FACTORS INFLUENCING FIRE DISASTER PREPAREDNESS IN THE CENTRAL BUSINESS DISTRICT OF NYERI TOWN, NYERI COUNTY, KENYA

By

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DECLARATION

This is my original work and has not been presented for an award in any other university.

…… ……

Joyce G. Murage Date

Reg No: L50/66511/2010

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

…… ……

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DEDICATION

I dedicate this work to my husband Edward Murage, my daughter Prudence and my sons Lewis and Robin.

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ABBREVIATIONS AND ACRONYMNS

CBD	Central Business District
CTBUH	Council on Tall Building Urban Habitat
DMMU	Disaster Mitigation and Management Unit
DREF	Disaster Relief Emergence Fund
UK	United Kingdom
MDG	millennium Development Goals
USFA	United States Fire Administration
OSHA	Occupational Safety and Health Administration

ABSTRACT

Each year people die or are seriously injured as a result of fires at work. Besides loss of life, fire costs Kenya millions of shillings from damage of property, loss of business, fire compensation and insurance premiums. Many of these fires can be avoided by taking fire precautions. If a fire breaks out a lot of the effects can be minimised by having effective controls and procedures in place. Statistics from Nyeri Fire Department show that a hundred and twelve (112) fire outbreaks have been experienced in Nyeri Municipality between the years 2011 and 2012. Fifty one per cent of these fires have occurred in buildings within Nyeri Central Business District (Nyeri Fire Department). The property destruction between January 2011 and January 2012 is estimated at thirty seven (37) million shillings. Eleven people have also lost their lives within the same period of time. A disconnect however exists between the frequency and magnitude of the fire outbreaks in urban centres and the level of preparedness. This therefore has led to the need of undertaking a study to make an assessment of the factors influencing fire disaster preparedness in the Nyeri Central Business District. Specifically the study assessed how independent variables like level of fire safety awareness, value of investment, nature of investment and municipal fire preparedness bylaws influence fire disaster preparedness which is the dependent variable. The purpose of the study is to establish the factors that influence fire disaster preparedness in the Central Business District of Nyeri Town. The objectives were to establish how fire safety awareness, value of investment, municipal fire preparedness bylaws and nature of investment influence fire disaster preparedness. The study used descriptive survey design. Probability sampling procedure was applied. It was carried out on one hundred and seventy two [172] tenants and fifty three [53] landlord/ladies who were selected through stratified random sampling method. This gave a total of two hundred and twenty five [225] respondents. Questionnaires with both closed and open ended questions were used in the collection of data. The findings were then edited, coded, classified and analysed using descriptive statistics then presented with the use of tables. The study found that the level of fire safety awareness is very low and the municipal council does not inspect compliance with fire disaster preparedness bylaws. The study recommended that The Nyeri Municipal Council should organise training for the Nyeri residents and also ensure regular inspection on compliance with fire disaster preparedness.

CHAPTER ONE

INTRODUCTION

1.1 Background to the Study

The world has in the past three decades experienced succession of disasters such as floods, fires, storms, earthquakes volcanic eruptions and landslides. Such incidents include the worst fire that occurred in Mexico, the Mozambican floods of year 2000 and the 2010 Chilean earthquake (Victoria, 2011). The disasters have claimed many thousands of life, caused material looses and afflicted terrible toll on developing countries in particular, where disaster diverts attention and resources from development needed desperately to escape poverty (Victoria, 2011).

According to Dynes and Russell (2002), there is fast growth in urban places of all sizes from small markets to Mega- cities. The increased development interactions increase the risk of fire occurrences as well. Thus, all stakeholders especially users of the buildings need to be well equipped in terms of knowledge on how to prevent and react to fire outbreaks.

Africa has had a share of its fire disasters. Fires have occurred in all provinces of Zambia and in most of the sectors of the economy. The fire disasters have not affected only market and private household but also strategic installations such as bridges and hydroelectric stations. Examples of major fires that have occurred in Zambia include the gutting of Society House, Cabinet 0ffice,Chisokeni Market in Kitwe in 1998 ,Indeni Oil Refinery in 2008.Lives have been lost due to the fires and damage to property worth billions of Kwacha has been experienced.(Disaster Management and Mitigation Unit, 2004).

Fires have contributed to the toll of manmade disasters in Kenya with varying loss of property and life Disaster Relief Emergency Fund (DREF). Examples of these fires include the 2001, fire at the Free Market at Uhuru Park Nairobi which razed down the entire market with merchandise worth millions of shillings destroyed. Later 2004 fire at Nairobi City Hall destroyed 3rd floor with destruction being estimated at 70 million shillings. Over 200 private luxury villas worth billions of shillings and more than 50 luxury vehicles were also gutted down by fire at the Oasis area of Malindi town in 2003 (Omolo and Simatwa, 2004). In 2009, a petroleum tanker fire at

Sachangwan claimed 150 lives and many more injuries. In 2009, Nakumatt Down town inferno resulted in 14 deaths and 40 injuries (Daily Nation Oct 24 pp1). Subsequently, more than 75 people died after a fire broke out in Nairobi's Sinai slums in September 2011 and at least 118 others were admitted to Mater, Metropolitan and Kenyatta National hospitals for serious burns. In February 2012, fire ravaged Mt Kenya forest and consumed bamboo trees in Chogoria and Chuka whose value was estimated to be more than 8 billion Kenya shillings (Ihure, 2012).

Nyeri County has also experienced its share of fire incidents in 2012, with the worst disaster being experienced at Giakanja when a tanker ferrying gas from a local businessman's premises who fills and distributes gas in Mount Kenya region exploded. Seven people lost their lives and the entire investment was razed down (Daily Nation Jan 16 2012 pp2). In Mweru High School - Mukurweini in Nyeri, dormitories were razed down in October 2010 (Daily Nation Oct 28 2011 Pp6). Statistics from Nyeri fire department show that there have been 112 fire outbreaks in Nyeri Municipality in the last 1 year. Fifty one per cent of these fires have occurred within the Nyeri Central Business District .The destruction is estimated to be 37 million Kenya shillings in Nyeri town alone. Eleven people have also lost their lives.

However a discrepancy exists between the frequency and magnitude of the fire disaster and the level o fire disaster preparedness. Fire accidents of the same sort occur repeatedly without any advantage being taken of lessons learnt. According to analysts Kenya's failure to put in place a comprehensive fire disaster preparedness policy means peoples response to high-risk fire disasters will remain slow, poorly co-ordinate and unnecessary expensive (Gicheru, 2012)

This study therefore intends to make an assessment of the factors influencing fire disaster preparedness in the Central Business District of Nyeri. The Central Business District is chosen since it offers a wide range of selection of buildings which house a lot of people as compared with areas outside.

1.2 Statement of the Problem

Literature review on fire disaster preparedness draws substantive conclusion that fast growth in urban places from small markets to cities leads to increased risks of fire disasters as well. Despite the frequency and magnitude of the fire disasters urban dwellers are rarely prepared to save life and property.

Statistics from the fire department in Nyeri show that 112 fire outbreaks have occurred in Nyeri Municipality between January 2011 and January 2012. Fifty one per cent of these fires have occurred within the Central Business District of Nyeri. The property destruction is estimated at 37 million shillings while eleven people have lost their lives (Nyeri Fire Department, 2012). Unfortunately accidents of the same sort occur repeatedly without any advantage being taken to gain important information for future preparedness in fire disaster preparedness. It is thus against this background that this research was conceived.

A survey on high-rise building safety emergencies and evacuation procedures conducted in Chicago USA in 2006 indicated that most of the occupants did not know where fire exits were located. The findings supported the need for continued public education about emergency and evacuation procedures in high-rise buildings (Beard, 1989).

A research conducted in Nairobi Medical School to assess fire risk awareness revealed that lack of training and drills in fire emergency evacuation is a factor that can be blamed by most respondents for their inability to escape from the fire scenes (Mugo et al., 2006). The study supported increased education on fire safety awareness.

No research seems to have been done in the Central Business District of Nyeri to identify the factors influencing fire disaster preparedness. This study was therefore conducted with the aim of generating useful information in the subject area and is focused on how fire safety awareness, value of an investment, nature of investment and municipal bylaws influence fire disaster preparedness in the Central Business District of Nyeri

1.3 Purpose of the Study

The purpose of this study was to establish the factors that influence fire disaster preparedness in the Central Business District of Nyeri County with the view of coming up with recommendations on how to improve fire disaster preparedness.

1.4 Research Objectives

The study was guided by the following objectives;

i. To establish how fire safety awareness influences fire disaster preparedness in the Central Business District of Nyeri.
ii. To examine how value of investment influences fire disasters preparedness in the Central Business District of Nyeri.
iii. To determine how municipal fire disaster preparedness bylaws influence fire disaster preparedness in the Central Business District of Nyeri.
iv. To assess how nature of investment influence fire disaster preparedness in the Central Business District of Nyeri.

1.5 Research Questions

The study sought to answer the following Questions;

i. How does fire safety awareness contribute to fire disaster preparedness in the Central Business District of Nyeri?
ii. To what extent does value of investment influence fire disaster preparedness in the Central Business District of Nyeri?
iii. How do municipal fire disaster preparedness bylaws contribute to fire disaster preparedness in the Central Business District of Nyeri?
iv. In which way does the nature of business influence fire disaster preparedness in the Central Business District of Nyeri?

1.6 Significance of the Study

The findings generated by this study will be used to make recommendations to the county Government town planners and other policy makers on appropriate programmes tailored to help increase fire disaster preparedness among the Nyeri town dwellers.

This study will also help future researchers who may have interest in this unexplored area in Nyeri town. This study will make positive contribution prepare the understanding of factors influencing fire disaster preparedness in Central Business District of Nyeri and provide practical suggestions that aimed at influencing the land lords/ladies in developing sound fire disaster preparedness measures.

1.7 Limitation of the Study

The researcher faced the challenge of distributing and collecting questionnaires from the large number of tenants and landlords/ladies intended to be included in the study. To overcome this, the researcher engaged research assistants who administered and collect the questionnaires. It was also hectic to secure appointments with the tenants and the landlords/ladies due to their tight schedules and therefore prior arrangement were made to counteract this setback. Finally not all the questionnaires were returned duly completed and therefore interviews were used to minimize this.

1.8 Delimitations of the Study

The primary focus of the study was to draw the respondents from the Central Business District of Nyeri. The study targeted the business proprietors and landlords/ladies in all the buildings within the Central Business District.

1.9 Assumption of the Study

The study assumed that the respondents would give reliable and valid information that would assist in getting valid data that could be used to make conclusions in relation to the study. The study also assumed that the variables would remain constant. Finally it assumed that the questionnaires would be returned in time duly complete

1.10 Definitions of Significant Terms

Disaster It is an extreme disruption of functioning of a society that causes widespread of human, material or environmental losses that exceed the ability of the affected society to cope using only its own resources.

Fire disaster preparedness Pre – fire disaster activities designed to increase the level of readiness or improve operational capability, for responding to a fire emergency.

Escape routes These are alternative ways that can be used by people to reach a place of safety means in relation to any point in a building.

Fire safety awareness It is the ability to recognize the danger of fire, to know what do to prevent fire as well as what actions to take in case one happens.

Fire safety devices They are equipments used to put off fire when it occurs and also alert the users of the building on the outbreak of fire in the early stages

Fire drills A response to a planned, stimulated fire emergency event aimed at gauging the preparedness of the employees to fire emergency.

M**unicipal bylaws** They are public regulatory laws which apply in a certain areas and on a limited range of matters

Investment Any commercial activity engaged in as a means of livelihood or profit.

Employee A person who is hired to provide provide services in an investment

1.11 Organization of the Study

In chapter one the following are covered: background of the study, statement of the problem, purpose of the study, research objectives and questions, significance, limitation and delimitations of the study and finally on the definitions of significant terms. In chapter two, the introduction has been covered, overview of fires and disaster preparedness in Kenya and in particular Nyeri County. In chapter three the following are included under research methodology, research design, study area, data collection techniques data analysis and operationalization of variables.

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CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter aimed at identifying what other researchers have done in the past concerning fire disaster occurrences and preparedness. This review was meant to enhance the understanding of other researchers' contribution to the problem. It was then out of the findings that the researcher was able to note gaps in knowledge and create entry point for the study. It also sharpened and deepened the researcher's conceptual framework concerning certain factors influencing fire disaster preparedness in Nyeri town. The chapter looked at how level of awareness, value of investments and municipal preparedness by laws influence fire disasters preparedness in the Central Business District of Nyeri Town.

2.2. Overview of Fire Disasters and Preparedness

Fires cause significant damage, serious injury and loss of life. Disasters such as these can be prevented easily with appropriate planning, fire protection, training and commitment of employees throughout an organization (Munso, 1998).

Historically in England, one of the first fire prevention measures was a requirement to extinguish all fires before nightfall. In 1872 in Oxford, authorities ordered a curfew bell to be rung at sunset to remind citizens to extinguish all indoor fires for the night. To date the existing fire safety in UK have various requirements for builders that cover all activities starting from construction site itself, actual design of material to be used and a building can only be given permit to operate if the structure has been certified to be fire proof and compliant with the fire safety regulations (Hall, 1997).

The Winecoff Hotel Fire which occurred in Atlanta, Georgia, in 1946 quickly spread through the building, trapping people in the upper floors, and causing many to jump out of windows to their deaths. Audit conducted in the hotel revealed that escape from the upper floors was difficult

because the building only had one exit stairway, which became impassable during the early stages of the fire (Colonna, 2001).

The strategy of individuals in evacuating buildings in case of a disaster was investigated by John Abrahams in Chicago in 1994 (Ouellette, 1993). The independent variables were the complexity of the building and the movement ability of the individuals. This study found that with increasing complexity and decreasing motion ability, the strategy can lead to fast exit, slow exit .The study recommended the provision of disaster escape routes and frequent drills in order to facilitate effective evacuation.

In United States of America, United States Fire Administration (USFA) claims that fire kills about 4,000 people annually injuring about 20,000 people and ends up destroying property worth billions of dollars. The records show that one reason why many small towns in America did not fare as well as larger cities during a fire disaster is that their fire fighting equipment was often not adequate giving. An example was Peshtigo Fire of 1871, where a massive fire killed over a thousand people (National Fire Protection Association, 2010).

Africa has had her share of fire incidents especially in the urban areas. Statistics released by Ghana Electrical Contractors Association in 2011 showed that 50% of fire outbreaks that occurred in Accra between 2009 and 2010 were in the central Business District, 30% of which were caused by improper electrical installation. In Nigeria, huge amounts and several lives have been lost to the devastating effects of fire in the last four decades. In 2010 alone, according to data published in the current edition of Fire Fighters magazine, no fewer than 990 lives were lost in 7,129 fire incidents in the country, as property worth over N53m were destroyed during the same period (Bukoski, 2006)

On 26th January 2012 fire outbreak and burnt a number of shopping malls and business premises in Yambio town, Western Equatorial State. The flames claimed the lives of 51 people and property burnt to ashes and to make it worse, the fire brigade was nowhere to respond and contain the situation (Kanjeche, 2012).

In a study conducted in Oshogbo in Nigeria, revealed that 73.4% of houses studied had “burglary proofs” installed on windows, doors and sometimes the veranda. This is a security

measure aimed at preventing robbers from gaining access to the house. The escape of inhabitants of a house, who commonly get trapped by the rigid non-removable metals in case of fire, become difficult (Bukoski, 2006).

2.3 Kenyan Perspective on Fire Disasters and Preparedness

Fires have contributed to the toll of manmade disasters in Kenya with varying loss of property and life (DREF, 2010). Examples of these fires include the 2001, fire at the Free Market at Uhuru Park Nairobi which razed down the entire market with merchandise worth millions of shillings destroyed. Later 2004 fire at Nairobi City Hall destroyed 3rd floor with destruction being estimated at 70 million shillings. Over 200 private luxury villas worth billions of shillings and more than 50 luxury vehicles were also gutted down by fire at the Oasis area of Malindi town in 2003 (Omolo and Simatwa, 2004). In 2009, a petroleum tanker fire at Sachangwan claimed 150 lives and many more injuries. The Nakumatt Down town inferno resulted in 14 deaths and 40 injuries (Daily Nation Oct 24 pp1, 2009). In September 2011, more than 75 people died after a fire broke out in Sinai slums in Nairobi. At least 118 others were admitted to Mater, Metropolitan and Kenyatta National hospitals for serious burns. In February 2012, fire ravaged Mt Kenya forest and consumed bamboo trees in Chogoria and Chuka whose value was estimated to be more than Sh8 billion (Ihure, 2012).

In Kenya the School Safety Policies as indicated in the Ministry of Education Circular No.G9/1/169 (Republic of Kenya, 2001) requires that drills should be held at least twice a year in all Kenyan schools in order to make them aware of the students aware of the emergency exits and also prepare them for evacuation in case of fire outbreak.

The same notion is supported by (Odour and Atsiaya 2004) who said that people who regularly visit or use buildings or even visitors should be aware about the presence of the exit door which should not be blocked with anything and with proper signage showing the path out. They said that observations show that in most of the buildings in Nairobi there were locks on doors while grilled outdoors were also locked a situation that presents doubts on their usability for escape purposes during emergency. They also noted that in most of the buildings, especially the storey

ones, escape routes are a fare tales and therefore when fire breaks out, people crumble in one staircase exposing them to more danger of fire (Odour and Atsiaya, 2004).

According to analysts, Kenya's failure to put in place a comprehensive fire disaster management policies means its response to high-risk events of fire disasters will remain slow, poorly co-ordinate and unnecessarily expensive. They recommend that there should be national fire disaster laws to be followed accompanied by actions to be meted on those who break them (Gicheru, 20110)

2.4 Fire Disasters in Nyeri County

Statistics from Nyeri fire department show that there have been 112 fire outbreaks in Nyeri Municipality between January 2011 and January 2012. Fifty one per cent of these fires have occurred in buildings in the town centre. The property destruction within the same period is estimated to be 37 million shillings. Eleven people have also lost their lives. These fire outbreaks have involved business premises as well as residential areas (Nyeri Fire Department, 2012**).**

Nyeri County has also experienced its share of fire incidents the last 5 years, with the worst disaster being experienced at Giakanja when a tanker ferrying gas from a local businessman's premises who fills and distributes gas in Mount Kenya region exploded. Seven people lost their lives and the entire investment was razed down (Daily Nation 2012 January 16 pp1). In Mweru High School- Mukurweini in Nyeri, dormitories were razed down in October2011 (Daily Nation 2011 October 28 pp6).

2.5 Level of Fire Safety Awareness

This is the ability to recognize the danger of fire, ability to know what to do to prevent fire as well as what action to take in case one happens. All fire disaster preparedness is based on the knowledge about fire hazards, the likelihood of different causes of fire outbreaks and the likely effects on the built and natural environment (Comolotti, 2004). He says people with knowledge about fire disaster will acquire equipments such as fire extinguishers, fire blanket and smoke detectors among others to support response activities. They also prepare their families and employees to take immediate action to prevent death injury and destruction of property whenever

disaster strikes. Safety regulations in U.K impose mandatory fire safety training to all employees working within a building, a construction area or any other busy area which helps provide employees with crucial information, develop skills such as those used in operating fire extinguishers and proper escape behaviors (Sime, 2001).

Wood (1990) explored levels of awareness of and preparedness for fire disaster in community members in Queensland and found that the level of fire safety awareness has direct influence on the level of preparedness. He says being ignorant of dangers of fire makes people ignore the installation of fire fighting gadgets which will help save life and property in case of fire outbreak. He also found that poor awareness of fire caused a lot of fire outbreaks while good knowledge enabled people to know the possible fire risks in ones premises. This study supported the more intensive and comprehensive capacity building in order to instill the need of preparedness (Wood, 1990).

In a study conducted in Oshogbo in Nigeria to assess the relationship between level of awareness and disaster preparedness found, that 73.4% of houses studied had “burglary proofs” installed on windows, doors and sometimes the veranda. Out of those interviewed 64% said they had never thought of the implication in case of fire outbreak. To them this is a security measure aimed at preventing robbers from gaining access to the house. The escape of inhabitants of a house, who commonly get trapped by the rigid non-removable metals in case of fire, become difficult (Bukoski, 2006).

Incidents of fire outbreaks in Tanzania will not go down unless peoples level of awareness of their duties to prevent fire is raised (Mfinanga, 2007). Mfinanga also noted that most people do not know that it is their responsibility to prevent fire outbreak and the first response is to call fire fighter as portrayed by one of a stall owner in Mchikichini market in Tanzania where 80 stalls were destroyed by fire who asked, “Is it our responsibility to fight fire?” While reacting to the question what steps the businessmen took to ensure that such incidents never reoccur again. To him it is the duty of the fire fighters.

People who regularly visit or use buildings or even visitors should be aware about the presence of the exit door which should not be blocked with anything and with proper signage showing the

path out (Odour and Atsiaya, 2004). They said that observations show that in most of the buildings in Nairobi there were locks on doors while grilled outdoors were also locked a situation that presents doubts on their usability for escape purposes during emergency. They also noted that in most of the buildings, especially the storey ones, escape routes are a fare tales and therefore when fire breaks out, people crumble in one staircase exposing them to more danger of fire. Many of the surveyed buildings, fire disaster may hardly be escaped using the emergency exits since many do not know the location of fire exits. However the location of fire escape ways does not necessarily imply easy access through the ways as one of the respondents was quoted saying "the escape ways are known to many but the environment is not welcoming : stairs are old ;the exit doors are regularly locked ,whereas the keys to are with the watchmen downstairs". Worse still the respondent did not know among the watchmen held the key (Odour and Atsiaya, 2004).

2.6 Value of the Investment

An investment is any commercial activity engaged in as a means of livelihood or profit, or an entity which engages in such activities. Business fire disaster awareness is a worldwide concern and that is why business disaster preparedness survey research among businesses, large and small appears to be on the increase. Messages of business preparedness to any form of disaster should be directed to senior leaders and decision makers (Eakin and Semchuk, 1998). They note that businesses increasingly see themselves as prone to vulnerability to fire disasters which has caused big investors to pay more attention to the level of fire disaster preparedness. However the report says there is a wide gap between companies awareness of the potential for disruption by fire and the amount of preparedness they have. This gap is due to the perception that fire disasters would not be severe enough to warrant investment of resources in the preparedness activities (Eakin and Semchuk, 1998).

Studies disaster management done in urban centers in India found that fire disaster preparedness of small businesses differ from those of large business (Quarantelli, 1992). The survey showed that small business rank safety regulations among the most burdensome and most difficult problems. They view it as a threat to their profitability and ultimately the survival of the

business. Contrary the large businesses comply with fire safety regulations despite the great financial obligation demanded (Quarantelli, 1992).

According to Cropp (1994), the New Zealand Fire services emergency incidents show that small firms experience a higher percent of property damage caused by fire as compared to larger businesses. He attributed this to the fact that huge investments are followed by sound fire safety precautions as compared to the small investments. The same was echoed by fire protection specialist Donnel (1980) whose study revealed that a high percent of small business in urban areas are not adequately prepared for fire with forty five percent of respondents admitting to not having fire extinguisher onsite. Warmald says that effects of fire occurrences are more adverse on small business as compared to large business considering the fire disaster preparedness level of the latter (Deakin, 1999).

According to an Office Depot Survey of 5000 small business owners , those business that deal with highly flammable materials that are also very expensive see themselves as vulnerable to fire disaster and thus follow the fire disaster preparedness guidelines to the letter .The report also showed that those organizations that had experienced some form of fire disruption have much higher levels of fire disaster preparedness than those that had not and those that had sustained great losses taking even more preparedness measures (Business Wire, 2008).

According to Bourque (2010), it takes many years to build a business but it can take a short time if fire occurs and that is why big investors take responsibility of assessing their business fire risk and also adhering to all fire safety guidelines. The same was supported by the findings of a survey of small and medium sized business carried out in New York which found that while 80% of the large business had some precautions for fire disaster preparedness while only 23% of the small business had not taken any precautions (Bourque, 2010).

A study conducted in Osogobo in Nigeria, revealed that 73.4% of the business premises studied had “burglary proofs” installed on windows, doors and sometimes the veranda. This is a security measure aimed at preventing robbers from gaining access to the house. The escape of inhabitants of a house, who commonly get trapped by the rigid non-removable metals in case of fire, become difficult (Bukoski, 2006).

A survey conducted in the Central Business District of Kisumu City to assess fire risk awareness among the small and micro enterprises revealed that most of the large investments are better prepared for fire disasters than the small ones. To them the benefits of purchasing and maintaining fire safety devices outweigh the costs of losses through fire. They therefore perceive the preparedness as possible competitive advantage over competitors who have not adhered to any fire disaster preparedness (Odour and Atsiaya, 2004).

2.7 Municipal Fire Preparedness Bylaws

Municipal bylaws are public regulatory laws which apply in a certain area and are made by a non-sovereign body which derives its authority from another government body and can only apply on limited matters and locality (Dailey, 2000). The purpose of the bylaws is to minimize the potential fire risk arising from certain use of land and buildings and to address public safety concerns (Dailey, 2000).

Historically in England, one of the first fire prevention measures was a requirement to extinguish all fires before nightfall. In 1872 in Oxford, authorities ordered a curfew bell to be rung at sunset to remind citizens to extinguish all indoor fires for the night. To date the existing fire safety in UK have various requirements for builders that cover all activities starting from construction site itself , actual design of material to be used and a building can only be given permit to operate if the structure has been certified to be fire proof and compliant with the fire safety regulations (Hall, 1997).

In Japan high-rise buildings and those buildings that exceed a certain size must appoint fire prevention chefs to prepare for large scale fire disaster. The owners must establish an in-house fire fighting team and also equip the buildings with appropriate means for fighting fire and giving warning. These equipments must be easily accessible and simple to operate with signs. Fire marshals should also ensure that routes to emergency exits and exits are kept free from obstruction all the time (Hurley, 2006).

In Columbia where the British Columbia Fire bylaws require the owner of a property to establish fire emergency procedure and prepare and maintain a building fire safety plan, the property owner will submit to the fire department a detailed review of approval prior to the

implementation of such a plan. An owner or occupier of a building is also supposed to remove any matter or things situated in or any building or premises which in the opinion of the fire department is a fire hazard or increases the danger of fire. The officers from the fire department are authorized at all times to inspect any property to ascertain whether the fire bylaws are complied with (Peakin, 1999).

Under the Regulatory Reform (Fire Safety) Order 2005 of the municipality of White House a person willing to set open fire, the responsible person must carry out a fire safety risk assessment and implement and maintain a fire management plan (Proulx, 1999) This applies between the month of April and October when the wind are strong. He says the intention is to control bush fires that are common within that period of time (Proulx, 1999).

In Nigeria the most of the municipal bylaws require that the owner or occupant of a building to always maintain a fire system alarm, emergency lighting and exit lighting supply and maintain portable fire extinguishers and also accessible means of exit in case of emergency. Failure to abide with the bylaws leads to heavy penalties (Bernard and Mackenzie, 1996).

In London the owner of a building is supposed to ensure that one or more smoke alarms are installed and maintained in every dwelling and are tested according to manufacturers specifications. Owners of buildings of six or more storeys will ensure that fire stairwells are marked clearly including roof access. Any person who violates any of these provisions of these bylaws will be liable to penalty of not less than fifty dollars. The penalty is meant to ensure people comply with the bylaws (Dynes and Russell, 2002).

According to Nyeri municipal fire disaster preparedness bylaws every workplace must have enough exits suitably located to enable everyone to get out of the facility quickly. In addition, fire doors must not be blocked or locked when employees are inside. Delayed opening of fire doors, however, is permitted when an approved alarm system is integrated into the fire door design. Exit routes from buildings must be free of obstructions and properly marked with exit signs. Firefighting equipments and facilities such as alarm systems, fire extinguishers and emergency doors must each be maintained on a regular basis and any faults, when detected, must

be rectified immediately. A record of such maintenance must also be maintained (Nyeri Fire Department, 2012).

2.8 Nature of Investment

Generally, there are enterprises which are more susceptible to fire accidents. Such are hotels, laboratories, chemical industries, petrol stations and production areas among others (Watts, 1997). He says level of fire protection that is given to escape routes in most cases vary depending on the level of risk of fire within the premises and other related factors. Generally, premises that are simple, consisting of a single storey, will require fairly simple measures to protect the escape routes, compared to a large multi-storey building, which would require a more complex and inter-related system of fire precautions (Proulx, 1999).

The same is echoed by Marjanoric and Nimpuno (2002) who note that in those premises that are prone to fire disasters, the number and capability of people present will influence the assessment of the escape routes. One must ensure that the existing escape routes are sufficient and capable of safely evacuating all the people likely to using the premises at any time, including events such as sales. If necessary one may need either to increase the capacity of the escape routes or restrict the number of people in the premises in order to save such victims, it is extremely essential for the high-rise buildings to have proper fire safety management in place. The people present in premises may sometimes just be employees, but most of the time will be a mixture of employees and members of the public. Employees can reasonably be expected to have an understanding of the layout of the premises, while members of the public will be unlikely to have knowledge of alternative escape routes (Marjanoric and Nimpuno 2002).

Barnes (2001) says that in United Kingdom a fire certificate is required for any premises used as a hotel or boarding house if sleeping accommodation is provided for more than 6 persons (whether guests or staff) or where there is some sleeping accommodation above the first floor or below the ground floor. A fire certificate is also required in respect of factory premises in or under which certain explosive or highly flammable materials are used or stored (depending on kind and quantities).He adds that all business proprietors need to think of how to prevent fire. Their understanding as regards the issue of fire needs to be sensitized. If one can put N3m in a

building and takes fire prevention gadget of N10, 000, then it is worth the risk since it is cheaper to prevent fire than fighting it. He argues that if a system is in place that will help to hold and contain fire before the arrival of fire fighters then the magnitude of destruction can be minimized (Barnes 2001).

Fire accidents occur anytime and at any place and that is why business owners, managers and supervisors should let their guard down and ensure that premises are fully protected from both inside and outside (Gillespie and Streeter, 1987). They advised that consideration should be given to the need to improve safety precautions against fire in large shops and departmental stores in which members of the public and employees may be present and also introduce legislation to enable local authorities and fire authorities to prescribe the measures to be taken in the areas for which they are responsible, and to inspect the arrangements made (Gillespie and Streeter, 1987).

Despite a general increase in the importance of preparedness, many companies have still not taken action. The Emerson poll (2006) found that 21 percent of large U.S. businesses (defined as those with more than $50 million in annual business revenue) have not taken serious precautions against fire disasters. This is according to studies done by the Semi-Annual Business Continuity Survey assessing Bay Area business disaster preparation and recovery (Donahue and Tuohy 2006). The study also found that while companies state that they take fire disaster preparedness seriously, most are only in the early stages of plan implementation. Among small businesses, an Office Depot survey found that 40 percent of respondents admit they are not ready for a disaster and one-third state that they have no current plans to begin preparedness activities (Business Wire, 2008).

Surveys conducted by The New Zealand Fire Service sampled premises that deal with materials that vulnerable to fire risks found a fairly high level of preparedness activity; in virtually every study targeting those premises a majority of respondents stated that their organizations did have sound fire disaster preparedness measures in place. Those surveys that addressed less vulnerable business found much lower levels of disaster preparedness planning. This overall finding is supported by multiple surveys that demonstrated a higher level of both planning activities and a

higher perception of vulnerability among those engaged in preparedness planning than by executives and decision makers working in other areas (Ramachandran, 1999).

2.9 Fire Disaster Preparedness

It is defined as pre – fire disaster activities designed to increase the level of readiness or improve operational capability, for responding to a fire emergency. Brewerton (1999) defined it as planning, equipping, training and exercising in order to create or sustain capabilities in order to prevent, protect against, mitigate and respond to any fire emergency. The purpose of being prepared according to him is to enable effective response when a disaster occurs (Brewerton 1999).

According to Colonna (2001) one of the universally followed guidelines in fire disaster preparedness is that fire extinguishers and other fire fighting equipment which include fire extinguisher hose reel, dry riser, wet risers sprinklers fire detectors and sensors should be kept wherever necessary. According to proper Fire Regulations & Fire Safety (2007) in the workplace standards, it is also important that the equipment each of these facilities is maintained on a regular basis and any faults, when detected, must be rectified immediately. A record of such maintenance must also be maintained (Colonna, 2001).

A survey which was conducted in South Kolkata Dhakuria to assess fire disaster preparedness hospitals in both private and public found that fire pumps had stopped working in several hospitals and Fire and smoke alarms in many hospitals were not functioning properly. This study revealed the risk exposed to patients in case of fire outbreak most of who were in critical conditions (Reuters, 2004).

All workplaces must have clearly identified means of escape which are kept clear at all times to ensure that everyone can exit the workplace in the event of a fire or other emergency (Mfinanga, 2007).He says if an escape route or emergency exit must be blocked for any reason, then alternative arrangements must be made and these arrangement must be conveyed to all those occupying the building .A research conducted in London to assess people's behaviour in fire revealed that as long as an exit is not seriously obstructed, people have a tendency to move in a familiar direction, even if further away, rather than to use a conventional unfamiliar fire escape

route. The study recommended proper fire signs to be posted in every building for easy access in case of fire outbreak (National Fire Association, 1995).

Bowker (1999) notes that in order to have effective fire preparedness in high-rise building, it is important to teach people about the fire safety methods and procedures. He says educational and training programs pertaining to the fire safety measures help in providing knowledge to the people about the various aspects of a fire disaster. He notes being ill prepared in the event of fire; one literally does not know what to do and while in that state of confusion the houses get raised in the inferno. Safety regulations in U.K impose mandatory fire safety training to all employees working within a building, a construction area or any other busy area which helps provide employees with crucial information, develop skills such as those used in operating fire extinguishers and proper escape behaviours (Proulx, 1999).

Ouellette (1997) noted that there is a huge difference between acquiring fire protection in theory and implementing the same in practice. Fire drills he said enable people to escape from the scenes without being hurt and without drills that entire one knows theoretically about fire safety will always backfire in a real situation of fire. He recommended that it is necessary to conduct a fire drill at least once a year when a fire the employees practice how to get out of the building as fast as they can, and to assemble and report in an agreed meeting place (Ouellette, 1997).

The Occupational Safety and Health Administration, OSHA, requires a written emergency action plan for all businesses that employ more than ten people, but for those with fewer than ten employees, the plan may be communicated orally. It is important that the evacuation plan is evaluated and practiced to ensure its efficiency (National Fire Protection Association, 1995).

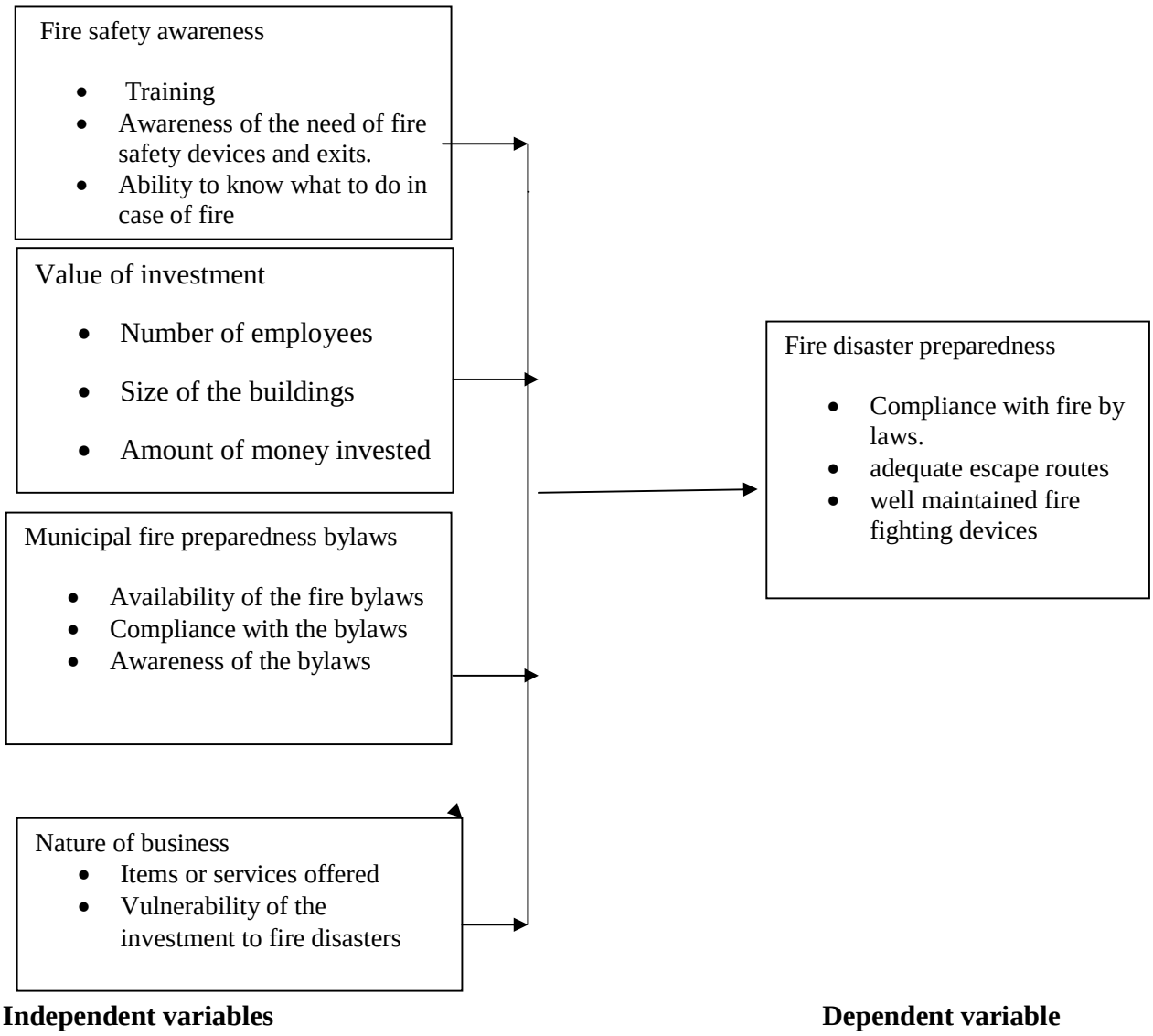

Figure 2.1 Conceptual Framework of Factors Influencing Fire Disaster Preparedness

Fire disaster preparedness was conceptualized in this study as the dependent variable while level of fire safety awareness, value of the investment, nature of investment and municipal fire disaster preparedness bylaws were viewed as the independent variables. Fire disaster preparedness was viewed as provision of well lit escape routes for easy evacuation in case of fire outbreaks as well as well as the tenants' and landlords' compliance with municipal fire disaster preparedness bylaws. The indicators of level of fire safety awareness were viewed as the ability to recognize

fire risk and knowing what to do in case of outbreak. This awareness leads to the provision of fire safety devices and escape routes in building as well as provision of Training on fire safety awareness.

Value of investment is another variable that will be assessed to find out how it affects fire disaster preparedness. It is assumed that those large investments that employ a lot of people and occupy high rise buildings are more likely to take fire disaster preparedness measures than the small ones. Nature of invest is also assumed to influence the level of preparedness. Those investments that deal with inflammable materials making them vulnerable to fire outbreaks will follow fire disaster preparedness guidelines to the letter. Presence of Municipal fire preparedness bylaws are believed to directly influence fire disaster preparedness. Where the Municipal council officers sensitize people on the bylaws and enforce the same by placing penalties on failure to comply will increase the level of preparedness as opposed to areas without the bylaws.

2.10 Summary of the Literature Review

Most of the literature on fire disaster revealed that a gap exists been the magnitude and frequency of fire disasters and the level of preparedness whenever such disaster strikes .It has highlighted that level of awareness, value of an investment, municipal fire preparedness bylaws and nature of investment, as factors influencing fire disaster preparedness. In most of the studies reviewed descriptive survey incorporating both qualitative and quantitative approaches is the widely used design. Stratified random sampling is the commonly used as the sampling procedure. Questionnaires, focus group, observations and interviews have been mostly used as data collection tools. This study therefore sets out to assess factors that influence fire disaster preparedness in the Central Business District of Nyeri using descriptive survey as a design as well as stratified random sampling as the sampling procedure. Questionnaires, interview and observations will be used as the instruments of data collection.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter sets out the research methodology adopted so as to establish how the level of fire safety awareness, value of investment, fire disaster preparedness bylaws and nature of investment influence fire disaster preparedness in the Central Business District of Nyeri. The chapter describes the research design adopted, area of study, the target population, the sample and sampling procedure, research instruments, validity and reliability of instruments, operational definition of variables, ethical issues and methods of data analysis to be used.

3.2 Research Design

The study adopted a descriptive survey design where Central Business District of Nyeri was selected for the study. Descriptive survey design is used in preliminary and exploratory studies to allow the researcher gather information, summarize, present and interpret it for the purpose of clarification (Orodho, 2002). Kothari (2003) also recommends descriptive design as it allows the researcher to describe, record, analyze and report conditions that exist or existed. This design allows the researcher to generate both numerical and descriptive data that can be used in measuring correlation between variables.

3.3 The Target Population

Kombo and Tromp (2006) define a population as a group of individuals, objects or items from which samples are taken for measurement. The population of interest consisted of all tenants and landlords/ ladies of the one hundred and seventy two (172) buildings found in the Central Business District and are also registered with the Nyeri Municipal Council. It consists of one thousand, one hundred and twelve (1112) tenants and one seventy two (172) landlords/ladies.

3.4 Sampling Design

The study adopted probability techniques to create a sampling frame. In probability sampling, stratified sampling was used since the tenants occupy buildings which are of varying sizes and also hold varying numbers of people. It was therefore important that all were represented. This method was also used by Mfinanga (2007) who divided the tenants in the buildings in the Central Business District of Dar-es-Salaam into four categories based on their size of the buildings while assessing fire safety awareness. The categories included Tenants in one storey buildings, two storey building, three storey buildings and four and above storey buildings. This study adopted the four categories however; it added one other category in an attempt to capture any possibility of variation in factors influencing fire disaster preparedness regarding the categories on the basis of size and number of people. It is thus important to give each an equal chance of being in the study. The five categories to be considered for data collection and analysis in the study are as follows;

Tenants in buildings that are not storey

Tenants in one storey buildings.

Tenants in two storey buildings

Tenants in three storey building

Tenants in four and above storey buildings

According to Cochran (1977) stratified random sampling technique is very common and preferred because stratification produces a gain in precision in the estimates of characteristics of the whole population. Another advantage of stratified sampling is that it ensures the inclusion into the sample subgroups which otherwise will be omitted entirely by other sampling methods because of their small numbers in the population (Borg and Call, 1989; Mugenda and Mugenda, 1999). Each stratum represents each category of the size of the building.

Table 3.1: Sampling Frame of Nyeri Central Business District tenants and landlords/ladies

Category/Strata	**No of tenants**	**No of landlords /ladies**
Tenants in buildings without Storey	160	85
Tenants in one storey buildings	256	32
Tenants two storey buildings	160	16
Tenants in three storey building	264	22
Tenants in four storey buildings	272	17
Total	1112	172

To get appropriate information on fire disaster preparedness, researcher used the sampling method provided by Taro (1968) in order to get a sample size of the 1112 tenants. It is as follows:

$n= N/1+N (e)^2$ where n = the sample size

N = total population of tenants

e = level of precision

$n =1112/1+1112(0.07)^2= 172$

To get the sample of the landlords the researcher will get 30% of 172 landlords/ladies which is 53. This is because they are best placed to understand how people in the buildings are prepared to manage fire. According to Corchran (1977), a sample of 30% of the population is sufficient for a study. The same view is supported by Blanche et. al.(2003). All the respondents were picked through simple random sampling. This gave the researcher a total of two hundred and twenty five respondents.

3.5 Research Instruments

This study used questionnaires for the purposes of gathering information from the tenants and landlords/ladies of the selected buildings. Both the primary and secondary data was collected for

the purposes of this study. The primary data will be collected through the questionnaires, while the secondary was collected from the offices of the municipal council and the fire department office in Nyeri. A questionnaire with both open and closed ended questions was be used to collect the primary data. Open ended questions were used to seek in depth information.

The questionnaires with adequate instructions and easy to understand language was hand delivered to the already identified samples of the population by the researcher and the research assistant. Date of collecting the filled in questionnaires was agreed upon at the point of delivery and follow-ups were made over the phone during the process.

3.6 Pilot Study

A pilot study was carried out to test the reliability and validity of the questionnaire. This was done to ensure that any irrelevant question items in the instrument were removed and to focus the questionnaire so that the right information is obtained. Piloting was also done to check the questionnaire content**,** structure, sequence, meaning and ambiguity of questions. According to Fraenkel and Wallen (2000), content validity is determined by expert judgment. The researcher also made the interview schedules in consultation with the supervisors to ensure that they address all possible areas of study appropriately and accurately. This helped rectify any inadequacies in time before actual collection of data in order to reduce biases. The questionnaires were pre-tested by administering it to sub-sample of twenty three respondents which is 10% of the sample population.

3.7 Validity of the Research Instruments

In order to improve validity the researcher ensured that the research instruments were accurate by making the necessary adjustments after conducting a pilot study and ensured the questions were getting the right responses to measure what was intended. Information gathered was also cross checked with other sources to ensure authenticity and accuracy. The researcher gave a copy of the questionnaire to a professional in the field of fire disaster preparedness to assess whether the concepts that the instruments were measuring accurately represented the concept under study.

3.8 Reliability of the Research Instruments

Reliability is important because it enables the researcher to identify misunderstandings, ambiguities, and inadequate items in the research instruments and make the necessary adjustments so that data collected can have more reliability. This was achieved by the researcher conducting a pilot study and making the necessary changes in the research instruments by way of reframing the questions to make them better understood, giving the necessary instructions and simplifying the language to ensure the correct interpretations. A Test – Retest was carried a week after to the exercise to guarantee that the information initially given is reliable. From the findings the correlation coefficient was 0.875 which is more than the recommended 0.85 and therefore the instrument was deemed as highly reliable in data collection.

3.9 Ethical Issues

To guarantee ethical handling of all the issues raised during the data collection, the researcher made sure that proper channels of applying for study authorization has been followed .The researcher ensured that all information was held in strict confidence and ensured anonymity of the respondents. The researcher also ensured that the data was not manipulated in any other way besides the intended purpose by this research. All the respondents were given a free will to participate and contribute voluntarily to the study.

3.10 Methods of Data Analysis

The raw data collected was first preprocessed. This includes editing of data to detect errors and omissions and correct where possible: which involved a careful scrutiny of the completed questionnaires to ensure that the data is accurate, consistent with facts gathered and uniformly entered. The researcher then coded the data for efficiency during data analysis. The data was classified on the basis of common characteristics and attributes. After the mass of raw data was assembled, it was tabulated in form of statistical tables, in order to allow further analysis.

Descriptive statistics was used for all the research objectives which helped to describe the basic features of the data in the study in summary. This was because most of the information collected was numerical. Descriptive statistics were used to examine the central tendency mainly the mean

and the mode of the data on all the research questions. Dispersion of the data meaning how spread out the data were as measured by standard deviation was done on the level of fire safety awareness to establish the influence of training on the level of preparedness. The same was done on the municipal fire disaster preparedness bylaws to establish the influence of on inspection for compliance on the level of preparedness.

Descriptive statistics is said to be advantageous because it is easy to work with, interpret and discuss raw data. It also includes useful techniques for summarizing data in a visual form and form basis for more advanced statistical methods. However, it offers very little information about the cause and effects. It is also of limited use when samples and populations are small.

3.11 Operational Definition of Variables

The researcher identified behavioral dimensions, indicators or properties denoted by the main variables under the study in order to render them measurable. The operationalisation of variables is shown in Table 3.1

Table 3.2 Operational Definition of variables

Objective	**Type of variable**	**Indicators**	**Measurement scale**	**Tools of analysis**	**Approach of data analysis**
To establish how fire safety awareness influence fire disaster preparedness	**Independent** Fire safety awareness	Training Awareness of the need of fire safety devices Awareness of the need of escape routes	Interval	Frequency, Percentage and Means	Descriptive.
To examine how value of investment influence fire disaster preparedness	**Independent** Value of an investment	Number of employees Size of the building Value of the investment	Ratio	Frequency, Percentage	Descriptive.
To examine how municipal fire disaster preparedness bylaws influence fire preparedness	**Independent** Municipal fire disaster preparedness bylaws	Aware of the municipal bylaws Compliance with the bylaws Availability of the bylaws	Interval	Frequency, Percentage and Means	Descriptive.
To find out how nature of investment influence fire disaster preparedness	**Independent** Nature of investment	Items or services offered Vulnerability of the investment to fire disaster	Ordinal	Frequency, Percentage	Descriptive.
	Dependent variable Fire safety preparedness	adequate escape routes Well maintained fire safety devices Compliance with fire bylaws	Ordinal	Frequency and Percentages	Descriptive

CHAPTER FOUR

DATA ANALYSIS, PRESENTATION AND INTERPRETATION

4.1 Introduction

This chapter presents the summary of the analyzed data. The results are presented based on the objectives of the study, which aimed at establishing the factors that influence fire disaster preparedness in the Central Business District of Nyeri County with the view of coming up with recommendations on how to improve fire disaster preparedness. The data was interpreted according to the research questions. The analysis was done through descriptive statistics and findings of the study were presented in form of frequency tables and percentages. The discussion of the outcomes is based on the outputs from Statistical Package for Social Sciences (SPSS)

4.2 Response Rate

Table 4.1: Response Rate (n=200)

Category	Targeted Sample size	Response Rate	%Response Rate
Landlords	53	45	84.91
Tenants	172	155	90.12
Total	225	200	88.89

A total of 225 questionnaires were distributed to the selected respondents in Central Business District of Nyeri. A total of 200 questionnaires were duly filled and collected making an 88.9% response rate. According to Peil (1995), questionnaires return rate of above 50% is acceptable for study. This was hence an acceptable rate and could be attributed to the fact that the questionnaires were physically dropped to the respondents and collected at an agreed date.

4.3 General Information of the Respondents

The researcher sought to establish the general information of the tenants and landlords/ladies. The major areas of concern were age, education level and gender. The aim was to establish the relationship between the age, level of education and gender of the respondents and the level of preparedness.

Table 4.2: General information about the Landlord/Landladies (n=45)

Category	Frequency	Percentage
Age bracket of the respondents		
31-40 years	2	4.4
41-50 years	19	42.2
51 years and above	24	53.3
Gender of the respondents		
Females	12	26.7
Males	33	73.3
Education level of the respondents		
Secondary	14	31.1
University	14	31.1
Middle level college	17	37.8

According to Table 4.2 above, majority of the landlords/ladies (53.3%) were 51 years and above, 42.2% of the respondents were aged between 41 to 50 years and the rest were between 31 to 40 years. These results imply that majority of the respondents who own business buildings were old people. This can be attributed to the fact that attainment of plots and construction of buildings is

quite expensive and thus those advanced in age are better placed to acquire large sums of money than the younger ones.

The study also revealed that most of the buildings were owned by men accounting to an overwhelming majority of 73.3% of the targeted population, with only 26.7% representing females. This may be due to the fact the society in Nyeri County is largely patriarchal with most of the properties being owned by men.

Finally under this category, 37.8% of the landlords had middle level college qualifications and 31.1% had university qualifications. Also, 31.1% of the respondents had attained secondary certificate. The researcher opted to establish the education level of the respondents which may have a high influence on the level of fire disaster preparedness.

Table 4.3: General information about the Tenants (n=155)

Category	Frequency	Percentage
Age bracket of the respondents		
20 years and below	7	4.5
21-30 years	16	10.3
31-40 years	38	24.3
41-50 years	62	40.0
51 years and above	32	20.6
Gender of the respondents		
No response	4	2.6
Females	57	36.8
Males	94	60.6
Education level of the respondents		
No response	3	1.3
Informal	1	.6
Primary	8	5.2
Secondary	27	36.8
University	43	27.7
Middle level college	44	28.4

Table 4.3 shows that, majority of the tenants (40%) are aged between 41 to 50 years, 24.5% of the tenants were between 31-40 years, 20.6% were 51years and above where as 14.8% of the tenants were aged below 30 years. These results imply that majority of the tenants were between 40 years and 50 years. This can be explained by the fact that people within this age group are very vibrant and it also within this range that those in formal employment resign and get into

business. Those below 30 years are still in school and that is why they are the least. The study found that 60.6% of the respondents were males and 36.8% were females. In many premises that were visited, businesses were operated by males. This can be explained by the fact that women are tied with the family obligations of caring for children and other family responsibilities.

The study revealed that 36.8% of the tenants had secondary certificate, 27.7% had university qualifications, 28.4% of the respondents had attained college certificate and 5.8% of the respondents had primary education or informal education. The high percent of tenants with secondary school certificate can be explained by the high state of school drop out after high school. Those who have primary and informal education are the minority because most of them tend to start their businesses in the rural areas. The percentage of those with university education explains the state of unemployment in our country.

4.4 Fire Safety Awareness

Fire safety awareness helps to recognize the danger of fire, know what to do to prevent fire as well as what action to take in case one happens. People with knowledge about fire safety will purchase fire devices and also prepare their families and employees to take immediate action to prevent death, injury and destruction of property whenever disaster strikes (Jones 2005).

Table 4.4: Fire Safety Awareness among the Landlord/ladies (n=45)

Category	Frequency	Percentage
Number of times the landlords/ladies have attended Fire Safety Training		
No response	1	2.2
Never	27	60.0
Once	13	28.9
Twice	4	8.9
What to do in case of Fire Outbreak		
Call fire brigade	16	35.6
Open behind door for people to get out	1	2.20
Raise alarm and use available fire extinguisher	10	22.2
Use fire extinguisher and call fire brigade	5	11.1
To save life and property	6	13.3

The study sought to find out how many times the landlords have been trained on fire safety since training increases their level of fire safety awareness which is viewed to have influence on the level of fire disaster preparedness. These findings show that 60% of the respondents have never been trained on fire safety. Indeed, the study found that 28.9% and 8.9% of the landlords have received training once and twice respectively. However, 2.2% of the respondent did not respond to this question. Asked whether the level of fire safety awareness influence their level of preparedness, 88.8% of the landlords were in agreement (*see appendix iv).*

Ability to know what to do in case of fire outbreak is determined by the level of fire safety awareness thus respondents were asked what they would do in case of fire breakout. The study found out that 35.6% of the respondents would call fire brigade, 22.2% of the respondents would raise and alarm and use the available fire extinguishers, 13.3% of the respondents would first save property and life, 11.1% of the respondents would use fire extinguisher and call fire brigade and the rest of the respondents indicated that they would open behind door for people to get out.

4.4.1.2 One Way Preparedness by the Times Landlords/Ladies Have Attended Training

The study computed mean index of the responses given by the landlords on the number of times they have attended training on fire safety preparedness and the descriptive results are given below. The researcher has used post hoc method for pair wise comparison to establish the influence.

Table 4.5: Training Sessions Attended by the tenants

Preparedness

	N	Mean	Std. Deviation	Std. Error
Never	27	24.8236	16.40195	3.15656
Once	13	59.4322	25.92060	7.18908
Twice	4	66.0714	10.71429	5.35714
Total	44	38.7987	26.05208	3.92750

In this study, N represents the number of the landlords participated in the research. There were only three categories of the respondents and the computed mean indices were 24.82, 59.43 and 66.07 for never, once and twice respectively. These results show that the landlords with the highest mean index were better on fire safety preparedness and vice verse. This implies that the respondents who have been trained twice are better than those who have been trained once or never. Since majority of the landlords/ladies have not adequately been trained on fire safety their level of preparedness is very low.

Table 4.6: Fire Safety Awareness among the Tenants (n=155)

Category	Frequency	Percentage
Number of times the tenants have attended Fire Safety Training		
No response	2	1.3
Never	103	66.5
Once	28	18.1
Twice	18	11.6
Thrice	4	2.6
What to do in case of Fire Outbreak		
Call fire help/brigade	73	47.1
Call municipal council	3	1.94
Call the police and help in putting out the fire	2	3.87
I will call my neighbors and try to save my wares	1	1.94
Pour water and save life and property and run away	19	12.26
Raise alarm and evacuate those in the premises, use available fire extinguisher	29	18.7
Scream	1	1.94
Switch off the electrical appliances and run for safety	2	3.87
To learn how to avoid fire	1	
Use fire blanket	1	1.94
I don't Know	2	3.87
Use the escape routes in the building	2	3.87

The study sought to establish how many times the tenants have been trained on fire safety in order to establish their level of preparedness incase of fire disaster. The results indicated that

66.5% of the respondents have never at all been trained. This high percent is almost equal to that of the landlords and thus explains why there is massive loss of life and property in case of fire outbreak. Indeed, the study found that 18.1%, 11.6% and 2.6% of the respondents have received training once, twice and thrice respectively which is a small percentage compared to those who have never. However, 1 or 1.3% of the respondent did not respond to this question. Asked whether the training influences fire safety preparedness, eighty five (85.8%) of the tenants were in agreement.

Respondents were asked what they would do incase of fire break out and the study found that, majority of the respondents (47.1%) would call for help/fire brigade and 12.26% said they would pour water and save life and property and run away. The rest of the responses indicated that the respondents had a general knowledge of what to incase fire broke out.

4.4.2.2 One Way Preparedness by the Times Tenants Have Attended Training

The researcher computed the mean index of the level of preparedness by the number of times they have attended training on fire safety preparedness and the results are given below. The researcher has used post hoc method for pair wise comparison to establish the influence of the training on the level of preparedness among the tenants.

Table 4.7: Responses from the Tenants per the Training Sessions.

Preparedness

	N	Mean	Std. Deviation	Std. Error
Never	102	36.7157	30.23902	2.99411
Once	28	68.7500	21.64215	4.08998
Twice	18	72.5397	25.04258	5.90259
Thrice	4	67.8571	27.04242	13.52121
Total	152	47.6786	32.06995	2.60122

In this study, N represents the number of the tenants participated in the research. There were only 4 categories of the respondents and the computed means were 36.7, 68.8, 72.5 and 67.9 for never, once, twice and thrice respectively. This results show that the tenants who have attend training twice had highest means and were better on fire safety preparedness. This implies that, the respondents who have been trained at least once are better than those who have never been trained.

The findings of the study show that majority of the landlords/ladies and tenants have not been trained on fire safety. This implies that their level of fire safety awareness is low and that is why they do not know what to do in case of fire outbreak. Based on the study, landlords/ladies and tenants who have attended fire safety training are adequately prepared for fire disasters. In fact most of them had well maintained fire safety devices and also knew what to do in case of fire outbreak. This means that since majority of the landlords/ladies and tenants have not adequately trained, they have the lowest mean which is a contributing factor to lack of adhering to fire safety measures.

There is also a clear indication that majority of the people do not know that it is their responsibility to be prepared with fire safety devices that can help them in the initial stages of fire outbreak and the only option is to call the fire brigade. This state of affairs can be attributed

to lack of training. These results support a study done by Mfinanga (2007) in Tanzania which revealed that magnitude of fire destruction will not go down unless people's level of awareness of their duties to prevent fire is raised. Mfinanga also noted that most people do not know that it is their responsibility to prevent fire outbreak and the first response is to call fire fighters.

4.5 Value of the Investment

Research done elsewhere indicates a very direct influence of the value of investment on the level of preparedness. Eakin (1998) noted that businesses increasingly see themselves as prone to vulnerability to fire disasters which has caused big investors to pay more attention to the level of fire disaster preparedness. The researcher wished to establish whether this is the same case in Central Business District of Nyeri Town.

Table 4.8: Value of the Investment of landlords/ladies and tenants

Category	Frequency	Percentage
Value of buildings according to the landlords/ladies (n=45)		
No response	3	6.7
Below 5 million	9	20.0
5-10 millions	16	35.6
11-15 millions	10	22.2
16 million and above	7	15.6
Value of investments according to tenants (n=155)		
99000 and below	44	28.5
100000-499000	40	25.8
1000000 and above	39	25.2
500000-999000	32	20.6

Landlord/ladies were asked to value their buildings and the study found that majority of the respondents (35.6%) mentioned that the value of their buildings was between 5-10 millions. Indeed, 20%, 22.2% and 15.6% quoted the value of their buildings are below 5 millions, 11-15 millions and 16 above and above millions. Eighty eight (88%) of the respondents were in agreement that the value of their investment influenced the way they prepared for fire disasters (*see appendix iv)*

Tenants were asked to value their investments and the study found that majority of the respondents (28.4%) mentioned that the value of their enterprises were below 99000. Indeed, 25.8%, 25.8% and 20.6% quoted the value of their buildings are 100000-499000, 500000-999000 and 1 million and above respectively.

In most cases small enterprises rank safety regulations among the most burdensome and most difficult problems. Contrary the large businesses comply with fire safety regulations despite the

great financial obligation demanded. Based on the findings fire disaster preparedness of small businesses differs from those of large business. In fact it was in the high rise buildings that most of the well maintained fire safety devices were found. Most of the buildings without storey did not have exits and those with them were either locked or poorly lit. Eighty eight (88%) of the respondents were in agreement that the value of their investment influenced the way they prepared for fire disasters (*see appendix iv).* This study also revealed that most of the businesses in the Central Business District are below five hundred thousand shillings. These small enterprises do not have fire safety devices, most of the doors were locked and some did not know where the keys were. Most of them said that the fire safety measures were expensive and find them a threat to their profit. The investments that are above one million Kenya shillings had well maintained fire safe devices well lit functional exits among others. These findings support the findings of a survey of small and medium sized business carried out in New York which found that while 80% of the high rise buildings had some precautions for fire disaster preparedness while only 23% of the smaller buildings had not taken any precautions (Bourque 2010). This confirms that the level of fire disaster preparedness is greatly influenced by the value of the investment.

4.6 Fire disaster Preparedness Bylaws

The municipal fire preparedness bylaws control activities that may become a fire hazard and also minimize the potential fire risk arising from certain use of land and buildings and also address public safety concerns. This section provides results and discussions of the response of the landlords/ladies on how the Municipal Council inspects compliance with the bylaws.

Table 4.9: Responses from the Landlords/tenants on Fire Disaster Preparedness Bylaws

Category	Frequency	Percentage
Inspection for Compliance with Bylaws according to landlords/ladies (n=45)		
No response	1	2.2
Often	4	8.9
Rarely	10	22.2
Never	18	40.0
Very rarely	12	26.7
Inspection for Compliance with bylaws according to tenants (n=155)		
No response	18	11.6
Often	6	3.9
Rarely	33	21.3
Never	33	21.3
Very rarely	26	16.8
Never	39	25.2

Landlords/ladies were asked how often municipal council officials inspect compliance with the bylaws. The finding revealed that 40% of the respondents said that very rarely municipal council officials inspect compliance with bylaws and 26.7% said never inspect the compliance. In fact 55.6 of the landlords/ladies said that they are not aware of the bylaws. (See appendix iv). This indicates that sine Nyeri Municipal does not adequately inspect compliance with the fire safety measures the huge looses in times of fire outbreaks can be attributed to this non-compliance.

Tenants were asked how often municipal council officials inspect compliance with the bylaws The finding revealed that 21.3% of the respondents said that often municipal council officials

inspect compliance with bylaws and 25.2% said never inspect the compliance with by laws in the premises. In fact 51% of the tenants acknowledged that they do not know that there are fire safety bylaws in Nyeri Town. Out those respondents 67.7% of them said that the municipal council is not doing enough to ensure compliance. Seventy six (76%) of them agreed that the bylaws greatly influence the level of preparedness.

4.6.2 One way Preparedness by Inspection for compliance with bylaws

Based on the responses from the landlords/ladies and tenants, the researcher computed the mean index of the responses given by the respondents on the compliance bylaws and the results are indicated in tables 4.10 and 4.11.

Table 4.1 Responses from Landlords/ladies on Inspection for Compliance with Bylaws (n=45)

Preparedness

	N	Mean	Std. Deviation	Std. Error
Often	4	78.5714	8.24786	4.12393
Rarely	10	61.4286	26.97946	8.53165
Very rarely	18	28.9021	20.28050	4.78016
Never	12	26.2897	14.90762	4.30346
Total	44	40.0974	26.93957	4.06129

In this study, N represent the number of the respondents participated in the research. There were only 4 categories of the respondents and the highest computed mean index was 78.6 for the often inspection of the building. The results show that the respondents with the highest mean index were more prepared in case of fire outbreak since the municipal officers inspects their buildings regularly.

Table 4.11: Responses from Landlords/ladies on Inspection for Compliance with Bylaws (n=155)

Preparedness

	N	Mean	Std. Deviation	Std. Error
Very often	6	85.7143	.00000	.00000
Often	33	79.0043	15.11078	2.63045
Rarely	33	63.3478	21.10318	3.67359
Very rarely	26	35.1374	25.40494	4.98232
Never	38	22.6253	20.91091	3.39220
Total	136	51.3620	30.92797	2.65205

In this study, N represents the number of the respondents participated in the research. There were 5 categories of the respondents and the highest computed mean index was 85.7 for the very often inspection of the building is been done. The results show that the respondents with the highest mean index were more prepared in case of fire outbreak than those with the least mean index.

Based on the findings of the study Nyeri Municipal does not adequately inspect compliance with the fire safety measures in the Central Business District of Nyeri Town. This has led to most of the landlords/ladies and tenants ignoring such measures as well lit unblocked exits well as well maintained fire safety devices. The huge looses in times of fire can be attributed to this non-compliance. On the contrary the buildings where inspections are done very often are safer since the fire safety preparedness by laws is implemented to the letter. In fact it was in these buildings that varieties of well maintained fire devices were found. The exits were well lit and people often use them. From the above findings, it can be observed that the existence of fire disaster preparedness bylaws that are affected through adequate inspection can greatly improve the level of fire disaster preparedness. On the contrary lack of them or inadequate inspection will lead to lack of fire disaster preparedness.

4.7 Nature of the Investment

Generally, such enterprises as hotels, Laboratories, chemical industries, petrol stations and production areas are more susceptible to fire accidents than other enterprises and are likely to keenly observe fire safety precautions (Watts, 1997). In this section the researcher asked both the landlord/ladies and tenants to indicate the type of their investment. Their responses are indicated in the table below.

Table 4.12: Nature of Investment by Landlords/Ladies and Tenants

Category	Frequency	Percentage
Type of Investment by landlords/ladies (n=45)		
No response	6	13.3
Office space	16	35.6
Saloon	6	13.3
Hotel	11	24.4
Hardware	6	13.3
Type of Investment by Tenants (n=155)		
No response	100	64.5
Office space	14	9.0
Shops	14	9.0
Supermarket	6	3.9
Hotel	14	9.0
Saloon	7	4.5

The study sought to establish the type of enterprises own by the landlords/landladies since previous studies indicate that the vulnerability of an investment to fire influences the level of

preparedness. From the above results 35.6% of the landlords/landladies own office space and 24.4% owns hotels. Also there those who owns the enterprise listed below and others.

The researcher also asked tenants on the type of investment they hold and from the results it can be concluded that 25.5% of the respondents own office space and the same for the shops while 64.5% of the respondents own other enterprise as shown in A*ppendix iv.*

The findings revealed that entrepreneurs of office spaces, shops, boutiques, grain stores and bookshops are not very keen on fire safety measures since they assume that they are not at risk. They had no fire safety devices and those with them were not well maintained. They did not even know how to use them. This may explain why most of the people in these buildings are not prepared in case of fire outbreak.

It was also found that in the buildings where supermarkets, some hardwares and hotels were found, the level of preparedness was high. In fact in the petrol stations and hotels fire extinguishers and fire blankets were well maintained. The exits were well signage and often used. Majority of the people knew how to use them. They had well lit exits and also knew what to do in case of fire outbreak. On being asked whether the nature of investment influence the level of fire safety preparedness 88.7 % were in agreement. These findings prove that the nature of investment do influence the level of fire disaster preparedness in the Central Business District of Nyeri.

4.8. Fire Disaster Preparedness

The purpose of being prepared is to enable effective response whenever fire a disaster occurs. It involves planning, equipping, training and exercising in order to create or sustain capabilities in order to prevent, protect against, mitigate and respond to any fire emergency. The researcher sought to find out form the landlords/ladies and tenants whether the door to the escape route are locked, escape routes are well lit, buildings have fire signage for the escape routes, availability of an emergency number and if there are fire safety devices. The results are indicated in tables 4.13 and 4.14.

Table 4.13: Fire Disaster Preparedness according to Landlords/Ladies (n=45)

Category	Frequency	Percentage
Whether the door to the escape route are locked		
No response	11	24.4
No	15	33.3
Yes	19	75.6
Whether escape routes are well lit		
No response	11	24.4
No	20	44.4
Yes	14	31.1
Buildings with fire signage for the escape routes		
No response	11	24.4
No	23	51.1
Yes	11	24.4
Availability of an emergency number		
No response	1	2.2
No	14	31.1
Yes	30	66.7
Fire safety devices		
No response	15	33.3
Fire extinguisher	29	64.4
Hose reel	1	2.2
Fire alarm	2	4.4

The study sought to establish whether the doors to the escape route were locked by respondents and the responses. The study found that 42.2% of the respondents, had doors to the escape route locked whereas 33.3% not locked. However, 24.4% of the respondents did not respond to the question and this could because the building had no escape door which also increases the level of risk.

The researcher sought to determine whether the escape routes were well lit since when they are clear people will tend to use them in case of emergence. The results indicated that only 31.1% of the respondents had well lighted escape route whereas 44.4% did not. In fact 24.4% of them did not respond to this question.

Proper fire signs posted in every building help to easily access the exit in case of fire outbreak. Visitors in the building can only access the exits if there is proper signage. The research attempted to find out whether the building has fire signage for the escape routes to gauge the level of preparedness as far as escape is concerned. Majority of the respondents in fact 51.5% had no signage which is a great danger especially to visitors in the buildings who may not know where the escape route is. They were mainly drawn from the building of one storey and those without. It was found that only 24.4% of the respondents had fire signage for the escape routes in their buildings.

The research further attempted to find out whether the landlords have emergency number to call in case of fire. Only 66.7% of the respondents had an emergency number to call in case of fire whereas 31.1% had none. Of those interviewed 2.1% did not respond to this question.

The study aimed to find out the fire safety devices found in the building and the results show that there exists hose reel, fire extinguishers and fire alarm and majority of the respondents had no any device in their buildings. Indeed, for those with devices only 13.3% of them were well maintained. S*ee Appendix iv.* This shows that majority of the people are not prepared to fight fire before spreading.

Table 4.14: Fire Disaster Preparedness according to Tenants (n=155)

Category	Frequency	Percentage
Whether the door to the escape route are locked		
No response	30	19.4
No	66	42.6
Yes	59	38.0
Whether escape routes are well lit		
No response	33	21.3
No	56	36.1
Yes	66	42.6
Buildings with fire signage for the escape routes		
No response	33	21.3
No	76	49.0
Yes	46	29.7
Availability of an emergency number		
No response	4	2.6
No	52	33.5
Yes	99	63.9
Fire safety devices		
No response	49	31.6
Fire extinguisher	97	62.6
Fire blanket	3	1.9
Hose reel	5	3.2
Fire alarm	1	.6

The study sought to establish whether the doors to the escape route were locked by respondents and the responses found that 42.6%, of the respondents, had doors to the escape route locked whereas 38.0% are not locked. However, 19.4% of the respondents did not respond to the question and this could because the building had no escape door or because of other reasons not disclosed.

The study sought to establish whether the escape routes were well lighted by respondents and the study found that 42.6% of the respondents did not have well lit escape route whereas 36.1% had well lit escape route. However, 21.3% of the respondents did not respond to the question.

The research further attempted to find out whether the building has fire signage for the escape routes. It was found that only 29.7% of the respondents had fire signage for the escape routes in their buildings whereas majority of the respondents, 49.7% did not have.

The research also attempted to find out whether there exits an emergency number and according to the tenants, it was found that 63.9% had emergency call number whereas 33.5% had none. Of those interviewed 24.6% did not respond to this question.

The research attempted to find out the fire safety devices found in the building and the results show that there exists fire extinguisher, hose reel, fire blanket and fire alarm and that majority of the respondents (62.9%) had fire extinguisher device in their premises. In total 68.4% of the tenants had fire safety devices and the rest did not respond to the question. Indeed, for those with devices only 36.1% of them were well maintained and 33.5% not well maintained. S*ee Appendix iv*

4.8.2 Summary

The above findings show that the level of fire disaster preparedness in the Nyeri Central business District is very low. Most of the escape routes are locked as a security measure aimed at preventing robbers from gaining access to the house. The escapes of inhabitants of a house, who commonly get trapped by the rigid non-removable metals in case of fire, become difficult. Majority of those that were locked were the small enterprises that cannot afford to hire security officers. It was also common in the buildings with one storey or without.

The well lit exits were mainly found in the high rise buildings, supermarkets, banks and hotels. The high number of those without well lit exits explain why most people are not able to escape incase of fire outbreak. These findings are in line with a research conducted in London to assess people's behaviour in fire revealed that as long as an exit is well lit, people have a tendency to move in a clear direction, even if further away (National Fire Association, 1995).

The study also found that majority of the landlords/ladies and tenants knew the emergency number to call incase of fire. This is explains why majority of the respondents said that they would call fire brigade in case of fire. It also shows that majority of the respondents do not know that it is their responsibility to prevent fire spread of fire in the initial stages. This increases the magnitude of destruction.

Based on the findings of the study, it is clear that the level of fire safety awareness, value of investment, municipal fire safety bylaws and nature of investment to a greater extent influence the level of fire disaster preparedness in the Central Business District of Nyeri Town.

CHAPTER FIVE

SUMMARY OF FINDINGS, DISCUSSIONS, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

This chapter gives the summary of major findings, conclusions and recommendations which are meant to promote the level of fire safety preparedness in the Central Business District of Nyeri Town. Finally the researcher gives suggestions for further research as a pointer to areas of concern as far as fire disaster preparedness is concerned.

5.2 Summary of Findings

The study was aimed at establishing the factors that influence fire disaster preparedness with the view of coming up with recommendations on how to improve fire disaster preparedness. It was guided by the following objectives; to establish how level of fire safety awareness influences fire disaster, to examine how value of investment influences fire disasters preparedness, to determine how municipal fire disaster preparedness bylaws influence fire disaster preparedness and to find out how nature of investment influence fire disaster preparedness in the Central Business District of Nyeri.

5.2.1 Level of Fire Safety Awareness

In order to establish if the level of fire safety awareness influence the level of fire disaster preparedness, the respondents were asked the number of times that they have attended fire safety training. According to responses of the landlords, 60% of them have never been trained on fire safety. Indeed, the study found that, 28.9% and 8.9% of the landlords have received training once and twice respectively. Similarly, 66.5% of the tenants have never been trained on fire safety. However, the study found that 18.1%, 11.6% and 2.6% of the respondents have received training once, twice and thrice respectively. Majority of the trained landlords/ladies had well maintained fire safety devices and also know what to do in case of fire outbreak. There is a clear indication

that since majority of the landlords and tenants have not received any training in fire safety awareness, they have not therefore taken the necessary precautions against fire disasters.

5.2.2 Value of the Investment

The researcher sought to establish if the value of investment influence the level of fire safety preparedness. The study found that majority of the landlords (35.6%) mentioned that the value of their buildings was between 5-10 millions. Indeed, 20%, 22.2% and 15.6% quoted the value of their buildings are below 5 millions, 11-15 millions and 16 above and above millions. Also, the study found that majority of the tenants (28.4%) mentioned that the value of their buildings was below 99000. Indeed, 25.8%, 25.8% and 20.6% quoted the value of their buildings are 100000-499000, 500000-999000 and 1 million and above respectively. From the study the landlords with buildings ranging from eleven million shillings and above had installed well maintained fire fighting devices and also provided a well lit escape routes and likewise for the tenants whose investments were above five hundred thousand shillings . Majority of the buildings of ten million shillings and below and those investments below five hundred thousand shillings had no fire equipments and those with them were not maintained. Some did not have exits and those with them were either locked or poorly lit. Out of those who responded 88.8 % and 87% of the landlords/ladies and the tenants respectively believe that the value of an investment influence the level of fire disaster preparedness. *See appendix 1*

5.2.3 Municipal Fire Safety Bylaws

The third researcher question was to find out if fire disaster preparedness bylaws contribute to fire disaster preparedness in the Central Business District of Nyeri. The findings revealed that 40% of the landlords said that very rarely municipal council officials inspect compliance with bylaws and 26.7% said that their never inspect the compliance. Correspondingly, the finding revealed that 21.3% of the tenants said that often municipal council officials inspect compliance with bylaws and 25.2% said never inspect the compliance with by laws in the premises. This is a clear indication that the Nyeri Municipal officers do not enforce the fire safety bylaws which explains why most of the landlords/ladies and tenants do not bother implementing the safety

measures. The tenants and landlords who said that the officers regularly inspect were drawn from buildings that are three and above storey and also those with investments that are highly vulnerable to fire like petrol stations. This shows that the Municipal council officers mainly concentrate on area that that are more prone to fire and are likely to experience more damage in case of fire. This is the only group that ensured compliance with the bylaws. Similarly 73.3% and 76.1% of the landlords/tenants respectively said that the fire safety bylaws can influence the level of preparedness if compliance is ensured.

5.2.4 Nature of Investment

Nature of investment greatly impact on the level of fire safety preparedness among investors. In this study those with much of office spaces in their buildings are not very keen on fire safety measure which may explain why most of the people in these buildings are not prepared in case of fire outbreak. The buildings where supermarkets, some hardwares and hotels were found, the level of preparedness was higher than in ordinary shops, boutiques and office space. They had fire safety devices, well lit exits and also knew what to do in case of fire outbreak. On being asked whether the nature of investment influence the level of fire safety preparedness 88.7 % were in agreement.

5.2.5 Fire disaster preparedness

The study found that 42.2% and 31.1% of the landlords, had doors to the escape route locked and well lighted escape route respectively. However, 33.3% and 44.4% of the landlords had not locked doors to the escape route and not well lighted escape route respectively. Equally, the study found that 38% and 42.6% of the tenants had locked doors to the escape route and well lighted escape route. The well lit and unlocked exits were mostly found in the high storey buildings and also in enterprises that are highly prone to fire. This state is pathetic and shows that in case of fire outbreak many people many people may be trapped in the building. Property would not also be saved.

Finally, the study found that, there exist fire extinguishers, horse reel and fire alarm and majority of the landlords had no any device in their buildings. Indeed, for those with devices only 13.3% of them were well maintained. On the contrary, the results shown that, there exists fire

extinguisher, hose reel, fire blanket and fire alarm and majority of the tenants, 62.9% had fire extinguisher device in their premises. In total, 68.4% of the tenants had fire safety devices. Indeed, for those with devices only 36.1%% of them were well maintained and 33.5% not well maintained. Most of the buildings without storey and those with one were not fitted with fire safety devices, likewise those enterprises below one hundred thousand shillings. However investments like the banks, hotels, supermarkets among others were well served with these devices. The high percent of the unmaintained fire safety devices was a point of concern since those devices are useless incase of fire outbreak.

5.3 Discussions

The findings revealed that the level of fire safety awareness is very low among the respondents in the Central Business District of Nyeri. This explains why they do not know how to prevent the outbreak of fire or even deal with it if it occurs. This is greatly contributed by the fact that most of them have not been trained on fire safety preparedness. These findings are in line with those of Wood (1990) who sought to explore levels of awareness of and preparedness for fire disaster in community members in Queensland. He found that the level of fire safety awareness has direct influence on the level of preparedness. He said being ignorant of dangers of fire makes people ignore the installation of fire fighting gadgets which will help save life and property in case of fire outbreak. He also found that low level of fire safety awareness of caused a lot of fire outbreaks while good knowledge enabled people to know the possible fire risks in ones premises.

The Nyeri Municipal council failure to inspect compliance with the fire safety bylaws was found to have contributed lack of preparedness among the respondents. According to Nyeri municipal fire disaster preparedness bylaws every workplace must have enough exits suitably located to enable everyone to get out of the facility quickly. In addition, fire fighting equipments and facilities such as alarm systems, fire extinguishers and emergency doors must each be maintained on a regular basis and any faults, when detected, must be rectified immediately. A record of such maintenance must also be maintained (Nyeri Fire Department, 2012). From the findings over 50% of the respondents said that the Council does not inspect. In London any person who violates any of these provisions of fire disaster preparedness bylaws is liable to penalty of not

less than fifty dollars. The penalty is meant to ensure people comply with the bylaws (Dynes and Russell 2002).

Entrepreneurs who have invested a lot of money were found to have adhered to fire safety measures. The banks and supermarkets are among those that had well lit exits and maintained fire safety devices. The same view was echoed by (Cropp. 1994) who said that New Zealand Fire services emergency incidents show that small firms experience a higher percent of property damage caused by fire as compared to larger businesses. He attributed to the fact that huge investments are followed by sound fire safety precautions as compared to the small investments

From the findings those enterprises which are more susceptible to fire accidents like hotels, Laboratories, petrol stations and production areas were found to be more prepared than those that were unsusceptible. It was found that level of fire protection varied depending on the level of risk of fire within the premises. Generally, premises that are simple, consisting of a single storey, will require fairly simple measures to protect the escape routes, compared to a large multi-storey building, which would require a more complex and inter-related system of fire precautions. These findings were in line with Surveys conducted by The New Zealand Fire Service which sampled premises that deal with materials that vulnerable to fire risks had a fairly high level of preparedness activity. In virtually every study targeting those premises a majority of respondents stated that their organizations did have sound fire disaster preparedness measures in place. Those surveys that addressed less vulnerable business found much lower levels of disaster preparedness planning (Ramachandran 1999).

5.4 Conclusion

Based on the findings of the study it is clear that majority of the landlords and tenants have never been trained on fire safety meaning that their level of fire disaster preparedness is very low. It was found that, for the landlords who have been trained twice on fire safety preparedness were slightly better and vice verse. This was according, to the mean index (24.82, 59.43 and 66.07 for never, once and twice respectively) computed for the three categories of the respondents. The higher mean index implies significant of training on fire safety preparedness.

It was found that the landlords/ladies in the high rise buildings Indeed they have been trained on fire safety and have also installed fire safety equipments. Their exits are also well maintained. These results show that they are more prepared for fire outbreaks than their counterparts in those buildings without storey. The tenants whose investments are above one million Kenya shillings have well maintained fire safety devices. They do not lock their exits and also know what to do in case of fire outbreak.

From the findings 40% of the respondents said that very rarely municipal council officials inspect compliance with bylaws and about a quarter said officials never inspect the compliance. This indicates that in most of the buildings the municipal council officers do not inspect. This may explain the reason why there is no compliance with the safety bylaws. The findings show that, the highest computed mean index was 85.7 for the very often inspection of the building meaning that those respondent were more prepared in case of fire outbreak than those with lower mean index. These respondents were mainly drawn from the storey buildings and also from such investments as petrol stations, banks, hotels among others. This implies that, in the buildings where inspections are been done very often are safer since the fire safety preparedness by laws is implemented to the letter

In the buildings where there is hotel business fire safety devices and the exit were well maintained due to their vulnerability. The study found that, office space which is believed to be safer and secure than other types of enterprise had no fire safety devices and if any were poorly maintained. The exit doors were also locked.

5.5 Recommendations

The following recommendations were made based on the research objectives that aimed to establish whether the level of fire safety awareness, value of investment, fire disaster preparedness bylaws and the nature of investment influence fire disaster preparedness in the Central Business District of Nyeri Town. Since majority of the landlords and tenants were not trained on fire safety preparedness, the study recommends that the Municipal Council of Nyeri in organizes training on fire safety awareness since people with knowledge about fire disaster will acquire equipments such as fire extinguishers, fire blanket and smoke detectors among others to

support fire disaster response activities. This will also help them prepare their families and employees to take immediate action to prevent death injury and destruction of property whenever disaster strikes.

The study found that 40% of the respondents said that very rarely municipal council officials inspect compliance with bylaws. Some of the tenants and landlords and ladies confessed that they do not know about the fire safety bylaws. The study recommends municipal council officials should inspect compliance with bylaws in all the premises in the town. Any person who violates any of these provisions of these bylaws should be liable to a high penalty which will ensure people comply with the bylaws. In order to save the situation the Municipal council needs to implement the bylaws to the letter like in London where any person who violates any of these provisions of fire safety devices bylaws is liable to penalty of not less than fifty dollars. The penalty is meant to ensure people comply with the bylaws. (Dynes and Russell 2002)

The study revealed that, in some of the buildings are not safe since they are not served with fire safety devices. Escape routes are either missing or poorly lit or locked. The research recommends installation of the fire safety devices in the premises. A fire certificate should be required for any premises dealing with explosive or highly flammable materials (depending on kind and quantities) such as hotels, Laboratories, chemical industries, petrol stations and production areas. This will ensure compliance with fire safety precautions.

The finding revealed that, 33.5% of the devices not well maintained. The study recommends that business owners, managers and supervisors should note that it is important that the equipment each of these facilities is maintained on a regular basis and any faults, when detected, must be rectified immediately. A record of such maintenance must also be maintained. This will enable them to contain fire in its initial stages before the arrival of the fire fighters.

5.6 Suggestions for Further Research

From the results, this research suggests further research from the following:

1. To investigate factors influencing fire disaster preparedness in other counties in Kenya.

2. To investigate the factors influencing the implementation of Municipal fire safety bylaws in any town in Kenya.
3. Assess the level of fire safety awareness in the Central Business District of Nyeri in Nyeri County.

REFERENCES

Beard, A.N. (1989). *Some ideas on a systemic approach*. Fire Safety Journal, Vol. 14, pp. 193-7.

Barnes,M. (2001). *Regulating Safety in an Unsafe World*. Journal of Hazardous Materials,86 (1-3): 25-37.

Bernard, P.M. and Mackenzie D.K. (1996). *The Human Factor in High Fire Risk Urban Residential Areas. A pilot study in New Orleans, Louisiana Washington D.C, US*. Department of Commerce, National Fire Prevention and Control Administration

Blanchet. M, Durrheim K, Painter, D. (Eds) (2006). *Research in Practice*. Cape Town: University of Cape Town Press

Bohle, R.J and Quainlanm, P. (2000). *Managing Occupational Health and Safety*. A multidisciplinary Approach. Sydney: Macmillan

Bowker, I. H. (1992). *Fire Safety in Tall Buildings.* New York.

Bruno, H. (2006). *Legislative safeguards needed to protect college students from fire*. Firehouse: Vol. 31 No. 9, p. 22.

Bowker, L. (1996). Lead hazards and abatement technologies in construction. Journal of Risk Management, 43, 35-38

Bukoski, R. W. (1996). *Risk and Performance Standards in the proceedings of Fire and Risk Hazard Assessment Symposium*. San Francisco.

Cramer, S. I. (1997). *Fire Performance Issues*. Paper presented at Civil and Engineering, University of Wisconsin – Madison, Wisconsin.

Chandler, S. E.and Hallington, S. J. (1984). *Fire Incidence, Housing, and Social Conditions the Urban Situation in Britain*. Fire Prevention, no. 172, pp. 15-20.

Cohen, L. and Manion, L. (1997). *Research methods in education*. Routledge: London

Comolotti, J. (2004). *The importance of school fire drills*. Retrieved March, 2012, from http:// www.fa.com.

Council on Tall Buildings and Urban Habitat (1992). *Fire Safety in Tall Buildings*. New York: McGraw-Hill

Cropp, D. (199l). *Fatal Fires in New Zealand.* Fire Service Commission:Wellington.

Dailey, W. (2000). *Guide to Fire Safety Management*. Leicester: Perpetuity Press

Deakin, G. (1999). *Fire Safety Standards – help or hindrance*. Fire Safety journal , 32 :103-118.

Disaster Research Center. (1994). *Impacts of the 1994 Northridge Fire Disaster*. Santa Monica Business Study:

Dynes, R and Russel, N .(2002). *A prospective on Disaster Planning*. Disaster Research Centre: Delaware

Donahue, A. and Tuohy, D.W .(2006). *Lessons we don't learn: A study of the lessons of disasters, why we repeat them, and how we can learn them*. Homeland Security Affairs, II(2), 1–28.

Donnell, M and Robert, P. (1980). *Fire In the City: Spatial Perspectives on Urban Structural Fire Problems*. Unpublished Doctoral Dissertation. Syracuse University,.

Emergency Preparedness Institute, Inc. (2007). *Preparedness needs a new message: Developing and promoting an effective message to encourage businesses, government agencies, their employees and families to prepare for fire disasters and emergencies*: *Connecting the dots.* Mt. Prospect, IL: Author. Retrieved january11, 2011, from http://www.getpreprared.org/ WhitePaperFinal06-07.pdf

Eakin, M. J. and Semchuk, W.H. (1998). *Occupational Health and Safety in Small Businesses*. Toronto: University of Toronto

Gicheru, C. (2011, October 28). *These disasters can be averted*. Daily Nation, Nairobi: Nation Media Group. Pp. 2

Gillespie, D.G. and Streeter, C.L.(1987). *Conceptualizing and measuring Disaster preparedness*. International Journal of Mass Emergencies and Fire Disasters,5 (2), 155–176.

Haddow and Bullock, J. (2006). *Introduction to Emergency Management 2nd ed*. Boston: Elsevier

Hall, R. (1997). *The lowdown on high-rise fires*. NFPA Journal, November/December, 84-90.

Ibrahim, H. (2000). *Assessment of active fire protection for government boarding school*. Unpublished masters dissertation, University Putra Malaysia

Kanyi. W. (2012). *Cloud of fire in Nyeri.* Daily Nation, Nairobi: Nation Media Group Pp 2.

Kachenje Y, and Kihila,J. (2010). *JAMBA*. Journal of Disaster Risk Studies, Vol. 3, No.1, June 2010 334

Karter, P. and .Donner, D. (1997). *Fire Rates and Census Characteristics*. Boston, National Fire Protection Association

Kothari. (1990). *Research Methodology , Methods and Technology , 2th ed*. New Delhi, Wishwa Prakashan,

Makabila, S. and Ayodo,H.J. (2011). *Putting out school fires*. The Standard Pp 17.

Marjanoric, P. and Nimpuno, K. 2002. *Disaster Management: Living with risk – towards effective disaster management training in Africa*. Retrieved on 16th February 2012 fromhttp://www.tt.fhkoeln.de/semesterprojects_extern/disaster_managment/data_lit/Disaster_Management/DM_living_with_risk.pdf .

McEntire, B. H. (2006). *Disaster Response and Recovery*. USA: John Willy and Sons

McGraw-Hill, B. (2002). Cost of Effective Domestic Fire Sprinkler Systems, Fire Research Report , New Zealand Fire Service Commission , Wellington.

Mfinanga, D. A. 2007. *Parking generation by facilities in the CBD of Dar-es-Salaam City*. The Journal of Building and Land Development, 14 (2):83-99

Mugenda O. M., Mugenda A. G. (2003). *Research Methods: Quantitative and Qualitative approaches.* Nairobi: Acts Press

Munson,K.and Mickey,A.U. *Urban Neighborhoods and the Fear of Fire. In Chester Rapkin, Ed.The Social and Economic Consequences of Residential Fires*. Lexington MA: D.C.Heath and Company, 1999

Mwanzia M., Mugo,W., and Ngamau, M. (2006). *Putting out fires in High-rise buildings*. The Daily Nation, Pp. 4.

National Fire Protection Association. (1995). *National Fire Codes*. Quincy , MA: NFPA.

National Fire Protection Association .(1991). *Fire Protection Handbook*. Quincy, MA: NFPA

Oduor A, and Atsiaya, P. (2004). *Two fire attacks fail to break school's spirit. East*. African Standard. Schools & career Nairobi: The Standard Pp.4

Omolo and Simatwa. (2004 June 6th). *Schools abroad brace against Fire Disasters*. Educational Matters, The Daily Nation pg .23.

Ouellette, M.J. (1993). *Visibility of exit signs.* Progressive Architecture, pp. 39-42.

Ramachandran, G. (1999). *Fire safety management and risk assessment Facilities.* Vol. 17, pp. 363-76.

Roberts, D. and Chan, H.W. (2000). *Fires in hotel rooms and scenario predictions.* International Journal of Contemporary Hospitality Management, Vol.12 No. 1,pp. 37-44.

Reuters. (2004). *Indian school fire kills 90 children*. Retrieved April 6,2012, from http:// www.Reuters.com/reports

Perry ,W.G. and Lindel, S. N. (2006) .Emergency Planning. USA: John Willey and Sons

Proulx, G. (1999). *How to initiate evacuation movement in public buildings Facilities.* Vol. 17, pp. 331-5.

Sime, J. (1990). *The concept of panic Fires and Human Behaviour.* London.: David Fulton Publishers

Stollard, P. and Abrahams, J. (1991). *Fire from the First Principles: A Design Guide to Building Fire Safety*. London: E & FN Spon

Thompson, M. (2001). *Campus fire safety today: facilities manager*. Association of Higher Education Facilities Officers, Vol. 17 No. 6, p. 6.

Watts, J. M. (1997). *Analysis of the NFPA fire safety evaluation system for business Occupancies.* Fire Technology.

Watson, D. (2000). *Time-Saver Standards for Building Materials and Systems: Design Criteria and Selection Data.* New York: McGraw-Hill Companies, Inc.

Wood, P.G. (1990). *A survey of behavior in fires in Canter Fires and Human Behavior, 2nd ed.* London: David Fulton Publishers,

Victoria, L.W. (2003). *Community Based Approaches to Disaster Mitigation*. Philipines.

APPENDIX 1: LETTER OF INTRODUCTION

JOYCE GATHONI MURAGE

P.O BOX 320

OTHAYA

20/5/2012

THE…….

……..

……..

Dear Sir/Madam,

RE: ACADEMIC RESEARCH.

I am a student at University of Nairobi pursuing a Masters Degree in Project Planning and Management. I am conducting an academic research on factors influencing fire disaster preparedness in the Central Business District of Nyeri. You have been identified as a key source of information required in this study. Please provide objective, truthful and complete information by ticking in the blank spaces provided. Kindly, note that the information that you provide will be treated with confidentiality and anonymity and will only be used for the purpose of this study.

Looking forward for your co-operation

Faithfully

J.G.Murage

Cell phone No. 0722-222386

APPENDIX II: QUESTIONNARE FOR TENANTS

The purpose of this questionnaire is to collect data which will be used to assess how such factors as level of fire safety awareness ,value of investment, nature of investment and municipal fire disaster preparedness bylaws influence fire safety preparedness in the in Nyeri town. The information provided through this questionnaire will be used purely and exclusively for academic purpose and will be treated with top most confidentiality. Your co-operation and assistance will be highly appreciated.

Put a tick against your answer [ ] and also write your answers in the spaces provided.

Section A: Personal Details

1 .Age (please tick in the spaces provided)

20yrs and below [ ] 21 – 30yrs [ ] 31 – 40yrs [ ] 41- 50yrs [ ] 51yrs and above [ ]

2. Gender Male [ ] Female [ ]

3. Your marital status (please tick)

Married [ ] Single [ ] Others specify ……. …….

4. Highest level of education attained (please tick)

Informal [ ] Primary [ ] Secondary [ ] University [ ]

B : FIRE SAFETY AWARENESS

5 .Do you think it is important to prepare yourself for fire disasters?

Yes [ ] No [ ]

If so how……

6. Do you know what an escape route is?

Yes [ ] No [ ]

Do you think it is important to have one?

Yes [ ] No [ ]

7. How many times have you attended fire safety training?

Once [ ] twice [ ] thrice [ ] never [ ]

8. In case of fire outbreak what would you do.....

…….

9. Do you think your investment is prone to any threat of fire outbreak?

Yes [ ] No [ ]

If so why……

C : VALUE OF THE INVESTMENT

10. How many employees do you have?

Below 5 [ ] 5-10 [ ] 11-15 [ ] 16 and above [ ]

11. What is the value of the investment in terms of Kshs?

99,000 and below [ ] 100,000 – 499,000 [ ] 500,000- 999,000 [ ] 1,000,000 and above [ ]

12. What is the size of this building?

Without storey [ ] 1 Storey [ ] 2 Storey [ ] 3 Storey [ ] 4 and above storey [ ]

13. What safety measures have you taken for your investment?.....

……

If none why haven't you? .....

14. In your opinion do you think the value of an investment can influence the fire safety measures taken by the proprietor?

Yes [ ] No [ ]

D: MUNICIPAL FIRE DISASTER PREPAREDNESS BYLAWS

15. Are you aware of the Nyeri municipal council fire disaster preparedness bylaws?

Yes [ ] No [ ]

If yes, which ones? ……..

……..

16. How often do the Nyeri municipal council officials inspect compliance with the bylaws?

Very often [ ] Often [ ] rarely [ ] Very rarely [ ] Never [ ]

17. How do they ensure compliance? …….

……

18. In your opinion is the municipal council doing enough to enforce the bylaws.

Yes [ ] No [ ]

19. Do you think the bylaws influence the level of fire disaster preparedness?

Yes [ ] No [ ]

E: NATURE OF THE INVESTMENT

20. Type of the enterprise

Hotel [ ] Saloon [ ] Supermarket [ ] Office Space [ ] Hardware [ ]

If any other specify ……

21. Have you ever experienced fire disaster in your business previously?

Yes [ ] No [ ]

22. Do you think your investment is vulnerable to fire disasters?

Yes [ ] No

If so why ……

23. Duration in the current investment (please tick)

Less than 2 years [ ] 3-5 years [ ] over 5 years [ ]

F: FIRE DISASTER PREPAREDNESS

23. How many escape routes are provided in the building?

None [ ] One [ ] Two [ ] Three [ ]

25. Are the doors to the escape routes locked?

Yes [ ] No [ ]

If yes who keeps the key

Owner [ ] Occupant [ ] Watchman [ ] Unknown [ ]

26 How do the doors to the escape routes open?

Inward [ ] Outward [ ] Sliding [ ] Revolving [ ]

27 .How often do you use the escape route?

Very often [ ] Often [ ] rarely [ ] Never [ ]

28. In your opinion are the escape routes well light?

Yes [ ] No [ ]

29. How often are the escape routes inspected and maintained?

Very often [ ] often [ ] rarely [ ] never [ ] unknown [ ]

30. Does the building have fire signage for the escape routes?

Yes [ ] No [ ]

31. In your opinion do you think the building is safe in case of fire outbreak?

Yes [ ] No [ ]

If no why...……..

32. In case of fire do you know the emergency number to call?

Yes [ ] No [ ]

33. Do you think there is compliance with fire bylaws in the building?

Yes [ ] No [ ]

34. Which of the following fire safety devices does this building have?

Fire extinguisher [ ] Fire blanket [ ] Hose reel [ ] Fire alarm [ ]

(ii) Are the fire safety devices mentioned above well maintained?

Yes [ ] No [ ]

Thank you for your co-operation and sparing time to respond to the questions.

APPENDIX III: QUESTIONNARE FOR LANDLORDS/LADIES

The purpose of this questionnaire is to collect data which will be used to assess how such factors as level of fire safety awareness ,value of investment, nature of investment and municipal fire disaster preparedness bylaws influence fire safety preparedness in the in Nyeri town. The information provided through this questionnaire will be used purely and exclusively for academic purpose and will be treated with top most confidentiality. Your co-operation and assistance will be highly appreciated.

Put a tick against your answer [ ] and also write your answers in the spaces provided.

Section A: Personal Details

1 .Age (please tick in the spaces provided)

20yrs and below [ ] 21 – 30yrs [ ] 31 – 40yrs [ ] 41- 50yrs [ ] 51yrs and above [ ]

2. Gender Male [ ] Female [ ]

3. Your marital status (please tick)

Married [ ] Single [ ] others specify ……. …….

4. Highest level of education attained (please tick)

Informal [ ] Primary [ ] Secondary [ ] middle level college [ ] University [ ]

B: LEVEL OF FIRE SAFETY AWARENESS

5. Do you think it is important to prepare yourself for fire disasters?

Yes [ ] No [ ]

If so how……

6. Do you know what an escape route is?

Yes [ ] No [ ]

Do you think it is important to have one?

Yes [ ] No [ ]

7. How many times have you attended fire safety training?

Once [ ] twice [ ] thrice [ ] never [ ]

8. In case of fire outbreak what would you do.....

……

9. Do you think your investment is prone to any threat of fire outbreak?

Yes [ ] No [ ]

If so why……

C : VALUE OF THE INVESTMENT

10. How many tenants are in this building?

Below 5 [ ] 5-10 [ ] 11-15 [ ] 16 and above [ ]

11. What is the value of the investment in terms of Kshs?

Below 5 millions [ ] 6 – 10 millions [ ] 11-15 millions [ ] 16 millions and above

12. What is the size of this building?

Without storey [ ] 1 Storey [ ] 2 Storey [ ] 3 Storey [ ] 4 and above storey [ ]

13. What safety measures have you taken for your investment.....

……

If none why haven't you? .....

14. In your opinion do you think the value of an investment can influence the fire safety measures taken by the proprietor?

Yes [ ] No [ ]

D: MUNICIPAL FIRE DISASTER PREPAREDNESS BYLAWS

15. Are you aware of the Nyeri municipal council fire disaster preparedness bylaws?

Yes [ ] No [ ]

If yes, which ones? ……..

……..

16. How often do the Nyeri municipal council officials inspect compliance with the bylaws?

Very often [ ] Often [ ] rarely [ ] Very rarely [ ] Never [ ]

17. How do they ensure compliance? …….

……

18. In your opinion is the municipal council doing enough to enforce the bylaws.

Yes [ ] No [ ]

19. Do you think the bylaws influence the level of fire disaster preparedness?

Yes [ ] No [ ]

E: NATURE OF THE INVESTMENT

20. Type of the enterprise

Hotel [ ] Saloon [ ] Supermarket [ ] Office Space [ ] Hardware [ ]

If any other specify ……

21. Have you ever experienced fire disaster in your business previously?

Yes [ ] No [ ]

22. Do you think your investment is vulnerable to fire disasters?

Yes [ ] No

If so why ……

23. Age of the building (please tick)

Less than 2 years [ ] 3-5 years [ ] over 5 years [ ]

F: FIRE DISASTER PREPAREDNESS

23. How many escape routes are provided in the building?

None [ ] One [ ] Two [ ] Three [ ]

25. Are the doors to the escape routes locked?

Yes [ ] No [ ]

If yes who keeps the key

Owner [ ] Occupant [ ] Watchman [ ] Unknown [ ]

26 How do the doors to the escape routes open?

Inward [ ] Outward [ ] Sliding [ ] Revolving [ ]

27 .How often do you use the escape route?

Very often [ ] Often [ ] rarely [ ] Never [ ]

28. In your opinion are the escape routes well light?

Yes [ ] No [ ]

29. How often are the escape routes inspected and maintained?

Very often [ ] often [ ] rarely [ ] never [ ] unknown [ ]

30. Does the building have fire signage for the escape routes?

Yes [ ] No [ ]

31. In your opinion do you think the building is safe in case of fire outbreak?

Yes [ ] No [ ]

If no why...……..

32. In case of fire do you know the emergency number to call?

Yes [ ] No [ ]

33. Do you think there is compliance with fire bylaws in the building?

Yes [ ] No [ ]

34. Which of the following fire safety devices does this building have?

Fire extinguisher [ ] Fire blanket [ ] Hose reel [ ] Fire alarm [ ]

(ii) Are the fire safety devices mentioned above well maintained?

Yes [ ] No [ ]

Thank you for your co-operation and sparing time to respond to the questions.