and maintenance works increased from 296 million during the Eighth Kenyan Plan to 1,079 million in the Ninth Kenyan Plan (Ali, 2009).

Seeley (1987) noted that building maintenance is very important with the prime aim, to preserve a building in its initial state. Furthermore, implementation of building maintenance allows the building to serve its purpose effectively. There are several main purposes in order to maintain buildings as stated below: retaining investment value; maintaining building in an acceptable condition and required standard; presenting a good appearance of building; generating income for building owner and surrounding activities; and conserving historical and architectural values of building.

Maintenance costs cover the overall cost or budget, which is allocated to keep the building to its best performance, or to retain the building in good condition. Lee and Wordsworth (2001) noted that the main objective of maintenance management organisation is to ensure the required or acceptable standards and level of services provided in the building continuously at the minimum cost. However, Chanter and Swallow (2007) found that the cost of maintenance work is usually higher than the cost of new construction work because of several factors as stated below: maintenance work is always carried out on small scale, leading to diseconomies of scale; before the repair or replacement work is carried out; there is a need to striping out the existing work; maintenance work has to be carried out in confined or occupied spaces, areas of places; the cost of making good and general clearing away is disproportionately high; and it incurs substantial disturbance costs on the operation of the building and perhaps loss of production.

Lee and Wordsworth (2001) define life cycle costs (LCC) as the total cost of owning and using an asset for over its whole life span. In order to achieve the efficient and lowest long-term cost of ownership for equipment or a project, LCC analysis is an essential tool to choose the most cost-effective approach from a series of alternatives (Barringer, 2003). The alternatives might be selected from different companies or tenders. For example, the decision to select a lift system to be installed in a building can be studied and obtained from several providers such as Panasonic, Toshiba, Mitsubishi and others. Thus, LCC analysis is an economic evaluation technique that determines the total cost of owning and operating a facility or system over period of time (Mearig *et al.*, 1999). Wu and Clement-Croome (2007) noted that the ratio of operating and maintenance costs to initial costs for buildings is an

essential factor for the whole life cycle of building services system in maintenance management. The relationships between initial costs, operating and maintenance cost involve the initial investment, project management, system design, building operations and maintenance management. Barringer (2003) noted that the costs of operation, maintenance and disposal always exceed to the initial costs. Whereby, the supporting costs are two to 20 times greater than the initial procurement costs. Thus, it is very important to accurately estimate the ratio from a LCC perspective. It has been found that the cost for housing maintenance is relatively high due to poor maintenance practices. This study aims to determine and identify the factors contributing to rising maintenance costs in Kakamega Municipality, Kenya.

1.2 Statement of the Problem

The geographical and urban structure, lack of properly designed system of renovation of houses and time schedule, inadequate skills and malfunctioning of tools and materials used, technical skills as well as lack of adequate funds for refurbishment and maintenance of residential houses are the main technical and financial problems facing most municipalities.

Social problems including lack of tenants awareness, poor conditions of house maintenance, managers, lack of community involvement, incompetence of manpower/staff qualifications & training are some challenges that the municipality encounters.

Kakamega Municipality does not have sufficient funding, improper legislation and negative attitudes towards the cost of housing maintenances.

The impact of building characteristics on maintenance costs has already been identified and studied in Malaysia (El-haram and Horner, 2002). Research has been carried on the factors affecting housing maintenance cost in developed countries like United Kingdom, United States and Malaysia by Ali, Kamaruzzaman, Sulaiman and Peng (2010);

But little or no literature has been documented on the factors affecting housing maintenance management cost in Kakamega Municipality. Most of the public and municipality housing have been in bad shapes, lack maintenance and refurbishment. While others have been totally abandoned and become damping sites for waste disposal. The study, therefore sought to establish the factors resulting to housing maintenance management cost in Kakamega Municipality.

1.3 Purpose of the Study

The purpose of the study will be to establish the factors affecting housing maintenance management cost in Kakamega Municipality, Kenya.

1.4 Research Objectives

The following objectives will be used in this study:

1. To establish the effect of building characteristics on maintenance management costs in Kakamega Municipality.
2. To establish the effect of tenant factors on maintenance management costs in Kakamega Municipality.
3. To establish the overall effect of maintenance factors on maintenance management costs in Kakamega Municipality.
4. To establish the effect of political factors on maintenance management costs in Kakamega Municipality.

1.5 Research Hypotheses

The study will be guided by the following research hypothesis:

$H0_1$: There is no effect of building characteristics on maintenance management costs in Kakamega Municipality.

$H0_2$: There is no effect of tenant factors on maintenance management costs in Kakamega Municipality.

$H0_3$: There is no effect of maintenance factors on maintenance management costs in Kakamega Municipality.

$H0_4$: There is no effect of political factors on maintenance management costs in Kakamega Municipality.

1.6 Significance of the Study

It is envisaged that the study findings will be of significant benefit to the Ministry of Housing, NEMA, future researchers, academicians and policy makers. It will give an insight into the factors affecting housing maintenance management cost in Kakamega Municipality.

It will provide the policy makers with information on the factors affecting housing maintenance management cost. It is hoped that the study findings will inspire other researchers to examine other some of the social factors such as user expectations and vandalism whose is so vexatious.

1.7 The scope of the Study

This study was delimited to Kakamega municipality in Kakamega County. Secondly, the study was confined to the factors affecting housing maintenance management cost in Kakamega Municipality. Thirdly, the study focused only on Municipal Council Staff and Ministry of Housing. The study did not include households and business people as the respondents.

1.8 Assumptions of the Study

The study was based on the following assumptions: there are factors affecting housing maintenance management cost; the respondents will be co-operative and give voluntarily accurate information; all respondents will be honest, objective and will find appropriate time to fill the questionnaires and respond interview schedules. It will also be assumed that the findings and recommendations of the study may be useful to the relevant stakeholders, Ministry of Housing, future researchers, academicians and policy makers.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter reviews the literature on the factors affecting housing maintenance management cost. Quality of maintenance activities often affects the housing maintenance cost. The quality is also influenced by the amount of budget allocation in each task. Sufficient resources especially finance is needed for maintenance work to have good maintenance actions and to sustain the required standards of buildings. The poor maintenance management practices are neither cost-effective nor optimum, and often cause a lot of problems, such as defective buildings, poor buildings functionality and others

2.2 Building Characteristics and Maintenance Management Cost

Building characteristics always have an influence on the maintenance costs (El-Haram and Horner, 2002). Basically, building characteristics include the building age, function, building or unit area, height of building, type of structure, finishes, services, building materials and others. Every building has its own characteristics and this makes the buildings require different amount of maintenance costs distribution and allocation to be maintained in good condition. For instance, building characteristics of apartment and serviced apartment are different in terms of the building amenities provided, facilities and services available (Sonthya, 2006).

2.2.1 Building Age

According to Slater (1982), Skinner (1982) and O'Neill (1974), the age of a building has a close relationship with the maintenance costs. Whereby, the maintenance costs increase while the building age is increasing. When the age of a building increases, some maintenance works such as painting work, replacement of new roof tiles and other works are required to ensure the sustainability of building. Additionally, higher maintenance cost and remedial cost are required for aged plumbing and drainage systems in buildings because of corrosion

problems (Wong, 2002). Thus, the maintenance cost is likely to be increased over the aging of building.

2.2.2 Building Height and Building Area or Size

There is an impact on maintenance costs regarding the height of a building. The higher the building, additional costs would be required for the tools and equipment used to carry out the maintenance tasks (Skinner, 1982). For example, scaffolding is needed to carry out various maintenance tasks at high rise buildings such as painting work, window cleaning or repair and other external works.

2.2.3 Type of Structure

The structure of a building is another factor that always affects maintenance costs. Owing to intensive investments in the design of civil infrastructures in the 1960s and 1970s, the number of deteriorating structures has increased considerably in the last decade. In this phenomenon, the structures require a great amount of financial resources for inspection, maintenance, repair, rehabilitation and replacement (Neves *et al.*, 2004). The structural stability of a building must be inspected and maintained from time to time in order to ensure the occupants' safety. Thus, periodical maintenance of steel structures is required to prevent the corrosion and maintain their strength and stability. Maintenance cost is significantly subjected to the type of structure in buildings.

2.2.4 Building Services

According to John and Clements-Croome (2005), building services systems are generally installed in buildings to provide a healthy and safe living environment for the occupants or residents. The building services include ventilation, lighting and power supply, water supply, sanitation, transportation communication and other systems. Building services accommodated in buildings is one of the factors affecting housing maintenance costs. According to Lam (2001), building services is a vital aspect to be concerned in building maintenance management, especially the mechanical and electrical services, which are the active components in a building. Owing to the high maintenance cost involved and the

consequences of building services' failure, awareness on the significance of building services maintenance has increased in the building services industry.

2.2.5 Building Materials

Building materials selected in the early design stage have an effect on maintenance costs. High maintenance cost is required to repair or replace the existing building components because of cutting cost at the initial design and construction stage, as well as wrong choices of materials. Shabha (2003) proved that the incompatible and poor quality materials used in construction and lack of regular-planned maintenance has caused the deteriorations or defects occurred in the building components. Moreover, Cheung and Kyle (1996) noted that material selections chosen over the life of a facility or building component undoubtedly influence the maintenance and operating costs of an asset and its service life.

2.3 Tenant Factors and Maintenance Management Cost

Housing maintenance cost is always influenced by the tenants or residents in numerous aspects. According to El-Haram and Horner (2002), tenant factors that have an impact on the maintenance cost include the expectation of tenants or residents, use of the property, vandalism by the tenants, delay in reporting failures, complete failure to report problems, as well as accessibility to the property. Olubodun (2001) noted that 25 per cent of total maintenance needs could be due to the tenant influence. Thus, participation of tenants and residents in housing management can be considered as a strategy of the landlord in bridging the gap between expensive maintenance management and the legitimate expectation or demand of the tenants (Yip, 2001).

2.3.1 Expectation of Tenants

High expectation of tenants significantly affects housing maintenance cost. According to Yip (2001), the operating and maintenance account of estate management in Hong Kong has dramatically increased from time to time. For instance, the surplus of HK$432 million (RM 185 million) in 1988 had increased to HK$1.7 billion (RM 727 million) in 1997 based on the annual report from the Hong Kong Housing Authority because of rising demands from tenants and residents for better living environments. Therefore, it is proven that high

standards of expectation from tenants and residents are likely to increase the maintenance cost.

2.3.2 Use of the Property

According to the Queensland Department of Public Works (2010), one of the factors that influences the level of maintenance funding is the deterioration or wear associated with the usage and occupancy of residents and tenants. In fact, this problem can be minimized by introducing property operating manuals and rules, and educating tenants and residents (El-Haram and Horner, 2002). Otherwise, the maintenance and repair cost will increase gradually because of improper use of the property through further damage.

2.3.3 Vandalism by Tenants

Vandalism by tenants is often discussed as a factor that affects housing maintenance cost. According to Olubodun and Mole (1999), vandalism is one of the factors that causes the defects on building components. In Malaysia, it is found that Kuala Lumpur City Hall (DBKL) spent RM 2.5 million solely for repairing faulty lifts and it was said that 95 per cent of the faulty lifts were caused by vandalism (Bavani, 2010). Consequently, the maintenance costs are influenced by distributing the repair costs to treat such defects, which are caused by vandalism.

2.3.4 Delay and Failure in Reporting Problems

According to Lee and Wordsworth (2001), the rate of deterioration of the component and the corresponding increase in the cost of rectification is likely without early response to such defect. Early response to the building failure is necessary to reduce the maintenance cost. However, early response to the building defect or failure cannot be done if there is a delay and failure in reporting the problems. In fact, delay and failure in reporting problems do affect the housing maintenance cost to some extent, but the significance of this factor is not that obvious (El-Haram and Horner, 2002).

2.3.5 Accessibility to the Property

El-Haram and Horner (2002) proved that inability to gain access to the property is one of the major factors that affect housing maintenance cost. Sometimes, the residents or tenants may not allow maintenance staff to access to their unit space for privacy reasons. According to Al-Arjani (1995), some tenants may not allow maintenance staff from gaining access to carry out maintenance works or tasks because of cultural issues. For instance, there are cracks found on the surface of external walls of a parcel unit in the sixth floor but is restricted to access to such unit space. Hence, maintenance staff can only access from the external building and additional equipment like scaffolding would be required to repair the affected portion.

2.4 Maintenance Factors and Maintenance Management Cost

Maintenance factors are likely to have great influence on housing maintenance costs (El-Haram and Horner, 2002). Generally, maintenance factors can be divided into two main factors, which are technical factors and administration factors. In terms of technical factors, some aspects that affect the maintenance cost are poor workmanship, and poor quality of spare parts and materials. While in terms of administration factors, the aspects that influence maintenance cost include poor maintenance management, budget constraints, failure to execute maintenance at the right time and poor budgetary control. The selection of the maintenance management team and staff is closely related to the maintenance factors that affect the housing maintenance cost.

Poor workmanship during the implementation of maintenance tasks is greatly affecting the maintenance cost in both the short- and long-term. Khalid et al. (2006) noted that poor workmanship is the predominant cause of defects emerging on the projects or maintenance works. Owing to poor workmanship, more defects will occur immediately or after the period of time the maintenance works are done. Then, further and additional remedies might be required to treat such defects. As Love and Irani (2003) mentioned, direct cost is often quoted in evaluating quality of workmanship and represent a significant proportion of total project costs or total maintenance costs. Hence, the total maintenance costs are likely to be increased as a result of poor workmanship during the implementation of maintenance works.

Poor quality of spare parts and materials used in the building components, elements, services or facilities significantly influence the maintenance costs. Al-hammad *et al*. (1996) stated that the problems related to the lack or unavailability of the required spare parts, tools or materials to perform maintenance tasks. As a result, poor quality or second hand spare parts are acquired for the maintenance tasks. According to Horner et al. (1997), the main objective of maintenance management is to minimise the need of repair on building defects by enhancing planning and implementation, adopting suitable materials and tools at the appropriate time and minimising the total LCC. Maintenance management quality is always an issue that significantly affects the housing maintenance cost. Effective building or housing maintenance management can minimise the operating and maintenance costs, while the building continues to function and operate efficiently.

Pascual *et al*. (2008) stated that the asset or building failure rate increases as time passes and this produces more repair and maintenance tasks. In order to ensure the sustainability of a building, the increasing maintenance cost is needed while the building age is growing older. It is often seen that deferral or delay of some maintenance tasks occurred because the budget allocated is not sufficient to cover the need for maintenance (El-Haram and Horner, 2002). Consequently, further implications such as damage, wear and defect will be incurred. According to Narayan (2003), failure or delay to execute maintenance actions at the right time may cause further implications to incur such as excessive damage, wear and defect. Then, additional maintenance works are necessary to be carried out in order to treat the problems. For instance, maintenance staff may have identified a problem occurring in a lift system such as the defective lift motor, but they delay the maintenance and repair to accommodate the occupants, which may result in permanently damaging the lift motor. This results in an increase in material and labour costs while additional maintenance and repair works are required.

2.5 Political Factors and Maintenance Management Cost

Political factors affect the housing maintenance cost in some circumstances, especially when there are changes of political policies through government or local authority. El-Haram and

Horner (2002) proved that the political factors considerably affect the housing maintenance cost. The variables include right to buy policy, new health and safety regulations and poor management. However, the “right to buy policy” aspect is only applicable for public housing and “poor management decision system” is not obvious in affecting the housing maintenance cost. So, only the “new health and safety regulations” aspect will be discussed in this study.

Health and safety is a key factor influencing the planning of maintenance tasks (Lee and Scott, 2009). Thompson (1994) noted that building maintenance is so important, whereby its role is not only to ensure the facilities and services in buildings are operating at the optimal standard of functions, but to satisfy the performance to the requirements of the building’s occupants. In order to obtain the objective of building maintenance, maintenance staff must consider all aspects of requirements of occupants to be compliant to the statutory health and safety regulations. Those aspects may include environmental conditions (ventilation, lighting and sanitation), data communication and electrical power. For time being, new health and safety regulations might be created to improve the building performance. Hence, new design concepts that comply with such new regulations are required when designing or refurbishing a building. This often affects the design cost for a new building or maintenance cost for an existing building.

2.6 Other Factors and Maintenance Management Cost

Besides, the factors that have been stated, there are other factors that affect the housing maintenance cost such as third-party vandalism and poor or lack of training (El-Haram and Horner, 2002). These factors can have an impact on the housing maintenance cost, which are often neglected by maintenance management staff. Third-party vandalism is one of the factors that affect housing maintenance cost. According to Tiun (2003), vandalism is one of the serious problems observed in many high-rise residential buildings. Although the security guards are assigned to protect the property of the buildings, such vandalism activities are still occurring. This factor has been proven by El-Haram and Horner (2002) as highly affecting the housing maintenance cost with the rank of 8 among 24 factors in their study. This factor is commonly caused by third-parties that have no relationship or interest to a building.

Poor or lack of training is likely to have an impact on the housing maintenance cost. Narayan (2003) stated that lack of maintenance personnel training is one of the reasons for poor operating practices in maintenance management. Maintenance personnel or operator's skill is an essential factor that influences the maintenance performance (Pascual et al., 2008). Poor operating and maintenance practices often lead to human error and consequently the occurrence of poor quality of maintenance outcomes. The poor maintenance outcome is then increasing the failure rate, which leads to the avoidable failures or further implications and subsequent repairs or additional maintenance works that are required in order to ensure the building performance standard.

2.7 Conceptual Framework

According to Rydell (1970), maintenance and operating expense is one of the major components of housing cost. Basically, maintenance and operating expense contributes one-third to one-half of total cost depending on the type of housing such as condominium, apartment, flat and others. Nowadays, an issue about the housing maintenance costs management is often discussed due to the continuous increase in housing maintenance costs. In order to reduce the maintenance costs, building managers or maintenance manager should adapt some strategies by minimising the number of maintenance tasks. According to El-Haram and Horner (2002), there are several factors that affect the housing maintenance cost. Generally, they can be divided into five main groups, which are building characteristics, tenant, maintenance factors, political and others factor. The main factors are divided into several variables that affect housing maintenance cost as shown in Figure 1.

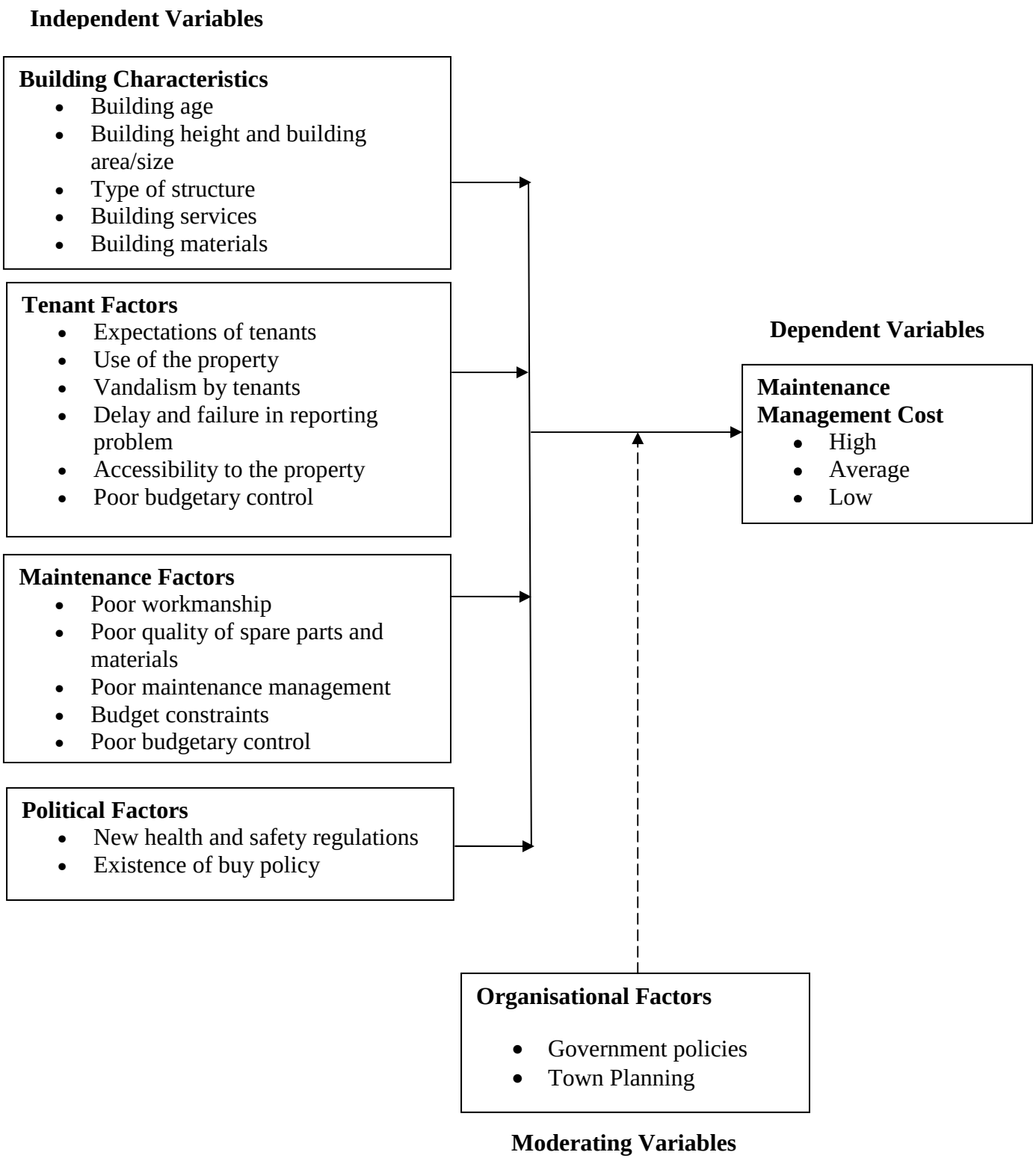

Figure 2.1: Conceptual Framework showing Interrelationships between Key Variables of the Study.

2.5 Knowledge Gap

According to Slater (1982), Skinner (1982) and O'Neill (1974), the age of a building has a close relationship with the maintenance costs. Whereby, the maintenance costs increase while the building age is increasing. When the age of a building increases, some maintenance works such as painting work, replacement of new roof tiles and other works are required to ensure the sustainability of building, but such studying findings have not been carried out and documented in Kakamega Municipality. Studies have also indicated that there are numerous factors that have influenced housing maintenance costs in varying degrees (Spedding, 1994); therefore, this study will be carried out to establish these varying degrees of these factors on maintenance costs in Kakamega Municipality.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter consists of the research methods to be used in carrying out the study. It includes research design, location of study, target population, sampling procedures and sample size, research instruments, validity and reliability of research instruments, data collection procedures and data analysis techniques.

3.2 Research Design

This study will adopt a descriptive survey design. Survey research is a research method involving the use of questionnaires and/or statistical surveys to gather data about people and their thoughts and behaviours. A survey is an attempt to collect data from members of a population in order to determine the current status of that population with respect to one or more variables. Yin (1984) argues in favour of the use of descriptive surveys in fact-finding because they provide a great deal of accurate information. The intention of survey research is to gather data at a particular point in time and to use it to describe existing conditions. The descriptive nature of research will be used in order to gain information on affecting housing maintenance management cost in Kakamega Municipality, Kenya.

3.3 Area of Study

The study will be carried in Kakamega Municipality located in Kakamega Central District, Western Province of Kenya. Kakamega District is one of the eight districts of Western

Province. It borders Butere/Mumias and Bungoma District to the West, Nandi District to the East, Vihiga District to the South and Lugari District to the North. It is inhabited mainly by the Luhya people. The District lies between longitudes 34032" and 350 57'30"east of the prime meridian and latitudes 0007'30" North and North 0015" of the equator. There are seven administrative divisions comprising 27 locations and 97 sub-locations covering a total area of 1,394.8km^2. Quakerism is widely practised here. In 1999 the total population was of 73,607 inhabitants with an urban population of 57,128 within an area of 8,361 km² (Census Report, 1999).The climate is mainly tropical, with variations due to altitude. Kakamega district is mainly hot and wet most of the year. The dependency ratio stands at 100:108 an indication that most of the population is made up of dependants and hence the need to improve income levels to guarantee better standards of living.

Welfare Monitoring Survey II (1997) found out that 57.47 of the population were living below poverty line. The poverty situation in the district is attributed to high population growth rate, HIV/AIDs and poor economic performance. The most vulnerable groups include the landless, female-headed households, subsistence farmers, unemployed youths, street children, the elderly and HIV/AIDs orphans. The district lacks industries and hence agricultural produce are poorly marketed.

There are three local authorities in the district, namely Kakamega Municipal Council, Kakamega County Council and Malava Town Council. The three local authorities have thirty-seven electoral wards. Kakamega country council has 13 wards, Kakamega Municipal Council has thirteen wards, and Malava Town Council has four wards. There are four

constituencies in the district namely, Ikolomani, Shunyalu, Malava and Lurambi. Municipality division had the highest population density of 1,485 persons per Km^2, followed by Ikolomani, Lurambi, Ileho, Navakolo, Kabras, and Shinyalu respectively (Kakamega District Strategic Plan 2005-2010) (see Appendix 6).

3.4 Target Population

The research was conducted Kakamega Municipality targeting 62 employees from Kakamega Municipality and 16 employees from the Ministry of Housing (MOH).

3.5 Sample Size and Sampling Procedure

The sampling procedure will be guided by the general rule in most social science research which suggested that the use of the largest sample will facilitate generalization (Kline 1980). Stratified random sampling will be used to categorise the two major players into Kakamega Municipality and Ministry of Housing. A census study will be carried in the two categories of players, that is, 62 employees from Kakamega Municipality and 16 employees from the Ministry of Housing.

3.6 Methods of Data Collection

The research instruments that will be used in conducting this research are questionnaire and interview schedules.

3.6.1 Questionnaire for Employees in Ministry of Housing and Kakamega Municipality

The questionnaire as a tool will be used because it is familiar to most people (Berdie, Anderson, and Niebuhr, 1986). Nearly everyone has had some experience completing questionnaires and it generally does not make people apprehensive. When respondents receive a questionnaire in the mail, they are free to complete it on their own time-table. The questionnaire is a convenient tool especially where there are large numbers of respondents to be handled because it facilitates easy and quick derivation of information within a short time (Kerlinger, 2004).

The structured (closed-ended) and unstructured (open-ended) will be used so as to get the responses from respondents (officers in housing and municipality). The closed-ended questions provide a greater uniformity and more easily processed (China and Oteng'i, 2007). The structured questionnaires shall be accompanied by a list of all possible alternatives from which respondents select the suitable answer that describes their situation by simply ticking (Mugenda and Mugenda, 2003). The questionnaires will be administered by the researcher or research assistants to avoid misinterpretation of questions by 'drop and pick' technique. Questionnaires are easy to analyze, and most statistical analysis software can easily process them. The responses are gathered in a standardised way, so questionnaires are more objective. Generally it is relatively quick to collect information using a questionnaire.

3.6.2 Interview Schedules for the Key Respondents

The researcher will use interview schedules since it provides face-to-face interaction with respondents and will enable the researcher to adapt the questions as necessary, clarify doubts

and ensure that the responses are properly understood, by repeating or rephrasing the questions. The researcher can also pick up nonverbal cues from the respondent. This tool will also give the researcher an opportunity to get a chance to probe the key informants on issues that may not be captured in the questionnaire. Prior to taking part in the interviews, the researcher intends to give respondents an opportunity to adequately prepare themselves for the interview. It is anticipated that this will enable the interviewees to give accurate and relevant information.

3.7.1 Validity

Validity refers to the degree of accuracy and meaningfulness of inference based on research results. Content validity refers to the degree to which the content of the items reflects the content domain of interest (Miller, 2003). Best and Khan (2005) suggest that the validity of the instrument is asking the right questions framed from the least ambiguous way and based on study objectives. Validity of the data will be done using content-related validity. This will be done by presenting the instrument to the supervisor to evaluate the applicability and appropriateness of the content, clarity and adequacy of construction of the instrument and suggestions made and modified appropriately. This measures the degree to which data collected using a particular instrument represents a specific domain of indicators or content of a particular concept Mugenda and Mugenda (2003). The indicators of variables will be clearly defined and scrutinized and instruments developed to match them.

3.7.2 Reliability

Reliability of a research tool is realized if it yields consistent information or data after repeat measurements are taken under the same conditions. The tools will be pre-tested (pilot testing) with the respondents from Bungoma Municipality and Ministry of Housing in Bungoma and the data obtained will not be included in the final analysis. The main purpose of pre-testing the research instrument is to identify any weaknesses and improve them. The pre-test is likely to give an indication of the time required to complete the tool. These respondents will be retested a second time two weeks later and their consistency between the two sets of the score will be computed using Cronbach's alpha coefficient to ascertain if the α obtained is ≥ 0.7 (Nunally, 1998).

3.8 Methods of Data Analysis

Primary data collected from this study will be analyzed using descriptive statistics including cross tabulation and frequency tables. Cross tabulation will be used to understand two different survey items and how they relate. For instance cross tabulation analysis will be used to determine the main variables in the study like building characteristics, tenant factors, maintenance factors, political factors affect maintenance management cost. Data will be analyzed by feeding it in a statistical package for social science (SPSS and the outputs on frequency tables and cross tabulation generated) as shown in Table 1.

3.9 Operational Definition of Variables

This section looks at the operational definition of variables as shown in Table 3.1.

Table 3.1: Operational Definition of Variables

Variable(s)	Operationalisation/Indicators	Measurement Scale
Building Characteristics	Building age, building age, building height and building area/size, type of structure, building services and building materials	Ordinal, interval and Likert scales
Tenant Factors	Expectations of tenants, use of the property, vandalism by tenants, delay and failure in reporting problem, accessibility to the property and poor budgetary control	Ordinal, interval and Likert scales
Maintenance Factors	Poor workmanship, poor quality of spare parts and materials, poor maintenance management, budget constraints and poor budgetary control	Ordinal, interval and Likert scales
Political Factors	New health and safety regulations	Ordinal, interval and Likert scales
Maintenance Management Cost	High, average and Low	Ordinal, interval and Likert scales

CHAPTER FOUR
DATA ANALYSIS AND PRESENTATNION

4.1 Introduction

The results of data analysis are presented in this chapter. Data has been organized and interpreted as per the objectives of the study. The study purposed to establish the influence of building characteristics on maintenance management costs; to determine the influence of tenant factors on maintenance management costs; to examine the overall influence of maintenance factors on maintenance management costs and to determine the influence of political factors on maintenance management costs in Kakamega Municipality.

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4.2 Demographic Information

4.2.1 Demographic Information of Respondents

This section presents respondents disaggregated by age, gender, work experience, educational level and school type.

With reference to Table 4.1, out of 75 respondents used in the study, 60% were in the age bracket of 21-30 years, 24% of respondents were in the age bracket of above 50 years, 8% in the age bracket of 31-40 years while 8% in the age bracket of 41-50 years. There was a highly significant ($P<0.01$) difference in the variation among age groups since the expected uniform distribution across age groups was not represented by 25% in each age group.

Table 4.1: Age bracket of Respondents

Age bracket	Frequency	Percentage
21-30 years	45	60.0
31-40 years	6	8.0
41-50 years	6	8.0
Above 50 years	18	24.0
Total	**75**	**100.0**

Therefore, this indicated that majority of respondents were the young people and who newly employed and therefore, housing is usually an issue and this could mean that they understood to some good extent the factors that affect housing maintenance management costs. Information from interview schedules indicated that there were more young people within the age brackets of 30-40 years than older ones in the age bracket of 50 years and above.

The age structure of the respondents shows a great diversity. Greater diversity in age creates challenges but also gives some important advantages and presents new opportunities such as contributing to creating organization culture, more tolerance to different behavioral styles and varied views. Another potential payoff is a greater opportunity for the organizations to develop the younger workers particularly in the age bracket of 30–40 years to take over from the older (above 50 years) when the latter retire (K'Obonyo, Kiraka and Dimba, 2008).

Table 4.2: Gender of Respondents

Gender	Frequency	Percentage
Male	51	68.0
Female	24	32.0
Total	**75**	100.0

The study sought to find out the gender distribution among the respondents in Kakamega Municipality, Kakamega County. The respondents were asked to indicate their gender and the results were recorded in Table 4.2. The results illustrated that there was a highly significant ($p<0.000$) variation in the gender distribution among the respondents since the expected 50% was attained because there were more males (68%) than females (32%) who participated in the study.

Table 4.3: Working Experience of Respondents

Working Experience	Frequency	Percentage
Less than 5 years	23	30.7
5-10 years	34	45.3
10-15 years	6	8.0
15-20 years	6	8.0
Above 20 years	6	8.0
Total	**75**	**100.0**

The study sought to find out the experience of the respondents aiming at determining the number of working years and in turn know how much experience they had been exposed to concerning housing maintenance management costs. The results are shown in Table 4.3. Similarly, there was a highly significant ($p<0.000$) variation in the working experience of the respondents, because the expected 25% expected in the working experience of the respondents was not realised. The results pointed out that 45.3% of the respondents had been working in Kakamega Municipality and the Ministry of Housing for 5-10 years, 30.7% have been working for less than 5 years, 8% of respondents for a period of 10-15 years, 15-20 years and above 20 years respectively. This translates to the fact that the respondents are well grounded in the organization and could give accurate information on the factors that affect housing maintenance management costs.

Table 4.4: Educational Level of Respondents

Age bracket	**Frequency**	**Percentage**
Bachelor's degree	16	21.3
Diploma	41	54.7
Others (certificates)	18	24.0
Total	**75**	**100.0**

The study sought to find out formal educational levels of respondents in Kakamega Municipality and the Ministry of Housing. To help understand this, respondents were asked to state their formal educational level. The results are recorded in Table 4.4. The results revealed a significant ($p<0.05$) differences in the educational levels of respondents. Results in

Table 4.4 show that 54.7% of respondents had diploma certificates, 24% had certificates and 21.3% had bachelor degrees. This indicated that the majority of the respondents had attained minimum academic and professional qualifications. This therefore, provides a solid base for better understanding of the factors that affect housing maintenance management costs.

These results are in line with what Jackson *et al*. (1991) noted that people who had a university degree used the knowledge for problem solving and group coordination. Hence in this study, members with high levels of education were likely to seek for private security with the confidence. Moreover, empirical evidence from studies conducted by social scientists makes it clear that there is significant scope for education to play a role in influencing the economic and social situations of people. In cross-country comparisons of education and economic growth, formal schooling plays an important role in enhancing economic growth (Krueger and Lindahl, 2001).

4.3.1 Building Characteristics and Maintenance Management Costs

This section presents study findings on the age of the building; building height, building area/size; type of structure; building services and building materials and how these variables influence maintenance management costs. With reference to Table 4.5, 85.3% of respondents were of the opinion that the age of the building determines maintenance management cost while 14.7% of respondents disagreed. This had a mean of 4.03. This could be interpreted to mean that the age of the building determines maintenance management cost. The finding was consistent with what Slater (1982) and Skinner (1982) found out that the age of building associates closely with maintenance costs. When the

age of a building increases, maintenance costs do increase. Additionally, higher maintenance cost and remedial cost are required for aged plumbing and drainage systems in buildings because of corrosion problems (Wong, 2002). Thus, the maintenance cost is likely to be increased over the aging of building.

Table 4.5: Building Characteristics and Maintenance Management Costs

Variables	Strongly agree	Agree	Undecided	Disagree	Strongly disagree	Mean score
Age of the building determines maintenance management cost	24(32.0%)	40(53.3%)		11(14.7%)		4.03
Building height and building area/size influences maintenance management cost	18(24.0%)	40(53.3%)	11(14.7%)	6(8.0%)		3.93
Type of structure will increase maintenance management cost	12(16.0%)	46(61.3%)	17(22.7%)			3.93
Building services determine maintenance management cost	6(8.0%)	47(62.7%)		22(29.3%)		3.50
Building materials influence maintenance management cost	35(46.7%)	34(45.3%)	6(8.0%)			4.39

Results also indicate that the building height and building area/size influences maintenance management cost (77.3%) while 8% of the respondents disagreed. Similarly, the type of structure was found to increase maintenance management cost (77.3%) while it was also established that building services determine maintenance management cost

(70.7%) and further analysis showed that building materials influence maintenance management cost (92.0%).

The findings were consistent with what Neves *et al*. (2004), found out that the structures require a great amount of financial resources for inspection, maintenance, repair, rehabilitation and replacement and this consequently increases the housing maintenance management cost. Lam (2001), building services is a vital aspect to be concerned in building maintenance management, especially the mechanical and electrical services, which are the active components in a building. Owing to the high maintenance cost involved and the consequences of building services' failure, awareness on the significance of building services maintenance has increased in the building services industry. Shabha (2003) also proved that the incompatible and poor quality materials used in construction and lack of regular-planned maintenance has caused the deteriorations or defects occurred in the building components. Moreover, Cheung and Kyle (1996) observed that material selections chosen over the life of a facility or building component undoubtedly influence the maintenance and operating costs of an asset and its service life.

Therefore, it was concluded that building characteristics increases maintenance management costs in Kakamega Municipality.

4.5.2 Tenant Factors and Maintenance Management Costs

This section gives study findings on the tenant expectations, vandalizing housing facilities, improper use of housing facilities by tenants, tenants delay to report failures in the housing parts; complete failure to report housing problems by tenants, inability to access housing facilities and poor budgetary control and how these variables influence maintenance management costs.

Table 4.6: Tenant Factors and Maintenance Management Costs

Variables	Strongly agree	Agree	Undecided	Disagree	Strongly disagree	Mean score
There are high tenant expectations	29(38.7%)	46(61.3%)				4.40
Tenants vandalize housing facilities		30(40.0%)	6(8.0%)	39(52.0%)		2.88
There is improper use of housing facilities by tenants	12(16.0%)	24(32.0%)	5(6.7%)	29(38.7%)	5(6.7%)	3.12
Tenants delay to report failures in the housing parts	6(8.0%)	47(62.7%)		22(29.3%)		3.12
There is complete failure to report housing problems	6(8.0%)	29(38.7%)	6(8.0%)	28(37.3%)	6(8.0%)	3.01
There is inability to access housing facilities		30(40.0%)	5(6.7%)	40(53.3%)		2.87
Tenants have poor budgetary control	24(32.0%)	22(29.3%)	11(14.7%)	18(24.0%)		3.70

Table 4.6 shows that there are high tenant expectations on proper housing conditions (100.0% and mean of 4.40). The respondents had mixed opinions on whether tenants

vandalize housing facilities (agree had 40.0%; 8.0% of respondents were undecided and 52.0% of respondents disagreed with mean of 2.88). On the question asked whether there is improper use of housing facilities by tenants, respondents gave different views, for example 16.0% of respondents strongly agreed, 32.0% of respondents agreed, 6.7% were undecided, 38.7% of respondents disagreed while 6.7% strongly disagreed. The question had a mean of 3.12. However, the respondents were almost unanimous on the delay of tenants to report failures in the housing parts (70.7%) while the views of the respondents on the tenants having poor budgetary control varied significantly (strongly agreed had 32%; agree had 29.3%, undecided, 14.7% and disagree had 24%).

The findings on tenant factors and maintenance management costs were supported by what El-Haram and Horner (2002) found out that tenant factors that have an impact on the maintenance cost include the expectation of tenants or residents, use of the property, vandalism by the tenants, delay in reporting failures, complete failure to report problems, as well as accessibility to the property. It was noted that 25 per cent of total maintenance needs could be due to the tenant influence.

On overall, tenant factors do increase the maintenance management costs in Kakamega Municipality and Ministry of Housing in Kakamega County.

4.3.3 Maintenance Factors and Maintenance Management Costs

This section focuses on the study findings on maintenance factors like poor workmanship, poor quality of spare parts and materials, poor maintenance management,

budget constraints and poor budgetary control and how these variables influence maintenance management costs. The results are recorded in the Table

Table 4.7: Maintenance Factors and Maintenance Management Costs

Variables	Strongly agree	Agree	Undecided	Disagree	Strongly disagree	Mean score
Poor workmanship increases maintenance management cost	34(38.7%)	64(65.3%)				4.85
Poor quality of spare parts and materials will affect maintenance management cost	47(62.7%)	28(37.3%)				4.63
Poor maintenance management will lead to increase in maintenance management cost	53(70.7%)	22(29.3%)				4.71
Budget constraints affect maintenance management cost	18(24.0%)	45(60.0%)	6(8.0%)	6(8.0%)		4.00
Poor budgetary control is a key contributor to increase in maintenance management cost	12(16.0%)	46(61.3%)	6(8.0%)	11(14.7%)		3.79

Table 4.7 illustrates that the respondents were of the opinion that poor workmanship increases maintenance management cost (100% and mean of 4.85) and that poor quality of spare parts and materials affected maintenance management costs (100% and mean of 4.63). The respondents were undivided that poor maintenance management will lead to increase in maintenance management cost (100% and mean of 4.71) and the respondents had varied views on budget constraints (mean of 4.00) and poor budgetary control (mean of 3.798) affecting maintenance management costs. Khalid *et al.* (2006) noted that poor

workmanship is the predominant cause of defects emerging on the projects or maintenance works. Owing to poor workmanship, more defects will occur immediately or after the period of time the maintenance works are done. Al-hammad *et al*. (1996) stated that the problems related to the lack or unavailability of the required spare parts, tools or materials to perform maintenance tasks. As a result, poor quality or second hand spare parts are acquired for the maintenance tasks.

Therefore, it can be summarised that maintenance factors do increase maintenance management costs in Kakamega Municipality and Ministry of Housing.

4.3.4 Political Factors and Maintenance Management Costs

The study findings on political factors like right to buy policy, new health and safety regulation, poor management decision system and poor or lack of training in house maintenance and maintenance management costs are illustrated in the Table 4.10.

With reference to Table 4.8, the respondents had varied views on the existence of right to buy policy and the responses had a mean of 3.32. The respondents were almost unanimous that there exists a new health and safety regulation in Kakamega Municipality and Ministry of Housing (77% and mean of 4.08) and that poor management decision system increased maintenance management cost (100% and mean of 4.31). The respondents were candid that poor or lack of training in house maintenance increases maintenance management cost (100% with mean of 4.47).

Table 4.8: Political Factors and Maintenance Management Costs

Variables	Strongly agree	Agree	Undecided	Disagree	Strongly disagree	Mean score
There exists right to buy policy	24(32.0%)	16(21.3%)	6(8.0%)	18(24.0%)	11(14.7%)	3.32
There is new health and safety regulation	24(32.0%)	33(44.0%)	18(24.0%)			4.08
Poor management decision system will increase maintenance management cost	52(69.3%)	23(30.7%)				4.31
Poor or lack of training in house maintenance increases maintenance management cost	35(46.7%)	40(53.3%)				4.47

It was noted that political factors affect the housing maintenance cost in some circumstances, especially when there are changes of political policies through government or local authority. El-Haram and Horner proved that the political factors considerably affect the housing maintenance cost. The variables include right to buy policy, new health and safety regulations and poor management.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter presents summary of study findings, conclusions drawn and recommendations based on the conclusions.

5.2 Summary of the Findings

The study had four objectives: to establish the influence of building characteristics on maintenance management costs; to determine the influence of tenant factors on maintenance management costs; to examine the overall influence of maintenance factors on maintenance management costs and to determine the influence of political factors on maintenance management costs in Kakamega Municipality.

The study findings revealed that there was a highly significant ($P<0.01$) difference in the variation among age groups since the expected uniform distribution across age groups was not represented by 25% in each age group. The results illustrated that there was a highly significant ($p<0.000$) variation in the gender distribution among the respondents since the expected 50% was attained because there were more males (68%) than females (32%) who participated in the study. The results pointed out that 45.3% of the respondents had been working in Kakamega Municipality and the Ministry of Housing for 5-10 years, 30.7% have been working for less than 5 years, 8% of respondents for a period of 10-15 years, 15-20 years and above 20 years respectively. The results revealed a significant ($p<0.05$) differences in the educational levels of respondents. Results in Table

4.4 show that 54.7% of respondents had diploma certificates, 24% had certificates and 21.3% had bachelor degrees.

Study findings; indicate that building characteristics, tenant factors, maintenance factors and political factors do increase maintenance management costs but at varying levels in Kakamega Municipality and Ministry of Housing in Kakamega County.

5.3 Conclusions

1) The study findings in this study added some knowledge to the empirical research by indicating that building characteristics, like building age, building height and building size/area, type of structure, building services and building materials do increase maintenance management costs in Kakamega Municipality.
2) Tenant factors, like expectations of tenants, use of the property and vandalism by tenants, delay and failure in reporting problems and accessibility to the property have an effect on the housing maintenance management cost in Kakamega Municipality.
3) Maintenance factors like poor workmanship, poor quality of spare parts and materials, poor maintenance management, budget constraints and poor budgetary controls affects the housing maintenance management costs in Kakamega Municipality.
4) Political factors like new health and safety regulations, government policies, poor planning and existence of new policies have effect on the housing maintenance management costs in Kakamega Municipality.
5) The research hypothesis proved that all the four research factors had significant effect to housing maintenance management cost in Kakamega municipality

5.4 Recommendations

The following recommendations were made based on the findings and the conclusions of the study: Since maintenance and operating expense is one of the major components of housing cost, the building managers or maintenance manager should adapt some strategies by minimizing the number of maintenance tasks. Kakamega Municipality and Ministry of Housing should keenly consider and take into considerations building characteristics, tenant factors, maintenance factors and political factors in the housing maintenance management so that municipal and Ministry of Housing houses are kept in the sound condition.

The government should allocate enough budget for provision of housing maintenance services within municipality which should be reviewed periodically to ascertain if the monies are put to correct use.

Educational activities such as organizational of conferences, seminars and workshops, publications of training manuals, case studies and best practices, provision of technical and financial assistance should also be conducted.

5.5 Suggestions for Further Research

The following suggestions were made after research findings and discussions:

(i) A similar study should be conducted in other Municipalities to ascertain if same results can be achieved.

(ii) A study should be carried out on the influence of government policies on effectiveness of housing maintenance management.

(iii) A study should be conducted to establish the influence of public awareness of initiatives on housing maintenance management cost.

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APPENDICES

APPENDIX 1: LETTER OF TRANSMITTAL

January, 2013.

Dear respondent:

I am a postgraduate student undertaking a Diploma in housing administration in the School of built environment at the University of Nairobi. I am carrying out a study on **Factors Affecting Housing Maintenance Management Cost in Kakamega Municipality, Kenya.** I am using the attached questionnaire and interview schedules to collect information for the study. It is my kind request that you fill the questionnaire, providing the relevant information to facilitate the study. Please use the space provided to fill in the information required as objectively and honestly as possible. The information provided will be treated with strict confidentiality for the purpose of this study only.

Thank you.

Yours faithfully,

Nyayiemi Samuel Kerama

APPENDIX 2A: QUESTIONNAIRE FOR EMPLOYEES

SECTION A: BACKGROUND INFORMATION

1. Name of the organisation ……..

2. Please indicate your age bracket?

21-30 years	[ ]
31-40 years	[ ]
41-50 years	[ ]
Above 50 years	[ ]

4. Please indicate your gender

Male	[ ]
Female	[ ]

3. State the number of years you have worked in the organization.

Less than 5 years	[ ]
5-10 years	[ ]
10-15 years	[ ]
15-20 years	[ ]
Above 20 years	[ ]

4. Please indicate the level of your education

PhD	[ ]
Masters	[ ]
Bachelor's degree	[ ]
Diploma	[ ]

Others……

SECTION B: FACTORS AFFECTING HOUSING MAINTENANCE MANAGEMENT COST

In this section please tick (√) the most appropriate response for each of the questions in the table below. **Strongly agreed (5), Agree (4), Undecided (3), Disagree (2), Strongly disagree (1)**

Q.		Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree
TENANT FACTORS						
1.	Tenants have high expectations					
2.	Tenants vandalize housing facilities					
3.	There is improper use of housing facilities by tenants					
4.	Tenants delay to report failures in the housing parts					
5.	There is complete failure to report housing problems by tenants					
6.	There is inability to access housing facilities					
7.	Tenants have poor budgetary control					
BUILDING CHARACTERISTICS						
8.	Age of the building determines maintenance management cost					
9.	Building height and building area/size influences maintenance management cost					
10.	Type of structure will increase maintenance management cost					
11.	Building services determine maintenance management cost					
12.	Building materials influence maintenance management cost					

	MAINTENANCE FACTORS					
13.	Poor workmanship increases maintenance management cost					
14.	Poor quality of spare parts and materials will affect maintenance management cost					
15.	Poor maintenance management will lead to increase in maintenance management cost					
16.	Budget constraints affect maintenance management cost					
17.	Poor budgetary control is a key contributor to increase in maintenance management cost					
	POLITICAL FACTORS					
18.	There exists right to buy policy					
19.	There is new health and safety regulation					
20.	Poor management decision system will increase maintenance management cost					
21.	Poor or lack of training in house maintenance increases maintenance management cost					

22. What are some of the factors affecting housing maintenance management cost in Kakamega Municipality?

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23. What are some of the challenges facing housing maintenance management cost in Kakamega Municipality?

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28. What are some of the strategic options available for addressing housing maintenance management cost in Kakamega Municipality?

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APPENDIX 3: INTERVIEW SCHEDULE FOR KEY INFORMANTS

Introduction: Good morning or afternoon sir/madam. Thank you for having granted me permission to interview you. I would like to assure you that I will stick to all ethical codes of conduct with regard to conducting research as stated in my introduction letter. I am carrying out a study on "**Factors Affecting Housing Maintenance Management Cost in Kakamega Municipality, Kenya."**

The Interview Questions:

1. Please identify and discuss some of the factors affecting housing maintenance management cost in Kakamega Municipality.

2. What are some of the challenges facing housing maintenance management cost in Kakamega Municipality? How can housing maintenance management cost be reduced?

3. What are some of the strategic options available for addressing housing maintenance management cost in Kakamega Municipality?

Conclusion: Thank you for your time, I hope your responses to the questions will contribute a lot to my research work.

APPENDIX 4: MAP OF KAKAMEGA MUNICIPALITY

1.