FACTORS INFLUENCING FIRE SERVICE DELIVERY: A CASE OF FIRE STATIONS IN KIAMBU COUNTY, KENYA

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DECLARATION

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

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

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DEDICATION

I wish to dedicate this work to my wife Carol and my daughter Chloe Bernards for their moral support during this study. Without their cooperation and understanding this work would not have been accomplished.

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ABBREVIATIONS AND ACRONYMS

CAPCOM	CAPital COMmunication
CEO	Chief Executive Officer
DFID	Department For International Development
DOSHS	Department of Occupational Safety and Health Services
FSC	Fire Station Commander
GOK	Government of Kenya
IIBC	Interim Independent Boundary Commission
ISDR	International Strategy for Disaster Reduction
NITA	National Industrial Training Authority
OSHA	Occupational Safety and Health Administration
SPSS	Statistical Package for Social Sciences
UK	United Kingdom
UN	United Nations
WIBA	Work Injury Benefit Act

ABSTRACT

Factors influencing fire service delivery is essential to reform the emergency sector and meet the safety needs of the present while improving on its future advances. By improving on services that are provided for free like fire service, the fire stations can enhance effectiveness and efficiency thereby increasing its responders productivity and satisfaction while at the same time streamline to a minimum the response time and administrative systems that are key in meeting the expectations of the members of the public who are the consumers of fire service delivery. Thus, the purpose of this study was to investigate the factors influencing fire service delivery at the county fire stations. The objectives of this study were; to examine the influence of fire stations staff skills in delivery of fire services in Kiambu County; to evaluate how time taken to respond to reported emergencies issues affect fire service delivery in Kiambu County; to establish the influence of top management support in the fire service delivery in Kiambu County and finally, to establish the influence of conditional external pressure in fire service in Kiambu County. Based on theories from fire service delivery literature, a conceptual framework for the fire service delivery has been developed. This study used mixed method research approach and applies the concurrent design. The total population size was 152 with the sampling size being 108 selected from the various strata which were the fire station commanders, heads of department, ambulance attendants, first aiders and the fire marshals. Data was collected using self-administered questionnaire, interview guide and observation method. The collected data was analyzed using Statistical Package for Social Scientist Software (SPSS). The results of the study were analyzed using descriptive and inferential statistics and the results were presented using tables. The findings of the study revealed that factors that influence fire service delivery are the fire staff skills, top management influence, the work environment and the conditional external pressure. The study further provides recommendation on improvements and policy measures on fire service delivery at the county level.

CHAPTER ONE
INTRODUCTION

1.1 Background of the study

The term fire service delivery is commonly used in fire safety and rescue circles in Kenya where emergencies that involves fires are involved. Community development foundation defines service delivery as “specialist services supported with service agreements, contracts or grants by public sector with moderate accountability”. And fire service delivery as “predominantly providing emergency fire fighting and rescue services for a certain jurisdiction which is typically a municipality, county or fire protection district or a combination”.

Emergencies outlined in fire service delivery definition, are not mere events striking each particular time but the results of various processes (Department for International Development (DFID), 2010). Auran (2007) notes that growth of mega-cities exposes them to mega-risks like earthquakes that captures headlines in local and international news agencies while far more lives are lost in urban areas due to everyday disasters including poor sanitation and fires. Uncontrolled urban growth increases severity of fire hazards and vulnerability (UN-HABITAT, 2007) as nearly half of the world population lives in urban centers and numbers are accelerating with more than half residing in slums (Pelling and Wisner 2009).

Pelling and Wisner (2009) further notes that fires are among man’s oldest concern since pre-history and myth period but are hardly scrutinized critically to develop efficient fire service delivery strategies. This has led to significant increase in fire damages in the last one and half decades (Torres, 2011). There is urgent need for sustained and comprehensive fire service delivery strategy in order to achieve the needs and the concerns of all social groups such poor, rich, men, women, young, old, indigenous or non-indigenous and that they be integrated into the fire service delivery policies and measures because level of vulnerability depends on the social aspects (International Strategy for Disaster Reduction (ISDR), 2007). Wanyande and Odhiambo-Mbai (2013) further asserts that in an increasingly competitive world, sound fire service delivery is not an option but rather it is essential in enhancing organizations effectiveness and competiveness and observes that factors influencing fire service delivery have been suggested by

Bititci (2007) to occur due to fire stations commanders implementing service delivery management systems with rules and regulations and then leaving it to run rather than take hands-on approach and using skills to motivate the fire personnel to produce more and better. This has brought about conflict of interest producing three classes of challenges within the world's fire sector outlined as technical, system and involvement (Radin, 2010). Technical challenges in fire service delivery relates to the indicators, data collection, interpretation and analysis while the system cover the softer people issues predominantly involving insufficient support from higher level of management or decision making.

In essence therefore, collective local actions and proactive fire service delivery by fire stations involved are more effective but these are rarely documented in urban Africa. The relative scarcity in collective fire service delivery may be attributed to the fact that little research studies have been conducted. While many governments in Africa have disaster risk management legislation and even laws at the sub-country government, there is still little capacity to undertake fire service delivery on the ground. Underlying factors being lack of political priority in allocation to country's fire stations (ISDR, 2007: Pelling and Wisner, 2009: Government of Kenya (GOK), 2007).

In Kenya, commercial and industrial demand has led to overcrowding, inadequate sanitation, poor health, polluted water, inadequate solid and waste management, inadequate infrastructure and lack of recreational facilities (Krhoda, 2008). Policies for managing the same have been set up especially those in relation to fire service delivery which encompasses encountering emergencies resulting from the inadequacies but there is an increasing demand to review the existing system to increase accountability, quality and timely fire services (Orale, 2008). Wanyande and Odhiambo-Mbai (2012) observes that poor service delivery with regard to free services in Kenya like fire service has led to decline in accountability and deterioration of ethical standards within the fire service delivery. It is for this reason that there are two pieces of legislation to ensure effective fire service delivery, the Occupational Safety and Health Act, 2007 (OSHA 2007) and the Work Injury Benefits Act, 2007 (WIBA, 2007). The Kenya gazzet notice number 57 also outlined the fire rules and regulations for workplaces in Kenya and includes the fire stations services (GOK, 2007).

To ensure effective fire service delivery, Kiambu County needs to pay attention to minimizing negligence and address disaster management needs (GOK, 2007). Kiambu County has a population of close to 1.7 million residents with more than half the number being in urban center (GOK, 2007). Fire therefore remains a major threat to the residents' survival, dignity, livelihood and security and more so those living in the slums where the housing structures are temporary and highly inflammable with no proper structures in place (Interim Independent Boundary Commission, 2007). According to IIEBC report (2007) Kiambu County has a population of 1, 623, 282 and the only one in Kenya with two public fire stations located in Thika and Kiambu sub-counties. As outlined in Kenya vision 2030, efficient service delivery is key to achieving the millennium development goals.

1.2 Statement of the problem

Research has shown that the consequences of terrorism attack, natural disasters or man-made catastrophes like fire can be physically and emotionally damaging to people and their communities (Concordia University, 2008). Catastrophic events will continue to occur at unprecedented intervals if fire service delivery is not reviewed from time to time. This requires efficient fire service delivery with the critical mission of rescue and the first and most solemn obligation to protect the people (Department of Homeland Security, 2007).

With this background therefore the need to focus on accelerated service delivery in Kenya was identified by the Interim Independent Electoral and Boundaries Commission (IIEBC) study tour of the county councils with the report noting that efficient service delivery will aid in the implementation of Kenya vision 2030 goals. The report further noted that local councils now under county governments had direct responsibility for implementation of many targets such as provision of basic services like fire safety (Cheserem, 2011), (Kenya county facts sheet, commission on revenue allocation). In Kiambu County a health portfolio committee report indicated that there was little progress made by the defunct local authorities to better delivery of free services, particularly fire service. This, it states, is compounded by lack of capacity and low response time. (GOK, 2013).

Kenya is a developing country and the factors that influence fire service delivery are different from those in the developed world where more studies have been done, thus this proposal seeks to initiate a study to fill this gap by investigating the factors influencing fire service delivery with regard to provision of efficient and effective fire services that leads to better intervention and advocacy in Kiambu County. Equally important this research will seek to establish whether there is importance in understanding the factors that influence fire service delivery and based on the results, suggest theory that can be applicable to other county fire stations in Kenya and provide the guideline to improvement.

1.3 Purpose of the Study

The purpose of this study was to investigate the factors influencing fire service delivery in Kiambu County.

1.4 Objectives of the study

1. To examine the influence of fire stations staff skills in delivery of fire services in Kiambu County.
2. To determine the influence of work environment in delivery of fire services in Kiambu County
3. To establish the influence of top management support in the fire service delivery in Kiambu County
4. To establish the influence of conditional external pressure in fire service in Kiambu County.

1.5 Research Questions

The following were the research questions for the study:

1. How does the fire station staff skill influences fire service delivery Kiambu County?
2. How does work environment influence fire service delivery in Kiambu County?
3. How does top management support influences fire service delivery Kiambu County?
4. How does conditional external pressure influences fire service delivery Kiambu County?

1.6 Significance of the study

The study was one of the few in Kenya to focus on fire service delivery at the local county level after the IIBC proposed county boundaries were ratified in 2010. It will also be unique in its approach to the provision of both specific and integrated provisions of fire services by not only the county government but also the national government. The researcher therefore had hopes that this research will therefore contribute towards an understanding of the theoretical and conceptual framework surrounding fire service delivery. The study was also to provide a better understanding of a link between fire service delivery policies and legislations of the county government enhancing the sense of responsibilities and ownership of the mandate to both the county government fire stations and those receiving the fire services.

The researcher had hopes that the findings of this study will enhance fire stations usefulness as the public will be able hold the county government accountable and have a legal recourse should they feel that they are treated unfairly. The proposed model was to provide a better sense of implementation and evaluation of fire service delivery programmes by national government, in general and county governments in particular. This can also be incorporated in the curricular of various institutions that deal in the field of disaster management. It can also be used in national government institutions that are responsible for capacity building which includes Department of Occupational Safety and Health Services (DOSHS), National Industrial Training Authority (NITA), Intel Fire Group among others.

1.7 Delimitation of the Study

This study will target fire stations located in Kiambu County as it is the county with the highest number of fire stations in Kenya (GOK, 2010).

1.8 Limitations of the study

It will be recognized that fire service delivery is multi sectoral and multi disciplinary in nature, involving different ministries which includes Ministry of Lands, Housing and Urban Development, Ministry of Labour, social security and services, Ministry of Education and the Ministry of transport and infrastructure just to mention a few. Therefore, the greatest limitation

will be the cross sectional majority of data to be collected. To avoid this, the research made sure that data collected is more focused on fire service delivery only.

The timing of the year and weather was also considered as one of the limitations, especially during rainy season whereby movement was restricted by weather and poor roads. The data collection therefore, was scheduled in dry season to avoid the above hurdles.

1.9 Assumptions of the Study

This study involved examining the fire stations in Kiambu County that are under direct control of the county government and therefore it was assumed that:

1. The respondents completed their questionnaire not only objectively but also accurately.
2. This study was carried out on fire stations in different locations with different jurisdictions within the Kiambu County. It was assumed that the difference in their routine duty operations will not affect the responses.

1.10 Definition of Significant Terms

County Government: This is a sphere of government in its own right and has distinct functions from other spheres.

External Pressure: This refers to influence on the firm from the organizational environment through competitive pressure and imposition by partner organizations, competitors and suppliers.

Fire Service delivery: This refers to taking of fire services to the people by the public fire stations to ensure public safety and health and at the same time protecting property from loss.

Public Fire Stations: This will comprise of all fire stations that are run either by the county or national government.

Service climate: The shared perception by the fire station staff on how much the fire station value fire service delivery to the Kiambu County

Size of Fire Stations: This refers to the number of fire service responders a fire station has.

CHAPTER TWO
LITERATURE REVIEW

2.1 Introduction

This study focused on related literature on the factors that influence fire service delivery and also presents the conceptual framework which this research will be based on.

2.2 Background to Literature Review

Kiambu County covers the old administrative divisions of Thika, Gatundu, Githunguri and Kiambaa including the old Lari, Limuru and Kikuyu division. These divisions have since been upgraded into districts and constitutes of 9 constituencies namely Gatundu South, Gatundu North, Juja, Thika Town, Githunguri, Kiambaa, Kabete, Limuru and Lari (Mwathe, 2013). Mwathe (2013) further points out that the county has a total of five fire stations serving a population of 1, 623, 282 with the fire responders to household ratio being 1:160.

According to Standard Newspaper (17, August 2013) there has been an increasing demand for fire service delivery in Kenya and the fire service providers are looking for better ways of improving management in order to offer better services. As a result there is need for the government fire responders to improve on their service delivery and in tandem with the Kenya vision 2030 and the Nairobi metropolitan strategy paper, The Standard Newspaper (17, August 2013). The purpose of this study therefore was to investigate the factors that influence fire service delivery and these factors are outlined as: Fire station staff skills; Work environment and fire service delivery; Top management support; and Conditional External pressure

2.3 Fire station staff skills and fire service delivery

Fire stations need to attract new employees who will contribute to the station through their abilities and values (Armstrong, 2008). Stations require their fire service employees to have two complementary capacities: fire service competencies and fire service inclination (Wilson, 2008).

Wilson (2008) state that "*service competencies are the skills and knowledge necessary to do the job"* (p.282). In many cases, job applicants validate competencies, such as attaining the particular degrees and relevant professional qualifications (Wilson, 2008) can determine whether he or she has the necessary technical or professional competencies to perform well on the job (Sinclair, 2010). But sometimes, service competencies may be related to *basic intelligence* or *physical requirements* rather than relevant degree (Wilson, 2008).

The fire response staff, who represents the station in the public eyes, can have an impact on image and reputation of the station. When the response staff provides the accurate service the public desires can be met, the station gains a positive reputation hence attaining the higher market share and charge more than its competitors for fire service delivery (Wilson, 2008). The fire service employees, who are knowledgeable, understanding, and concerned about the customers' needs, also influence the five dimensions of service quality: reliability, responsiveness, empathy, assurance, and tangibles (Wilson, 2008). It is essential to understand and meet what the customer wants and needs with service employees' abilities to deliver (Wilson, 2008).

The lack of knowledge therefore, on technical and operational skills is contributing factors that affect fire service delivery in most fire stations. In summary, there is need for fire education. The station commanders and the fire staff needs to attend training programmes that will enlighten them on an effective and efficient fire service delivery. In addition, there is general issue of skills and training. The skills deficiencies that appear in developing countries fire stations is not only technical abilities but also management skills (Arendt, 2008). Generally fire stations do not develop training plans. Apulu and Latham (2009) notes that in Tanzania, fire stations do not invest in training of their firemen as they are afraid that on completion of such training and having improved their qualification, these firemen will leave and find employment in large companies that offer better salaries. Nevertheless, fire stations needs to conduct training sessions for staff as this will assist in creating awareness on the benefits of an efficient and effective fire service delivery within a county government (Arendt, 2008).

According to Rule (2008) innovation diffusion theory targets fire stations in developing countries as there is lack of knowledge and training to impart the necessary skills and technical know-how required in the fire service development process. Therefore, if the fire staff have more knowledge and skills then they would be more likely effective and efficient in their operations. Based on these discussions, the technical and acquired skills of the fire staff can be seen as the capabilities of the fire station. This will also defines the fire station's efficiency by defining the internal standard of performance for its fire staff and is approximately the construct of doing the right things.

According to Mohammad (2009), fire staff helps organizations by reacting to emergencies as well as providing salvage to its properties and employees in case of eminent dangers and emergencies. Fire personnel therefore contribute significantly to the extent of effectiveness and efficiency of fire service delivery. Lack of skills is regarded as the most common barrier to efficient and effective fire service delivery (Johnson, 2012). The unfamiliarity with the fire equipment technologies amplifies the degrees of difficulties faced by fire responders during emergency responses. The consequent loss in work efficiency and frustration over the foreign based emergency technology directly attributes to negative attitude to the fire staff and contributes to inefficiency in fire service delivery (Bankoff, 2004).

Analoui (2007), found that lack of technical skills on fire service operations among fire station staff and lack of knowledge regarding the benefits of improved technologies on fire service delivery is an inhibitor to effective and efficient fire service delivery among fire stations. There is inability to acquire new skills and expertise in new technologies and there is also lack of training and education that form a significant barrier to a better fire service delivery (Analoui, 2007). Caldeira and Ward (2007) therefore concludes that for fire stations to successfully implement a strategically accepted and effective fire service system, the top command of the station and its staff must have reasonable knowledge of the relevance to fire service operations. Mutula (2007) explained that the new problems, which are closely linked with the introduction of technology in fire service, includes low computer literature among staff among other reasons. In agreement with this state of affair, low level of technical education in the developing countries is the major factor that hinders efficient utilization of fire service resources.

Ansell and Gash (2008) supports that fire stations staff with technical skills training are more at ease in participating in technological advancement to improve fire service delivery. A study by Montazemi (2007) indicates that the level of fire staff technical skills correlates with their participation in the fire station development process and agenda. Effective fire station support and comprehensive fire staff education are dominant concerns when introducing a new system or technical equipment within the station. Montazemi (2007) also noted that the fire staff education is important and that different types of stations require different types of training as the fire staff technical knowledge on fire service delivery positively correlates with user's satisfaction in the context of fire stations.

2.4 Work environment and fire service delivery

Yoon and Suh (2003) showed that employees in a better work climate indicated by job satisfaction are more likely to work harder and provide better services. Employees who are satisfied with their jobs tend to be more involved in their employing organizations, and more dedicated to delivering services with a high level of quality. Previous research has also suggested that loyal employees are more eager to and more capable of delivering a higher level of service quality (Loveman 1998, Silvestro and Cross 2000). Researchers have argued that service quality is influenced by fire station service climate. (Hartline and Ferrell, 1996).

The argument that work environment contributes to fire service delivery is grounded on the theory of equity in social exchanges (Homans 1961). Although there are different views on social exchange theory, theoriets agree that social exchange involves a series of interactions to generate obligations (Emerson 1976, Cropanzano and Mitchell 2005) meaning something is given and something is returned (Cropnzano and Mitchell 2005).

In the context of social exchange theory, when the fire station offers favorable service climate that makes it fire service employees satisfied, the latter will in return tend to be committed to making an extra effort to the organization as a means of reciprocity for their employer (Wayne, 1997, Flynn 2005), leading to higher level of fire service delivery quality.

Research in consumer psychology has shown that exposing customers to happy employees resulting in customers having a positive attitudinal bias towards fire service products (Howard and Gengler, 2001). Likewise, research in organizational behavior has revealed that the hostility of fire service employees has a direct impact on the hostile mood of the recipient of fire services (Doucet, 2004), leading to customer dissatisfaction regardless of the performance of the core tasks of the fire services delivered to fulfill customer needs.

Fire service staff with a high level of job satisfaction will appear to the customer more balanced and pleased with their environment, leading to positive influence on the level of customer satisfaction (Homburg and Stock 2004). Therefore this study was to investigate the influence of work environment on fire service delivery focusing on job satisfaction and work effort.

2.5 Top management support and fire service delivery

This study considered the originality of the top management in supporting fire service delivery. Originality of senior commanders and the officers refers to the willingness of the top executives to support fire service delivery programmes bearing the risks of originalities. When the fire station commanders and the top county executives are familiar with fire service delivery, the county fire stations reduces the uncertainty concerning the support for the station and increases the willingness of the station to provide the fire services. The top executive of the county stations is a leader and an entrepreneurial figure who is crucial in determining the support attitude of the small business (Rizzoni, 2007). This is because the leader's quality is the determinant of the overall management style of the business. The leader must support his juniors and be aware of knowledge requirement to fulfill the delivery of the service. With regard to knowledge, the degree of uncertainty involved in fire service delivery support will diminish, resulting in less risky support for the service delivery (Mohamad, 2009). Chan and Ngai (2007) further observes that this is consistent with the findings of other studies which reported that the lack of knowledge of the fire service delivery process and insufficient awareness of the potential benefits may be inhibiting fire stations from undertaking efficient and effective fire service delivery. To the extent the leader can lower the knowledge inadequacies; it will facilitate the process of fire service delivery. Dewar and Dutton (2007) also found out that extensive knowledge is important for the top executive of fire stations in support of the fire service delivery programmes.

Research has also explored several characteristics of executives that influences effective fire service delivery. Rogers (2008) suggest that originality in fire service delivery is related to fire service delivery new decision process. When the knowledge of the support is gathered, an attitude will be formed towards the innovation as to whether to adopt or to reject a fire service delivery programme. Top station commanders always make the final decisions on fire service delivery based on the internal needs of the organization or environmental changes (Damapour and Schneider, 2007). Fire station commanders also take the responsibility of managing and use of technological innovation which is vital in supporting fire service delivery within the fire stations (Pinheiro, 2010). The fire station's strategic decisions on fire service delivery often reflect personal characteristics of its top commanders, hence researchers have examined the top executives support factors that influences fire service delivery.

In examining top management support in fire service delivery, Thong and Yap (2007) considered fire stations commanders innovativeness, attitude towards change and knowledge amongst others. Damapour and Schneider (2007) investigated manager's age, gender, education level, tenure in position and attitude towards efficient and effective service delivery while at the same time focusing on the organizational, environmental and top manager's effect on the phases involved in fire service delivery within the fire stations.

The fire station commander's perception of fire service delivery plays an important role in the efficiency and effectiveness of a service delivered to the public. Top fire station commander innovativeness and favorable attitude of fire service delivery affects in a positive way the reception of the service to the local residence and also assists in all the stages of a new service delivery adoption. In initial stages of delivering a fire service to the people, the fire station commander helps in developing awareness among the crew members, in preparation stage they are responsible for allocating necessary resources and in the implementation stage they create an environment for smooth dispensation of the fire services (Rogers, 2008). Mehrtens et. Al (2007) found a direct link between the fire stations commanders' positive attitude towards fire service delivery improvement and its success. Every fire service delivery process is associated with

uncertainty; however a fire station commander with more positive attitude challenges these risks and continues to maintain their enthusiasm by committing increasing amount of resources.

Fire station commander's tenure refers to the length of time the commander has been in their current job. Researchers have found contradicting results when examining commanders tenure. Experienced commanders with their fire stations "know how" can facilitate a smooth fire service delivery that is more efficient and effective and at the same time use their authority to establish an atmosphere for successful implementation of various processes and procedures. Commanders with longer tenure have a better knowledge of the station operations and would be more competent in handling unforeseen events that arise during fire service delivery activities that are usually uncertain. Hence more experience fire station commanders are favored for an efficient and effective fire service delivery (Damanpour and Schneider, 2009).

In an empirical study Sharma and Rai (2007) found that fire stations with commanders on a short tenure hard a high service delivery rate. The majority of the studies that investigated commander's tenure verified a significant influence of technology and its adoption (Damanpour and Schneider, 2009). Hence, the research predicts a positive association for the relationship between commander's tenure and the efficient and effective service delivery. Individual characteristic of a commander plays an important role in the delivery of fire services. Amongst these commanders, technology knowledge was found to have a strong correlation with effective and efficient fire service delivery (Thong and Yap, 2007; Chan and Ngai, 2007). A commander with more technological knowledge is able to assess the benefits of a new technology and more likely to ensure the fire service delivery is efficient and effective. Lack of efficiency and effectiveness creates uncertainty and it is only the awareness through knowledge that resources will be committed to efficient fire service delivery.

Commanders can influence fire service delivery by virtue of their innovativeness and interest towards change. Due to the dorminant role of the fire station commander, these aspects are essential in fire service delivery. Commander's willingness to embrace change and technology dictates how efficient and effective the fire service delivery would be (Thong and Yap, 2007). Craig and King (2007) discussed the role of fire station commander as a product champion. In

small businesses, the chief executive officer is usually the owner and the sole decision maker and the executive officer's originality and involvement contributes to the success of the business as they are willing to take risks and would prefer solutions that have not been tried before (Thong, 2008). Past literature found fire station commanders originality significantly and positively influencing how services are delivered within their jurisdiction (Thong and Yap, 2007; Thong, 2007, Mirchandani and Motwani, 2010).

Thong (2007) found out that there is a positive relationship between the top management support and the service delivery in this case the fire service delivery. Hung et al (2010) also found a positive relationship between originality of senior executives and the efficiency and effectiveness of fire service delivery.

2.6 Influence of conditional external pressure in fire service delivery

External pressure refers to the influences that fire stations receive from sources external to it. If a station's competitors, suppliers or customers are implementing new fire service delivery scheme, then this results in pressure for non-implementers. This pressure is caused by the perception that implementers will have certain competitive advantages. Depending upon the intensity of the pressure, the type and need for implantation of a fire service delivery system varies across every organization. Various studies have shown that increased external pressure in the marketplace has been a major force propelling companies and organizations to implement various fire service delivery systems such as the e-alarm system, e-disaster monitoring system (mohamad, 2009)

External influence can take the form of encouragement or pressure and can vary from encouragement or pressure to recommendations, requests, or providing incentives or imposing penalties. External pressure therefore refers to the influence from the organizational partners and customers. The pressure exercised by the powerful organizational partners to implement fire service delivery system influences the decision by a fire station (Lacovou, Benbasat and Dexter, 2007). An organization that implements a particular fire innovation for efficient and effective fire service delivery would demand their partners to implement similar process to fully utilize the innovation at an inter-organizational level. Similarly the demands from the residence who are the customers of the fire stations have a strong impact in the implementation a fire service delivery

system (Abereijo, Adeniyi and Aderemi, 2009). Small organizations are known to be very vulnerable to customer pressure since they are more likely to be dependent on larger customers for their survival. The pressure from the organizational partners and customers is particularly high for small organizations compared to larger ones (Lacovour et al., 2007). Studies have provided evidence that significant external pressure in the implementation of efficient and effective fire service delivery and hypothesized external pressure can have a positive relationship with fire service delivery (Chan and Ngai, 2007)

Competition increases the likelihood of organizations being innovative thereby being efficient. Hameed and Councel (2012) in their research of assessing the influence of environment and CEO characteristics for service delivery implementation explained that tough rivalry pushes the organizations to innovate. They argued that empirically, studies have shown that more intense competition is associated with higher service delivery. Competition leads to uncertainity and increases both the need for and the rate of fire service delivery. Porter and Millar (1985) suggest that, by implementing a fire service delivery system, organizations will be able to compete in three ways. A new fire service delivery system can change the fire industry structure and in so doing alter the rules of competition. New fire service delivery system can also create competitive advantage by giving organizations new ways to outperform their rivals. Finally, new fire service delivery spawn new organizations, often from within existing operations of the organizations. Therefore, small organizations in an environment that is more competitive would feel a greater need to turn to efficient and effective fire service delivery to gain competitive advantage. On the other hand a small organization is a less competitive environment would not be faced with a push to implement an efficient and effective fire service delivery system.

Fire stations implement fire service delivery systems in reaction to an external pressure or demand to achieve an advantage of an environmental opportunity (Damanpour and Schneider, 2007). The external environment plays a significant role in outing the factors that influences fire service delivery. Quaddus and Hofmeyer (2007) considered competitive pressure, government support, fire station partners support and vendor support as different environmental aspect in investigating the factors that influences business to business trading exchange in small businesses. Examining factors that influence fire service delivery in the UK fire stations,

Premkur and Roberts (2009), considered competitive pressure, pressure from trading partners, trading partners support and vertical linkage in the context of the environment.

Ifinedo (2012) identified three main sources of external pressure as follows: competitive pressure, supplier's pressure and customer's pressure. He explained that competitive pressure influences fire service delivery in large organizations and businesses. According to Raymond (2007), and Hadaya (2007), organization partners' pressure affect acceptance of a new fire service delivery.

Fei and Shera (2011) in their research on understanding efficient service delivery in china argued that given the fire stations are responsible for implementing the fire service delivery investments, the decision of whether to implement and how to do it solely rest with the fire station commanders. Strong commitment from the executives ensures there is deployment of adequate financial and human resource as well as careful assessment of the factors that influences the fire service delivery plan. It is also able to assess the other factor that includes the acceptance by the fire staff. As a result, fire service delivery projects are taken seriously in China and the responsibility solely rests with the executives hence commonly reffered to as the "executives' project".

With respect to customer's pressure, Kuna (2007) said that the key driver for fire stations to determine factors that influences fire service delivery within their jurisdiction is customer feedback, demand and pressure. In many cases, fire stations would implement fire service delivery systems due to influences exerted by its organizational partners and or its competitors having no relation to the fire station itself. For example, pressures from organizational partners or competitors have been found to be an important factor in assessing the factors that influence fire service delivery (Kaun and Chau, 2007). Against this background, this study anticipates that increase in competitive pressure on the fire stations should results in higher level of fire service delivery. To this effect, external pressure has been considered as a factor that influences fire service delivery.

2.7 Theoretical framework

The theories that have been used in the study of factors affecting fire service delivery include the emergency management theory. This model provides a sound basis for supporting the emergence of emergency management theory utilizing the management process from planning, organizing, leading and controlling (Fayol 1916, Mintzbert 1973, Katz 1974, Koontz 1984). Taylor (1911) considered management a process and one that "if approached scientifically" would lead to success. His principles of scientific management initiated a revolution in how we viewed both the process and position of the fire station manager. Many early writers in emergency management contended that there was a right way of organizing work and accomplishing tasks (Gilbreth 1911) while others built on the engineering approaches to acknowledge the impacts of bureaucracies (Weber 1947).

A major contribution of this theory is the strategic planning process which is applied to management of fire service delivery in the need to monitor the nature and changing characteristics of external forces and how they impact on the operations of the fire station. However the model does not provide information on how to access the external forces characteristics, furthermore it has been criticized for its lack of specificity, Bertalanffy (1972).

System theory has also been used by researchers to explain why fire service delivery may or may not be efficient and effective (Bertalanffy, 1972). It hypotheses that everything is part of a larger, independent arrangement and it is centered on clarifying the whole, its parts, and the relations between them. Fire service delivery encompasses many parts which includes local, county, national, public, private and non-profit units. Bertalanffy further suggests that system theory acknowledges that effective fire service delivery requires response time that is at par, knowledge and skills of the responders, support of the top management and the competition from outside quotas within the fire station. These systems are open not only in relation to their environment but also in relation to themselves; the interactions between components affects the system as a whole. A series of studies found that System theory is the best model in examining the factors that influences fire service delivery because it is specialized in service delivery, it is well research, it uses psychometric measurements and it is dorminant model for investigating service delivery in the emergency arena (Bedeian, 1989).

Freemont (1985) developed a framework for organizational adoption based on Contingency Theory of Organizations. The theory postulates an effective organization should have a structure which is consistent with its environment needs. The effectiveness of an organization is based upon its fitness towards both internal and external factors such as environment, organization size, and organization strategy and response time to make a decision. In this framework key determinants are identified as external environment which includes competition, the response time, the organization formal and informal knowledge and finally, the top management support (Tosi et al, 1984). Therefore decision makers should take into account the response time, top management support, the external environment and organization skills.

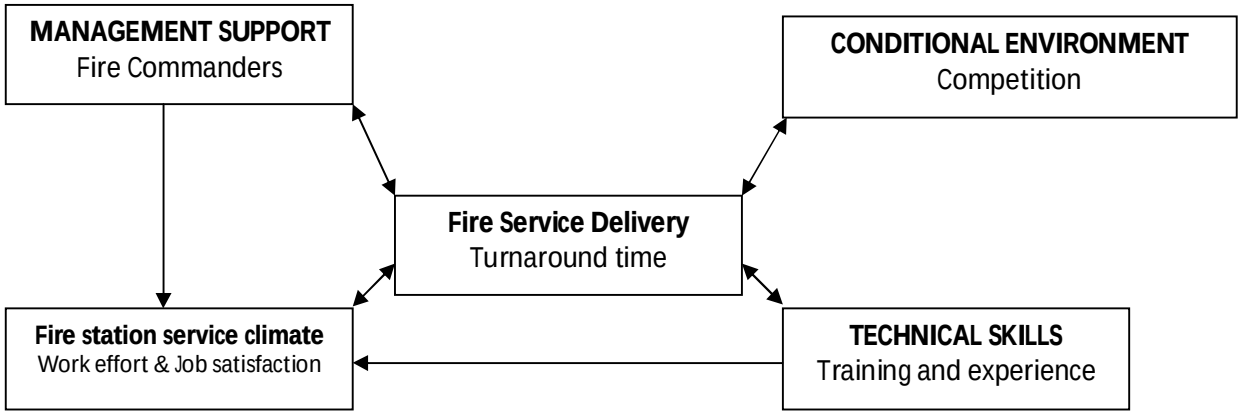

Figure 1: Fire service delivery framework
Source : Tosi (1984)

This framework has been adapted in emergency service delivery studies in the past and it provides a useful analytical framework that can be used for studying the factors that influences fire service delivery (Oliveira and Martins, 2011).

According to Scott (2011) institutional theory has also been used in the past studies which emphasizes that institutional environments are crucial in shaping the fire stations structure and actions. Fire stations decisions are not driven purely by rational goals of efficiency but also by social and cultural factors and concerns for legitimacy. Fire stations as organizations are supported by cultures, structures and routines while operating at multiple levels (Scott, 2011).

The theory claims that firms in the same field tend to become homologous over time, as competitive and customer pressures motivate them to copy industry leaders. Institutional theories tend to be variance theories and are therefore better in explaining among types of fire stations. This study modified the fire service delivery framework which considers response time, competition, top management support and station staff skills as factors that influence fire service delivery and came up with a conceptual framework below.

2.8 Conceptual Framework

The conceptual framework below shows the relationship between the dependent and the independent variables.

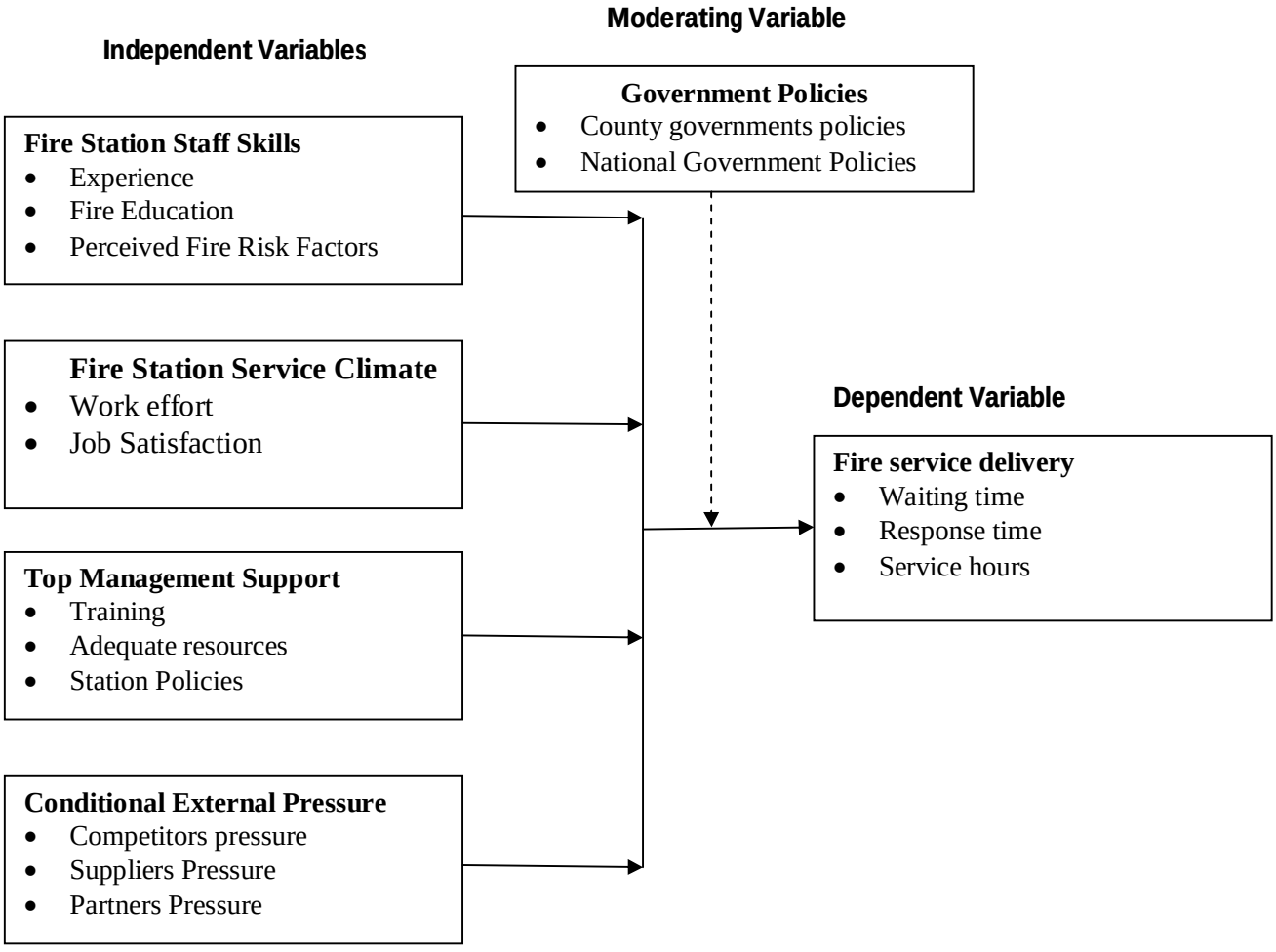

Figure 2: conceptual framework.

The conceptual framework illustrate how fire station staff skills influences the adoption of fire service delivery in terms of experience, fire education and perceived fire risk factors within the fire stations. The work environment influence on fire service delivery will be illustrated in terms of the work effort and the job satisfaction levels of the fire staff. The top management influence on fire service delivery will be illustrated on the basis of training, adequate resources and station policies support. The influence of conditional external pressure will be illustrated on the basis of conditions posed by competitors, suppliers and partners. All the independent variables will enable in determining the fire station service delivery in terms of waiting time, response time and service hours.

CHAPTER THREE
RESEARCH METHODOLOGY

3.1 Introduction

This chapter presents the research design which was applied, target population for the study and the sample size used. It also explains the data collection procedure, analysis and research instruments the study will adopt. It also focused on validity and reliability of instruments and ethical issues.

3.2 Research Design

The researcher used mixed method research approach and employed the concurrent design. Creswell (2005) describes the research approach as involving philosophical assumptions, the use of qualitative and quantitative approaches, and the mixing of both approaches in a study while concurrent design of the approach is a procedure in which the researcher converges quantitative and qualitative in order to provide a comprehensive analysis of the research problem. The mixed method approach permits the collection of both qualitative and quantitative data in the same study and allows the researcher to determine the extent one approach is used over the other which is dependent highly on the purpose of the study (Creswell, 2005). The approach also included triangulation, development, initiation and expansion and allows the researcher match the design strategies with relation to their goals in attempting to understand a specific phenomenon (Green, 1989).

The benefit of the approach was that the study contains information from data that is merged hence the results produced helped the researcher understand better the factors that influence fire service delivery. However according to Creswell (2005), the fact that the researcher determines the priority to one or the other form of qualitative or qualitative research, may lead to bias. Creswell (2005) also notes that mixed method research should not be considered inherently valid but instead, trustworthiness and credibility must be assured through the application of rules and procedures and attention to quality criteria.

3.3 Target Population

The target population consisted of fire station commanders, heads of departments, ambulance attendants, first aiders and fire marshals within the study area.

According to IIEBC report (2007), the populations of the various fire stations in Kiambu County are distributed in table 3.1:

Table 3.1: Target Population

No.	Strata	Thika	Kiambu	Ruiru	Limuru	Kikuyu	TOTAL
1	Fire Station Commander	2	2	2	2	1	**9**
2	Head of departments	6	4	6	2	4	**22**
3	Ambulance Attendants	10	8	10	3	2	**33**
4	First Aiders	8	3	2	6	1	**20**
5	Fire Marshals	16	21	12	15	4	**68**
	TOTAL	**42**	**38**	**32**	**28**	**12**	**152**

3.4 Sampling Size and Sample Technique

The sample size will be chosen using the Krejcie and Morgan Table (1970) which determines sample size based on the formulae:

Formula for determining sample size

$$s = X^2NP(1-P) \div d^2(N-1) + X^2P(1-P)$$

s = required sample size.

X^2 = the table value of chi-square for 1 degree of freedom at the desired confidence level (3.841).

N = the population size.

P = the population proportion (assumed to be .50 since this would provide the maximum sample size).

d = the degree of accuracy expressed as a proportion (.05).

Source: Krejcie & Morgan, 1970

Based on the target population therefore, the sample size was 108 extracted from the Krejcie and Morgan Table (1970) for a population size of 150.

From a sampling size of 108, therefore the specific stations were sampled on the basis of the sample size using the formula:

$$\frac{\text{Fire station number of staff x sample size}}{\text{Total Population}}$$

(*Source: Allen and Constable, 2005*)

The sample size from the various fire stations is therefore given table 3.2:

Table 3.2: Specific Fire Stations Sample Size

No.	Fire Station	Number of Staff	Sample Size
1	Thika	42	30
2	Kiambu	38	27
3	Ruiru	32	23
4	Limuru	28	20
5	Kikuyu	12	8
	TOTAL	**152**	**108**

The sample size from the various strata was given by the formula:

$$\frac{\text{Strata size x Fire Station sample size}}{\text{Total Sample Size}}$$

(*Source: Allen and Constable, 2005*)

The sample size from the various strata is given in table 3.3:

Table 3.3: Strata Sample Size

No.	Strata	Thika	Kiambu	Ruiru	Limuru	Kikuyu	TOTAL
1	Fire Station Commander	2	2	2	2	1	**9**
2	Head of departments	5	2	3	2	2	**14**
3	Ambulance Attendants	8	4	7	2	2	**23**
4	First Aiders	5	2	2	3	1	**13**
5	Fire Marshals	10	17	9	11	2	**49**
	TOTAL	**30**	**27**	**23**	**20**	**8**	**108**

The research used stratified random sampling in selecting the sample from the population. The sub-groups within the fire stations that formed the strata included fire station commanders, heads of departments, ambulance attendants, first aiders and fire marshals as listed in table 3.1 above. A simple random sample selection scheme was then applied in each stratum through allocation of generated random numbers from table of random numbers.

According to Castillo (2009) the stratified random sampling guarantees better coverage of the population and the researcher has control over the subgroups that were included in the sample. Castillo (2009) further notes that one of the main advantage of stratified random sampling is that it can be difficult to identify appropriate strata for study and that it is more complex to organize and analyze results. This was mitigated by the researcher by the fact that the identified strata are within the structure of the fire stations and the researcher has undertaken training on analysis of stratified random sampling.

3.5 Research Instruments

Quantitative data was collected from the fire stations through administering a questionnaire while qualitative data was collected through application of an interview guide and the use of observation guide to compliment the quantitative data. The questionnaire will be used for collecting primary quantitative data. Additionally, the questionnaires was used for the following reasons: its potentials in reaching out to a large number of respondents within a short time; able to give the respondents adequate time to respond to the items; offers a sense of security

(confidentiality) to the respondent; and it is objective method since no bias resulting from the personal characteristics as in an interview (Owens, 2002).

The questionnaire was divided into six sections. The first section collected background information for the respondent and the target fire station, the second section of the questionnaire seek to establish the influence of fire station staff skills on fire service delivery, third section determined the work environment and fire service delivery, fourth section finds out the top management influence and fire service delivery, the fifth section investigates the conditional external pressure on fire service delivery and finally the section six of the questionnaire seeks the opinion of the respondent on the status of fire service delivery.

In the third section of the questionnaire, McClosky and Mueller Satisfaction scale is incorporated to measure the fire staff job satisfaction and fire service delivery.

The observation guide listed items within the fire station that influence fire service delivery while the interview guide listed a set of questions to guide the researcher in interviewing the selected sample population on factors that influence fire service delivery in Kiambu County.

3.5.1 Piloting the Instruments

A pilot study was conducted at the Kericho County Fire Station as it exhibits the same characteristics as the stations under study. This enabled the researcher to pretest all the research instruments. All the research assistants also familiarize themselves with the research tools during the pilot study. Data obtained from the pilot study were then used to moderate the final research instruments.

3.5.2 Validity of the Instruments

According Mugenda and Mugenda (1999) validity is the accuracy and meaningfulness of inferences which are based on research results. Kothari (2004) explains that content validity is the extent to which a measuring instrument provides adequate coverage of the topic of the study. If the instrument contains a representative sample of the universe, then the content validity is good. Its determination is primarily judgmental and intuitive and it can also be determined by using a panel of persons who shall judge how well the measuring instruments meets the

standards (Kothari, 2004) and Bog and Gall (1985) points out that validity of an instrument is improved through expert judgment.

3.5.3 Reliability of the Instruments

Mugenda and Mugenda (1999) define reliability as a measure of the degree to which a research instrument yields consistent results after repeated tests when administered a number of times. It also refers to the situation where the results of a study can be reproduced under similar methodology (Joppe, 2000). The researcher will measure the questionnaire, interview guide and the observation guide as the instrument of study in the fire stations in Kiambu County.

The test – retest method was employed to establish the reliability of the questionnaires. According to Gregory (1992) the technique involves administering the same instrument twice to the same group of subjects. The questionnaire was administered to Kericho County fire station selected for the pilot study within an interval of one week and Pearson Product Moment Correlation Coefficient (r) was calculated for each questionnaire. Scores obtained from both tests were correlated to get the coefficient of reliability. A Spearman's correlation coefficient of 0.7 was found acceptable. Mugenda and Mugenda (1999) notes that acceptable reliability coefficient ranges from 0.6 in social sciences.

3.6 Data Collection Procedure

The researcher applied for a permit from the National Council for Science, Technology and Innovation to conduct the research. The Kiambu County Assistant Secretary was briefed about the purpose of the study and gave authority to the County Chief Fire Officer for the researcher to be conducted. The fire station assistant commanders were sought and recruited to introduce the researcher and the research assistants to the other fire station staff members as they are well known and since they are familiar with the station, they led the research team in the various blocks while moving around. Two research assistants were recruited and trained to assist in data collection of the study.

3.7 Data Analysis Technique

The qualitative data were coded and doubled entered into a computer database designed using Ms – Access application. Data cleaning and validation was performed in order to achieve a clean

dataset that was then exported into a statistical package for social sciences (SPSS ver.21). A clean dataset stored stored in a computer hard drive for analysis. Backup files were stored in CDs and external hard disks regularly to avoid any loss or tampering.

Data analysis was conducted using SPSS statistical software. Exploratory data techniques were used at the initial stage of analysis to uncover the structure of data and identify outliers or unusually entered values. Quantitative data was coded and processed using SPSS version 22.0. Descriptive statistics such as frequencies has been used to summarize, organize and simplify the data to be collected. Quantitative data has been presented using frequency tables and graphs.

The qualitative data generated from interview and observation guide has been categorized in themes in accordance with research objectives and reported in narrative form along with quantitative presentation and was used to reinforce the quantitative data.

3.8 Ethical Consideration

Clearance for the research was sort from the Kiambu County under the department of Health Services and also from the National Council for Science, Technology and Innovation. The target fire stations were given adequate explanation on the purpose of the research and given time to seek clarifications and/or ask questions before being recruited into the study. Informed consent was sort from the sample population before conducting interviews. Participation was fully voluntary and confidentiality maintained at all levels during the study.

3.9 Operation

Table 3.4: Operationalization of variables

Objectives	Variables	Indicator	Measurement Scale	Methods of data Collection	Data Analysis Technique
	Independent Variables				
To examine the influence of fire stations staff skills in delivery of fire services in Kiambu County.	Fire staff Skills	Experience Fire education Perceived fire risk factors	Nominal Nominal	Administering questionnaire In depth Interview	Frequencies and percentage
To determine the vulnerability factors that influence fire service delivery in Kiambu County.	Vulnerability Factors	Social Forces Cognitive forces	Nominal Nominal	Administering questionnaire In depth Interview	Frequencies and percentage
To establish the influence of top management support in the fire service delivery in Kiambu County	Top Management Support	Training Adequate Resources Policies	Norminal Normial Nominal	Administering questionnaire In depth Interview	Frequencies and percentage
To establish the influence of conditional external pressure in fire service in Kiambu County	External Pressure	Competitors Suppliers Partners	Ordinal Ordinal Ordinal	Administering questionnaire In depth Interview	Descriptive Descriptive Descriptive
	Dependent Variables				

To investigate factors influencing fire service delivery	Fire Service delivery	Number of hours	Ratio	Administer Question	Descriptive
		Waiting time	Ratio	Observation	Descriptive
		Response Time	Ordinal	In depth Interview	Descriptive

CHAPTER FOUR
DATA ANALYSIS, PRESENTATION AND INTERPRETATION OF FINDINGS

4.1 Introduction

The chapter presents the data analysis, presentation and interpretation of the findings on the factors that influence fire service delivery. The data collected was collated and reports produced in form of descriptive tables.

4.2 Questionnaire Return Rate

Out of the one hundred and eight (108) questionnaires administered, one hundred and one (101) constituting 93.5% response rates were collected. Out of this 30 fire staff were from Thika station, 26 from Kiambu station, 20 from Ruiru station, 19 from Limuru station and 6 from Kikuyu station. According to strata response rates were 9 fire station commanders, 13 heads of departments, 21 ambulance attendants, 13 first aiders, and 45 fire marshals.

The response rate from the various strata is given in the table 4.1:

Table 4.1: Strata Response Rate

No.	Strata	Thika	Kiambu	Ruiru	Limuru	Kikuyu	TOTAL	Percent
1	Fire Station Commander	2	2	2	2	1	**9**	**8.9**
2	Head of departments	5	2	3	1	2	**13**	**12.9**
3	Ambulance Attendants	8	4	7	2	0	**21**	**20.8**
4	First Aiders	5	2	2	3	1	**13**	**12.9**
5	Fire Marshals	10	16	6	11	2	**45**	**44.5**
	TOTAL	**30**	**26**	**20**	**19**	**6**	**101**	**100**

According to American Association for Public Opinion Research (AAPOR, 2008), the 93.5% which is a high response rate from a random sample of 108 is considered preferable to a low response rate from sample above 108.

4.3 Characteristics of the Respondents

This section gives an analysis, presentation and interpretation of the respondents' gender, age and level of education.

4.3.1 Gender of Respondents

Table 4.2 shows the distribution according to gender of the respondents.

Table 4.2: Sex of the respondents

Gender	Frequency	Percentage
Male	99	98.0
Female	2	2.0
Total	**101**	**100.0**

In all, 98.0% of the respondents were male and 2% female, indicating an unbalanced gender distribution at the fire stations.

4.3.2 Age of Respondents

Table 4.3 shows the distribution of the fire station staff according to their age.

Table 4.3: Distribution of Age of Respondents

Age	Frequency	Percentage
18 – 35	21	20.8
36 – 46	62	61.4
46 – 55	16	15.8
55 and above	2	2.0
Total	**101**	**100.0**

The highest percentage of respondents (61.4%) was between age 36 – 46 while the lowest was 55 and above years and stood at 2.0%. This is an indication that the older youth are more engaged in fire service delivery than the younger youth and the elderly. There is also an indication that as the older youth (36 – 46 years) nears the old age, their number decreases at 15.8%.

4.3.3 Level of Education of Respondents

Table 4.4 shows the level of education that the fire station staff had attained before employed at their current workstation.

Table 4.4: Distribution of level of education of respondents

Level of education	Frequency	Percentage
Primary	19	18.8
Secondary	46	46.6
College	34	33.7
University	0	0.0
None	2	0.9
Total	101	100.0

Table of 4.4 presents levels of education of the fire station staff. It indicates that 99.1% of the fire station staff had formal education. Almost all the fire station staffs in Kiambu County are literate. The data from this table reveals that to a large extent (99.1%), one can only join the fire service after completion of formal education.

4.3.4 Status of fire service delivery

Table 4.5 shows the percentage rating of the status of fire service delivery in the various stations.

Table 4.5: Status of fire service delivery

Status of fire service delivery	Scale	Thika	Kiambu	Ruiru	Limuru	Kikuyu	TOTAL	%
Improving	20 – 40	11	8	6	14	1	**40**	**39.6**
Average	41 – 60	16	18	14	4	5	**57**	**56.4**
Declining	61 - 80	3	0	0	1	0	**4**	**4.0**
TOTAL		**30**	**26**	**20**	**19**	**6**	**101**	**100**

Majority 56.4% in a scale of 41 – 60 of the respondents stated that the status of the fire service delivery is average while 39.6% in a scale of 20 - 40 were of the opinion that the status of fire service delivery is improving and a significant minority at 4.0% felt that the status of fire service delivery is declining.

4.3.5 The average turnout time

The average turn out time is critical for every fire station as it determines the fire station efficiency and effectiveness in responding to emergency calls. Table 4.6 presents the percentage analysis for the average turn out time of the fire station.

Table 4.6: Average turn out time of the fire stations

Average turnout time	Thika	Kiambu	Ruiru	Limuru	Kikuyu	TOTAL	%
Less than 10 minutes	19	21	11	3	6	**60**	**59.4**
10 minutes	7	2	4	16	0	**29**	**28.7**
More than 10 minutes	3	2	5	0	0	**10**	**9.9**
TOTAL	**29**	**25**	**20**	**19**	**6**	**99**	**98**

Majority 59.4% of the respondents confirmed that the average turn out time for the fire stations was less than 10 minutes with 28.7% of the respondents giving a view that the average turnout time is exactly 10 minutes while a small minority at 9.9% felt that the average response time for the fire stations was more than 10 minutes.

4.3.6 Motivation

The respondents were asked to state in their own opinion what they feel encourages them within the fire station in their routine job to achieve efficient and effective fire service delivery. Table 4.7 presents the analysis of the findings in percentage.

Table 4.7: Motivational factors contributing to fire service delivery

Motivation factor	Thika	Kiambu	Ruiru	Limuru	Kikuyu	TOTAL	%
Salary	28	25	10	16	5	**84**	**83.2**
Passion for the job	25	20	11	8	3	**67**	**66.3**
Public Appreciation	21	18	14	7	4	**64**	**63.4**
Appreciation by colleagues	9	2	1	0	0	**12**	**11.9**

From Table 4.7 it can be confirmed that majority of the respondents agrees that salary (83.2%) is a major motivational factor in fire service delivery while firemen/women passion for the job (66.3%) and public appreciation (63.4%) is also taking into consideration by majority of the respondents. Appreciation from colleagues (11.9%) was mentioned by a few respondents and is not to a large extent a motivation by many.

The variables of the study researched included the influence of fire staff skills, fire station service climate, influence of top management and the influence of conditional external pressure. This is analyzed, presented and interpreted below.

4.4 Influence of staff skills and fire service delivery

This section gives the analysis, presentation and interpretation of responses on influence of staff skills on fire service delivery. The responses were distributed to cover fire staff experience, their education and the perceived fire risk factors.

4.4. 1 Experience in fire service

Table 4.8 shows the experience of the fire staff at the various fire stations within Kiambu:

Table 4.8: Distribution of level of experience of respondents

Level of experience	Thika	Kiambu	Ruiru	Limuru	Kikuyu	TOTAL	%
Less than 1 year	1	12	7	9	3	**32**	**31.7**
1 – 3 years	3	0	0	4	0	**7**	**6.9**
4 – 6 years	8	4	5	2	0	**19**	**18.8**
More than 6 years	18	10	8	4	3	**43**	**57.4**
TOTAL	**30**	**26**	**20**	**19**	**6**	**101**	**100**

Out of the 101 respondents who returned the questionnaire, 43 which represents 57.4% had experience of more than 6 years with those with less than one year standing at 31.7%. The respondents also reported 6.9% for those with less than 3 years experience and 18.8% for those with less than 6 years experience. From the data it can be noted that the Kiambu fire stations staff have adequate experience.

4.4.2 Knowledge on fire service delivery

Table 4.9 shows the kind of knowledge on fire service delivery the current fire staff holds.

Table 4.9: Distribution of knowledge of respondents on fire service delivery

Knowledge	Thika	Kiambu	Ruiru	Limuru	Kikuyu	TOTAL	%
General knowledge on fire safety	10	18	14	12	6	**60**	**59.4**
Specialized Emergency Care	5	1	2	1	0	**9**	**8.9**
Trainer of Trainers	12	6	3	6	0	**27**	**26.7**
Records Management	3	1	1	0	0	**5**	**5.0**
TOTAL	**30**	**26**	**20**	**19**	**6**	**101**	**100**

According to data analyzed in table 4.9, most of the fire staff respondents have general knowledge on fire safety (59.4%) while those with specialized emergency care (8.9%) and records management (5.0%) noted as the lowest.

4.4.3 Training needs in fire service delivery

Table 4.10 shows whether respondents are aware of a system in place to help the fire staff in identifying their training needs in fire service delivery.

Table 4.10: Training needs assessment of respondents on fire service delivery

A system on training needs assessment	Thika	Kiambu	Ruiru	Limuru	Kikuyu	TOTAL	%
Yes	9	1	4	8	0	**22**	**21.8**
No	21	25	16	11	6	**79**	**78.2**
TOTAL	**30**	**26**	**20**	**19**	**6**	**101**	**100**

Majority of respondents (78.2%) confirmed that there was no system in place within the fire stations to enable fire staff in identifying their training needs to aid in fire service delivery while only 21.8% of the respondents confirmed there was a system in place.

4.4.4 Perceived fire risk factors on fire service delivery

Regarding perceived fire risk factors on fire service delivery, more than half of the respondents spoke about risks. The most prevalent themes raised included inadequate facilities, lack of training and poor remuneration. This is given is given the table 4.11 below.

Table 4.11: Perceived risk factors by the respondents on fire service delivery

Perceived risk factor	Frequency	Percentage
Inadequate facilities	97	96.0
Poor remuneration	83	82.2
Poor Infrastructure	68	67.3
No answer	4	4.0
Total	**101**	

From the table it can be observed that the most prevalent risk according to the respondents is inadequate facilities (96.0%) and poor remuneration (82.2%). A good majority of the respondents (67.3%) also indicated that poor infrastructure affects service delivery. 4% of the total sampled that returned the questionnaire did not answer the question.

From the analysis and presentation therefore, staff skills influence fire service delivery with respect to staff experience at the various stations. Kiambu fire stations, from the analysis, indicate that the staffs are experienced as indicated by 57.4% of the respondents. Fire staff knowledge also influences fire service delivery as indicated by table 4.6. Most of the fire staffs have general knowledge (59.4%) without any significant specialization (8.9%) nor records management (5.0%). Without specialization in knowledge and good records management, then fire service delivery is negatively influenced. Finally, perceived risks by the fire staff on fire service delivery also influences fire service delivery. The respondents identifies the most prevalent perceived risks influencing fire service delivery as inadequate infrastructure (96.0%), poor remuneration (82.2%) and poor infrastructure (67.3)

4.5 Work environment and fire service delivery

To answer research question number 3, that sought the responses on the influence of work environment on fire service delivery as indicated by work effort and job satisfaction, the sampled fire staff were asked to rate the statements that included staff remuneration, promotional opportunities, relationships with fellow staff, provision of required equipments, good working conditions, established customer care service, attendance to public forums to publicise fire station, employee leave implemented, enough working space for the fire tenders and officers and finally, that the station compensate for extra time worked. The ratings were done using a 5-point likert scale whose numerical values was in ascending order ranked from 1-to-5 with decreasing order of strength of the level of agreement assigned to each of the corresponding statement-factors given. Strongly Agree and Agree were combined into one scale while strongly disagree and disagree were also combined into one scale. After the data was coded and analysed, findings from the sampled staff responses was presented as shown in table 4.12.

Table 4.12: Distribution of influence of work environment on fire service delivery

Scale	The combined likert	Frequency	Percentage
10 – 20	Agree	98	97.0
21 – 32	Neutral	0	0.0
33 - 50	Disagree	3	3.0
	Total	**101**	**100.0**

As shown in table 4.12, majority 97.0 percent of the sampled fire staff agree that work environment influences fire service delivery in Kiambu County.

The mean given by SPSS as 1.06 was in the scale of 10 - 20 and therefore can be interpreted to denote the fact that most of the sampled fire staff agreed that work environment influences fire service delivery in Kiambu County.

The standard deviation value was used to determine the variability of the responses. The standard deviation given by SPSS was 0.33 therefore an indication that there was no significant variation in the responses among the sampled respondents

4.6 Influence of top management on fire service delivery

The respondents responses on the influence of top management on fire service delivery was analyzed and is presented focusing on measures put in place to improve work effort and the job satisfaction.

4.6.1 Attendance to fire training programmes

Table 4.13 shows the percentage of respondents who had been through fire safety training programmes after joining the fire station.

Table 4.13: Attendance to fire training programmes

Attendance to training programmes	Thika	Kiambu	Ruiru	Limuru	Kikuyu	TOTAL	%
Yes	11	3	8	8	2	**32**	**31.7**
No	19	23	12	11	4	**69**	**68.3**
TOTAL	**30**	**26**	**20**	**19**	**6**	**101**	**100**

The percentage of respondents who revealed to have been through a fire safety training program by the fire station before induction was at 31.7% while 68.3% of the respondents had not. This could perhaps be due to existence of fewer training programmes within the study area.

4.6.2 New systems and technologies

New systems and technologies are critical in fire service delivery to ensure sustainability of the stations. Table 4.14 shows the level of top management support for new systems and technologies.

Table 4.14: The top management support on new systems and technologies

Support on new systems & technologies	Thika	Kiambu	Ruiru	Limuru	Kikuyu	TOTAL	%
Providing technology savvy equipment	16	12	7	9	0	**44**	**43.6**
Setup fund for innovation & system upgrade	0	0	1	0	0	**1**	**1.0**
Training responders on emerging trends	14	14	12	9	6	**55**	**54.5**
Give autonomy to innovative responders	0	0	0	1	0	**1**	**1.0**
TOTAL	**30**	**26**	**20**	**19**	**6**	**101**	**100**

Table 4.14 shows the top management support for new systems and technologies within the fire station. According to table 4.10 that majority of the responders are satisfied with the management support on training responders on emerging trends (54.5%). According to the responders a good effort is also being seen in top management supporting provision of

technology savvy equipment (43.6%). However, table 4.10 analysis also indicates that the top management has not looked into setting up fund for innovation and systems upgrade (1%) and also does not give autonomy to innovative responders (1%).

4.6.3 Fire service delivery phases

Table 4.15 shows respondents' view on the most important phases of fire service delivery supported by the top management.

Table 4.16 Phases of fire service delivery supported by top management

Phases of fire service delivery	Thika	Kiambu	Ruiru	Limuru	Kikuyu	TOTAL	%
Job rotation	17	18	12	18	6	**71**	**70.3**
Coaching	2	3	1	0	0	**6**	**5.9**
Promotion	11	5	7	1	0	**24**	**23.8**
TOTAL	**30**	**26**	**20**	**19**	**6**	**101**	**100**

A large majority at 70.3% are satisfied with the top management on job rotation when asked which are the important phases supported by the top management. It can also be noted that there is little effort being done on promotion (23.8%). However, according to the respondents there is no significant effort in place to support coaching (5.9%) of the fire service staff.

4.6.4 Authority to implement fire service delivery policies

Table 4.17 shows the respondents view on whether the top management had authority to implement fire service policies.

Table 4.17: Top management authority to implement fire service delivery policies

Authority to implement fire service delivery policy	Thika	Kiambu	Ruiru	Limuru	Kikuyu	TOTAL	%
Yes	28	25	20	19	6	**98**	**97.0**
No	2	1	0	0	0	**3**	**3.0**
TOTAL	**30**	**26**	**20**	**19**	**6**	**101**	**100**

A very large majority of the respondents 97.0% agrees that the top management have authority to implement fire service delivery. It is only 3.0% who disagreed that the top management has no authority to implement fire service delivery.

4.6.5 Feedback response mechanism

Emergency feedback response is critical in the operations of the fire station to determine its fire service delivery status. Table 4.18 therefore shows the fire station feedback response mechanism in fire service delivery.

Table 4.18: Fire station feedback response mechanism in fire service delivery

Authority to implement fire service delivery policy	Thika	Kiambu	Ruiru	Limuru	Kikuyu	TOTAL	%
Letter box provided for feedback within the station	0	1	0	0	0	**1**	**1.0**
E-mail address provided to employees	7	0	2	0	0	**9**	**8.9**
Appraisal done regularly	21	24	18	19	6	**88**	**87.1**
Never answered the question	2	1	0	0	0	**3**	**2.9**
TOTAL	**28**	**25**	**20**	**19**	**6**	**101**	**100.0**

Majority of the respondents 87.1% were of the opinion that their fire station undertake appraisals regularly to monitor feedback response from the fire staff on fire service delivery. Only 1% of the respondents indicated that letter box is provided by the station for feedback within the station while 8.9% indicated that an e-mail address is provided to employees for feedback response on matters of fire service delivery. It can also be noted that 2.9% of the respondents did not answer the question.

4.7 Influence of conditional external pressure on fire service delivery

Conditional pressure is an essential element in the efficient working of fire stations in terms of innovation, efficiency and widening of choice in the fire service delivery. This section therefore reports the analysis of fire service delivery in terms of pressures from competitors, suppliers and partners.

4.7.1 Competitors Pressure

Table 4.14 shows the conditional external pressure influence on fire service delivery.

Table 4.19: Influence of competitors' pressure on fire service delivery

Conditional external pressure	Thika	Kiambu	Ruiru	Limuru	Kikuyu	TOTAL	%
Fire station customers drifting to competitors	12	10	8	18	6	**54**	**53.5**
Use of state of the art equipment in neighboring fire stations	12	7	5	0	0	**24**	**23.8**
Conditions set by donor partners	6	9	7	0	0	**22**	**21.8**
TOTAL	**30**	**26**	**20**	**18**	**6**	**100**	**99**

Majority of the respondents (53.5%) confirmed that the fire station customers were drifting to competitors while 23.8% were of the opinion that the use of state of the art equipment in neighbouring fire stations exerts pressure on the fire stations for service delivery and only 21.8% were of the opinion that conditions set by donor partners influences fire service delivery.

4.7.2 Suppliers pressure

Table 4.20 shows the influence of supplier pressure on fire service delivery.

Table 4.20: Supplier external pressure

Suppliers external pressure	Thika	Kiambu	Ruiru	Limuru	Kikuyu	TOTAL	%
Award of exclusive rights to suppliers	0	10	5	7	0	**22**	**21.8**
Procurement from a single supplier or restricted group of suppliers	12	2	5	1	0	**20**	**19.8**
Creation of a form of suppliers licensing scheme	18	7	8	8	6	**47**	**46.5**
a fixed limit (quota) on the number of suppliers	0	7	2	3	0	**12**	**11.9**
TOTAL	**30**	**26**	**20**	**19**	**6**	**101**	**100**

Table 4.20 reveals that 46.5% indicated that the creation of a form of supplier licensing scheme influences fire service delivery while 21.8% agreed that awarding exclusive rights to supply by the fire station influences fire service delivery. 19.8% of the respondents indicated that procurement from a single supplier or restricted group of suppliers influences fire service delivery while 11.9% indicated that a fixed limit (quota) on the number of suppliers influences fire service delivery.

4.7.3 Competitive pressure arising from county structure

The Kenya county governments were implemented recently and the respondents were asked their opinions on what are the competitive pressures arising from county structure that influences fire service delivery. Table 4.21 therefore presents this analysis from the respondents.

Table 4.21: Competitive pressure arising from county structure

Competitive pressure arising from county structure	Thika	Kiambu	Ruiru	Limuru	Kikuyu	TOTAL	%
The fire station's size	9	11	6	12	3	**41**	**40.6**
The fire station distribution and concentration	21	15	14	7	4	**61**	**60.4**
TOTAL	**30**	**26**	**20**	**19**	**7**	**102**	**101**

Majority of the respondents (60.4%) confirmed that the distribution and concentration of the fire stations within Kiambu county influences fire service delivery while 40.6% were of the opinion that the fire station's size was influencing fire service delivery.

4.7.4 Institutional controls to check extreme competition

It is important for fire stations to align themselves to the competitors. This section presents the analysis from the respondents view in Table 4.22.

Table 4.22: Institutional controls applied to check extreme competition

Institutional controls applied to check extreme competition	Thika	Kiambu	Ruiru	Limuru	Kikuyu	TOTAL	%
Fire station own & provide permit to access public hydrants	3	0	1	3	1	**8**	**7.9**
Fire station carryout inspection of fire systems exclusively	9	12	6	7	5	**39**	**38.6**
Fire station approves business permits to business involved in fire safety	18	14	13	9	0	**54**	**53.5**
TOTAL	**30**	**26**	**20**	**19**	**6**	**101**	**100**

Majority of the respondents (53.5%) confirmed in Table 4.22 that the fire stations approves permits to businesses involved in fire safety as a measure applied to check extreme competition. The respondents also agreed at 38.6% that fire station carryout inspection of fire systems

exclusively to check competition while only 7.9% agreed that the fire stations own and provide permit to access public hydrants.

CHAPTER FIVE
SUMMARY OF FINDINGS, DISCUSSIONS, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter presents summary of the findings, discussion, conclusions reached and recommendations following the objective of the study. Fire service delivery has been taunted as a major contributor to safe environment. This study set to investigate the factors that influence fire service delivery by focusing on the fire staff skills, work environment and the influence of conditional external pressure.

5.2 Summary of the findings

Relying on the responses given by the respondents, the researcher came up with findings which were used to make conclusions and give recommendations. The main findings as based on the result on data analysis in chapter four are given in Table 5.1 below:

Table 5.1: Summary of findings

Demographic Characteristics	Finding
Gender	• Large majority 98.0% of the respondents were male while female were only 2.0% indicating a high unbalance gender distribution at the fire station
Age	• Majority of the respondents 61.4% were between the age of 36 – 46 while the lowest age group was 55 and above (2.0%). The youth (18 – 35) are represented in fire service delivery at 20.8% while those slightly mature (46 – 55) were represented at 15.8%.
Level of education	• Majority 46.6% of the respondents were secondary school leavers while those who have attended college were 33.7%.

	• The analysis also showed that there is no university (0.0%) graduate and those who have not attended any formal education are only 2.0% and those with basic education of primary were 18.8%
Fire service delivery status	• Majority 56.4% were of the opinion that the status of fire service delivery was average while 39.6% felt that it was improving and 4.0% opined it was declining.
Average turnout time of the station	• Majority 59.4% indicated that the turnout time is less than 10 minutes while 28.7% indicated it was exactly 10 minutes with 9.9% having the view that it was more than 10 minutes.
Objectives	**Findings**
To examine the influence of fire stations staff skills in delivery of fire services in Kiambu County	• Fire staff with experience of more than six years stood at 57.4% but again those with less than one year was 31.7% indicating no bridge in gap • Vast majority at 59.4% had only general knowledge on fire safety indicating lack of specialization in fire service delivery. • Large majority of the respondents at 78.2% confirmed that there is no system in place to enable fire staff in identifying their training needs • Most significant risk factors are inadequate resources and poor remuneration.
To determine the influence of work environment in delivery of fire services in Kiambu County	• Majority (61.4%) confirmed that the fire stations do not have a customer care department or office • Majority of the respondents at 77.2% confirmed that the fire station does not have enough space for the fire tenders and offices • 73.3% confirmed that the fire station environment

	is conducive and not influenced by politics. This can be attributed to better structures in recruitment process • 80.2% agree that the station at least has tried to provide the basic fire safety equipments
To establish the influence of top management support in the fire service delivery in Kiambu County	• 68.3% of the respondents confirmed to not having access to fire safety training programmes. Most were of the opinion that these trainings have never been organized by the management. • Majority (54.5%) were satisfied with the top management support on new and emerging technologies • No fund has been set aside for innovation and systems upgrade. • Study also noted that job rotation has been effected at the fire stations scoring 70.3% while coaching has not been implemented at the stations only scoring 5.9%. • Most respondents agreed at 97.0% that the top management had the authority to implement fire service delivery policies • Apart from appraisal (87.1%), the fire station has not implemented public feedback response mechanisms which include letter box (8.9%) and e-mail address (1.0%).
To establish the influence of conditional external pressure in fire service in Kiambu County	• 53.5% of the respondents confirmed that the fire station customers were drifting to the competitors and this is attributed to inefficient service delivery • The fire station suppliers have to go through a form of licensing by the station and this is viewed

	as a red tape to constructive engagement with stations. • 60.4% agreed that there is competitive pressure arising from the county structure in the sense of fire station distribution and concentration while 40.6% observed that the competitive pressure was due to the fire stations' size. • Institutional controls in place to observe extreme competition includes fire stations involvement in approval of business engauging in fire service delivery (53.5%), fire station carrying out inspection of fire systems exclusively (38.6%) and fire station owning and providing access permit to hydrants (7.9%). This means that the fire station has low authority on its hydrants within its jurisdiction.

5.3 Discussions of the findings

This section gives a detailed discussion of the findings from this study.

5.3.1 Fire station staff skills

The provision of training on fire safety skills is critical for the effective and efficient fire service delivery. Schoof (2006) has suggested that fire safety skills is crucial in assisting fire staff to develop fire service attributes and behaviours hence efficient and effective fire service delivery. Although majority (57.4%) of fire staff had experience of more than 6 years, most had a general knowledge on fire safety at 59.4%. It is only 8.9% and 5.0% who had done specialized emergency care and records management respectively. Schoof (2006), notes that specialization in the delivery of services improves the service delivery by making it efficient and effective. Majority (78.2%) of the respondents blames this lack of specialization on the lack of a system in place within the fire station to enable fire station staff identify their training needs.

Studies by Satterthwaite (2006) have reported that in developing countries such as in Africa, a high proportion of the population work in the informal economy and live in poor quality and overcrowded housing in informal settlement with high fire risks. Perceived fire risk levels are increased by the lack of infrastructure and services in many areas. The shortcomings in fire service delivery in most county fire stations in Kenya includes lack of fire engines, inadequate equipments, insufficient personnel with inadequate training and fire fighting facilities.

5.3.2 Fire station service climate

The results in table 4 showed that mean score and standard deviation for items on work environment showed that the fire service delivery is influenced by the work environment as perceived by the fire station responders. The study findings shows that work effort and motivation have a major influence on fire service delivery. This findings concur with those of Chugunta (2001) in a survey carried out in Zambia which revealed that overwhelming majority of the respondents cited work effort and motivation in terms of relationship with supervisors, remunerations, compensation for extra time, promotional opportunity and provision of required equipments as the major reason for motivation of service employees.

5.3.3 Influence of top management on fire service delivery

According to Carman (1990), top management in an organization is the pillar of activities within the same organization and can either make or break the organization depending on their decisions and changes they bring to the organization. The finding of this study shows that fire station staffs have not undergone any training by the fire station at a significant 68.3%. Fire safety training is critical for the delivery of fire services in line with the changing needs, therefore according to this findings, access to training is still quite low at 31.7%.

According to Schoof (2006) emerging trends in fire service delivery contribute to improvement in the delivery of the same services. The finding of this study has revealed that the top management is committed to training responders on emerging trends (54.5%) and also provision of technology savvy equipments which including fire engines and firefighting appliances. However, the low score on setting up fund for technology and systems upgrade (1.0%) and giving autonomy to innovative responders (1%) is a clear indication according to Schoof (2006) that there is no alignment in the station policies to cover all areas of fire service delivery.

In order for fire service delivery to be consistent without interruption through senior employees leaving the station Schoof (2006) advices that job coaching and promotion is important in ensuring continuity in fire service delivery. The findings of this research showed that the top management has supported rotation of junior staff at 70.3% but has not supported coaching as indicated by 5.9% and promotion 5.9% of staff. These findings reveal that should the top fire station officers leave the station then there would be a crisis as there is no coaching and the promotion is insignificant.

If effective feedback response is designed into a performance management program, the fire staff and response team will improve on fire service delivery hence making the station more efficient and effective (Carman, 1990). Carman (1990) further notes that with effective feedback response processes, the fire staff will not be working blind but will have coordinated functions that meet the needs of the clientele of the station. The findings of the stations showed that only appraisal 87.1% of the fire station personnel is given attention by the top management with other feedback mechanisms like provision of letter box at 1.0% and emails at 8.9% not having much attention.

5.3.4 Influence of conditional external pressure

According to this study, majority 53.5% of the respondents confirmed that the fire stations' customers were drifting to the competitors. This according to Carman (1990), is a wakeup call to the fire station to look into its fire service delivery and further notes that the Michael Porter's 5-sources of pressure in a business identifies competition as a factor that determines the ultimate growth potential of an industry. The lack of the fire stations using competition analysis as a strategy is recipe for insignificant delivery of fire services.

Findings of this study indicate that supplier pressure is noted to influence fire service delivery through the creation of a form of supplier licensing scheme by the fire station. Table 4.15 states this at 46.5% and this according to a study by Carman (1990) limits the level of competition as there is no level playing field for all the suppliers of the fire station and this can also lead to abuse of office. Majority of the respondents at 60.4% confirmed that fire station distribution and concentration affects the fire service deliver. This is also confirmed by a study by Todaro (1994) noting that an organization's size, distribution and concentration directly reflects on its fire

service delivery. Todaro (1994) further states that organizations with better distribution channels, size enough for its facilities and offices and highly concentrated in a region is likely to perform better in service delivery.

The fire stations have been mandated by various statutes within the Kenya Constitution (2010) and various by-laws of the station to undertake certain institutional controls which are aimed at checking on competition. The findings of this study revealed that the fire stations have not implemented some of these institutional controls. Highly neglected is the owning and provision of licence permit to access fire hydrants within jurisdiction which scored only 7.9% while mandate to carryout inspection of premises exclusively (38.6%) and that of approving business permits to businesses involved in fire service delivery is significantly implemented.

Even though Table 4.19 reveals that the average turnout time of the fire stations is less than 10 minutes (59.4%), other studies by GOK (2004) revealed that due to communication problems, also revealed in this study, it's the police who receive fire calls who inturn informs the fire brigade which delays the reporting process. Consequently firemen arrive late at the service delivery point and are met by angry and violent crowds. This again depends on motivation of the fire staff as revealed in Table 4.20 of this study report.

5.4 Conclusions of the study

The following conclusions were made from the findings of this study.

From the demographic characteristics of the study, it is evident that the fire stations to a large extent only recruit men at the expense of their female counter. At the same time their level of education is largely from primary and secondary school level thereby limiting the level of specialization. It can also be concluded from the characteristics that the fire station fire service delivery status is average with a turnout time of less than 10 minutes.

Results of a 5-point likert scale showed that work environment influences fire service delivery. The factors that contribute to work environment are concluded as staff remuneration, promotional opportunity, relationship with fellow workers, good working environment,

established customer care service, attendance to public forums to publicize the station, employee leave implementation, enough working space for fire engines and offices and finally fire station compensation for extra time worked.

Top management strongly influences fire service delivery in terms of having attendance to specialized fire safety training programmes, support to new and emerging technologies, setting fund for fire systems upgrade, job rotation and coaching, appraisal and implementation of feedback response mechanism. It can be concluded from the findings that the top management have never conducted specialized trainings, there is no fund set aside to address issues of innovation and systems upgrade, coaching has not been embraced and there is no feedback response mechanisms in fire stations.

Fire station suppliers' pressure, competitive pressure and donor/partner pressure attributed to conditional external pressure, influences fire service delivery by a large extent. The fire stations clientele are drifting to the competitors and this is attributed to inefficient fire service delivery. There is also a competitive pressure arising from the counties structures in the sense of fire station distribution and concentration. The fire stations also approves business permits for businesses involved in fire service delivery exclusively giving it the role of stamping authority rather than a standardization authority as it does not issue the permits to access its jurisdiction fire systems like hydrants.

5.5 Recommendations of the study

Based on the conclusions of this study, the following recommendations were made.

The fire stations should invoke section 125 of the Republic of Kenya that requires a progressive realization of the enforcement of the one-third-gender rule to ensure that women are represented at the fire stations as not only a requirement of the law but also balance decision making. In order to analyze fire service delivery internalization, the government of Kenya should introduce a fire safety syllabus at the primary school level through to secondary school level and fire stations should capitalize on knowledge gained by graduate in fire safety by restricting top management levels to graduates only. To improve on fire service delivery of the fire stations

which is currently average, the fire stations should therefore consider the recommendations below in addition.

The county fire stations should improve on the fire stations work environment by focusing on the work effort and job satisfaction through ensuring improved staff remuneration, elaborate promotional opportunity, encouraging relationship between workers, improved working conditions, establishing a customer care service, attending public forums for publicity, implement employees leave, enough working space for fire tenders and office and compensating staff for extra time.

In order to ensure that top management positively influences fire service delivery, the management should conduct specialized fire safety trainings to its staff to meet the needs of the diversity of the environment. The county disaster management committee with its representation from the fire station top management should set aside funds for upgrading the fire stations systems and innovation purposes. A policy should be introduced at the County Assemblies that makes it mandatory for coaching and feedback response mechanisms to be established at the county government fire stations.

In order to address the issue of competition pressure from the way the structures of the counties are and the way the fire stations are distributed and concentrated, there is need by the fire stations to carryout capacity building for its staff members. A county bill should be proposed to give the fire stations exclusive rights to vet and license businesses in the fire safety industry and permit them the same to regulate the fire systems like hydrants installed within the respective counties.

5.6 Suggested area for further research

The study proposes the following areas for further study:

1. An investigation into the factors influencing fire service delivery case of private fire stations in Kiambu district.
2. An investigation into the factors influencing fire service delivery in other counties
3. An investigation into how the population living within the jurisdiction of fire stations can be incorporated in fire station planning for efficient fire service delivery.

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APPENDICES

APPENDIX 1: LETTER OF TRANSMITTAL

Benard Onyango Lango
P. O. Box 3238 – 01002 Thika
TeL: 020-2499786, 0720-430336
Benard.lango@gmail.com

TO WHOM IT MAY CONCERN

Dear Sir/Madam;

RE: LETTER OF REQUEST TO CONDUCT RESEARCH

I am a postgraduate student at the University of Nairobi pursuing Masters of Arts Degree in Project Planning and Management. I am currently undertaking a research on the factors influencing fire service delivery: case of Fire stations in Kiambu County.

I am pleased to inform you that you have been selected to participate in the study and I therefore request you to provide information through the questionnaire provided. I request for your honesty and goodwill as this will make the research data useful hence the whole study and its meaning.

The information provided will be treated with at most confidence and data provided will be used for academic purposes only.

I thank you in advance for your participation,

Yours Sincerely;

BENARD LANGO

L50/83832/2012

APPENDIX 2: QUESTIONNAIRE FOR THE FIRE STATION RESPONDERS

Instruction:

SECTION I : FIRE STATION BACKGROUND INFORMATION

1. Name of Station:

   ☐ Thika ☐ Kiambu ☐ Limuru ☐ Kikuyu ☐ Ruiru

2. Sex of respondent:

   ☐ Male ☐ Female

3. Age in years:

   ☐ 18 – 35 ☐ 36 – 45 ☐ 46 – 55 ☐ 55 and Above

4. Title

   ☐ Fire Station Commander

   ☐ Head of Department

   ☐ Ambulance Attendants

   ☐ First Aiders

   ☐ Fire Marshals

5. What is your level of education?

   ☐ Primary

   ☐ Secondary

   ☐ College

   ☐ University

   ☐ Any Other Specify: …….

SECTION II : Fire station staff skills and fire service delivery

6. How many years have you been in fire service sector?

   ☐ Less than a year ☐1 – 3 years ☐4 – 6 years ☐More than six years

7. What kind of knowledge on fire service delivery do you currently hold? (*Multiple answers allowed*)

   ☐ General knowledge on fire safety

   ☐ Specialized emergency care knowledge

   ☐ Trainers of Trainers

   ☐ Records Management

   ☐ Any other specify: …….

8. Have you ever undertaken any of these fire service delivery continuous training in the last one year?

   ☐ In – Service training

   ☐ Partner – Donor Training

   ☐ Private Training

   ☐ Any other Specify: …… …….

   ☐ If not why: ……..

9. Is there a system in place to help the fire staff in identifying their training needs in fire service delivery?

   ☐ YES

   ☐ NO

Explain: ……..
…….

10. In your own opinion, what do you perceive as fire risks hindering fire service delivery? :
…….
…….
…….
…….

SECTION III: Work environment and fire service delivery

(In answering the following questions, indicate your opinion on the influence of the following attributes on fire service delivery)

11. How would you rate the following service climate factors influence on the fire service delivery?

	Influence of fire station service climate	**Strongly Agree**	**Agree**	**Neutral**	**Disagree**	**Strongly Disagree**
A.	Fire staff salary influences fire service delivery					
B.	Fire staff promotional opportunity influence fire service delivery					
C.	Relationship with fellow workers at the fire station influences fire service delivery					
D.	Fire staff are provided with the required equipments to undertake their job					
E	Fire station work environment is conducive for fire service delivery and not influenced by politics					
F	The fire station has established customer care service					
G	The fire stations staff attends public forums to publicize the station response services to improve fire service delivery					
H	My immediate supervisor always understands what am trying to do.					
I	Employee leave provided by the fire station is satisfactory					
J	The fire station has enough space for both the fire tenders and offices					
K	The fire station compensates for extra time worked hence improving on service delivery					

SECTION IV : Influence of Top Management on fire service delivery

12. Did you attend a training programme by the station before induction in the fire station?

- ☐ YES
- ☐ NO

13. How does the top management support new systems and technologies in fire service delivery?

- ☐ Providing technology savvy equipments
- ☐ Sets up fund for innovation & system upgrade
- ☐ Training responders on emerging trends
- ☐ Gives autonomy to innovative responders
- ☐ Any other specify:……

14. What are the most important phases of fire service delivery supported by top management?

- ☐ Job rotation
- ☐ Coaching
- ☐ Promotion

15. Does the top management have authority to implement fire service delivery policies?

- ☐ YES
- ☐ NO

If yes, briefly list fire station policies implemented in the last one year:

…….. ……..
…….
…….
…….

16. Does the fire station have a feedback response mechanism in fire service delivery?

- ☐ Letter box provided for feedback within the station
- ☐ E-mail address provided to employees
- ☐ Appraisal done regularly
- ☐ Any other specify:……

SECTION V : Influence of conditional external pressure on fire service delivery

17. How does conditional external pressure influence fire service delivery?

- ☐ Fire station customers drifting to competitors
- ☐ Use of state of the art equipments in neighbouring fire stations
- ☐ Conditions set by donor partners

18. In what way does the supplier pressure influence fire service delivery?

- ☐ The award of exclusive rights to supply
- ☐ Procurement from a single supplier or restricted group of suppliers
- ☐ The creation of a form of supplier licensing scheme
- ☐ A fixed limit (quota) on the number of suppliers

19. In your opinion what are the competitive pressure arising from county structure that influences fire service delivery?

- ☐ The fire station's size
- ☐ The fire station distribution and concentration

20. What activities has the fire station undertaken to align itself with external pressure to enhance fire service delivery?

- ☐ The fire station owns and provides permits for access of its hydrants
- ☐ The fire station carries out inspection of fire systems exclusively
- ☐ The fire station approves business permits to businesses involved in fire safety
- ☐ Any other specify:…….

SECTION VI : Status of fire service delivery

21. What is the status of fire service delivery?

- ☐ Improving
- ☐ Average
- ☐ Declining

22. What is the average turnout time of the fire station

- ☐ Less than 10 minutes

☐ 10 minutes

☐ More than 10 minutes

☐ Other specify:…….

23. What reasons would you attribute this average turnout time to:

…….

…….

…….

24. In your opinion what encourages you within the fire station in your routine job

…….

…….

…….

25. What challenges are you facing that influence fire service delivery?

…….

…….

…….

26. What would you recommend for implementation to improve fire service delivery?

…….

…….

…….

APPENDIX 3: INTERVIEW GUIDE FOR QUESTIONNAIRE FOR THE FIRE STATION RESPONDERS

Instruction:

SECTION I : FIRE STATION BACKGROUND INFORMATION

1. Name of Station:
2. Sex of respondent:
3. Age in years:
4. Title
5. What is your level of education?

SECTION II : Fire station staff skills and fire service delivery

6. How many years have you been in the fire service sector?
7. What kind of knowledge on fire service delivery do you currently hold? (*Multiple answers allowed*)
8. Have you ever undertaken any of these fire service delivery continuous training in the last one year?
9. Is there a system in place to help the fire staff in identifying their training needs in fire service delivery?
10. In your own opinion, what do you perceive as fire risks hindering fire service delivery?

SECTION III: Work environment and fire service delivery

(seek the opinion of the interviewee on the following employment satisfaction attributes)

11. How would you rate the following service climate factors influence on the fire service delivery?

a) Fire staff salary influences fire service delivery
b) Fire staff promotional opportunity influence fire service delivery
c) Relationship with fellow workers at the fire station influences fire service delivery
d) Fire staffs are provided with the required equipments to undertake their job
e) Fire station work environment is conducive for fire service delivery and not influenced by politics
f) The fire station has established customer care service

g) The fire stations staff attends public forums to publicize the station response services to improve fire service delivery
h) My immediate supervisor always understands what am trying to do.
i) Employee leave provided by the fire station is satisfactory
j) The fire station has enough space for both the fire tenders and offices
k) The fire station compensates for extra time worked hence improving on service delivery

SECTION IV : Influence of Top Management on fire service delivery

12. Did you attend a training programme by the station before induction in the fire station?
13. How does the top management support new systems and technologies in fire service delivery?
14. What are the most important phases of fire service delivery supported by top management?
15. Does the top management have authority to implement fire service delivery policies? If yes, briefly list fire station policies implemented in the last one year:
16. Does the fire station have a feedback response mechanism in fire service delivery?

SECTION V : Influence of conditional external pressure on fire service delivery

17. How does conditional external pressure influence fire service delivery?
18. In what way does the supplier pressure influence fire service delivery?
19. In your opinion what are the competitive pressure arising from county structure that influences fire service delivery?
20. What activities has the fire station undertaken to align itself with external pressure to enhance fire service delivery?

SECTION VI : Status of fire service delivery

21. What is the status of fire service delivery?
22. What is the average turnout time of the fire station?
23. What reasons would you attribute this average turnout time to.
24. In your opinion what encourages you within the fire station in your routine job
25. What challenges are you facing that influence fire service delivery?
26. What would you recommend for implementation to improve fire service delivery?

APPENDIX 4: OBSERVATION GUIDE

1. Fire station name: …….

2. Observation Dated: …….

3. The observations:

No.	ITEM	Yes/No	Condition
1	**Influence of response time on fire service delivery**		
•	Fire tenders (Fire Engines)		
•	Fire beaters		
•	Delivery Hoses		
•	Fire extinguishers		
•	Sand Buckets		
•	Foam chemical		
•	Dry Powder Chemical		
•	Central Clock System		
2	**Influence of top management on fire service delivery**		
•	In – House training programme		
•	Resources records checklist		
•	Code of Conduct		
3	**Influence of station staff skills on fire service delivery**		
•	Certificate of achievement		
•	Recruitment guideline		
•	Employee of the month award		
4	**Influence of conditional external pressure**		
•	Procurement policy		
•	Donor/Partner guide		
•	Hydrant permit book		
•	Business assessment form		

APPENDIX 5 : KREJCIE & MORGAN TABLE

Table for Determining Sample Size for a Given Population

N	S	N	S	N	S	N	S	N	S
10	10	100	80	280	162	800	260	2800	338
15	14	110	86	290	165	850	265	3000	341
20	19	120	92	300	169	900	269	3500	246
25	24	130	97	320	175	950	274	4000	351
30	28	140	103	340	181	1000	278	4500	351
35	32	150	108	360	186	1100	285	5000	357
40	36	160	113	380	181	1200	291	6000	361
45	40	180	118	400	196	1300	297	7000	364
50	44	190	123	420	201	1400	302	8000	367
55	48	200	127	440	205	1500	306	9000	368
60	52	210	132	460	210	1600	310	10000	373
65	56	220	136	480	214	1700	313	15000	375
70	59	230	140	500	217	1800	317	20000	377
75	63	240	144	550	225	1900	320	30000	379
80	66	250	148	600	234	2000	322	40000	380
85	70	260	152	650	242	2200	327	50000	381
90	73	270	155	700	248	2400	331	75000	382
95	76	270	159	750	256	2600	335	100000	384

Note: "N" is population size
"S" is sample size.

Source: Krejcie & Morgan, 1970

APPENDIX 6 : NACOSTI RESEARCH CLEARANCE PERMIT

CONDITIONS

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

REPUBLIC OF KENYA

National Commission for Science, Technology and Innovation

RESEARCH CLEARANCE PERMIT

Serial No. A 1929

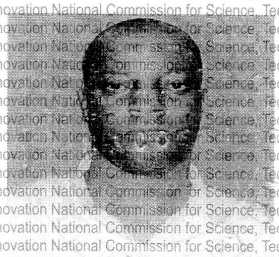
CONDITIONS: see back page

THIS IS TO CERTIFY THAT:
MR. BENARD ONYANGO LANGO
of UNIVERSITY OF NAIROBI, 0-1002
Thika,has been permitted to conduct research in *Kiambu County*

on the topic: *FACTORS INFLUENCING FIRE SERVICE DELIVERY: A CASE OF FIRE STATIONS IN KIAMBU COUNTY, KENYA*

for the period ending:
31st July,2014

Permit No : NACOSTI/P/14/2544/1842
Date Of Issue : 16th June,2014
Fee Recieved :Ksh 1,000



.....
Applicant's Signature

.....
Secretary
National Commission for Science, Technology & Innovation

APPENDIX 7 : NACOSTI RESEARCH CLEARANCE

NATIONAL COMMISSION FOR SCIENCE, TECHNOLOGY AND INNOVATION

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

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

Ref: No.

Date:

16th June, 2014

NACOSTI/P/14/2544/1842

Benard Onyango Lango
University of Nairobi
P.O.Box 30197-00100
NAIROBI.

RE: RESEARCH AUTHORIZATION

Following your application for authority to carry out research on ***"Factors influencing Fire Service Delivery: A case of Fire Stations in Kiambu County, Kenya,"*** I am pleased to inform you that you have been authorized to undertake research in **Kiambu County** for a period ending **31st July, 2014.**

You are advised to report to **the County Commissioner and the County Director of Education, Kiambu County** before embarking on the research project.

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

SAID HUSSEIN
FOR: SECRETARY/CEO

Copy to:

The County Commissioner
The County Director of Education
Kiambu County.