

**INFLUENCE OF INNOVATION PRACTICES ON THE
PUBLIC SECTOR PERFORMANCE IN NAIROBI CITY
COUNTY GOVERNMENT-KENYA**

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**Influence of innovation practices on the public sector performance in
Nairobi city county government-Kenya**

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DECLARATION

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

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DEDICATION

I dedicate this thesis to my family whose love and support has been unparalleled.

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I wish to acknowledge God for His gift of life and wisdom. Further, I acknowledge my Supervisors and Lecturers Prof. Gregory Namusonge and Dr. Susan Were for agreeing to give me intellectual support me throughout the research period. Your input has been unmatched.

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LIST OF ABBREVIATIONS AND ACRONYMS

DOI	Diffusion of Innovation
EU	European Union
HR	Human Resource
HRM	Human Resource Management
ICT	Information and Communications Technology
IT	Information Technology
KIM	Kenya Institute of Management
KPI	Key Performance Indicators
LICs	Low Income Countries
N	Population Total
NGO	Non-Governmental Organization
OECD	Organizational for Economic Co-operation and Development
R&D	Research and Development
SMEs	Small and Medium-sized Enterprises
SPSS	Statistical Package for Social Science
UK	United Kingdom

OPERATIONAL DEFINITION OF TERMS

- Effectiveness:** It's the extent to which the project's objectives were achieved, or are likely to be achieved and seeks to control the factors that influence accomplishment or non-achievement of the objectives (Ngacho, 2013).
- Efficiency:** The maximization of output for a set level of input or resources, that is the extent to which desired effects are achieved at a reasonable cost (Takim and Adnan, 2009; Niringiye and Ayebale, 2012).
- Evaluation:** Is a systematic and objective assessment of an ongoing or completed project whose aim is to determine the relevance and level of achievement of project objectives, development effectiveness, efficiency, impact and sustainability (UNODC, 2005).
- Innovation:** Innovation refers to changing processes or creating more effective processes, products and ideas (Nielsen, 2016). For businesses, this could mean implementing new ideas, creating dynamic products or improving your existing services. Innovation can be a catalyst for the growth and success of an organization, and can help in adapting and growth in the marketplace (Kumar, 2016).
- Impact:** :It is the positive and negative, primary and secondary long-term effects produced by a development intervention, directly or indirectly, intended or unintended. Impact is the result that links to the

development objective as described in the project document. It is often only detectable after several years and usually not attained during the life cycle of one project. For this reason, there is a need to plan for impact, recognizing that the project will likely achieve outcomes (UNODC, 2005).

Performance:

Accomplishment of a given task in this case a project measured against preset known standards of accuracy, completeness, cost, and speed (Pitagorsky, 2013).

Process Innovation:

Implementation of a new or significantly improved production or delivery method (including significant changes in techniques, equipment and/or software). Minor changes or improvements, an increase in production or service capabilities through the addition of manufacturing or logistical systems which are very similar to those already in use, ceasing to use a process, simple capital replacement or extension, changes resulting purely from changes in factor prices, customisation, regular seasonal and other cyclical changes, trading of new or significantly improved products are not considered innovations (Breuer, & Lüdeke-Freund, 2016).

Organizational Innovation:

It's the implementation of a new organisational method in the undertaking's business practices, workplace organisation or external relations. Changes in business practices, workplace organisation or external relations that are based on organisational

methods already in use in the undertaking, changes in management strategy, mergers and acquisitions, ceasing to use a process, simple capital replacement or extension, changes resulting purely from changes in factor prices, customization, regular seasonal and other cyclical changes, trading of new or significantly improved products are not considered innovations (Breuer, & Lüdeke-Freund, 2016).

Technological Innovation: Means to conceive and produce a new solution (from a scientific and technological knowledge) to a real or perceived need (Invention). To develop this solution into a viable and produceable entity (Realisation). To successfully introduce and supply this entity to the real or perceived need (Hasan, 2013).

Marketing Innovation: Is the implementation of a new marketing method involving significant changes in product design or packaging, product placement, product promotion or pricing (Reguia, 2014).

Public Sector: Usually comprised of organizations that are owned and operated by the government and exist to provide services for its citizens. Like the voluntary sector, organizations in the public sector do not seek to generate a profit. (Mihaiu *et al*, 2010).

ABSTRACT

This study sought to find out the influence of innovation practices on public sector performance in Nairobi City County Kenya. The study sought specifically to establish the influence of product innovation, process innovation, technological innovation, marketing innovation and organizational innovation on public sector performance in Nairobi City County, Kenya. The target population of the study was 32099 civil servants in the public sector in Nairobi City County. A representative sample of 384 was obtained by use stratified random sampling. This study targeted civil servants at different levels. The study used a descriptive research design to measure the influence of innovation practices on public sector performance. The study used a questionnaire to collect data. A structured questionnaire was used to collect data. The Statistical Package for Social Sciences version 22 was used to analyze data. Inferential statistics were used to establish the relationships that existed between the variables. The correlation coefficient was used to measure the relationship between independent variables and dependent variable while the regression analysis was used to measure the strength between the independent and dependent variables. Data was presented in form of tables, graphs and charts. The study found out that product innovation, process innovation, technological innovation, market innovation and organizational innovation influence public sector performance. The study concluded that public sector performance in Nairobi City County will improve if the study variables product innovation, process innovation, technological innovation, market innovation and organizational innovation are improved. The study therefore recommends that policy makers, government, the public sector stakeholders and other interested parties should make policies that support improvement of product innovation, process innovation, technological innovation, market innovation and organizational innovation. There is need also to invest in innovation practices with the involvement of civil servants since findings indicated that the level of employee involvement was minimum on designing these strategies for innovation practices. The study recommends that there is need to manage technology transfer problems, develop innovation adopting nature and absorptive in Nairobi City County to enhance innovation activities implemented in public sector organizations.

CHAPTER ONE

INTRODUCTION

1.1 Background of the study

This study aimed at finding out the influence of Innovation Practices on Public Sector Performance in Nairobi City County. This chapter consists of the background information of the study, the statement of the problem, the objectives, research questions, research hypotheses, the justification of the study and the scope of the study. The chapter explains what the problem under study was and then articulates the research objectives and hypotheses based on the title.

The legitimacy of any public service draws its breath from the capacity of responding to the needs of citizens in a way that is economically efficient. An emerging consensus among public sector experts is that in as much as public sector performance involves efficiency and outputs, it also involves the effectiveness of outcomes. The two major questions which are under consideration when it comes to public sector performance include: are citizens getting what they need and in what optimal way are public sector organizations using the resources under their disposal. The public sector most of the time is involved in the creation and delivery of goods and services that may not be needed or preferred by most people but rather what is essential for a certain group of people such as disabled or the elderly (Carrera & Dunleavy, 2013).

Public sector performance around the world has been experiencing a call for improvement in the recent past since the sector employs a large number of people and also because the sector receives significant amount of funding from the government as well as the public. Restructuring and reforms in the public sector have been household names in recent times which have been aimed at improving performance and efficiency but from the experience of many public servants, the result has been redundancies,

intensification of work and an increase in activities that do not make any material contribution to the delivery of services. The overall result to public workers has not only been more work stress and less job satisfaction but also lower quality service being delivered to citizens (Boyle, 2006).

Innovation is seen as an outcome of a collision between technological opportunities and user needs. Innovation does not only mean inventing. Innovation can mean changing your business model and adapting to changes in your environment to deliver better products or services (Nielsen, 2016). Successful innovation should be an in-built part of your business strategy, where you create a culture of innovation and lead the way in innovative thinking and creative problem solving. Innovation can increase the likelihood of your business succeeding. Businesses that innovate create more efficient work processes and have better productivity and performance (Hall, 2011).

As per the study conducted by Geoff Mulgan about Nesta which is a UK's innovation foundations, the public sector organizations can become more effective innovators. Public sector innovations involve creating, developing and implementing practical ideas to achieve a public benefit. Innovation in the public sector organizations induce better understanding of opportunities and problems, thus generating more useful ideas by scaling things up and improving adoption.

Government policies have had an impact on the innovation strategy and its efforts towards development and advancement. Government policies are critical for innovation within the public sector because it decides resource allocation in accordance with comparative advantages (O'Donnell, 2006). In public sector organizations, there is a need to balance innovation policies that supports traditional technology with the policies that better respond to the issues of competition and enterprise development (Jong *et al*, 2008). Apart from this, there are various organizational factors that create a learning environment which promotes innovation. Transition to new ideas within the organization faces not only financial barriers but a lot of cultural and political barriers

too in both public and private sector organizations. So, implementation of innovation is not an easy task in both the types of organizations.

An organization that provides an environment and culture that promotes learning and development of employees; open communication channels and learning from customers, suppliers and even competitors is better positioned to innovate. It is through learning that an organization can increase the depth and diversity of knowledge (Mavin, Lee & Robson, 2010). In fact, higher the learning ability of a firm, higher is the level of company's competitiveness, innovativeness and product introduction success.

This study focused on public sectors including Physical Planning, Public Health, Social Services and Housing, Primary Education Infrastructure, Inspectorate Services, Public Works, Environment Management while the latter include Agriculture, Livestock Development and Fisheries, Trade, Industrialization, Corporate Development, Tourism and Wildlife, Public Service Management in Nairobi County, Kenya

1.1.1 Global Perspective of Innovation Practices and its Performance

Innovation practice has been used as a tool to determine competitiveness and national progress. Government can support innovation by continually reforming and updating the regulatory and institutional framework within which innovation activities takes place. Government could also play a direct role in fostering innovation by means of public investment in science and basic research which helps to develop ICT which in turn enables further innovation (OECD, 2007). Innovation practices have been applied to address global challenges such as climate change and sustainable development.

Over the years scientific and technological advances have been achieved via various innovative approaches put forward across the globe which in turn translated into more productive economic activity. This is due to the application of advances in technology, in conjunction with entrepreneurship and innovative approaches to the creation and delivery of goods and services (OECD, 2007). This leads to economic growth if the

market structures and the regulatory environment enable the more productive activities to expand. However, the economic growth is dependent on the innovative effort itself that is formal research and development (Szirmai *et al.*, 2011). Improvement in the skill composition of labor plays an important role in productivity growth. Investments in software have also contributed to business performance and economic growth (Uppenber& Strauss, 2010).

Through innovation, new forms of competition and new markets have been realized for the creation and delivery of innovative products and services (Reguia, 2014). This has been reinforced by globalization and rapid advances in new technologies, more so information and communication technology (ICT). Globalization has increased the pressure of countries to engage in a continuous process of adjustment and innovation which in turn increases creation and commercialization of innovative products, processes and services too (OECD, 2007). It also leads to emergence of new markets for innovative products and access to a new supply of highly skilled workers (Schwab, 2017).

Standards of living have continually been improved through creation of business opportunities that come along with innovation which lead to increased income for the workers. This has been seen in many countries which have supported and encouraged innovative approach in service delivery. Innovation increases the use of information technology and improves on products standardization (Elg-VINNOVA, 2014). This includes tools like email or web-based designs. Other communication tools like twitter also came up and this has had huge benefits to many business functions as it provided and continues to provide a platform to market their products globally.

A basic driver for global purchasing and outsourcing is the ambition to extend the firms organizational and technological capability by coordinating networks of suppliers. Innovation practices also leads to improved supplier integration that is both tools and proficiency (von Haartman & Bengtsson, 2015). How the firm can build up the ability to

exploit potential capabilities in the networks determines the outcomes of the global purchasing. Supplier integration is required for harnessing the innovation potential of new suppliers when outsourcing manufacturing. Investment in ICT is positively correlated with uptake and diffusion of innovation (Onodera, 2008). Use of ICT is linked to the ability of firms to innovate new products, services, business processes and applications. ICT has fostered networking. This has fostered informal learning and cooperation within firms (Zoroja, 2015). It is used to predict the long term survival of organizations, determining the organization's success and sustaining its global competitiveness especially in an environment where technologies, competitive position and customer demands can change almost overnight and the life cycle of products and services are becoming shorter (Yusr, 2016).

As firms get exposed with external partners during innovation, they get exposed to other ways of getting things done thus diverse thinking is brought about in the organization (McDermott, 2012). This could be used as a tool to consider whether your current practices are good enough, whether you have to adjust them or even develop new practices for you and your organization. You get new perspectives on collaboration which can inspire better interaction and collaboration between business units.

Overall activity as well as overall complexity increases with open innovation (Jemala, 2010). The increased number of actors provides new ways for people to be creative. Though innovation has been associated with positive effect, this is not always the case. New technologies, initially not covered by patent systems, have emerged notably in the field of software and biotechnology (OECD, 2004). Globalization has made imitation and counterfeiting both more rewarding in an expanded market and more feasible, as a number of countries registered significant growth in technological capabilities without a corresponding development in their intellectual property right system (OECD, 2007).

The scope of products being counterfeited or pirated is broad and expanding. Counterfeiting has effects on consumers whose health and safety are often times put at

risk, right holders whose sales declines, the government which suffers lost tax revenues while facing the costs associated with fighting piracy, society at large in light as the resources that are channeled to the criminal networks that are often being counterfeited, and lastly the innovation environment as it diverts creativity, entrepreneurship, and incentives away from the genuine innovation.

Global purchasing slows down the innovation process and thereby prolongs the time taken to deliver the products or services to the market. For instance, firms that do not purchase globally prioritize a higher introduction rate of new products than firms that do not purchase globally therefore firms purchasing globally experience a higher level of supplier product innovation, compared to firms that purchase globally (von Haartman & Bengtsson, 2015).

Information communication and technology (ICT) and notably the internet have made copying of creative contents easier. Innovation brings about laxity in the companies in that the companies involved in innovation often begin to focus more on its needs than the needs of the market. When you begin to innovate with partners, the partners either focus on their needs and this leads to failure of innovation (Loewe & Dominiquini, 2006).

1.1.2 Regional Perspective Innovation Practices and its Performance

Eradication of hunger and achieving food security has been a reality through innovation in many parts of Africa. Innovation has been seen to reduce the rates of hunger and food insecurity through agriculture or agronomy (Dobermann *et al*, 2013). Improved cultivation techniques have been employed in this process.

Prevention and control of diseases is now a reality in most African countries. In the past, Africa has lost a vast of its population through both communicable and non-communicable diseases that are preventable and treatable (Oni & Unwin, 2015). This was as a result of weak as well as fragmented health systems. Innovation has brought

about new and effective medicines, diagnostic tools, vector control tools and vaccines which have helped to control and prevent diseases. Invention and innovation in traditional medicine and strengthening local health systems, taking into account the sociocultural and environmental situation of the people has also prevented diseases (African Union, 2014). Greater coordination amongst health stake holders and other related sectors has led to the development of science and technology.

Africa's greatest hope for continental development is its vibrant human resources. Creativity and innovative technologies have been used to create more wealth and jobs for the youths in the continent. This priority will develop internal capacities, co-creation, development and marketing of new or improved products and services. This will create a new opportunities for value added employment by adapting and commercializing the outputs of national and regional innovation across Africa (African Union, 2014).

As of today, more than 1.5 billion people live in countries affected by fragility and conflict - a majority of which is under the age of 30. Innovation has created spaces for youths to express their opinions, enhanced the peace-building knowledge and skills of young people, built trust between youths and governments, and promoted intergenerational exchange, which in turn has enabled people to live together in peace (African Union, 2014). Africa is strengthening its governance capacity as many African countries reorganize their state structures to foster entrepreneurship and flexibility so as to be more responsive to the needs of citizens and champion innovation. Innovation has led to the training of future generation of political and social leaders, business people and entrepreneurs, scientist as well as researchers. Thus in the long run innovation has helped build the African society at large.

Africa's natural resources are important for conserving the welfare of current and future generations. Innovation has been used to realize potential benefits that would arise from sustainable use and conservation of these resources that is the socioeconomic development (UN, 2008). Innovation has been used as a platform to share enabling

infrastructure and data and jointly manage programs of mutual interest such as disease outbreak, natural resources and environment, hazards and disaster, climate among others (African Union, 2014).

1.1.3 Local Perspective of Innovation Practices and Performance

Innovation has led to improved performances in organizations with increased industry convergence in the financial industry in Kenya following the introduction of mobile money transfer services offered by telecommunication players, the registration of micro finances as deposit taking organization and the entry of internet money transfer agents (Njenga, Kiragu & Opiyo, 2015). These changes have resulted in financial institutions no longer facing competition from among themselves only but also from non-banking players.

Through innovation there has been improved financial performance especially in the banks located within Kenya. Innovation adoption by commercial banks presents a high potential of financial performance improvement therefore yielding increased returns for the shareholders (Cherotich *et al*, 2015). Innovation versatility has resulted to their increased adoption rate among the banks and their customers with the uptake further accelerated by the fact that the adoption is from both the banks and their customers. Banks are able to manage their costs better in continuing to invest in technology innovation as opposed to continued investment in bricks and motor branches (Njenga, Kiragu & Opiyo, 2015).

The internet and mobile channels can process a higher volume of transactions compared to the use of the conventional manual processes, thus leading to better management of costs within the banking sector (Ndunga *et al*, 2016). Through marketing innovation, commercial banks have been able to creatively market and deliver particular services to customers in the right time and environment (Mahmod *et al.*, 2010). Further, commercial banks have explored management innovation which is the management of

the innovation processes. This has allowed the management to cooperate with a mutual apprehension of goals and processes. Innovation management has allowed the banks to respond to internal and external opportunities, and use its creativity to introduce unique concepts, processes and products.

Innovation strategies such as product repositioning, product replacement and process innovation strategies like conformance to regulations and the reduction of costs contributed to banks increased profitability (Ngugi, 2013). The Government of Kenya launched the innovative Kenya National Agricultural Insurance Program, which is designed to address the challenges that agricultural producers face when there are large production shocks, such as droughts and floods. The program aims at improving farmers' financial resilience to these shocks and will enable them to adopt improved production processes to help break the poverty cycle of low investment and low returns.

1.2 Statement of the Problem

Performance in the public sector has been an area of concern. The legitimacy of any public service draws its breath from the capacity of responding to the needs of citizens in a way that is economically efficient. An emerging consensus among public sector experts is that in as much as public sector performance involves efficiency and outputs, it also involves the effectiveness of outcomes. The two major questions which are under consideration when it comes to public sector performance include: are citizens getting what they need and in what optimal way are public sector organizations using the resources under their disposal.

Due to growing population in countries around the world, there has been a surge in the demand for public sector goods and service, this in turn, has challenged organizations in the public sector to improve performance. The uncertain current economic climate in the world gives public sector organizations a critical paradox. Tax revenues and other sources for public funding continue to decrease annually makes it paramount for public

sector organizations to cut on costs while at the same time ensuring that performance remains optimal. The public sector is and will remain the largest employer in advanced and growing economies yet the irony is that slow performance growth has long made it a drag on the economy. With the existence of empirical evidence how public sector performance growth is slow and downwards, need arises on what steps should be taken to enhance performance in the sector (Carrera & Dunleavy, 2013).

The Kenyan public sector according to the Kenya Institute of Public Policy and Research and Analysis (KIPPRA) has been experiencing a downward growth since independence and this has been attributed majorly to poor management, corruption, lack of creativity and innovation and also poor wages to a great extent; redundancies are a major cause of low performance in the sector as well as incompetent and under qualified work force (KIPPRA, 2014). Due to poor performance the service users remain dissatisfied and demonstrate high complaint levels due to poor service.

Innovation is a catalyst for the growth and success of an organization, and helps in adapting and growth in market place (Kumar, 2016). Scholars and practitioners have become increasingly interested in innovation in the public sector (Osborne and Brown 2011). Many embrace the idea that innovation can contribute to improving the quality of public services as well as to enhancing the problem-solving capacity of governmental organizations in dealing with societal challenges (De Vries *et al*, 2015). It was against this background that the study sought to find out the influence of innovation practices on public sector performance.

1.3 Objectives of the Study

1.3.1 General Objective

To identify the influence of innovation practices on public sector performance in the Nairobi City County Government.

1.3.2 Specific Objectives

- i. To assess the influence of product innovation on the public sector performance in Nairobi City County Government.
- ii. To determine the influence of process innovation on public sector performance in Nairobi City County Government.
- iii. To establish the influence of organizational innovation on public sector performance in Nairobi City County Government.
- iv. To analyse the influence technological innovation on public sector performance in Nairobi City County Government.
- v. To evaluate the influence of marketing innovation on the public sector performance in Nairobi City County Government.

1.4 Research Hypotheses

The study adopted null hypotheses as given below:

H₀₁: There is no significant relationship between product innovation and the public sector performance in Nairobi City County Government.

H₀₂: There is no significant relationship between process innovation and the public sector performance in Nairobi City County Government.

H₀₃: There is no significant relationship between organizational innovation and the public sector performance in Nairobi City County Government.

H₀₄: There is no significant relationship between technological innovation and the public sector performance in Nairobi City County Government.

H₀₅: There is no significant relationship between marketing innovation and the public sector performance in Nairobi City County Government.

1.5 Justification of the Study

On a general basis the findings were expected to make a contribution to the general body of knowledge by articulating new theories and models. This study was also expected to provide practical solutions to the existing problems around public sector performance in Nairobi City County Government by highlighting innovative practices that need to be put in place. This research report will present significant facts in theoretical, empirical and methodological avenues thus will help future researchers to understand the areas which may create barriers or challenges to effectively implement innovations within their organization. Furthermore, this study would want to build on the previous work done on innovations which mainly focused on government funded projects.

1.5.1 Republic of Kenya

The government of Kenya is expected to benefit from this study by making use of the findings and recommendations to address the innovation challenges affecting public sector performance in Nairobi City County and in other counties as well. This will help the government in developing innovation practices and strategies that supports unmatched performance.

1.5.2 ICT Practitioners

These study findings are expected to benefit the ICT practitioners by providing empirical evidence to support clear strategies that would help to spur innovation practices that enhance public sector performance in Nairobi City County. This will also

help the ICT Practitioners put in place a more elaborate and comprehensive framework that will be used to enhance innovation practices in view of the highly needed industrial innovation. This research is expected to benefit the ICT Practitioners understand types of innovations that are implemented in the public sector organizations and the scope of the technological innovation in the Nairobi City County Government.

1.5.4 Scholars and Researchers

The study findings and recommendations are expected to contribute to the body of knowledge that will be useful in enhancing the understanding of researchers and scholars on innovation practices and public sector performance. The study recommended areas for further studies upon which the researchers and scholars can base their work.

1.6 Scope of the Study

This study was conducted in Nairobi City County focusing on 10 public sectors. The study focused on the influence of innovation practices on the public sector performance. The study focused on five independent variables including product innovation, process innovation, marketing innovation, technological innovation and organizational innovation and one dependent variable namely public sector performance. The target population was 32099 civil servants in Nairobi City County drawn from 10 public sectors including; Physical Planning, Public Health, Social Services and Housing, Primary Education Infrastructure, Inspectorate Services, Public Works, Environment Management ,Agriculture, Livestock Development & Fisheries, Trade & Industrialization, Corporate Development, Tourism and Wildlife, Public Service Management in Nairobi City County, Kenya. The sample size was 384 civil servants.

1.7 Limitation of the Study

The study experienced some challenges. The study was limited to Nairobi City County only meaning the findings could not be easily generalized given the different characteristics of different counties. To mitigate this, the study recommended that further studies should be conducted in other counties so as to have a country wide outlook of innovation practices and performance. Performance is a very wide area and therefore this study could exhaust all the dimensions of performance more so public sector performance. To mitigate this challenge the study recommended more studies on other dimensions of performance. The respondents were not willing to share honest opinions, to overcome this challenge they were assured that the study was purely for academic purposes and confidentiality was key.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

The chapter reviewed relevant literature on the influence of innovations practices on public sector performance in Nairobi City County, Kenya. The chapter discusses, theoretical review, conceptual framework, empirical review used in the study based on the study variables. The chapter also provides a critique, a summary of the chapter and identified research gaps that were filled by this study.

2.2 Theoretical Review

A theory is a set of systematic interrelated concepts, definitions, and propositions that are advanced to explain and predict phenomenon (facts) (Cooper & Schindler, 2011). Theoretical framework is a collection of interrelated ideas based on theories. It is a reasoned set of propositions, which are supported by data and evidence.

2.2.1 Innovation Theory

Innovation theory, also called diffusion of innovation theory, explains how advancements gain traction and over times spread, of diffuses, throughout a specific population. These advancements can be new ideas, technology, behaviors or products. Diffusion of Innovation (DOI) Theory by Rogers (1962), is one of the oldest social science theories. It originated in communication to explain how, over time, an idea or product gains momentum and diffuses (or spreads) through a specific population or social system. The end result of this diffusion is that people, as part of a social system, adopt a new idea, behavior, or product. Adoption means that a person does something differently than what they had previously (i.e., purchase or use a new product, acquire and perform a new behavior, etc.). The key to adoption is that the person must perceive

the idea, behavior, or product as new or innovative. It is through this that diffusion is possible.

Adoption of a new idea, behavior, or product (i.e., "innovation") does not happen simultaneously in a social system; rather it is a process whereby some people are more apt to adopt the innovation than others. Researchers have found that people who adopt an innovation early have different characteristics than people who adopt an innovation later. When promoting an innovation to a target population, it is important to understand the characteristics of the target population that will help or hinder adoption of the innovation. There are five established adopter categories, and while the majority of the general population tends to fall in the middle categories, it is still necessary to understand the characteristics of the target population. When promoting an innovation, there are different strategies used to appeal to the different adopter categories.

Innovators, these are people who want to be the first to try the innovation. They are venturesome and interested in new ideas. These people are very willing to take risks, and are often the first to develop new ideas. Very little, if anything, needs to be done to appeal to this population. Early Adopters - these are people who represent opinion leaders. They enjoy leadership roles, and embrace change opportunities. Early Majority, these people are rarely leaders, but they do adopt new ideas before the average person.

Late Majority - These people are skeptical of change, and will only adopt an innovation after it has been tried by the majority. Laggards, these people are bound by tradition and very conservative. The stages by which a person adopts an innovation, and whereby diffusion is accomplished, include awareness of the need for an innovation, decision to adopt (or reject) the innovation, initial use of the innovation to test it, and continued use of the innovation. There are five main factors that influence adoption of an innovation, and each of these factors is at play to a different extent in the five adopter categories.

This theory has been used successfully in many fields including communication, agriculture, public health, criminal justice, social work, and marketing. In public health, Diffusion of Innovation Theory is used to accelerate the adoption of important public health programs that typically aim to change the behavior of a social system. For example, an intervention to address a public health problem is developed, and the intervention is promoted to people in a social system with the goal of adoption (based on Diffusion of Innovation Theory). The most successful adoption of a public health program results from understanding the target population and the factors influencing their rate of adoption. This theory supports the variable product innovation since it articulates how an idea is converted into practical innovative products.

2.2.2 The Innovation Cycle model

The Innovation Cycle is a model proposed by Schoen *et al.* (2005) and was also known as the Model for the Invention to Innovation Process. Directing their ideas at managers of technology incubators, Schoen *et al.* (2005) opined that past project management models were incomplete representations of the innovation cycle. They note that models like the Waterfall Model, adopted from the waterfall model of systems development, were staged and restrictive. Schoen *et al.* (2005: 5) referred to the Waterfall Model as a “stage-gate” model as there are gates from one phase of development to the other, with known deliverables from each phase, which become the inputs for the next phase.

This means that each phase is dependent on successful completion of the previous one. Schoen *et al.* (2005) contended that, unlike in the Waterfall Model, the processes are not necessarily strictly defined. In past project management models, the authors contended, there are well-defined outcomes and therefore one proceeds towards the outcomes. The authors then introduced the Spiral Model. Again, this is borrowed from the spiral model of systems development, which was proposed by Boehm in 1998. Schoen *et al.* (2005) noted that the Spiral Model is better suited than past project management models to development cycles, because in development the outcomes are not necessarily clear or

well defined. The developer therefore went through the cycles (iterations) to delve deeper into the requirements.

Schoen *et al.* (2005) noted that technology managers often deal with technologies that do not have well-defined outcomes, timelines or project goals; and that sometimes these technologies are emerging from university laboratories. This means these projects have no clear starting points, which past models such as the waterfall, funnel and vat models do not take into account. Schoen *et al.* then presented a modified spiral model that they referred to as the Innovation Cycle. Figure 2.2 illustrates the innovation cycle, as postulated by Schoen *et al.* (2005).

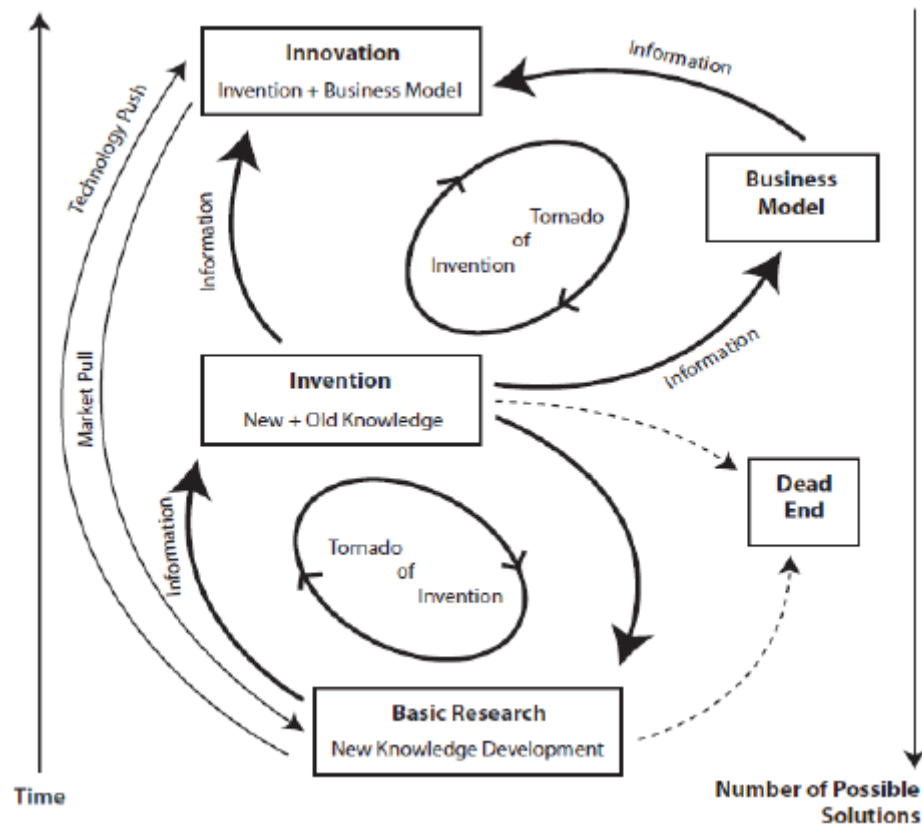


Figure 2. 1: Model for the Invention to Innovation Process

Source: Reprinted from “The innovation cycle: A new model and case study for the invention to innovation process” by Schoen, Mason, Kline, & Bunch, 2005, *Engineering Management Journal*, 17(3), p.8.28.

Schoen *et al.* (2005: 8) noted that innovation “is not a step-by-step, set the pins up and knock them down type of operation and requires mating a good idea with an even better concept”. This concept is echoed in the work of Albert Einstein, who believed that innovation was not a product of logical thought, although the result was tied to logical structure. Kandiri (2014) asserts that innovation represents the triumph of contrarianism and the breaking free of mental constraints. This model supports the variables process innovation, marketing innovation, technological innovation and organizational innovation.

2.2.3 Innovation-decision process theory

Rogers (2003) described the innovation-decision process as “an information-seeking and information-processing activity, where an individual is motivated to reduce uncertainty about the advantages and disadvantages of an innovation” .For Rogers (2003), the innovation-decision process involves five steps: knowledge, persuasion, decision, implementation, and confirmation. These stages typically follow each other in a time-ordered manner.

i. The Knowledge Stage

The innovation-decision process starts with the knowledge stage. In this step, an individual learns about the existence of innovation and seeks information about the innovation. “What?,” “how?,” and “why?” are the critical questions in the knowledge phase. During this phase, the individual attempts to determine “what the innovation is and how and why it works” (Rogers, 2003). According to Rogers, the questions form three types of knowledge: awareness-knowledge, how-to-knowledge, and principles-knowledge.

ii. The Persuasion Stage

The persuasion step occurs when the individual has a negative or positive attitude toward the innovation, but “the formation of a favorable or unfavorable attitude toward an innovation does not always lead directly or indirectly to an adoption or rejection” (Rogers, 2003). The individual shapes his or her attitude after he or she knows about the innovation, so the persuasion stage follows the knowledge stage in the innovation-decision process. Furthermore, Rogers states that while the knowledge stage is more cognitive- (or knowing-) centered, the persuasion stage is more affective-(or feeling-) centered. Thus, the individual is involved more sensitively with the innovation at the persuasion stage. The degree of uncertainty about the innovation’s functioning and the social reinforcement from others (colleagues, peers, etc.) affect the individual’s opinions and beliefs about the innovation.

iii. The Decision Stage

At the decision stage in the innovation-decision process, the individual chooses to adopt or reject the innovation. While adoption refers to “full use of an innovation as the best course of action available,” rejection means “not to adopt an innovation” (Rogers, 2003). If an innovation has a partial trial basis, it is usually adopted more quickly, since most individuals first want to try the innovation in their own situation and then come to an adoption decision. The vicarious trial can speed up the innovation-decision process. However, rejection is possible in every stage of the innovation-decision process.

iv. The Implementation Stage

At the implementation stage, an innovation is put into practice. However, an innovation brings the newness in which “some degree of uncertainty is involved in diffusion” . Uncertainty about the outcomes of the innovation still can be a problem at this stage. Thus, the implementer may need technical assistance from change agents and others to reduce the degree of uncertainty about the consequences. Moreover, the innovation-

decision process will end, since “the innovation loses its distinctive quality as the separate identity of the new idea disappears” (Rogers, 2003).

v. The Confirmation Stage

The innovation-decision already has been made, but at the confirmation stage the individual looks for support for his or her decision. According to Rogers (2003), this decision can be reversed if the individual is “exposed to conflicting messages about the innovation” (p. 189). However, the individual tends to stay away from these messages and seeks supportive messages that confirm his or her decision. Thus, attitudes become more crucial at the confirmation stage. Depending on the support for adoption of the innovation and the attitude of the individual, later adoption or discontinuance happens during this stage.

Rogers (2003) described the innovation-diffusion process as “an uncertainty reduction process”, and he proposes attributes of innovations that help to decrease uncertainty about the innovation. Attributes of innovations includes five characteristics of innovations: relative advantage, compatibility, complexity, trialability, and observability. Rogers (2003) stated that “individuals’ perceptions of these characteristics predict the rate of adoption of innovations”. Also, Rogers noted that although there is a lot of diffusion research on the characteristics of the adopter categories, there is a lack of research on the effects of the perceived characteristics of innovations on the rate of adoption. This theory supports the process innovation variable since it discusses how the cycle of innovation.

2.2.4 Theory of Disruptive Innovation

A disruptive innovation is an innovation that creates a new market and value network and eventually disrupts an existing market and value network, displacing established market leading firms, products and alliances. The theory of disruptive innovation has proved to be a powerful way of thinking about innovation-driven growth. Many leaders

of small, entrepreneurial companies praise it as their guiding star; so do many executives at large, well-established organizations, including Intel, Southern New Hampshire University, and Salesforce.com.

Unfortunately, disruption theory is in danger of becoming a victim of its own success. Despite broad dissemination, the theory's core concepts have been widely misunderstood and its basic tenets frequently misapplied. Furthermore, essential refinements in the theory over the past 20 years appear to have been overshadowed by the popularity of the initial formulation. As a result, the theory is sometimes criticized for shortcomings that have already been addressed. In this study, this theory mainly supports organization innovation variable.

2.2.5 Technology push and Market pull theory

Technology push is a part of a business strategy of a company. In the innovation literature, there is a distinction between technology push and market pull or demand pull. A technology push implies that a new invention is pushed through Research and Development, production and sales functions onto the market without proper consideration of whether or not it satisfies a user need. In contrast, an innovation based upon market pull has been developed by the R&D function in response to an identified market need.

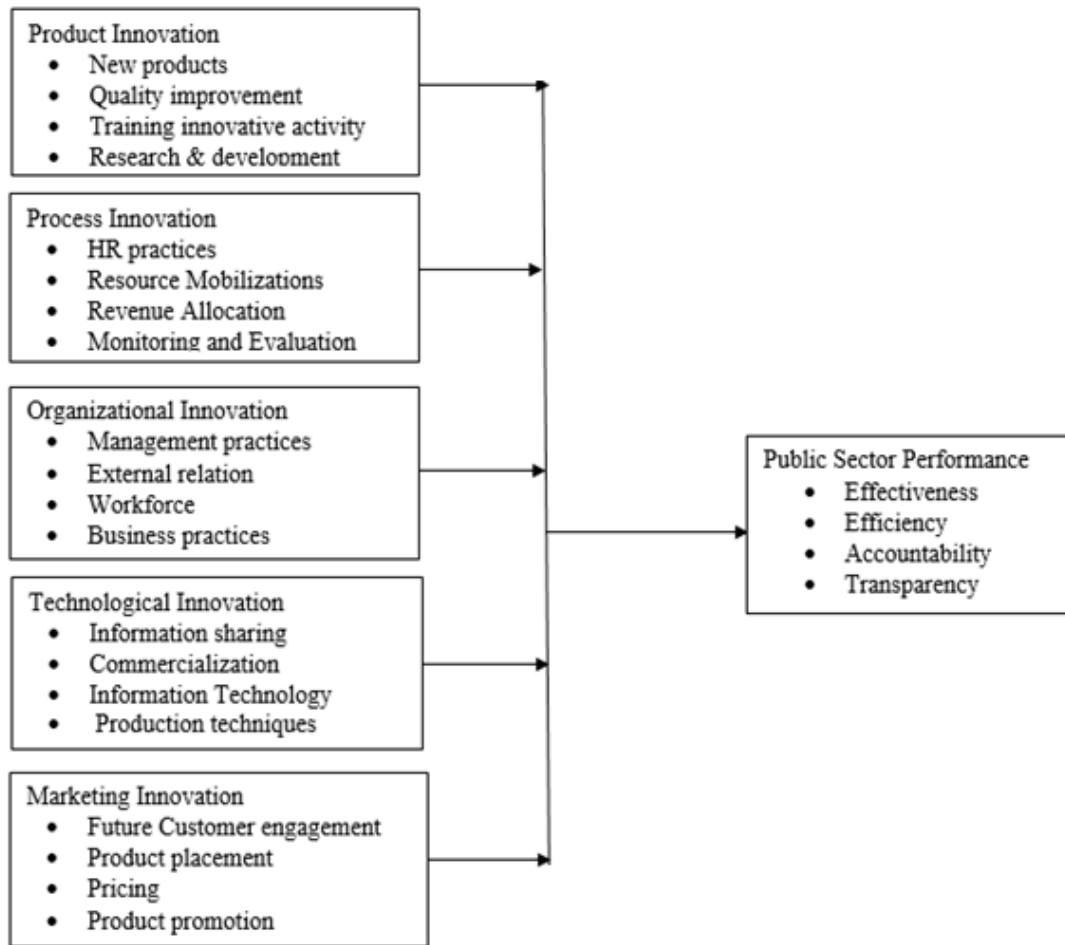
The origins of the idea behind the technology push can be sourced to Joseph Schumpeter. In Schumpeter's works there can be found many elements relating to the different hypotheses that have come to be called technology push and demand pull. In the book "The Theory of Economic Development" Schumpeter argued that development was the result of the innovative ability of the entrepreneur and his introduction of new methods of production. However Schumpeter does not explicitly say where these new methods come from. The entrepreneur, it is assumed, simply finds them in the economic system. For Schumpeter, the essential forces behind social and economical changes are

innovative technologies. Technology, whether generated outside the economic system or in the large R&D laboratories of a monopolistic competitor, is for Schumpeter the leading engine of growth.^{[3]:95[4]} Therefore, the 'technology push' hypothesis of the origin of innovations finds a natural place in Schumpeter's ideas. According to Schumpeter, the supply of new technologies is more important than the adaption to existing patterns of demand. Furthermore, only product innovations can lead to the creation of new industries. They are thus more significant than process innovations, which can only lead to the increased efficiency of existing industries.

The origins of the market-pull or demand pull are sourced in the literature to Jacob Schmookler. Nevertheless, Schmookler did not argue that demand forces were the only determinants of inventive and innovative activity. He used the example of the two blades of a pair of scissors to represent invention and demand as two interacting forces. However, and probably because he was trying to correct the opposite imbalance, the main emphasis of his work was on demand factors. In this study, this theory mainly supports Technological innovation variable.

2.3 Conceptual Framework

A conceptual framework as a hypothesized model that identifies the concepts under study and their relationship. It expresses the independent variables, which influence the dependent variable. McGrath (2009), Mosby (2009) and Anderson (2005), defines conceptual framework as a group of concepts that are broadly defined and systematically organized to provide a focus, a rationale, and a tool for the integration and interpretation of information. According to Mugenda & Mugenda (2003), the purpose of a conceptual framework is to help the reader to quickly see the proposed relationships between the independent variables and the dependent variables. Systematically placed in broad structure of explicit prepositions, statement of relationships between two or more variables.



Independent Variables

Dependent Variable

Figure 2. 2: Conceptual Framework

2.3.1: Product Innovation

From the perspective of an individual firm, its new or improved goods which can be sold on the market are product innovations. Product innovations have a consistent positive effect on employment growth (Damijan, Kostevc, & Stare, 2014). This effect is larger for manufacturing industries. Process innovations are found to exhibit no labour displacement effects, while organizational and marketing innovations reveal a consistent positive on employment. Henderson and Clark (1990), Griffin and Page (1996) and

Mikolla (2001) that proposed innovation typologies that help companies understand the level of innovation they have the capability to offer to the market (incremental or radical). Product Innovation revolves around new products, quality improvements - packaging, branding etc. Research by Fowinkel (2014) reveals that the concept of product innovation is broader and includes changes in the utilization of a product or service in the market. Product innovations impact effectiveness by providing the user with a new functionality or existing functionality performed in a new way.

Recently, the promotion of innovation in manufacturing Small and Medium-sized Enterprises (SMEs) in Low Income Countries (LICs) such as Kenya, has entered the agenda of policy-makers and international development agencies. Many agree that innovation is crucial in these countries, because innovation in all economic sectors is fundamental for growth, in order to catch up with middle- and high-income economies (Voeten, 2015). The micro-level relationship among firm-level resources, and innovative activity in Low Income Countries has received little attention in the past. Elements of a product strategy may centre on improving product quality, replacing products that are being phased out, or extending the product range.

2.3.2: Process Innovation

Process innovation involves the implementation of a new or significantly improved production or delivery method. Process innovation refers to process improvement (Davenport, 1992) is business-oriented and consistently focused on hard facts and value. The first wave of process improvement used continuous improvement (kaizen) techniques to empower people to solve problems. This proved to be a very successful approach and today we see the lean movement which is based on this thinking with tools such as the 6-sigma (George, Maxey, & Rowlands, 2005), quality awards and also maturity model such as the Capability Maturity Models (Chrissis, Konrad, & Shrum, 2003). Since the beginning of the 1990s there has been an enormous focus on business processes and business processes as a source of innovation. This marks the second wave

and the understanding was that the business processes were inhibited by organizational and cultural boundaries. Consequently techniques like Business Process Re-engineering (BPR) emerged using a clean slate approach and new IT was applied as a silver bullet (Hammer & Champy, 1991). Improving production routines may lead to price advantages over competitors as the firm reduces unit costs. Elements of a production strategy may focus on improving production flexibility, reducing lead times, improving working conditions, or reducing labour costs.

2.3.3: Organizational Innovation

Organizational innovation can be defined as the process of changing the organization by introducing different methods of production or administration. Organizational innovation includes the adoption of ideas from outside the organization and the generation of ideas within. Organizational innovation involves planning initiation, execution, selection, and implementation (Spender & Kessler, 1995). Organizational restructuring may lead to higher productivity.

Organizational innovation has been consistently defined as the adoption of an idea or behavior that is new to the organization (Damanpour 1988, 1991, Daft & Becker 1978, Hage 1980, Hage & Aiken 1970, Zaltman, Duncan & Holbek 1973, Oerlemans et al 1998, Wood 1998, Zammato & O'Connor 1992). The innovation can either be a new product, a new service, a new technology, or a new administrative practice. Although the definition has remained consistent, the particular kinds of innovation examined have shifted across time as well as have the kinds of problems that have interested people. In the 1960s and 1970s the emphasis was on incremental change in public sector organizations (Allen & Cohen 1969, Daft & Becker 1978, Hage & Aiken 1967, Kaluzny et al 1972, Moch 1976), while in the 1980s and 1990s it has been on radical change in private sector organiza-

tions (Collins et al 1987, Cohn & Turyn 1980, Ettlie et al 1984, Gerwin 1988, Jaikumar 1986, Teece 1987, Walton 1987).

Examples of the latter include flexible manufacturing (Collins et al 1987, Gerwin 1988, Teece 1987), retort -able pouches (Ettlie et al 1984), robotics, automated handling of materials, or computer numerically controlled machines (Jaikumar 1986), and even ship automation (Walton 1987) and shoe production (Cohn & Turyn 1980). Furthermore, the measures for “radical” altered from subjective ones (Kaluzny *et al* 1972) to more objective ones (Cohn & Turyn 1980, Collins *et al* 1987, Ettlie *et al* 1984, Walton 1987).

2.3.4: Technological Innovation

Technological innovation is the process by which industry generates new and improved products and production processes. Technological innovation includes activities ranging from the generation of an idea, research, development and commercialization to the diffusion throughout the economy of new and improved products, processes and services. Effective technological innovation includes either the diffusion process or the spread of the innovation commercially (Zairi, 1992). Technological innovation requires and is followed by new technology exploitation. New technology exploitation (NTE) refers to the utilization of new technology or scientific developments to improve the performance of products or manufacturing processes. The failure of management to recognize and manage breakthrough technology innovation often results in organizational inefficiencies and frustration (Bigwood, 2004).

In technical business services, product innovations included highly specialized software, task-orientated computer products, data management tools, and internet-based services; process innovations ranged from computerized networking in the development of software, the adoption of ISO standards, and the development of new project standards and methodologies dealing with evaluation methods and quality testing (Baldwin et al., 1998).

With the advent of computer networks linking financial institutions and ATMs, consumers can now access their accounts at any time, and from a vast array of geographic locations (from different branches of the same institution and from competitor institutions). Moreover, with the advent of tele-banking and internet-based services, consumers no longer need to be present at financial institutions in order to conduct financial transactions.

Attridge (2007) defined innovation as “something new” and thus that definition was supported by Chigona and Licker (2008), who defined innovation as the effective implementation of a new or significantly improved idea, service, process or practice that is intended to be useful. From this definition, it becomes clear that Dodds saw technology as having emancipatory power. Klein and Knight (2005) definition was adopted because in the case of PHEA-ETI projects, the universities involved did not invent the technologies but integrated them in existing teaching and learning processes. In short, the current study looked at a situation where HEIs are being innovative without being inventive – that is, implementing creative technology ideas.

2.3.5: Market Innovation

Marketing innovation refers to a process in which people gradually become familiar and accepting of a new idea. Marketing innovation is a social learning process that results in consumers slowly changing their attitudes and values. Market innovations are often technologically driven. When a technology is developed, the new technology is often in need of a new type of market application. Market innovation is based on the following assumptions: Innovation is driven by a learning process within social groups; some individuals have a higher propensity to try innovative products than others; and the speed of adoption may vary from one business to another (Brown, 1992). A market strategy may focus on opening new domestic or foreign markets, or simply on maintaining current market share.

Innovation is market-driven. Firms innovate in order to gain an advantage over competitors, perhaps by becoming more cost-efficient, by tailoring products to meet unique customer requirements, or by improving access to service in remote areas. It may be the case that the impacts of an innovation accord directly with its objectives. For example, a firm may implement product development teams to bring to market a new product line. Its successful commercialization is both the primary objective and outcome of an innovation strategy. Innovations may also give rise to unintended consequences. For example, the act of constituting development teams (itself an organizational innovation) may improve worker morale and lead to higher productivity.

In certain sectors, a firm's competitive strategy may focus on developing novel products that embody high levels of technological sophistication. A substantial investment in R&D may thus be required to bring these products to market. If the firm is able to protect new products with intellectual property rights, then it has an incentive to invest in R&D. If, however, competitors are readily able to appropriate the gains from this investment in R&D—by offering comparable products to consumers with little delay—the benefits from this investment are substantially diminished. In this case, firms may look to other sources for innovative ideas.

2.3.6: Performance

Kraak (2015) defines performance as how well a person completes tasks and also the attitude with which he/she completes the tasks. According to Rohan and Madhumita (2012), job performance can be defined (and assessed) in terms of quantifiable outcomes of work behaviors such as amount of sales, numbers sold and also in terms of behavioral dimensions which may include work-related communication, decision making, problem solving among other skills. Debrah and Ofori (2014) define performance as carrying out actions efficiently and effectively to meet agreed job objectives. Civil servants performance means using their skills, ability, experience and so forth, to perform the

assigned task required. Job performance refers to how well employees' performance on the job and assignments assigned them measure about the

Job performance can also be referred to as the functioning and presentation of employees. This implies how employees are able to effectively and actively administer their task and assignments and also how they present their assignment to reflect the good service and quality desired by their organisations. Performance measures are related to effectiveness (how good, accurate or relevant the service delivery was to the customer), efficiency (how quickly you deliver), cost effectiveness and cost efficiency. Performance measures covering information relating to: Customers – new and cost; Resource – consumed, save or required; Finance – how efficiently and effectively tasks and activities are accomplished (Ekaterini & Constantinos- Vasilios, 2009).

Some genuine aspects for measuring performance in relation to reward system include: annual growth in profits of a company; efficient and effective product and service spin-off and growth; rate of customer growth and retention annually; corporate expansion, opening of new branches and creation of subsidiaries; annual increase in the organisation's market share; rate of employee turnover over a certain number of years (Velada & Caetano, 2011).

Employees need training not only in the technological aspects but also in human relations, problem solving and the basic concepts of management. When employees acquire new knowledge and information, they become more efficient, productive and fully developed. The importance of training has accelerated in the last few decades as a mission of most organization to achieve maximum return on investment (Ericsson, 2016). Training should be viewed therefore as an important part of the process of total quality management. Understanding of the importance of training recently has been heavily influenced by the intensification of competition and the relative success of organizations where investment in employee development is considerably emphasized.

Amongst the important function of human resource management, one of the crucial functions is employee development through proper training and development programs. Employee development refers to the capacity and capability building on an employee, and thus as of whole organization, to meet the standard performance level environment (Satterfield & Hughes, 2010). More the developed employees, more they are satisfied with their job, hence increasing the firm productivity and profitability.

2.4 Empirical Review

Kenya's development blueprint, the Kenya Vision 2030 (Republic of Kenya, 2007), recognized science, technology and innovation (STI) as one of the drivers of socioeconomic transformation. Kenya Vision 2030 specifically underscored the need to move to a knowledge-led economy. Under the strategies for promoting STI, the blueprint, in the section on "intensification of innovation in priority sectors", recognized the role of

institutions of higher learning and the importance of their collaboration with industry.

The blueprint also noted that indigenous technology remains unmapped and untapped. The failure to tap into our local capability for innovation has seen most companies in Kenya importing software from Finland and other developed and developing countries, thus losing a lot of revenue to foreign firms.

The blueprint further stated that "in order to encourage innovation and scientific endeavors, a system of national recognition will be established to honor innovators" (Republic of Kenya, 2007: 23). The blueprint therefore clearly acknowledged the role of innovation and tapping into our local talents in achieving national development. The blueprint's vision of developing innovation supported the adage that for a firm or country to remain at the leading edge it must tap into the brain power of its human resources.

2.4.1 Product Innovation

Product innovation is the systematic approach to reduction or elimination of waste rework and loss in the production process or the introduction of a good or as service that is new or has significantly improved characteristics or intended uses. These include technical specifications, components and materials, incorporated software, user friendliness or other functional characteristics. Product innovation includes both new products and new uses for existing products. A lot of “platform” innovation is a good example of building on what is already there, with the iPod and iTunes good examples. Another example of doing more with existing assets is the pharmaceutical industry’s approach to drug repurposing. This is the use of a medicine in a therapeutic area different to that for which it was originally developed (McFarthing, 2017).

The continuance and the persistence of any company depends on its capacities to maintain its market place and face the competition which spreads rapidly and aggressively with the globalization and the expansion of the new technologies, and while product reflects the company's image its whole success depends also on the product success through realizing (compliance) consumers desires and needs, and developing new products (Reguia, 2014).

Successful innovation results in new products and services, gives rise to new markets, generates growth for enterprises, and creates customer value. Innovation improves existing products and processes, thereby contributing to higher productivity, lower costs, increased profits and employment (Reguia, 2014). Firms that innovate have higher global market share, higher growth rates, higher profitability and higher market valuation. Customers of innovative products gain benefits in terms of more choices, better services, lower prices and improved productivity. As innovations are adopted and diffused, the "knowledge stock" of the nation accumulates, providing the foundation for productivity growth, long-term wealth creation and higher living standards (Milbergs & Vonortas, 2004).

Reguia (2014) suggests that, a company's continuance is related to its capacity in developing competitive advantages in its products that allows it to obtain customers' fidelity and widening its market share through product innovation. So companies become obliged to adopt product innovation and provide the favorable environment.

i. New products

Creation of new products is an important driver in economic growth and productivity both to the organization and country at large. When new goods and services emerge, new markets also emerge to consume them. Innovation matters. In the consumer product realm, it can drive profitability and growth, and it can help companies succeed—even during tough economic times. On the opposite side of the sales counter, consumers have a strong appetite for innovation, but they're increasingly demanding and expect more choice than ever before (nielsen, 2015). New Products have cross-generational appeal, and aren't just for the young.

According to Booz (1982) there are several types of products innovation which are: Launching new products which are not existing before through; buying innovations from other companies, or developing new products through R&D programs done by companies in their laboratories or in external ones; Widening products mix through adding new products; Improving existing products; Reclassification products positions and oriented new products to new markets; Reducing costs through applying new techniques to produce new products.

Developing and innovating products is considered as a growth driver for companies, whereas; companies competitive position is determined through their capacity to innovate in their product portfolio and the time that they need to launch their new products (Reguia, 2014). According to a research done by the Nielsen (2015), Affordability tops global consumers' list of reasons for purchasing a new product, but there are regional differences in the order of importance placed on this attribute. In Asia-

Pacific, affordability is the third-most important reason for purchasing a new product, behind value and convenience. North Americans place affordability second on their list, behind novelty and tied with brand recognition. In Latin America, affordability is just slightly behind brand recognition as the reason for making a new product purchase.

Consumers have a strong appetite for innovation. They're increasingly demanding and expect more choice than ever before. Around the world, more than six-in-10 respondents (63%) say they like when manufacturers offer new products, and more than half (57%) say they purchased a new product during their last grocery-shopping trip (Nielsen, 2015). Brand competition is intense and shelves are crowded. Manufacturers must also contend with growing media fragmentation, evolving retail distribution channels and tightening budgets, among other obstacles. As a result, the vast majority of new product introductions are taken out of distribution before the end of their launch year.

Products that are totally new require to be patented in order to protect the organization against copyright infringement or simply theft of their ideas. It is the capacity to innovate new products in order to be more competitive through: quality, higher techniques, perfect marketing...etc. for attracting customers (Reguia, 2014).

ii. Quality improvement

Quality improvement is the action taken throughout an organization to increase the effectiveness of the activities and process to provide added benefits to both the organization and the consumer.

One of the principles of creating a culture in which continuous quality improvement flourishes is that it should involve staff at all levels. Enabling staff to explore and co-create the process makes it more likely that the whole organization will own the approach; responsibility for quality then ripples out to teams, reducing the pressure on one resource or set of people (Nath, 2016).

The link between innovation and continuous quality improvement is well-documented. In a 1991 paper, *From continuous improvement to continuous innovation*, Robert E Cole wrote that: ‘...innovation is best associated with creative solutions, and these can occur at a small as well as a large scale, and can be more, or less, discontinuous. Put more bluntly, there is plenty of innovation that occurs in the course of continuous improvement.’

iii. **Packaging**

Packaging is the technology of enclosing or protecting a product for distribution, storage, sale and use (Board, 2013). Packaging plays an important role in terms of protection, storage and hygienic handling of a product and plays a key role in marketing (Golinska & Kawa, 2015). It is regarded as the most important form of advertising at the most important point in the purchasing journey; the point of purchase.

Innovative packaging increases the shelf life of a product (Han, 2014). This is very crucial especially in the agricultural sector (in preservation of the quality of produce) and in the medical arena where some medicines are highly unstable and require special conditions and packaging to preserve them.

Innovative packaging ensures that a product is well secure during handling and the consumer is safe when handling dangerous products for example acids and flammable products (Barlow, 2015). Through this a manufacturer comes up with safe ways of delivering a product so that the container does not contaminate its contents. Also many manufacturers are coming up with eco-friendly ways of packaging to ensure sustainability of production without compromising on product quality.

Innovative packaging also ensures a brand stands out when compared to other brands in the market (Baaghil, 2013). A good example of innovative packaging is the wide use of Aluminum cans in the food industry which are appealing to the consumer but also preserve the quality of the content (Kregiel, 2015). Also, Tetra packs aseptic packages allow

liquid food to retain color, texture, natural taste and nutritional value for up to 12 months without need of any preservatives or refrigeration.

iv. Branding

Branding is the act of imprinting or engraving a brand name or symbol on to a product (Keller & Lehmann, 2006). In branding the manufacturer seek to capture the attention of the consumers among many competitive commodities. Brand owners know that during any shopping experience a distinctive, well designed and functional package adds considerable value in influencing shopper perceptions and purchasing decisions in the retail environment. It enhances brand communication, supports product positioning and helps a product stand out on the shelf (Dobson & Yadav, 2012). Thus, the graphics, messaging and even shapes are highly thought through before being taken to the market to ensure the brand stands out positively.

At the level of an individual enterprise, a strong brand is regarded as a unique, strategic and organizational resource (de Chernatony & Harris, 2001; McDonald *et al.*, 2001).

Skaalsvik & Olsen (2014) argues that strong brands may lead to strong companies, customer loyalty and even strong industries and that a powerful brand can dictate high brand equity. Similarly, Davis (2007) claims that the most valuable resource a business has is the reputation of its brands. Thus, a strong brand as an intangible asset is beneficial and useful because it enables a firm to strategically position itself with regard to competitors (Skaalsvik & Olsen, 2014). Furthermore, a strong brand, which is associated with superior quality is beneficial for customers in determining customer value as it will impact their trust, commitment and loyalty to a brand.

Sensory branding is one way in which the brand owners can apply to have deep motivational and emotional connection with their customers. Sensory branding is about creating new or emphasizing sensations - namely the touch, taste, smell, sound and look of a product-that affect consumer's emotion, memory, perception, preference and

choice. Branding is perceived as a holistic, change oriented management process, which needs to be adequately planned, organized and implemented through the work of innovative brand leadership (Eriksson & Larsson, 2011). In doing this, leadership needs to find a balance between internal and external orientation in the planning, development and implementation of branding strategies, activities and actions (Skaalsvik & Olsen, 2014). Internal orientation concerns the role of brands inside a company (Mahnert & Torres, 2009), which implies that employees are an important source of brand equity. The essence is that the motivation, commitment and loyalty of employees are as important as their attitudes, values, beliefs and behavioral styles.

Ideally, these should reflect an organization's brand values, promises and brand messages (Murtazina, 2012). Contrasting with the internal orientation of service branding, the external orientation implies an understanding of a brand as an image and representation of the reputation of an enterprise from the view of external stakeholders (Gromark & Melin, 2013). This dual orientation of service branding implies that service branding encompasses all levels and functions of an organization. This contrasts with the classic view of branding as essentially as market communication tool (Fill, 2005). Nevertheless, the development of a competitive, sustainable and successful brand becomes the responsibility of everyone working in an organization (Skaalsvik & Olsen, 2014). Innovative packaging and branding also enables the consumer to identify genuine products from counterfeit ones thus ensuring the safety (Wilson, 2015).

2.4.2 Process Innovation

Process innovation refers to the implementation of a new or significantly improved delivery production method (Shaver, 2014). Process innovation happens when an organization solves an existing problem or performs an existing business process in a radically different way that generates something highly beneficial to those who perform the process, those who rely on the process or both (Viederyte, 2016). The first step in an

innovation process is to understand the context. This should include a comparison with current competitive offerings and potential future entry based on available intelligence.

Organizations today often bring in new information technology systems or find ways to use older in new ways at the forefront of their process innovation efforts (Viederyte, 2016).

Process innovation is different from incremental innovation in both scope and size (Detienne, Koberg & Heppard, 2001). Whereas incremental or continuous improvements generate limited value, innovation generates improvements that increase value by upward of 50%, 100% or even more. Some describe process innovation as creating radical or game-changing shifts (Lyons, Chatman, & Joyce, 2007). In addition to the introduction of a radically new approach or technology, process innovation generally requires a longer planning time and support from high-level management. It's also riskier than incremental improvements and requires a higher level of cultural and structural change (Sergeeva, & Radosavljevic, 2010). Process innovation also typically impacts a broader portion of an organization than do incremental improvements.

Process innovation can generate value to either internal customers, including employees or the actual organization itself, or it can create value to external customers, including business partners, end users or actual consumers. Values stemming from process innovation include reducing the time it takes to produce a product or perform a service; increasing the number of products produced or services provided within a time frame; and reducing the costs per product produced or service provided. Additionally, process innovation can generate significant gains in product quality and service levels (Reguia, 2014). Overall, an individual organization needs to see a significant increase in some of its key performance indicators (KPIs) to be a true process innovation.

i. Human resource practices

Human resource practices relate to specific practices, formal policies and philosophies that are designed to attract develop motivate and retain employees to ensure the effective functioning and survival of the organization (Ozigbo, 2014).

Human resource management practices play an influential role in motivating employees in an organization to exhibit favorable attitudes and behaviors which are required to support and implement the competitive strategy of an organization. According to Khan (2015) innovative firms treat HRM practices as the organization's strategy to encourage team responsibilities, enhance organizational culture, and buildup customer relationships through participation and empowerment. In turn, it will help to create and market new products and services.

Indermun (2014) define sustainability as the ability of a company to survive and succeed in a dynamic competitive environment. Sustainability is a driving force that is reshaping the business world and will continue to do so. To gain competitive advantage and become successful in this landscape, companies must constantly come up with new ways to drive innovation in business processes, management practices and products and services. But even the best ideas for supporting sustainability will fall flat unless a company's workforce can put them into action (Lacy, Arnott and Lowitt, 2009). Lacy et al (2009) mention that the five levers: organisational change, leadership development, employee learning, performance management and employee engagement can help. These are key elements of human resource management practices and therefore remain key imperatives for achieving an organisation's sustainability.

Performance appraisal has in the past increased employee commitment and performance since they are given a chance to discuss their work performance (Dobre, 2013). This leads to a greater performance in innovative activities. Career management has assisted employees to attain their career goals and objectives. If employees are likely to feel

satisfied with their career management, they are likely to perform better (Gregory, 2011).

Reward system provides financial reward, promotion and other recognition, in order to motivate employees to take risk, develop successful new products and generate newer ideas (Mutembei *et al*, 2014). Reward system encourages employee to become motivated, thereby increase their participation in contributing innovative ideas, which leads to high organizational innovation (Tan & Nasurdin, 2011). Training helps to master skill, knowledge and ability which contribute to innovation in terms of products, production processes and management practices in daily operations by the employee in any organization (Tan & Nasurdin, 2011). Recruitment which involves employing and obtaining appropriate and competent candidates through external sourcing (Sparrow, Schuler & Jackson, 1994), has given greater importance to be attached to fit between person and company culture. Hence, the high level of implementation of recruitment that attaches individual –organizational fit is likely to result in high organizational innovation (Deshmukh, 2014).

Below, Zheng, O'Neill and Morrison (2009) show the relationship between innovative HR practices and performance. From figure one can clearly see that innovative HR practices has a direct effect on a company's bottom line. Innovative HR practices can therefore be responsible for making shareholders happy.

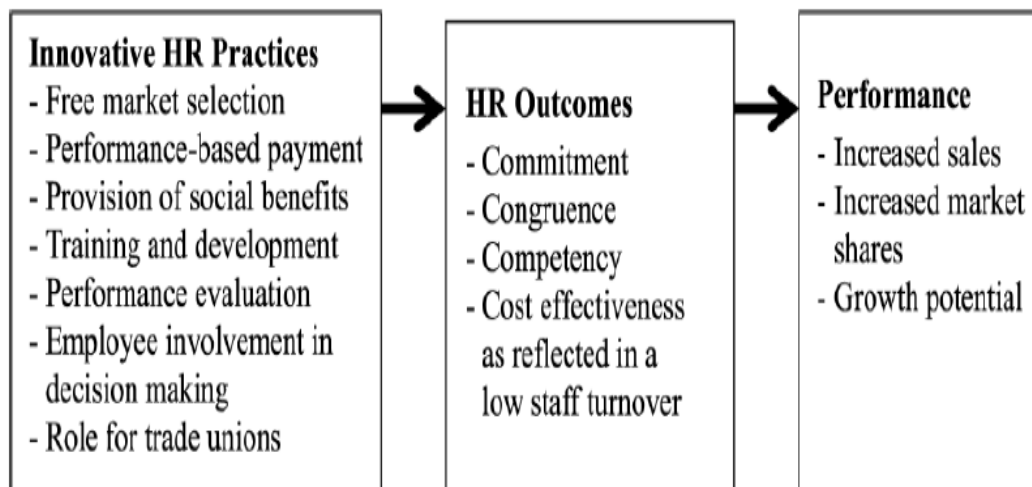


Figure 2. 3: Relationship between innovative HR practices and performance

Source: Zheng et al, 2009:181

ii. Resource mobilization

Resource mobilization refers to all activities involved in securing new and additional resources for your organization (Seltzer, 2014). It also involves making better use of, and maximizing, existing resources. Developing a plan or strategy for resource mobilization can lead to creative efforts in using your own local assets to gain support for your organization (Seltzer, 2014). With increased competition for scarce grant resources, thinking of, and creating options for new, diverse, and multiple funding streams will help your organization manage its programs (Batti, 2014). Resource mobilization is critical to any organization as it ensures the continuation of your organization's service provision to clients; Supports organizational sustainability; Allows for improvement and scale-up of products and services the organization currently provides; Organizations, both in the public and private sector, must be in the business of generating new business to stay in business, that is, creativity and innovativeness of an organization is what will ensure its continuity (Seltzer, 2014).

Resource mobilization is a valuable component for strengthening an NGO. Unfortunately there is a lot of competition for donor resources and in many cases for an organization to secure resources it depends on how well it can compete with other organizations to raise funds; and on how good it is at exploring other ways to source for resources (Batti, 2014). An organizational culture that is flexible helps an organization in looking for ways to maximize resources, in finding innovative ways of raising funds, or carrying out programs in challenging environments (Batti, 2014).

iii. Monitoring and evaluation

Good planning, monitoring and evaluation enhance the contribution of any organization by establishing clear links between past, present and future initiatives and development results (Menon, Karl, & Wignaraja, 2009). Monitoring and evaluation can help organization extract relevant information from past and ongoing activities that can be used as the basis for programmatic fine-tuning, reorientation and future planning (Hoffmann & Hawkins, 2015). Without effective planning, monitoring and evaluation, it would be impossible to judge if work is going in the right direction, whether progress and success can be claimed, and how future efforts might be improved (Menon, Karl, & Wignaraja, 2009).

Good planning combined with effective monitoring and evaluation can play a major role in enhancing the effectiveness of development programmes and projects. Good planning helps us focus on the results that matter, while monitoring and evaluation help us learn from past successes and challenges and inform decision making so that current and future initiatives are better able to improve people's lives and expand their choices (Menon, Karl, & Wignaraja, 2009).

In the broader approach, monitoring also involves tracking strategies and actions being taken by partners and non-partners, and figuring out what new strategies and actions need to be taken to ensure progress towards the most important results. Evaluation

determines the extent to which they are achieving stated objectives and contributing to decision making. Therefore, the aims of both monitoring and evaluation are very similar: to provide information that can help inform decisions, improve performance and achieve planned results (Jensen, & Loneragan, 2013).

2.4.3 Organizational Innovation

Organisational innovation means the implementation of a new organisational method in the undertaking's business practices, workplace organisation or external relations (Van den Bossche *et al*, 2015). Changes in business practices, workplace organisation or external relations that are based on organisational methods already in use in the undertaking, changes in management strategy, mergers and acquisitions, ceasing to use a process, simple capital replacement or extension, changes resulting purely from changes in factor prices, customisation, regular seasonal and other cyclical changes, trading of new or significantly improved products are not considered innovations (Van den Bossche *et al*, 2015).

What organizational innovation constitutes and how managers lead, shape and manage organizational innovation has been a major research area in the organizational management literature. In general Razavi (2013) suggests that there are three broad approaches to organizational innovation: Firstly, innovation is considered as a determining factor of organizational growth and superior business performances (Gumusluoglu and Ilsev, 2009). This approach emphasizes on innovation oriented business strategy and grants bigger investment in the growth of organizational capability to innovate new products. The second approach regards innovation as rather a byproduct of dynamic organizational development and prescribe prioritization of company's atmosphere and working condition over just exclusively focusing on innovation management. The third approach credits innovation as a contributing factor but underlines a careful balance between innovation and other contributing factors for an efficient business performance (Lawson and Samson, 2001). These different levels of

apportioning importance on innovation delineate, in the advance management literature, the thought and strategies of leading and managing innovation by the managers.

Razavi (2013) argues that organizational capability approach employed by the managers is the mostly known approach to in innovation management. It suggests that product innovation in the long run is better managed by nurturing and enhancing capabilities of firms as innovation engine. It advocates that superior business performances of the firms depend on the large scale investment in innovation capability instead of investing in the creation of physical assets. The stronger the innovation capability possessed by a firm, the more effective will be their innovation performance (Lawson and Samson, 2001).

Organizational innovation means the implementation of a new organizational method in the undertaking of business practices, workplace organization or external relations (Leovaridi & Popescu, 2015). Organizational innovation can be intended to increase a firm's performance by reducing the administrative costs or transaction costs, improving workplace satisfaction (and thus labor productivity) or reducing cost of supplies (Günday *et al*, 2011). The ability of an organization to innovate is reconditioned for successful utilization of inventive resource and new technologies.

Organizational creation is fundamental to the process of innovation (Lam, 2011). Changes in business practices, workplace organization or external relations that are based on organizational methods already in use in the undertaking, changes in management strategy, mergers and acquisitions, ceasing to use a process, simple capital replacement or extension, changes resulting purely from changes in factor prices, customization, regular seasonal and other cyclical changes, trading of new or significantly improved products are not considered innovations (Viederyte, 2016).

Current research on how to organize the role of government in innovation – both how governments support innovation in markets and how governments achieve innovations within public organizations for improving its market supporting activities – converges

around a rather simplified single-organization explanations: innovations are driven by either (Weberian) elite expert organizations or (Schumpeterian) fluid peripheral organizations (Karo, 2015).

Looking at the history of innovation bureaucracy, a more complex picture emerges: historically we find a rich organizational variety for implementing diverse innovation policy goals. Historically the organizational variety is, first, driven by highly diverse public-private relationships; and second, the variety itself is an important factor in success and failure of innovation policies. Combining analytical lenses created by Weber and Mintzberg we build analytical framework based on routines and capacities to analyze organizational variety in innovation bureaucracy. We show how different kinds of public organizations are successful at delivering different kinds of innovation policy goals and impacts (Karo, 2015).

Particularly important is the distinction between organizations capable of innovations in policies (instrumental performance) versus organizations supporting innovations in private sector (substantive performance) (Karo, 2015). Although the debate over the most appropriate organizational structure for innovative activities continues, there is general agreement among both academics and practitioners that a mechanic organizational structure characterized by pronounced levels of bureaucracy, formalization and control is in conflict with the trial-and-error character of innovation processes (Parzefall *et al.*, 2008).

According to Huhtala *et al.* (2006) the bureaucratic tendencies as defined by Max Weber (and later on Stewart Clegg) have not actually been systematically researched specifically in the context of innovative organizations. Alvin Gouldner the great sociologist of the 1950's has compellingly argued that bureaucracy is often understood as an end result in itself, and therefore the tendencies are not viewed as hypotheses, which should be empirically tested and verified (Gouldner, 1954). The bureaucratic

tendencies can be seen as characteristics of bureaucracy, in that if they are found, one can talk of bureaucracy.

Weber's bureaucracy is, however, an ideal type, which means that not all the tendencies need to be present in order for an organization to be categorized as a bureaucracy.

In practice in organizations labeled as bureaucracies only some of the bureaucratic tendencies are found, and the ideal type remains a sort of a backdrop against which the realization of bureaucracy in organizations is evaluated (Huhtala *et al.*, 2006). Therefore, it is useful to approach bureaucracy, from a tendency perspective. He discussed bureaucracy widely calling it an iron cage in which an organization has replaced a group of equal individuals as the structuring element of work. He acknowledged that bureaucracy was technically superior over other organizational forms. He pointed out that since economic activity is oriented towards substantive rationality it would not be a simple calculation but would also take into account values. However, Weber predicted that capitalism would not need religious values and substantive rationality; they would be replaced by calculability and formal rationality. With rational calculations capitalists could manage the increasing uncertainty of the world (Huhtala *et al.*, 2006). In this way bureaucracy would cause work to become more linear and predictable (Anonymous, 2007).

Weber thought that bureaucracy was necessary, unavoidable, inescapable, universal and unbreakable (Huhtala *et al.*, 2006). Weber did not link bureaucracy with efficiency. He saw the following tendencies as leading to bureaucracy: hierarchisation, Specific configuration of authority, Specialization, credentialisation, Centralization, The authorization of organizational action, legitimization of organizational action, disciplinisation of organizational action, officialisation of organizational action, impersonalisation of organizational action, careerisation, A process of status differentiation (stratification), contractualisation of organizational relationships, Formalization of rules, Standardization, bureaucratic tendencies researched ultimately

exemplify three things: authority, rules and lack of humanity. Overall, the results indicate that there is a striking absence of bureaucracy in the mobile content companies, both from the viewpoint of Human resource managers and employees. Rationality and calculability are seen as typical characteristics of bureaucracy (Al-Habil, 2011).

On the contrary, the business logic and survival strategy in the industry seems to be that companies succeed if they are flexible and creative (Huhtala *et al.*, 2006). In other words, the 15 tendencies of bureaucracy are found not to be present, and when they appear, they form a loose web. Hence, they are not interconnected or strong, but instead the degree of bureaucratization is weak. With content companies, the positions of owners, managers and employees are somewhat interchangeable, with a single person able to take all three roles, even simultaneously

2.4.4 Technological Innovation

Technological innovation comprises activities that contribute to the research, development and design of new products, services or techniques, or to improving existing products, and generates new technological knowledge. Innovation process depends essentially on external conditions; designing of new technologies results from interactions with customers, suppliers, competitors and various other public and private organizations (Diaconu, 2011). This explains why clusters, competition and other business linkages are so important for the process of technological development. In this context, innovation seen as a system, in terms of spatial, at the regional or national level, allows understanding and analysis of these interactions, with impact on innovation propensity and performance of innovation activity (Diaconu, 2011).

However, technological competitiveness resulted from innovation based on in-house R&D activity is an economic development moving force. An innovative company will achieve a high profit rate, giving a signal to other companies, including imitators who, if they have market entrance conditions, will pursue to share profit, resulting in

diminishing initial innovator advantage. Such imitators “spreading” at the industrial or sector level tackle technologic development in a time interval, after which emerged effects from new technologies upon growth will slow down. Taking this idea of Marxist origin, Schumpeter was to note the importance of innovations diffusion, arguing that imitators can be successful if they improve the original innovation, that is, if they become themselves innovators (Diaconu, 2011). In this framework, it becomes obvious that the technology acquisition cannot be simply assimilated with purchasing from suppliers. Companies must have the ability to identify the appropriate technologies they need, to assess technological options for using or their modification and, last but by no means to least, to integrate new technologies into production processes. With other words, companies that practice this type of innovation must have skills to purchase and use new or substantially improved technologies (Diaconu, 2011).

Information sharing; refers to the official or unofficial sharing of meaningful, timely, and appropriate information between firms and can be defined as parties favorably providing helpful information to their partners (Lee, 2015). Traditionally, an organization’s management distributed information along a well-defined, top-down channel (Daft, 1983). Today, due to the spread of social technologies, information can be shared with great ease and almost no effort. This ease of information sharing makes it very difficult to assure that all information travels along the defined channels. Thus, many organizations that already use social technologies to a wider extend are facing the problem of how to adopt their policies to the new nature of information sharing (Martin & van Bavel, 2013).

This expectation of collecting a diverse range of information enables the partner to better respond to internal processes and external market conditions.

Accordingly, the sharing of accurate, timely and appropriate information enables reasonable decision making and the improved effectiveness of the process. It can also reduce the level of uncertainty a firm faces in its decision-making process (Rouhani *et*

al, 2016). If a firm has incomplete information or lacks it, it is likely to have difficulty making decisions under a high level of uncertainty (Taghavifard, 2007). In particular, in the case of manufacturing firms located overseas, they are placed in high-uncertainty situations, which make reasonable management difficult. However, in the case of manufacturing subsidiaries in overseas locations with relatively poor resources, the sharing of technology-related information with parent headquarters can be defined as technology information sharing (Lee & Kim, 2015).

In particular, from the research-based theory perspective, the sharing of technology-related information that can have considerable influence on the competitiveness of the firm is likely to be an important factor strengthening the competitiveness and capability of its manufacturing subsidiaries from their perspective (Diaconu, 2011). Open information sharing means to establish an organizational and technical infrastructure that encourages free exchange but also enforces controls that mitigate the risks of irresponsible use (Cybersecurity, 2014). Daniel Michelis (n.d) provides us with six different concepts of open information sharing which includes;

Explaining decisions; this concept aims at explaining management decisions and strategies. Employees should not only understand management's behavior but also comprehend the background of their decisions and strategies (Lee, 2016). Using social technologies to explain decisions is a first step to openness and is already widespread. The intranet of many organizations has evolved into a corporate social network that includes internal weblogs. Employees are able to comment and discuss decisions made by their managers (Naik, 2015). Vice versa the management can listen to staff opinions and take part in ongoing discussions.

Mutual report; With mutual reporting, management and employees of an organization regularly provide and update each other with information about current developments. Social technologies enable an interactive, two-way exchange of information (Ariel,

2015). They can also be divided into individual communication channels to which executives and employees can subscribe,

Information sharing with partners; Information exchange can include both internal and external information that staff or management exchange with external stakeholders of the organization (Welch & Jackson, 2007). The general aim is to build and maintain external relationships in order to obtain direct access to all relevant information (Gaál, 2015). (Start with this one)

Encourage Participation; Employees, customers, partners or external supporters are invited to contribute their opinion, their own ideas or any other information (Medal, 2008). The information collected allows the organization to assess its own performance from different perspectives and to build on the motivation and engagement of individuals who are willing to freely support the goals of the organization (Oyza, 2016).

Outsource Problem Solving; an open exchange with customers and business partners can generate ideas that help to improve the organization's performance, to solve specific problems and to develop innovations. In recent years a growing number of organizations have started to offer outside individuals the possibility to participate in open innovation projects (Gaál, 2015).

Open Interfaces; this last concept of open information sharing is different to the others because it does not focus on the exchange between people but on the exchange between computers. Open interfaces allow external actors to build on standardized processes of the organization and enhance these processes by adding new components. They also allow the automatic exchange of information, which is often the basis for entirely new services.

2.4.5 Marketing Innovation

Marketing Innovation is defined as the plan to incorporate the advances in marketing science, technology or engineering to increase the effectiveness and efficiency of marketing, to gain competitive advantage and increase shareholder value. Tinoco (2005) suggests that Marketing innovation entails the generation and implementation of new ideas for creating, communicating, and delivering value to customers and managing customer relationships and further argues that marketing innovation should be developed concurrently with product innovation. Marketing innovation is the capacity to re-conceive the existing industry model in ways that create new value for customers, undermine competitors, and produce new wealth for all stakeholders, according to the organizational knowledge literature (Cascio, 2011). Further, marketing knowledge is a powerful strategic asset and a prerequisite for marketing innovation (Hanvanach, Droge and Calatone 2003).

Marketing is a discipline, a practice and it is changing because the underlying knowledge in the social sciences that supports it is changing. Marketing is composed of micro-economic data (e.g. price, quantity, and behavioral data, the understanding of human behavior from psychology, anthropology, and sociology) (Anonymous, 2012). One quality that unites the marketing strategies of all of these brands is innovation. Effective digital marketing requires that brands have the ability to adapt to change, and to grasp new opportunities. Being able to innovate allows brands to conceptualize new ideas and put them into practice (Hong, 2015).

The persistent belief that innovation is primarily about building better products and technologies leads managers to an overreliance on upstream activities and tools. But downstream reasoning suggests that managers should focus on marketplace activities and tools (Dawar, 2013). Competitive battles are won by offering innovations that reduce customers' costs and risks over the entire purchase, consumption, and disposal cycle. Even in the purest of scenarios, the benefits of innovation for brand

marketing efforts can be clear. Volvo, for example, established a reputation for being an innovator of automobile safety, a message that has been effectively reiterated in their marketing campaigns for decade (Hong, 2015).

2.4.6 Public Sector Performance

The performance analysis in the public sector is a matter of real importance for national governments and public policy-makers who are currently experiencing a high volume of public debt as a result of crossing the period of financial crisis (Mihaiu, 2010). As development of international economics and advances of technology are occurred in recent years, knowledge globalization and economic integration are strengthened. Meanwhile, international public sectors have made great progresses in a decade, which requires efficiency and output standards in line to private sectors to establish “elite standard”. However, there is a great gap between public and private sectors in the management of innovation (Zhonghua, & Ye, 2012). In addition, public sectors do not have a comparative advantage in terms of economic efficiency and social benefits, so that public sector managerial reform is urgently needed (Mihaiu, 2010).

One important aspect of improvements of the new public management model is increasing the assessment of performance, which implementing departments’ goals and strategies on standards of the performance appraisal (Kim, 2011). Public sector performance evaluation is to measure the situation achieving established goals - including the efficiency of changing resources into public goods and services (output), the quality of outputs (the quality of services they provide to their customers and customers’ satisfaction), the results (the actual effects of behaviors compared to the target), and the efficiency of government operations during a process of achieving its planned goals (Zhonghua, 2012).

According to Zhonghua (2012) in light of traditional enterprise performance measurement, public sectors performance measurement shows two significant

characteristics in the process of implementation and improvement: First, the multidimensional nature of measuring objectives. Public sectors not only have the economic attributes, but also bear on non-economic obligations of environmental benefits and social benefits, which needs to set performance targets to balance multiple objectives, multi-agent interests. Second, the lack of assessment data. Due to the lack of sophisticated management information system and the relative lack of continuity of data accumulations, when making the use of traditional performance evaluation methods, data collection is very difficult.

Effectiveness; is the extent to which the project's objectives were achieved, or are likely to be achieved and seeks to control the factors that influence accomplishment or non-achievement of the objectives (Ngacho, 2013). The effectiveness is the indicator given by the ratio of the result obtained to the one programmed to achieve (Mihaiu, 2010). Peter Drucker believes that there is no efficiency without effectiveness, because it is more important to do well what you have proposed (the effectiveness) than do well something else that was not necessarily concerned (Drucker, 2001). The relationship between efficiency and effectiveness is that of a part to the whole, the effectiveness is a necessary condition to achieving efficiency. Ulrike Mandl, Adriaan Dierx and Fabienne Ilzkovitz (2008) in the paper "The effectiveness and efficiency of public spending" indicate that the efficiency and effectiveness analysis is based on the relationship between the inputs (entries), the outputs (results) and the outcomes (effects).

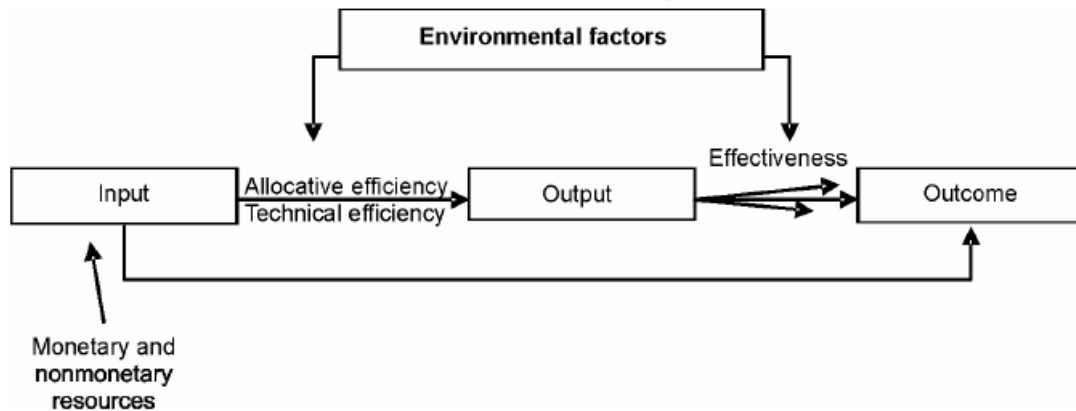


Figure 2. 4: Relationship between inputs, outputs and outcomes of effectiveness

Source: Mandl U., Dierx A., Ilzkovitz F., (2008): The effectiveness and efficiency of public spending, p.3.

As it can be seen in Figure (), the efficiency is given by the ratio of inputs to outputs. The authors mentioned above distinguish between the technical efficiency and the allocative efficiency. The technical efficiency implies a relation between inputs and outputs on the frontier production curve, but not any form of technical efficiency makes sense in economic terms, and this deficiency is captured through the allocative efficiency that requires a cost/benefit ratio. The effectiveness, in terms of this study, implies a relationship between outputs and outcomes. In this sense the distinction between the output and the outcome must be made.

Ulrike Mandl, Adriaan Dierx and Fabienne Ilzkovitz (2008) therefore suggests that, effectiveness, illustrating the success with which resources were used in order to achieve the objectives pursued, is harder to achieve than efficiency, since the latter is not influenced by outside factors. The effectiveness has as influence factors the outputs, the outcomes and the environmental factors. The latter, the environmental factors (such as lifestyle and various socio-economic influences) exercise a major influence over the

effectiveness. The quality of the public administration is a factor that affects both the efficiency with which the public money are used and the effectiveness (Mihaiu, 2010).

Efficiency; is the maximization of output for a set level of input or resources, that is the extent to which desired effects are achieved at a reasonable cost (Takim and Adnan, 2009; Niringiye and Ayebale, 2012). In general sense, the efficiency can be achieved under the conditions of maximizing the results of an action in relation to the resources used, and it is calculated by comparing the effects obtained in their efforts (Mihaiu, 2010).

A problem that arises is related to the full comparability of the two sectors, so as to be able to compare the effectiveness of each one of them. Even a simple analysis reveals that the two sectors are not interchangeable. The objectives pursued by the public and private organizations are different, so, the private sector aims for profit, while the public sector seeks not only to obtain economic benefits, but also to obtain social benefits, with the stated primary objective to ensure the public welfare. Efficiency is provided by the relationship between the effects, or outputs such as found in the literature, and efforts or inputs (Curristine, 2007).

Accountability; ensures actions and decisions taken by public officials are subject to oversight so as to guarantee that government initiatives meet their stated objectives and respond to the needs of the community they are meant to be benefiting, thereby contributing to better governance and poverty reduction (Reddy, Nanda Kishore, Ajmera, Santosh, 2015). Broadly speaking, accountability exists when there is a relationship where an individual or body, and the performance of tasks or functions by that individual or body, are subject to another's oversight, direction or request that they provide information or justification for their actions (Gyong, 2014).

Therefore, the concept of accountability involves two distinct stages: answerability and enforcement. Answerability refers to the obligation of the government, its agencies and

public officials to provide information about their decisions and actions and to justify them to the public and those institutions of accountability tasked with providing oversight. Enforcement suggests that the public or the institution responsible for accountability can sanction the offending party or remedy the contravening behavior (Mollah & Hossain, 2016). As such, different institutions of accountability might be responsible for either or both of these stages.

Evaluating the ongoing effectiveness of public officials or public bodies ensures that they are performing to their full potential, providing value for money in the provision of public services, instilling confidence in the government and being responsive to the community they are meant to be serving (Organisation for Economic Co-operation and Development, 2011).

The concept of accountability can be classified according to the type of accountability exercised and/ or the person, group or institution the public official answers to (Abuodha, n.d). The main forms of accountability are Horizontal vs. Vertical Accountability, Political versus Legal Accountability, Social Accountability, and Diagonal Accountability (Abdaless, Barzi, Crowther, & Oubrich, 2015).

Transparency; is recognized for the means to improve trust. Therefore greater transparency in the public sector is also hope to enhance public confidence and trust in the government agencies (Hasan, 2013). In accounting term, 'transparency' is called 'disclosure', the obligation to disclose an organisation's financial circumstances for the benefit of their creditors or principals (Hood, 2006). Governmental transparency can be explained as the ability to find out what is going on inside government (Piotrowski et al, 2007). Transparency has been generally supposed to make institutions and their office-holders trusted and trustworthy (O'Neill, 2002).

Heald (2006b) wrote that transparency is believed to positively connect to performance because exposure to public view works as stimulus. The author notes that, however,

transparency about operational aspects of process can affect behaviour in unexpected ways. The author also suggests that introducing or increasing transparency may have damaging effects rather than beneficial except if it is seen to make a difference. The author explains that if transparency is beneficial, it could lead to cessation or reduction of corruption and punishment of offenders. Public knowledge arising from greater transparency would lead to greater cynicism and possibly wider corruption if the corruption exposed continues. But if trust is constantly observed, it is hardly earned and easily dissipated (O'Neill, 2002)

Public confidence in public administration can be categorized to three fundamental principles, namely transparency, accountability and trust (Power, 1994). Therefore, when public trust is declining, public confidence will also decline. In the public sector, public confidence will provides a bridge for mutual interest between the managers of service providers and the auditor. Publication of the performance result is very good to communicate performance and thus enhance transparency. Transparency also works to benefit service providers by allowing them to transfer liability and reduce risk (Hasan, 2013).

Hasan (2013) argues that the comprehensive performance assessment enforced in local government agencies regime are not viewed as contributing towards improvement in public trust nor in public participation, although part of the objectives of greater transparency is to improve trust. He further explains that assessment regime and its published results have not been viewed as affecting local electors' decisions to vote in local elections nor the choice of political parties. The public has showed little interest in responding to the invitation for public inspection of the local authorities' statement of accounts, possibly due to the difficulty in understanding the accounting terminologies.

2.5 Critique of Literature

The idea that creativity and innovation are related is not clearly cut out. Horton (2014) accentuates that creativity is the ability to come up with new ideas while innovation means making a new solution available thus suggesting the two not necessarily related. He further expounds on this that founding a company that brings an offer to market that is based on someone else's invention does not require any creativity. On the other hand, inventing something new but not doing anything with it could be creative without yielding an innovation.

In Kenya the biggest obstacle to innovation is not lack of creativity (although it often claimed to be so.) Instead it is a culture that rewards mediocrity and avoiding risk. People generate new ideas but they then kill their best ideas because they are afraid of their organization's reaction to them. In addition to this, confusion about the presumed goal of a business or organization has been attributed to less innovativeness of various organizations.

The pathway of innovation is not always linear. There are several factors that may influence the innovation cycle, hence the intended outcome from an innovation cycle may not always be realized as anticipated and they may end up being more costly in the long run. Several institutions may not be willing to go the extra mile in terms of investing in innovations. This is further compounded by the fact that not all innovation practices may yield the intended results. Re-strategizing by such firms will result into extra costs and delay in terms of time. Creativity and innovation requires risk taking which may be costly in terms of the risks anticipated and the cost of risk management.

The theory of Disruptive Innovation as put forward by Christensen also creates a dilemma that firms that continually make the same decisions that made them successful, will eventually lead to their downfall. Thus he downplays innovation as the cause of

constant growth to any firm. He explains that great firms have failed with even the incorporation of new technologies.

2.6 Summary of Literature

Innovation is seen as an outcome of a collision between technological opportunities and user needs. The focus is upon the interaction between producers and the users of innovation. Innovations are interactive and social. For businesses, this could mean implementing new ideas, creating dynamic products or improving your existing services. Innovation can be a catalyst for the growth and success of an organization, and can help in adapting and growth in the marketplace.

Innovation does not only mean inventing but rather changing your business model and adapting to changes in your environment to deliver better products or services. Successful innovation should be an in-built part of your business strategy, where you create a culture of innovation and lead the way in innovative thinking and creative problem solving. Innovation can increase the likelihood of your business succeeding. Businesses that innovate create more efficient work processes and have better productivity and performance.

Hence innovation is assumed to have direct relationship with organization performance. Public sector innovations involve creating, developing and implementing practical ideas to achieve a public benefit. Innovation in the public sector organizations induce better understanding of opportunities and problems, thus generating more useful ideas by scaling things up and improving adoption. Apart from technological innovation other categories of innovations include product innovation, process innovation, organizational innovation, and marketing innovation.

2.7 Research Gaps

From the literature above, innovation is broadly seen as an essential component of competitiveness, embedded in the organizational structures, processes, products and services within an organization. Very little has been said and done about assessing the impact of various categories of innovations especially in light to public sector performance. This is due to the fact that most researches attempt to measure the “innovativeness” of the organization or the country rather than the consequences of innovation. There is a clear consensus that innovation is the reason for growth and decay of an organization, but there is a substantial lack of structured evidence concerning this. By exploring the effects of the organizational, process, product, technological and marketing innovations on the different aspects of organization performance, including innovative, production, market and financial performances, a theoretical framework will be empirically tested and proposed identifying the relationships amid innovations and organization performance through an integrated innovation-performance analysis. Secondly, by identifying the relationships between innovations and organization performance, the research seeks to find out which innovation category is more important factor affecting the innovative performance and organization performance. Further, the research will try to explain why the public sector organization is typically less innovative than its private sector counterparts as it has been insinuated in the literature above.

Innovation can increase the likelihood of a business succeeding. Organizations that innovate create more efficient work processes and have better productivity and performance. This is also true for the public sector. In the private sector, innovation is an established field of study that tries to explain why and how innovation takes place (De Vries *et al*, 2015). General literature reviews and systematic reviews have been carried out to assess the state-of-the-art in this field as well as to generate new avenues for theory building and research (Perks & Roberts, 2013). However, what is known about

innovation in the public sector? What topics have been addressed in the innovation studies to date, and what are the possible avenues for future research? Moreover, what can be added to the current methodological state-of-the art when it comes to public innovation research?

Many researches have been conducted to identify the challenges and barriers to adopt innovation in the public sector organizations but a comprehensive systematic overview of public sector innovation, which are replicable and transparent is still lacking. So this research study tried to explore how innovation influences performance in the public sector in Kenya empirically and it also attempted to fill the loopholes of the literature review on the stated topic.

Most of the literature reviews were mostly grasping the meaning and importance of public sector innovation conceptually rather than empirically. This research explored the empirical grounding of the knowledge that has been put forward in the scholarly articles related to innovation in the public sector and in so doing will sought to improve the quality and efficiency of internal and external processes; Creation of new organizational forms, the introduction of new management methods and techniques and new working methods; Creation or use of new technologies, introduced in an organization to render services to users and citizens; Creation of new public services or products; Introduction of new concepts, frames of reference or new paradigms that help to reframe the nature of specific problems as well as their possible solutions.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter covers the methodology including research philosophy, the research design, population, sampling frame and sampling techniques. It finally discuss data collection instruments, data collection procedure, pilot testing, data analysis and presentation which was based on the research questions and the research design applied to establish the influence of on innovative practices on public sector performance in Nairobi City County.

3.2 Research Design

Research design is plans and procedures for research that span the decision from broad assumption to detailed methods of data collection and analysis (Creswell, 2009). The research design is the blueprint for fulfilling objectives and answering questions (Cooper and Schindler, 2006). The objective of the research study was to find out the influence of innovations in the public sector therefore the nature of the questions posed are how, why and what.

The case studies are the preferred method when how and why questions are posed and they can be exploratory in nature (Yin, 2009). The word case comes from the Latin noun *casus*, which means an individual object (Liamputtong, 2009). In research some consider “the case” an object of study (Stake,1995), a unique aspect (Smeijsters and Aagaard, 2005). He further describe case study as an empirical inquiry that investigates a contemporary phenomenon in depth and within its real life context, especially when the boundaries between the phenomenon and context are not clearly evident. (Yin, 2009)

terms case studies as descriptive (providing narrative accounts), explanatory (testing theories) or exploratory (can be used as a pilot study for larger social research). The study used both qualitative and quantitative research designs since both numerical data and that expressed in words were collected given the nature of the study objectives.

This study adopted descriptive research design. The choice of descriptive study was informed by the fact that it is not only restricted to fact findings, but often result in the formulation of important principles of knowledge and solution to significant problems (Orodho, 2003). (Kombo and Tromp, 2007) observe that descriptive approach is designed to obtain information concerning the current phenomenon and wherever possible to draw valid general conclusions from facts discussed. Innovative organizations and existing innovation knowledge base which was used as reference points so that the findings are measured against best practices in innovation.

3.2.1 Research Philosophy

A research philosophy is a belief about the way in which data about a phenomenon should be gathered, analysed and used. The term epistemology (what is known to be true) as opposed to doxology (what is believed to be true) encompasses the various philosophies of research approach. The purpose of science, then, is the process of transforming things *believed* into things *known*: doxa to episteme. Two major research philosophies have been identified in the Western tradition of science, namely positivist (sometimes called scientific) and interpretivist (also known as antipositivist). This study adopted the positivism research philosophy, (Ryan, 2006). Research by Macdonald (2006) asserts that positivism may be seen as an approach to social research that seeks to apply the natural science model of research as the point of departure for investigations of social phenomena and explanations of the social world. This study, by employing this approach, intended to unravel any details that are critical in the subject matter. Again this was to help identify the significance of innovation practices on various projects the

public sector is carrying out and how it influences performance in the respective public sector organizations and give respective recommendations.

3.3 Target Population

The population of this study was the public sectors including Physical Planning, Public Health, Social Services and Housing, Primary Education Infrastructure, Inspectorate Services, Public Works, Environment Management ; while the latter include Agriculture, Livestock Development and Fisheries, Trade, Industrialization, Corporate Development, Tourism and Wildlife, Public Service Management in Nairobi County, Kenya. The study targeted the 32099 civil servants operating in respective public sectors.

3.4 Sampling Frame.

Kothari (2014) describes sampling frame as a list of members of the research population from which a random sample may be drawn. For this study, the sampling frame was 32,099 civil servants employed within the Nairobi County under the following public sectors: Physical Planning, Public Health, Social Services and Housing, Primary Education Infrastructure, Inspectorate Services, Public Works, Environment management while the latter include Agriculture, Livestock Development and Fisheries, Trade, Industrialization, Corporate Development, Tourism and Wildlife, Public Service Management.

3.5 Sample Size and Sampling Technique

A Sample is a subset of a population, selected to participate in a study (Anderson, 2011). Sampling is a process of selecting a subset of the population in which entire population is represented. Simple random sampling was used to secure a representative group which enabled the researcher to gain information about the population according to (Mugenda and Mugenda, 2003). Nduati (2015) observed that the larger the size of the

sample, the more precise the information given about the population. According to Mugenda and Mugenda (2003), when the population is more than 10,000 then the minimum sample size can be evaluated as follows:

$$n = \frac{Z^2 pq}{d^2}$$

Where:

n = the minimum sample size if the target population is greater than 10,000

Z = the standard normal deviate at the required confidence level.

p = the proportion in the target population estimated to have characteristics being measured. Use 0.5 if unknown.

$q = 1 - p$

d = the level of significance set.

If the target population is less than 10,000 then the minimum sample size is obtained using the formula:

$$n_s = \frac{n}{1 + \frac{n}{N}}$$

Where:

n_s = the minimum sample if the target sample size is less than 10,000

n = the minimum sample size if the target population is greater than 10,000

N = the estimate of the population size.

Once the required sample size has been determined, proportion allocation will be used to obtain the number of contractors and project managers.

With $Z=1.96$, $p=q=0.5$ and $d = 0.05$;

$$n = \frac{1.96^2 \times 0.5 \times 0.5}{0.05 \times 0.05} = 384$$

Sample size=384 civil servants drawn from the public sector.

Table 3.2: Sample Size

Name of the Public sector	Total Population	Representative of each stratum $\frac{x}{y} \times 100 = Z\%$	Sample size of Z% of 384
H S S	4131	11.9%	45
E,Y,C&CSSS	4,822	15.1%	58
IC&E-G	356	1.2%	4
PSMS	2184	6.8 %	26
LH&PPS	3067	9.7%	36
PW,R&TS	5,765	18.1%	69
TICDT&WLS	4,899	15.4%	59
WEFE&NRS	2,876	8.9%	35
F&EPS	1345	4.4%	17
AL&DFS	2,654	8.5%	33
Grand Total	32099	100	384

Source; Report of Devolved Functions, Structures & staffing for county Governments ,2012

Where: x = The number of employees in the respective company; y = Total Target population; and Z = sample size per strata. See Appendix III for full names.

3.6 Data Collection Instruments

Zikmund (2003) defines data collection tools as the instruments used to collect information in research or the methods employed to collect research data. The choice of the methods to use is influenced by the nature of the problem and by the availability of time and money (Cooper & Schindler, 2006). The questionnaires had both open ended

and closed questions. Open ended questions provided the opportunity for self-expression openly and honestly. They allow the respondents to give their ideas, concerns & feelings (Kenya Institute of Management (KIM), 2009). The closed questions made it easier and quicker for the researcher to record responses and compare code and statistically analyze. The questionnaires contained Likert Scales which allowed for degrees of opinion, and even no opinion at all. The advantage is that they do not expect a simple yes / no answer from the respondent.

3.6.1 Primary Data

Primary data is the data which is collected a fresh and for the first time and thus happen to be original in character (Kothari, 2014). Louis et al., (2007) describes primary data as those items that are original to the problem under study. Primary data will be collected through the administration of semi-structured questionnaires to both Management and Unionisable employees of the respective companies in the energy sector in Nairobi County, Kenya. A questionnaire is a data collection tool, designed by the study and whose main purpose is to communicate to the respondents what is intended and to elicit desired response in terms of empirical data from the respondents in order to achieve research objectives (Mugenda & Mugenda, 2003). It is a means of eliciting the feelings, beliefs, experiences, perceptions, or attitudes of some sample of individuals (Zikmund, 2003). According to Kothari and Garg (2014) this method of data collection is quite popular, particularly in case of big enquiries. In this method a questionnaire was distributed to respondents with a request to answer the questions and return the questionnaire.

3.7 Data Collection Procedure

The study obtained an introduction letter from the university and a research permit from the public sectors involved. The drop and pick method was used in the data collection in the specified sectors. This allowed the respondents to work on the questionnaire in private and when it is convenient.

3.8 Pilot Study

The research instruments were pilot tested on 10% of the sample size (38 civil servants). This 10% of the civil servants were excluded from the main study. They were selected randomly. The data obtained was then subjected to various tests to check for instrument reliability and instrument validity. The results formed part of the final study results.

3.8.1 Reliability of research

Reliability involves demonstrating that the operations of a study such as the data collection procedures can be repeated with the same results. The reliability of the instruments was tested using Cronbach's Alpha. Kothari (2009) says that it refers to consistency of measurement; the more reliable an instrument is, the more consistent the measure. The research study used a test-retest method which involved administering the same scale or measure to the same group of respondents at two separate times. This was done after a time lapse of one week. The test was administered twice at two different points to the same respondents. Cronbach's Alpha was then used to calculate the correlation co-efficient in order to ascertain the degree of consistency in giving similar response each time the questionnaire was administered. The formula that was used to calculate the Reliability Coefficient is as follows: $(N / (N - 1)) ((\text{Total Variance} - \text{sum of Individual Variance}) / \text{Total Variance})$. All constructs with a coefficient greater than 0.7 were accepted.

$$\alpha = \frac{N \cdot \bar{c}}{\bar{v} + (N - 1) \cdot \bar{c}}$$

Where:

N = the number of items

\bar{c} = average covariance between item-pairs

\bar{v} = average variance

3.8.2 Validity of research

Validity was determined by the use of face and content validity. Face validity tests whether the questions appear to be measuring the intended constructs, while content validity the test content to determine whether it covers a representative sample of the behavior area to be measured and covered. Expert input was also used to check on the instruments validity.

3.9 Data Analysis and Presentation

The data collected from the field was captured using Statistical Package for Social Sciences (SPSS) version 21 and Microsoft Excel (2013). Data was placed in context to tease out categories, themes, and patterns that should then be declared out in the findings. Quantitative data was analysed through descriptive statistics (White, 2000). Descriptive statistics including frequency, percentages and means were employed and a summary graphs, pie charts and frequency distribution tables was done.

Qualitative data was analysed using content analysis. The latter is a careful, detailed, systematic examination and interpretation of a particular body of material in an effort to identify patterns, themes, biases and meanings (Leedy and Ormrod, 2005; Neuendorf,

2002). Berg (2007) perceives that in order to present the perception of others in the most forthright manner, a greater reliance on induction is necessary. He further states that the development of categories in any content analysis must drive from inductive reference concerning pattern that emerge from the data. In content analysis the text is coded or broken down, into manageable categories on a variety of levels, for example word, word sense, phrase, sentence, or theme. Information is then obtained after examination of the data. This research adopted the technique of content analysis to analyze the qualitative. This was done by coding the individual transcript data into sentences and themes, categorizing data based on these themes and summarizing all individual data to present a case study

Statistical Modeling

Inferential statistics mainly involved the testing of correlation among the various variables. For nominal data Pearson's correlation together with correlation coefficient was computed. For ordinal data Spearman's Rank correlation coefficient was used. In both cases, a relationship was considered significant if the associated p value was less than 0.05. Multiple regression was done at 95% confidence level and 5% significance level. This was done to establish how much contribution was made by the predictor variables on the dependent variable. ANOVA was also computed to determine the goodness of fit of the model. Finally beta coefficients were computed to determine how much change was caused by a unit change in the predictor variables.

Every value of the independent variable x is associated with a value of the dependent variable y . The regression line for 5 explanatory variables X_1, X_2, X_3, X_4, X_5 was defined as;

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \varepsilon_i$$

Where:

β_0 Constant of the equation

$\beta_0 \dots \beta_5$ The parameters to be estimated;

$X_1 \dots X_2$ The explanatory variables;

X_1 Product Innovation;

X_2 Process Innovation;

X_3 Organizational Innovation;

X_4 Technological Innovation;

X_5 Marketing Innovation;

ε_i The error term

Y Public Sector Performance

3.10 Diagnostic Tests and Tests of Assumptions

It was essential to ensure non-violations of the assumptions of the classical linear regression model (CLRM) before attempting to estimate equation. Estimating these equations when the assumptions of the linear regression are violated runs the risk of

obtaining biased, inefficient, and inconsistent parameter estimates (Brooks, 2008). Consequently, linearity test, the multicollinearity, autocorrelation, heteroscedasticity, and panel unit root tests were conducted to ensure proper specification of equations and as given above

3.10.1 Linearity Test

Linearity means that two variables, "x" and "y," are related by a mathematical equation "y = cx," where "c" is any constant number. The importance of testing for linearity lies in the fact that many statistical methods require an assumption of linearity of data. This occurs when data is sampled from a population that relates the variables of interest in a linear fashion. This means that before using common methods like linear regression, tests for linearity must be performed (Jin, Parthasarathy, Kuyel, Geiger, and Chen, 2005). Linearity test was conducted for each variable. SPSS, statistical software tool through ANOVA testing methods, was used to observe with ease the possibility of the data arriving from a linear population.

3.10.2 Normality Tests

Parametric tests such as correlation and multiple regression analysis require normal data. When data is not normally distributed it can distort the results of any further analysis. Preliminary analysis to assess if the data fits a normal distribution was performed. To assess the normality of the distribution of scores, Kolmogorov-Smirnov test and graphical method approach were used. When non-significant results (> 0.05) are obtained for a score it shows the data fits a normal distribution (Tabachnik & Fidell, 2007).

3.10.3 Multicollinearity

Tests for multi-collinearity were carried out because in severe cases of perfect correlations between predictor variables, multi-collinearity can imply that a unique least

squares solution to a regression analysis cannot be computed Field, (2009). Multi-collinearity inflates the standard errors and confidence intervals leading to unstable estimates of the coefficients for individual predictors. Multi-collinearity was assessed in this study using the Variance Inflation Factor and tolerance.

3.10.4 Heteroscedasticity

Since the data for this research is a cross-section of firms, this raises concerns about the existence of heteroscedasticity. The Classical Linear Regression Models (CLRM) assumes that the error term is homoscedastic, that is, it has constant variance. If the error variance is not constant, then there is heteroscedasticity in the data. Running a regression model without accounting for heteroscedasticity would lead to biased parameter estimates. To test for heteroscedasticity, the Breusch-Pagan/Godfrey test (1979) was used. The null hypothesis of this study was that the error variance is homoscedastic. If the null hypothesis is rejected and a conclusion made that heteroscedasticity is present in the panel data, then this would be accounted for by running a Feasible Generalized Least Squares (FGLS) model.

3.11 Hypothesis Testing

Hypothesis testing was tested using the multiple regression model to show how well it fits the data. The significance of each independent variable were also tested. The Hosmer-Lemeshow's (H-L), goodness of fit will be applied. To evaluate the goodness of fit of the logistic regression model, the Nagelkerke's R squared was used. The test divides a subject into deciles based on predicted probabilities then computes a chi-square from observed and expected frequencies. Then a probability (p) value was computed from the chi-square distribution to test the fit of the logistic model.

The hypothesis was tested on the basis of p value. The rule of thumb was that the research hypothesis was accepted if the p value was 0.05 or less. The research hypothesis was rejected if the p value is greater than 0.05. In other words, if the p-value

is less than 0.05 then it was concluded that the model was significant and had good predictors of the dependent variable and that the results were not be based on chance. If the p-value was greater than 0.05 then the model was not significant and was not used to explain the variations in the dep

CHAPTER FOUR

DATA FINDINGS, ANALYSIS AND DISCUSSION

4.1 Introduction

This chapter presents the responses from public sectors that formed the sample of the study whose main objective was to identify the influence of innovation practices on public sector performance in the Nairobi City County Government. The data was analyzed through descriptive statistics and presented using tables, charts and in prose using qualitative content analysis. The study also made valid replicable inferences on the data in various contexts. Data analysis was conducted to statistically determine whether the independent variables had an effect or influence on the dependent variable.

4.2 Response Rate

The researcher issued 384 questionnaires to the respondent who filled and returned them 350 questionnaires. This gave a response rate of 91.15%. The table 4.1 below shows how the results. According to Mugenda and Mugenda (2003), a response rate of 50% or more is adequate. Babbie (2004) also asserted that return rates of 50% are acceptable to analyze and publish, 60% is good, and 70% is very good. Thus, the respond rate of 91.15% was considered very good.

Table 4.1: Response Rate

Response rate	Frequency	Percentage
Response	350	91.15%
Non-response	34	8.85%
Total	384	100%

4.3 Reliability and Validity

A pilot study was conducted to determine the reliability and the validity of the instruments used for data collection. Reliability defines the extent to which the instruments are error-free and thus ensures consistent measurement across time and items in the questionnaire. Cronbach's alpha which a reliability coefficient was used to indicate how well the items in the set are correlated to each other. It was calculated as the average inter-correlations among the items measuring the construct. A Cronbach's coefficient value of 0.7 was adopted as a threshold minimum value which defined satisfactory reliability (Sekaran, 2008). Table 4.2 shows that all the items included in the variables were consistent they all have the values of Apha above 0.7, which is the recommended value of Alpha.

Table 4.2: Reliability Analysis

Item	Cronbach's Alpha	Number of items	Remark
Product innovation	0.734	6	Accepted
Process innovation	0.701	7	Accepted
Organizational innovation	0.700	5	Accepted
Technological innovation	0.770	6	Accepted
Marketing innovation	0.761	6	Accepted
Public sector performance	0.814	5	Accepted

4.4 Demographic Information

4.4.1 Gender of the Respondent

The study aimed to establish the gender of the respondents who participated in the study. As presented in figure 4.1 majority (71%) of the respondents were male, and 29% were female. The findings imply that the human resource department in the public

service is a male dominated field. According to Ellis, Cutura, Dione, Gillson, Manuel and Thongori (2013), in spite of women being major actors in Kenya's economy, and notably in public sector, men dominate in the sector citing the ratio of men to women in formal sector as 0.74: 0.26.

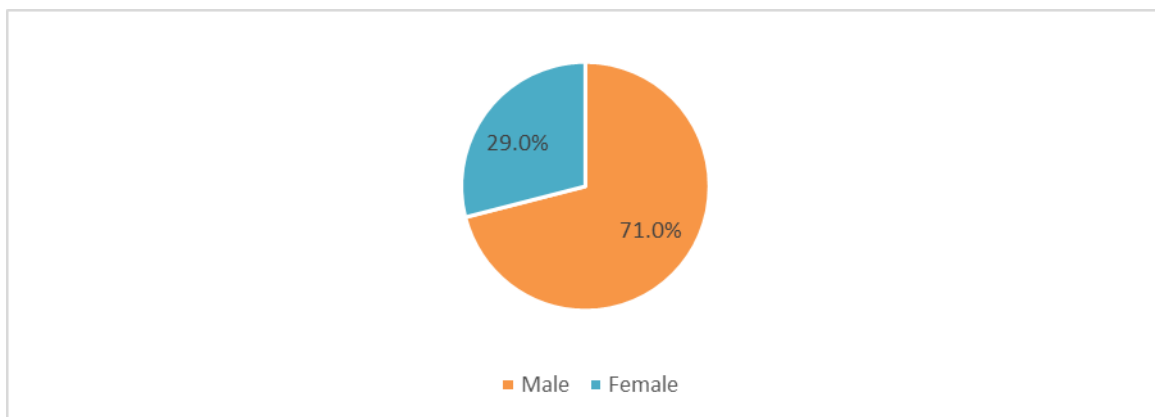


Figure 4.1: Gender of the Respondent

4.4.2 Age Distribution of the Respondents

The Table 4.2 shows the age of the respondents. The table shows that majority (44%) of the respondents were within the age bracket of 41-45 years, 25% of the respondents were within the age bracket of 31-40 years, 18% of the respondents had 46 years and above, 12% of the respondents were within the age bracket of 26-30 years and 1% of the respondents were within the age bracket of 21-25 years. This result indicates that majority of the people were involved in the study were within the age brackets of 41-45 years.

Table 4.3: Age of the Respondents

Age	Frequency	Percent (%)	Valid Percent (%)
21-25 years	4	1	1
26-30 years	41	12	12
31-40 years	88	25	25
41-45 years	154	44	44
46 years and above	63	18	18
Total	350	100	100

4.4.3 Education Level of the Respondent

The study aimed to establish the gender of the respondents who participated in the study. The figure 4.2 shows the education level attained by the respondent. The figure shows that majority (55%) of the respondents had a Bachelor's degree, 25% of the respondents had a masters and 14% of the respondents had a Diploma, 4% a certificate and 2% a PhD. These results indicate that majority of the people who involve in the study were degree holders.

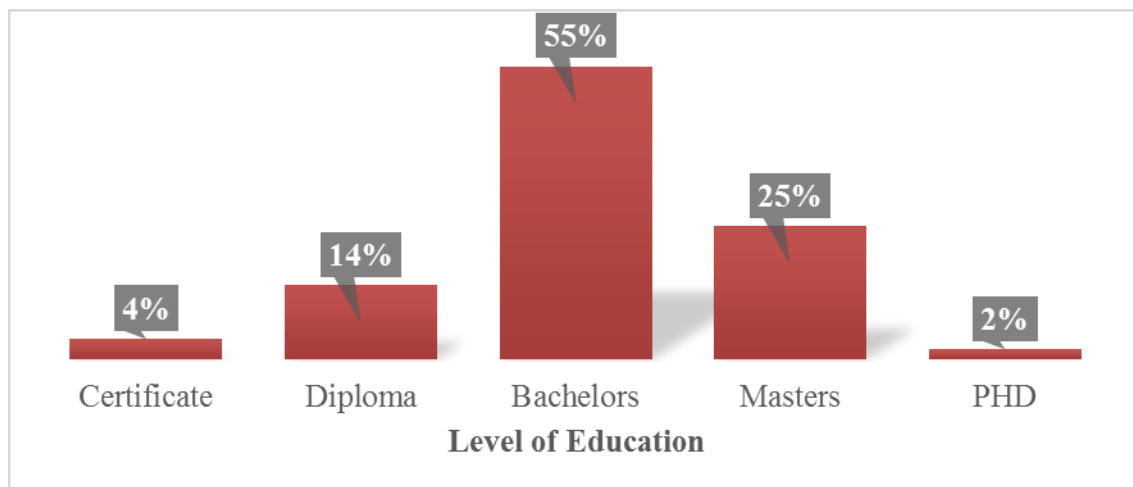


Figure 4.2: Education Level of the Respondent

4.4.4 Work Experience of the Respondent in Public Sector

The Figure 4.3 shows the number of years the respondents have worked in the organization. The figure shows that majority (34.0%) of the respondents have an experience of between 16-20 years, 21% of the respondents have an experience of 21 years and above, 18% of the respondents have an experience between 5-10 years, 16.0% of the respondent have an experience of between 11-15 years and 11.0% of the respondent have worked for 1-4 years in the public sector. These results indicate that majority of the people who involve in the study have worked for 16-20 years in the public sector.

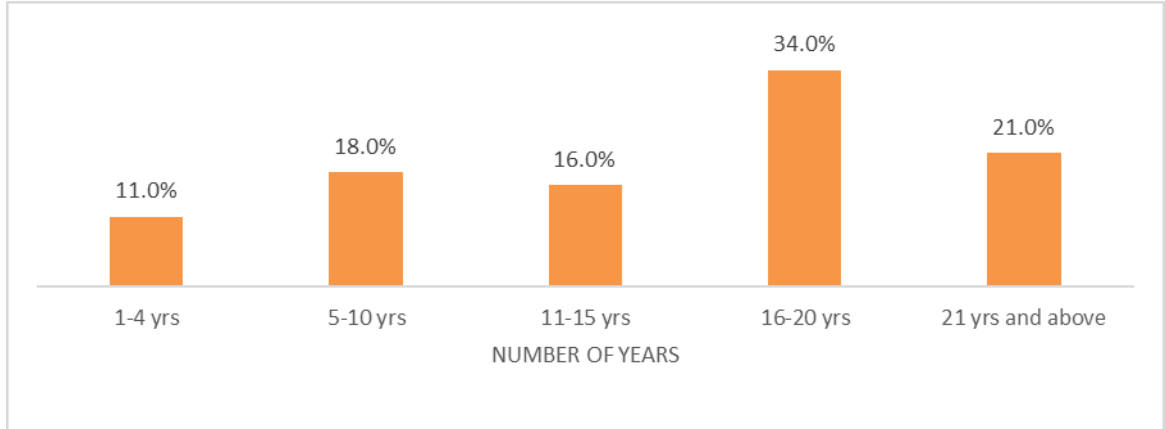


Figure 4.3: Work Experience of the Respondent

4.4.5 Designation of the Respondent

The Figure 4.4 shows the designation of the respondent in the organization they work. The figure shows that majority (60.0%) of the respondents was clerical officers, 23.0% of the respondents were managers and 17.0% of the respondents were supervisors. This result indicates that majority of the people who involve in the study were clerical staffs.

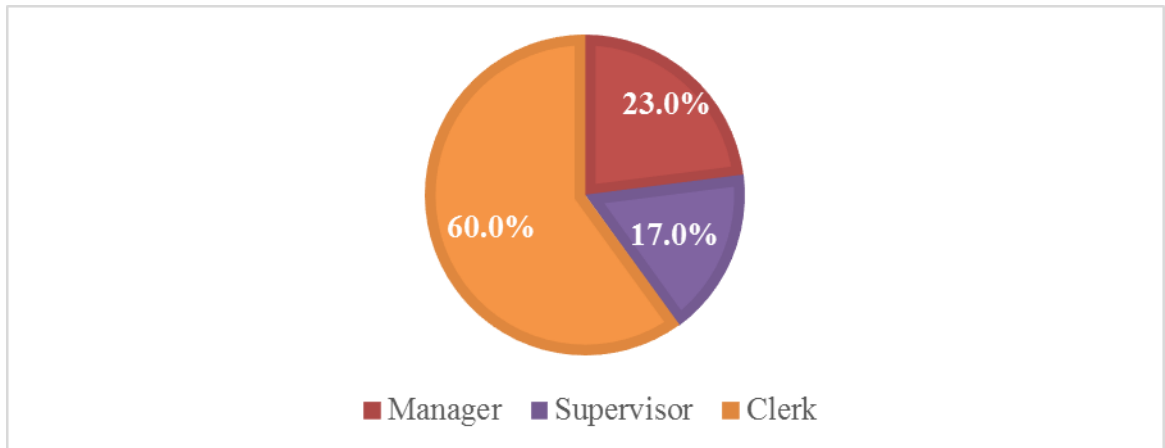


Figure 4.4: Designation of the Respondent

4.4.6 Department of the Respondent

The Figure 4.5 shows the department where the respondent belonged in the organization they work. The figure shows that majority (40.0%) of the respondents belonged to finance department, 33.0% of the respondents belonged to marketing department and 27.0% of the respondents belonged to procurement department. These results indicate that majority of the people who were involved in the study belonged to finance department.

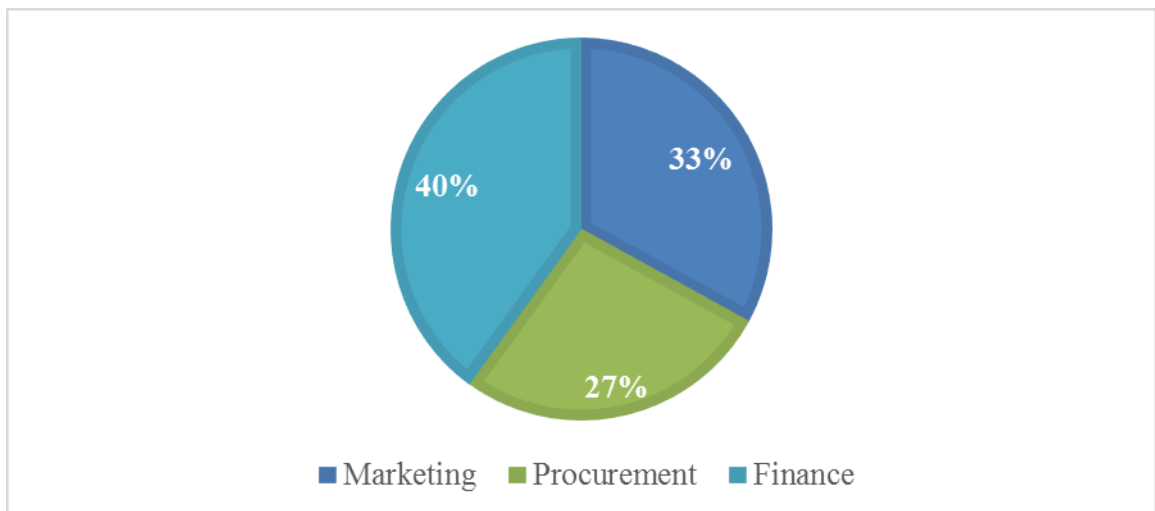


Figure 4.5: Department of the respondent

4.5 Descriptive Statistics

In this section the questions were measured on a scale of 1-5, with 1 indicating strongly disagree, 2-Disagree, 3-not sure, 4-Agree and 5 indicating strongly agree to the question that was asked. From these results a mean of 1 indicate that the respondents strongly disagreed with the question that was asked, a mean of 2 indicate that the respondent disagreed with the question that was asked, a mean of 3 indicate that the respondent were not sure about the question that was asked, a mean of 4 indicate that the respondent were in agreement about they question that was asked and a mean of 5 indicate that the

respondent were in strong agreement with the question that was asked. The standard deviation gives the variations of the response from the mean. The smaller the standard deviation the better the results as it indicates that the response were not far away from the mean response.

4.5.1 Product Innovation

From the findings as shown in Table 4.4, 75.9% of the respondents agreed that the organization introduced new or significantly improved goods, 77.2% agreed that organization introduced new or significantly improved service, 68.2% agreed that the new or significantly improved products introduced in the organization were new to their market, also the 81.5% of the respondents agreed that the new or significantly improved products introduced in the organization were only new to their firm, 73.1% of the respondents agreed that the research and development activities undertaken by the organization created new knowledge to solve scientific and technical problems, 75.1% of the respondents further agreed that the organization engaged in in-house or contracted out activities to design or alter the shape or appearance of goods or services, finally 73.7% of the respondents agreed that acquisition of existing know-how, copyrighted works, patented and no patented inventions by their organization from other enterprises or organizations for the development of new or significantly improved products.

The findings are in line with those of Chigona and Licker (2008) contended that innovation holds the key to the continuity and growth of companies. Skaalsvik & Olsen (2014) argues that strong brands may lead to strong companies, customer loyalty and even strong industries and that a powerful brand can dictate high brand equity. Similarly, Davis (2007) claims that the most valuable resource a business has is the reputation of its brands. Thus, a strong brand as an intangible asset is beneficial and useful because it enables a firm to strategically position itself with regard to competitors (Skaalsvik & Olsen, 2014). Nevertheless, the development of a competitive, sustainable and successful brand becomes the responsibility of everyone working in an organization

(Skaalsvik & Olsen, 2014). Innovative packaging and branding also enables the consumer to identify genuine products from counterfeit ones thus ensuring the safety (Wilson, 2015).

Table 4.4: Descriptive Statistics of Product Innovation

Statement	Strongly Disagree	Disagree	Undecided	Agree	Strongly Agree	Mean	Std. Div.
Did your organization introduce goods innovation: new or significantly improved goods?	6.7%	4.9%	12.5%	36.2%	39.7%	2.34	1.70
Did your organization introduce service innovation: new or significantly improved service?	9.2%	4.6%	9.0%	29.8%	47.4%	2.65	1.82
Were the new or significantly improved products introduced in your organization new to your market	7.2%	12.7%	11.8%	34.1%	34.1%	4.70	0.58
Were the new or significantly improved products introduced in your organization only new to your firm	4.6%	4.3%	9.5%	40.2%	41.3%	4.77	0.42
Research and development activities undertaken by your organization create new knowledge or to solve scientific or technical problems	4.6%	7.5%	14.7%	41.9%	31.2%	4.76	0.45
Did your organization engage in In-house or contracted out activities to design or alter the shape or appearance of goods or services	7.2%	6.9%	10.7%	36.4%	38.7%	4.77	0.49
Acquisition of existing know-how, copyrighted works, patented and no patented inventions, etc. by your organization from other enterprises or organizations for the development of new or significantly improved products.	7.5%	8.4%	10.4%	35.8%	37.9%	4.84	0.40
Average						4.12	0.84

4.5.2 Process Innovation

The questions were measured on a scale of 1-5, with 1 indicating strongly disagree, 2-Disagree, 3-not sure, 4-Agree and 5 indicating strongly agree to the question that was asked. From these results a mean of 1 indicate that the respondents strongly disagreed with the question that was asked, a mean of 2 indicate that the respondent disagreed with the question that was asked, a mean of 3 indicate that the respondent were not sure about the question that was asked, a mean of 4 indicate that the respondent were in agreement about they question that was asked and a mean of 5 indicate that the respondent were in strong agreement with the question that was asked. The standard deviation gives the variations of the response from the mean. The smaller the standard deviation the better the results as it indicates that the response were not far away from the mean response.

Table 4.5 show that 60.1% of the respondents agreed that their organization engaged in acquisition of advanced machinery, equipment, software and buildings to be used for new or significantly improved processes (M=4.92, SD=0.367). 75.4% agreed that their organization organization introduced new or significantly improved methods of manufacturing or producing goods or services (M=4.90, SD=0.302). Further 73.7% of the respondents agreed that their organizations had introduced new or significantly improved logistics, delivery or distribution methods for their inputs, goods or services (M=4.86, SD=0.493). 70.3% respondents agreed that organizations have also introduced new or significantly improved supporting activities for their processes, such as maintenance (M=4.86, SD=0.493).

The findings are in line with those of Viederyte (2016) who stated that process innovation happens when an organization solves an existing problem or performs an existing business process in a radically different way that generates something highly beneficial to those who perform the process, those who rely on the process or both. In addition to the introduction of a radically new approach or technology, process innovation generally requires a longer planning time and support from high-level

management. It's also riskier than incremental improvements and requires a higher level of cultural and structural change (Sergeeva, & Radosavljevic, 2010).

Indermun (2014) define sustainability as the ability of a company to survive and succeed in a dynamic competitive environment. Sustainability is a driving force that is reshaping the business world and will continue to do so. To gain competitive advantage and become successful in this landscape, companies must constantly come up with new ways to drive innovation in business processes, management practices and products and services.

Table 4.5: Descriptive Statistics of Process Innovation

Statement	Strongly Disagree	Disagree	Not Sure	Agree	Strongly Agree	Mean	Std. Deviation
Did your organization introduce new or significantly improved methods of manufacturing or producing goods or services	10.4%	10.7%	18.8%	27.2%	32.9%	4.90	0.30
Did your organization introduce new or significantly improved logistics, delivery or distribution methods for your inputs, goods or services	6.9%	14.5%	3.1%	35.5%	39.9%	4.86	0.49
Did your organization introduce new or significantly improved supporting activities for your processes, such as maintenance systems or operations for purchasing, accounting, or computing	2.3%	12.1%	11.8%	37.3%	36.4%	4.86	0.49
Did your organization engage in acquisition of advanced machinery, equipment, software and buildings to be used for new or significantly improved processes	4.9%	8.4%	16.5%	35.0%	35.3%	4.92	0.37
Acquisition of existing know-how, copyrighted works, patented and no patented inventions, etc. by your organization from other enterprises or organizations for the development of new or significantly improved processes.	4.6%	7.5%	16.5%	35.0%	36.4%	4.80	0.59
Average						4.87	0.45

4.5.3 Organizational Innovation

The questions were measured on a scale of 1-5, with 1 indicating strongly disagree, 2-Disagree, 3-not sure, 4-Agree and 5 indicating strongly agree to the question that was asked. From these results a mean of 1 indicate that the respondents strongly disagreed with the question that was asked, a mean of 2 indicate that the respondent disagreed with the question that was asked, a mean of 3 indicate that the respondent were not sure about the question that was asked, a mean of 4 indicate that the respondent were in agreement about they question that was asked and a mean of 5 indicate that the respondent were in strong agreement with the question that was asked. The standard deviation gives the variations of the response from the mean. The smaller the standard deviation the better the results as it indicates that the response were not far away from the mean response.

According to the Table 4.6, 83.8% who were majority of the respondents agreed that the enterprise introduced new business practices for organizing procedures i.e. supply chain management, business reengineering as shown by a mean and a standard deviation (M=4.86, SD=0.493). Further 84.1% of the agreed that new methods of organizing work responsibilities and decision making introduced i.e. first use of a new system of employee responsibilities, team work, decentralization, integration or de-integration of departments, education/training systems, etc. (M=4.85, SD=0.5). 82.9% of the respondents also agreed that proportion of new products or services typically coming from ideas initially developed outside the firm (M=4.84, SD=0.395), 80.6% agreed that the organization and innovative realignment of workforce influences public sector performance (M=4.83, SD=0.453) and 82.9% of the respondents agreed that management practices influenced public sector performance (M=4.80, SD=0.492).

The findings are in line with those of Van den Bossche *et al*, (2015) who revealed that organisational innovation means the implementation of a new organisational method in the undertaking's business practices, workplace organisation or external relations. Changes in business practices, workplace organisation or external relations that are

based on organisational methods already in use in the undertaking, changes in management strategy, mergers and acquisitions, ceasing to use a process, simple capital replacement or extension, changes resulting purely from changes in factor prices, customization, regular seasonal and other cyclical changes, trading of new or significantly improved products are not considered innovations (Van den Bossche *et al*, 2015).

Razavi (2013) argues that organizational capability approach employed by the managers is the mostly known approach to in innovation management. It suggests that product innovation in the long run is better managed by nurturing and enhancing capabilities of firms as innovation engine. It advocates that superior business performances of the firms depend on the large-scale investment in innovation capability instead of investing in the creation of physical assets.

Table 4.6: Descriptive Statistics of Organizational Innovation

Statement	Strongly Disagree	Disagree	Not sure	Agree	Strongly Agree	Mean	Std. Dev
Did your enterprise introduce new business practices for organizing procedures (i.e. supply chain management, business reengineering?)	2.3%	11.8%	2.0%	48.0%	35.8%	4.86	0.49
Knowledge management, lean production, quality management, etc.)	7.5%	5.2%	3.2%	50.6%	33.5%	4.84	0.51
Were new methods of organizing work responsibilities and decision making introduced (i.e. first use of a new system of employee responsibilities, team work, decentralization, integration or de-integration of departments, education/training systems, etc)	4.9%	8.1%	4.0%	49.4%	33.5%	4.85	0.50
New methods of organizing external relations with other firms or public institutions were introduced by organization (i.e. first use of alliances, partnerships, outsourcing or sub-contracting, etc.)	4.6%	7.2%	7.5%	47.7%	32.9%	4.80	0.53
Was the proportion of new products or services typically coming from ideas initially developed outside the firm	4.9%	8.4%	2.0%	53.5%	31.2%	4.84	0.40
Organization and innovative realignment of workforce influences public sector performance	7.8%	11.8%	4.6%	36.7%	39.0%	4.83	0.45
Management practices influence public sector performance	4.3%	9.8%	2.9%	52.6%	30.3%	4.80	0.49
Average						4.83	0.48

4.5.4 Technological Innovation

The questions were measured on a scale of 1-5, with 1 indicating strongly disagree, 2-Disagree, 3-not sure, 4-Agree and 5 indicating strongly agree to the question that was asked. From these results a mean of 1 indicate that the respondents strongly disagreed with the question that was asked, a mean of 2 indicate that the respondent disagreed with the question that was asked, a mean of 3 indicate that the respondent were not sure about the question that was asked, a mean of 4 indicate that the respondent were in agreement about they question that was asked and a mean of 5 indicate that the respondent were in strong agreement with the question that was asked. The standard deviation gives the variations of the response from the mean. The smaller the standard deviation the better the results as it indicates that the response were not far away from the mean response.

Table 4.7 shows that 75.4% of the respondents agreed that the use of technology was a priority in this organization, 73.9% agreed that the level of technological sophistication considered in the organization was satisfactory, 80.4% agreed that the commercialization of technological product innovations often required the development of new marketing methods, 69.4% agreed that new production technique typically increased productivity only if it was supported by changes in organization, 75.7% agreed that diverse range of information enabled the partner to better respond to internal processes and external market conditions, further 74.3% agreed that information technology skills influenced public sector performance, also 67.9 agreed that information sharing influenced public sector performance while 79.7% agreed that information technology network systems influenced public sector performance.

The findings are in line with those of Diaconu (2011) who revealed that technological innovation comprises activities that contribute to the research, development and design of new products, services or techniques, or to improving existing products, and generates new technological knowledge. Innovation process depends essentially on external conditions; designing of new technologies results from interactions with

customers, suppliers, competitors and various other public and private organizations. However, technological competitiveness resulted from innovation based on in-house R&D activity is an economic development moving force. An innovative company will achieve a high profit rate, giving a signal to other companies, including imitators who, if they have market entrance conditions, will pursue to share profit, resulting in diminishing initial innovator advantage. Information sharing; refers to the official or unofficial sharing of meaningful, timely, and appropriate information between firms and can be defined as parties favorably providing helpful information to their partners (Lee, 2015).

Table 4.7: Descriptive Statistics of Technological Innovation

Statement	Strongly Disagree	Disagree	Not Sure	Agree	Strongly Agree	Mean	Std. Dev
Use of technology is a priority in this organization	5.5%	12.1%	6.9%	35.5%	39.9%	4.80	0.49
The level of technological sophistication considered in the organization was satisfactory	8.1%	8.7%	9.2%	30.3%	43.6%	4.81	0.44
The commercialization of technological product innovations often requires the development of new marketing methods.	4.6%	4.9%	10.1%	40.8%	39.6%	4.67	0.64
New production technique will typically increase productivity only if is supported by changes in organization	5.2%	12.4%	13.0%	38.2%	31.2%	4.38	1.22
Diverse range of information enables the partner to better respond to internal processes and external market conditions	6.9%	8.1%	9.2%	40.2%	35.5%	4.60	0.87
Information technology skills influences public sector performance	4.6%	8.4%	12.7%	35.0%	39.3%	4.77	0.45
Does information sharing influence public sector performance	8.4%	6.4%	17.3%	40.2%	27.7%	4.65	0.63
Information Technology Network systems influences public sector performance	5.8%	8.1%	6.4%	54.3%	25.4%	4.75	0.50
Average						4.68	0.65

4.5.5 Marketing Innovation

The questions were measured on a scale of 1-5, with 1 indicating strongly disagree, 2-Disagree, 3-not sure, 4-Agree and 5 indicating strongly agree to the question that was asked. From these results a mean of 1 indicate that the respondents strongly disagreed with the question that was asked, a mean of 2 indicate that the respondent disagreed with the question that was asked, a mean of 3 indicate that the respondent were not sure about the question that was asked, a mean of 4 indicate that the respondent were in agreement about they question that was asked and a mean of 5 indicate that the respondent were in strong agreement with the question that was asked. The standard deviation gives the variations of the response from the mean. The smaller the standard deviation the better the results as it indicates that the response were not far away from the mean response.

According to Table 4.8, 73.7% of the respondents agree that significant changes to the aesthetic design or packaging of a good or service were introduced, 73.2% agreed that their organization introduced new media or techniques for product promotion, 71.2% agreed that new methods for product placement or sales channels were introduced 75.4% agreed that new methods of pricing goods and services were introduced, 73.9% agreed that their organization benefited from competitors or other enterprises in their industry, 80.4% agreed that there were uncertain demand for innovative goods or services, further 69.4% agreed that future customer engagement influenced public sector performance, finally 75.7% agreed that potential markets were dominated by establishment enterprises.

Tinoco (2012) suggests that Marketing innovation entails the generation and implementation of new ideas for creating, communicating, and delivering value to customers and managing customer relationships and further argues that marketing innovation should be developed concurrently with product innovation. Marketing innovation is the capacity to re-conceive the existing industry model in ways that create

new value for customers, undermine competitors, and produce new wealth for all stakeholders, according to the organizational knowledge literature (Cascio, 2011).

Further, marketing knowledge is a powerful strategic asset and a prerequisite for marketing innovation (Hanvanach, 2013). The persistent belief that innovation is primarily about building better products and technologies leads managers to an overreliance on upstream activities and tools. But downstream reasoning suggests that managers should focus on marketplace activities and tools (Dawar, 2013).

Table 4.8: Descriptive Statistics of Marketing Innovation

Statement	Strongly Disagree	Disagree	Not Sure	Agree	Strongly Agree	Mean	Std. Dev
Were significant changes to the aesthetic design or packaging of a good or service introduced	7.5%	8.4%	10.4%	35.8%	37.9%	4.76	0.45
Did your organization introduce new media or techniques for product promotion (i.e. the first-time use of a new advertising media, a new brand image, introduction of loyalty cards, etc)	2.9%	12.4%	11.6%	37.9%	35.3%	4.71	0.46
New methods for product placement or sales channels introduced (i.e. first-time use of franchising or distribution licenses, direct selling, exclusive retailing, new concepts for product presentation, etc.)	6.1%	4.7%	18.0%	36.6%	34.6%	4.82	0.39
New methods of pricing goods or services were introduced (i.e. first-time use of variable pricing by demand, discount systems, etc.)	5.5%	12.1%	6.9%	35.5%	39.9%	4.48	0.50
Did your organization benefit from competitors or other enterprises in your industry	8.1%	8.7%	9.2%	30.3%	43.6%	4.54	0.54
Uncertain demand for innovative goods or services	4.6%	4.9%	10.1%	40.8%	39.6%	4.58	0.52
Future customer engagement influences public sector performance	5.2%	12.4%	13.0%	38.2%	31.2%	4.52	0.54
Potential markets dominated by establishment enterprises	6.9%	8.1%	9.2%	40.2%	35.5%	4.59	0.53
Average						4.63	0.49

4.5.6 Public Sector Performance

The questions were measured on a scale of 1-5, with 1 indicating strongly disagree, 2-Disagree, 3-not sure, 4-Agree and 5 indicating strongly agree to the question that was asked. From these results a mean of 1 indicate that the respondents strongly disagreed with the question that was asked, a mean of 2 indicate that the respondent disagreed with the question that was asked, a mean of 3 indicate that the respondent were not sure about the question that was asked, a mean of 4 indicate that the respondent were in agreement about they question that was asked and a mean of 5 indicate that the respondent were in strong agreement with the question that was asked. The standard deviation gives the variations of the response from the mean. The smaller the standard deviation the better the results as it indicates that the response were not far away from the mean response.

Table 4.9 show that 77.2% of the respondents agreed that public sector performance in Nairobi had been effective, 68.2% agreed that transparency influenced public sector management, 81.5% agreed that public sector performance was heavily reliant on accountability of public servants, 73.1% agreed that efficiency influenced public sector performance, 75.1% agreed that both human and non-human resource influenced public performance while 73.7% of the respondents agreed that skills had direct relationship on public sector performance

According to Zhonghua (2012) in light of traditional enterprise performance measurement, public sectors performance measurement shows two significant characteristics in the process of implementation and improvement: First, the multidimensional nature of measuring objectives. Public sectors not only have the economic attributes, but also bear on non-economic obligations of environmental benefits and social benefits, which needs to set performance targets to balance multiple objectives, multi-agent interests.

Ulrike Mandl, Adriaan Dierx and Fabienne Ilzkovitz (2008) therefore suggests that, effectiveness, illustrating the success with which resources were used in order to achieve the objectives pursued, is harder to achieve than efficiency, since the latter is not influenced by outside factors. The effectiveness has as influence factors the outputs, the outcomes and the environmental factors

Table 4.9: Descriptive Statistics of Public Sector Performance

Statement	Disagree	Disagree	Not Sure	Agree	Agree	mean	Std. Dev
Do you think public sector performance in Nairobi has been effective	9.2%	4.6%	9.0%	29.8%	47.4%	4.58	0.57
Transparency influences public sector management	7.2%	12.7%	11.8%	34.1%	34.1%	4.66	0.52
Public sector performance is heavily reliant on accountability of public servants	4.6%	4.3%	9.5%	40.2%	41.3%	4.59	0.49
Efficiency influences public sector performance	4.6%	7.5%	14.7%	41.9%	31.2%	4.72	0.45
Both human and non-human resource influences public performance	7.2%	6.9%	10.7%	36.4%	38.7%	4.72	0.45
Skills have a direct relationship with public sector performance	7.5%	8.4%	10.4%	35.8%	37.9%	4.65	0.59
Average						4.65	0.51

4.6 Diagnostic Tests / Tests of Assumption

Linear regression makes assumptions about the data used including that it is normally distributed, there is linearity, and there is no multi-collinearity and no heteroscedasticity. If these assumptions are not met by the data used statistical results may yield inappropriate results. Use of data which does not conform to these assumptions may lead to type I or type II errors or may lead to over or underestimation of statistical significance (Osborne & Waters, 2002). The results of the tests for normality, linearity, heteroscedasticity and multi-collinearity are presented below.

4.6.1 Normality Test

It was necessary to carry out the normality test as many of the statistical procedures used in the study including correlation, regression and t- test were based on the assumption that the data follows a normal distribution. This assumes that the population from which the sample was drawn was normally distributed (Ghasemi & Zahedias, 2012). To test for normality of data using Kolmogorov-Smirnov, the null hypothesis posits that the data is normally distributed that is, not significantly different from a normal distribution. The results presented in the table 4.10 shows that the variables had p-value which were greater than 0.05 and thus the null hypothesis were not rejected. It was thus concluded that the variables were normally distributed. This implies the data is suitable for analysis using correlation and regression analysis. Graphical method results are shown in figure 4.5.1. The results in indicate that the residuals are normally distributed.

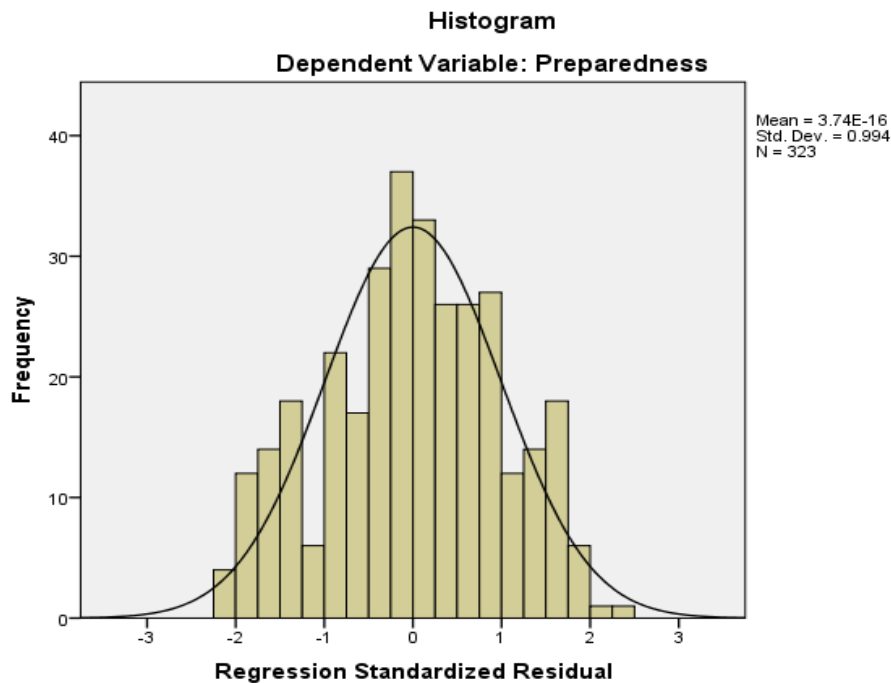


Figure 4.6: Test for Normality

Table 4.10: Results of Kolmogorov-Smirnov Test for Normality

Variable	K-S Test Statistic	Df	Sig.
Product Innovations	2.191	350	0.077
Process Innovation	2.167	350	0.057
Organizational Innovation	3.168	350	0.063
Technological Innovations	4.242	350	0.076
Marketing Innovation	2.139	350	0.096
Public Sector Performance	2.225	350	0.073

4.6.2 Test for Multi-collinearity

Tests for multi-collinearity were carried out because in severe cases of perfect correlations between predictor variables, multi-collinearity can imply that a unique least squares solution to a regression analysis cannot be computed (Field, 2009). Multi-collinearity inflates the standard errors and confidence intervals leading to unstable estimates of the coefficients for individual predictors. Multi-collinearity was assessed in this study using the Variance Inflation Factor and tolerance. The results of the tests of multi-collinearity are presented in Table 4.11. Collinearity statistics indicated a Variance Inflation Factor (VIF) < 5 and Tolerance > 0.2 , an indication that the variables were not highly correlated, hence no existence of Multi-collinearity. This is an indication of the suitability of the variables for multiple regression. The cut off for VIF is 10 and should a variable have had anything over and above 11 it should have been dropped.

Table 4.11: Multi-collinearity Test Results

Variables	Tolerance	VIF
Product innovations	0.687	1.455
Process Innovation	0.539	1.854
Organizational innovation	0.513	1.949
Technological innovations	0.626	1.597
Marketing innovation	0.525	1.712

4.5.5.3 Test for Heteroscedasticity

Since the data for this research is obtained from a cross-section of firms, it could raise concerns about the existence of heteroscedasticity. The Breusch-Pagan/Cook-Weisberg test was carried out to confirm if the error variance was not constant in which case there could have been heteroscedasticity in the data. Running a regression model without accounting for heteroscedasticity may lead to biased parameter estimates. To test for heteroscedasticity was necessary to make a hypothesis in respect to the error variance and test the error variances to confirm or reject the hypothesis.

For the purposes of applying the Breusch-Pagan/Cook-Weisberg test, a null hypothesis (H_0) of this was formulated that the error variance is not heteroscedastic while the alternative hypothesis (H_1) was that the error variance is heteroscedastic. The Breusch-Pagan/Cook-Weisberg test models the error variance as $\sigma^2_i = \sigma^2_h(z_i\alpha)$ where z_i is a vector of the independent variables.

It tests $H_0:\alpha=0$ versus $H_1:\alpha\neq 0$. Table 4.12 shows the results obtained when the Breusch-Pagan/Cook-Weisberg test was conducted. The results in Table 4.11 indicate that the p value is greater than 0.05 (0.087) and so the null hypothesis set up for this test was

supported. It was found that the variables under this study did not suffer from heteroscedasticity.

Table 4.12: Results of Breusch-Pagan / Cook-Weisberg Test for Heteroscedasticity

Breusch-Pagan / Cook-Weisberg test for heteroscedasticity

$$\text{chi2}(1) = 2.754$$

$$\text{Prob} > \text{chi2} = 0.087$$

4.5.5.4 Test for Independence

This study used the Wooldridge test for serial correlation to test for the presence of autocorrelation in the linear panel data. Serial autocorrelation is a common problem experienced in panel data analysis and has to be accounted for in order to achieve the correct model specification. According to Wooldridge (2002), failure to identify and account for serial correlation in the idiosyncratic error term in a panel model would result into biased standard errors and inefficient parameter estimates. The null hypothesis of this test was that the data had no serial autocorrelation. If serial autocorrelation was detected in the study data, then the feasible generalized least square (FGLS) estimation procedure would be adopted. The test for autocorrelation was made using Durbin and Watson (1951) test. Durbin-Watson (DW) is a test for first order autocorrelation that is it tests only for a relationship between an error and its immediately previous value. This study used Durbin-Watson (DW) test to check that the residuals of the models were not auto correlated since independence of the residuals is one of the basic hypotheses of regression analysis.

The Durbin-Watson statistic ranges in value from 0 to 4. A value above 2 indicates non-autocorrelation; a value toward 0 indicates positive autocorrelation; a value toward 4 indicates negative autocorrelation. Results indicate that the overall statistic was 2.38 as shown in Table 4.13. Therefore, the null hypothesis was not rejected and therefore the data was not auto correlated.

Table 4.13: Durbin-Watson Results

Variable	Durbin-Watson	P-Value
Product Innovations	2.552	0
Process Innovation	2.332	0
Organizational Innovation	2.231	0
Technological Innovations	2.402	0
Marketing Innovation	2.721	0
Public Sector Performance	2.134	0
Overall	2.38	0

4.6 Inferential Statistics

4.6.1 Correlation Analysis

Correlation between variables is a measure of how well the variables are related. This is represented by r . The most common measure of correlation in statistics is the Pearson Correlation (technically called the Pearson Product Moment Correlation or PPMC), which shows the linear relationship between two variables. Results are between -1 and 1. A result of an r value of -1 means that there is a perfect negative correlation between the two values at all, while a result of $r = 1$ means that there is a perfect positive correlation between the two variables. Result of 0 means that there is no correlation

between the two variables (Gujarat, 2004). The Pearson correlation results from this study are shown in Table 4.14 and it reveals that there is an r value of 0.786 which is a strong positive correlation between product innovation and public-sector performance, there is an r value of 0.802 which is a strong positive correlation between process innovation and public-sector performance. Therefore, an increase in the process innovation affects public-sector performance positively.

Table 4.14 reveals that there is an r value of 0.594 which is positive correlation between organizational innovation and public-sector performance. The figure indicates that a positive relationship exists. Therefore, an increase in the organizational innovations affects public-sector performance process positively. The Pearson correlation results reveals that there is an r value of 0.853 which is a strong positive correlation between technological innovation and public-sector performance. A positive relationship exists and therefore, an increase in the technological innovation affects public-sector performance positively. The results further reveals that there is an r value of 0.454 which is a positive correlation between marketing innovation and public-sector performance. A positive relationship exists and therefore, an increase in the marketing innovation affects public-sector performance positively.

Table 4.14: Pearson Correlation Coefficient Matrix

		Public-sector performance	Product innovations	Process Innovation	Organizational innovation	Technological innovations	Marketing innovation
Public-sector performance	Pearson Correlation	1.000					
	Sig. (2-tailed)						
Product innovations	Pearson Correlation	0.786**	1.000				
	Sig. (2-tailed)	0.000					
Process Innovation	Pearson Correlation	.802**	.165**	1.000			
	Sig. (2-tailed)	0.000	0.002				
Organizational innovation	Pearson Correlation	.594**	0.059	.204**	1.000		
	Sig. (2-tailed)	0.000	0.278	0.000			
Technological innovations	Pearson Correlation	.853**	.175**	.219**	.396**	1.000	
	Sig. (2-tailed)	0.000	0.001	0.000	0.000		1.000
Marketing innovation	Pearson Correlation	.454**	0.059	.124**	.214**	0.039	
	Sig. (2-tailed)	0.000	0.278	0.000	0.000	0.278	0.213

** Correlation is significant at the 0.01 level (2-tailed).

4.6.2 Regression Analysis

The results in Table 4.15 present the fitness of model used in explaining the relationship between product innovations, process innovation, organizational innovation, technological innovations, marketing innovation and on the dependent variable which was public-sector performance. The independent variables (product innovations, process

innovation, organizational innovation, technological innovations and marketing innovation) were found to be satisfactory variables in determining public-sector performance. This was supported by the coefficient of determination, R-square of 0.738. This means that product innovations, process innovation, organizational innovation, technological innovations and marketing innovation explain 73.8% of the variations in the dependent variable which is public-sector performance. These results further mean that the model applied to link the relationship of the variables was satisfactory.

Table 4.15: Model Summary

Model	Estimates
R	.859
R Square	0.738
Adjusted R Square	0.642
Std. Error of the Estimate	0.356202

The (ANOVA) results in table 4.16 indicated that the model was statistically significant. Further, the results implied that the independent variables were good predictors of public sector performance in Nairobi County. This was supported by an F_{cal} of 14.291 which indicated that the overall model was significant as it was more than the F_{crit} value of 3.88 with (5, 94) degrees of freedom at the $P=0.05$ level of significance. The reported $p=0.000$ was less than the conventional probability of 0.05 significance level. This shows goodness of fit of the model fitted for this study.

Table 4.16: Analysis of Variance (ANOVA)

	Sum of Squares	Df	Mean Square	F	Sig.
Regression	1.715	5.000	0.343	14.291	0.000
Residual	2.249	344.000	0.024		
Total	3.965	349			

Beta coefficients results in table 4.17 showed that Product innovation had a positively and significant influence on the Public-Sector Performance ($\beta=0.250$, $p=0.007$). This implies that one unit increase in product innovation will lead to a 0.250 increase in performance. The table indicated that Process innovation had a positively and significantly influence on Public-Sector Performance ($\beta=0.206$, $p=0.000$), implying a unit increase in progress innovation will lead to a 0.206 increase in performance. Organizational innovation had a positively and significantly influence on Public-Sector Performance ($\beta=0.327$, $p=0.000$), implying a unit increase in organizational innovation will lead to a 0.327 increase in performance. Technological innovation had a positively and significantly influence on Public-Sector Performance ($\beta=0.645$, $p=0.005$). This implies that a unit increase in technological innovation will lead to a 0.645 increase in performance. It was further established that Marketing innovation was positively and significantly influenced Public-Sector Performance ($\beta=0.431$, $p=0.000$), implying that a unit increase in marketing innovation will lead to a 0.431 increase in performance.

Table 4.17: Regression coefficient

	Unstandardized Coefficients		t	Sig.
	B	Std. Error		
(Constant)	1.828	0.290	6.305	0.000
Product innovations	0.250	0.043	5.814	0.007
Process Innovation	0.206	0.055	3.755	0.000
Organizational innovation	0.327	0.090	3.626	0.000
Technological innovations	0.645	0.052	12.404	0.005
Marketing innovation	0.431	0.043	7.541	0.000

The joint regression optimal model was as shown below

$$Y = 1.828 + 0.250X_1 + 0.206X_2 + 0.327X_3 + 0.645X_4 + 0.431X_5$$

Where;

Y = Public-Sector Performance

X₁ = Product innovations

X₂ = Process Innovation

X₃ = Organizational innovation

X₄ = Technological innovations

X₅ = Marketing innovation

4.10 Hypotheses Testing

Multiple linear regression was used to test the hypothesis. The criteria used in hypothesis testing was that research hypothesis was to be accepted if the p value is 0.05 or less. The research hypothesis was to be rejected if the p value is greater than 0.05. In other words, if the p-value is less than 0.05 then it was concluded that the model was significant and had good predictors of the dependent variable and that the results was based on chance. If the p-value was greater than 0.05 then the model was not significant and was used to explain the variations in the dependent variable.

4.10.1 Summary of Results of Hypotheses Test

The results of the regression analysis indicated that all the four research hypotheses were rejected and the alternative hypotheses accepted. Results are shown in table 4.28.

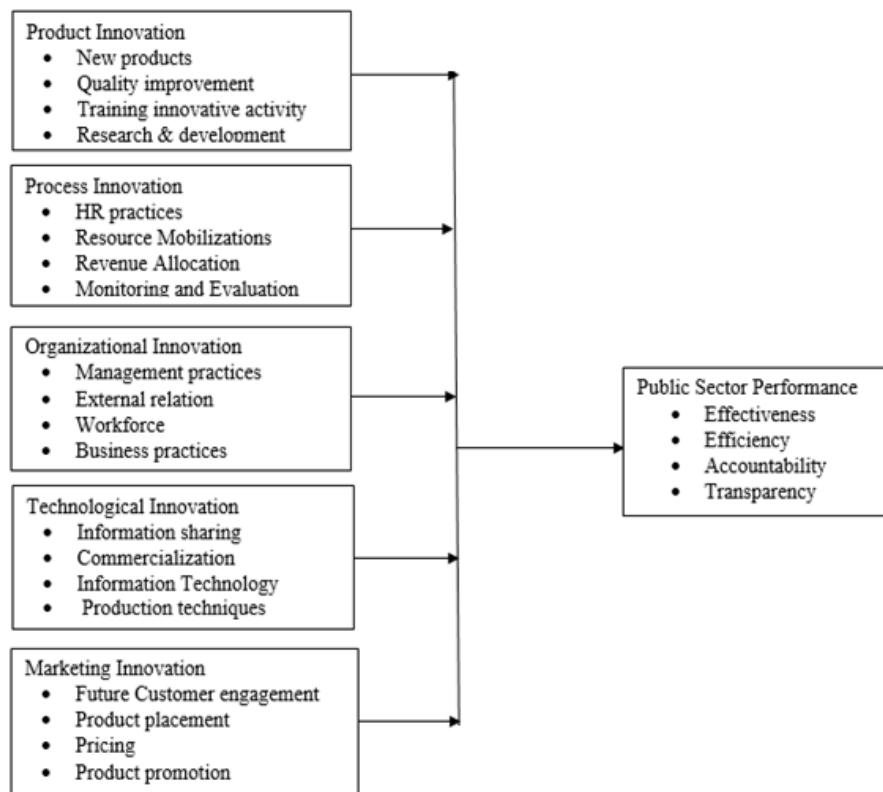
Table 4.18: Summary of the Hypotheses Results

Objective No	Objective	Hypothesis	Rule	p-value	Comment
One	To determine the influence of product innovation on public sector performance in Nairobi City County.	H₀₁ : There is no significant relationship between product innovation and public sector performance	Reject H₀₁ if p value < 0.05 and accept H ₁	p < 0.05	The null hypothesis was rejected; therefore, there is a positive significant relationship between Product innovation and public sector performance in Nairobi City County, Kenya
Two	To examine the influence of process innovation on public sector performance in Nairobi City County, Kenya.	H₀₂ : There is no significant relationship between process innovation and public sector performance	Reject H₀₂ if p value < 0.05 and accept H ₁	p < 0.05	The null hypothesis was rejected; therefore, there is a positive significant relationship between Process innovation and public sector performance in Nairobi City County, Kenya
Three	To establish the influence of marketing innovation on public sector performance in Nairobi City County, Kenya.	H₀₃ : There is a positive significant relationship between marketing innovation and public sector performance in Nairobi City County.	Reject H₀₃ if p value < 0.05 and accept H ₁	p < 0.05	The null hypothesis was rejected; therefore, there is a positive significant relationship between marketing innovation and public sector performance in Nairobi City County.
Four	To evaluate the influence of technological innovation on public sector performance in Nairobi City County, Kenya.	H₀₄ : There is no significant relationship between of technological innovation and public sector performance in Nairobi City County, Kenya	Reject H₀₄ if p value < 0.05	p < 0.05	The null hypothesis was rejected; therefore, there is a positive significant relationship between technological innovation and public sector performance in Nairobi City County, Kenya.
Five	To establish the influence of organizational innovation on public sector performance in the public sector in Nairobi City County Kenya.	H₀₅ : There is no significant relationship between organizational innovation and public sector performance in Nairobi City County, Kenya.	Reject H₀₅ if p value < 0.05	The p value < 0.05	The null hypothesis was rejected therefore there is a positive significant relationship between organizational innovation and public sector performance in Nairobi City county, Kenya.

4.11 The Optimal Model

Based on the outcomes of the requisite and inferential analysis, the following figure is the optimal model for the study. All the variables were found to be valid; none of them was rendered redundant. There was no need for revision as hypotheses were tested and all the variables statistically established to be relevant. The revised conceptual framework is presented in the figure 4.7

The revised conceptual framework is presented in the figure 4.7



Independent Variables

Dependent Variable

Figure 4.7: Revised Model (Optimal model)

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter presents the summary of major findings of the study, relevant discussions, conclusions and the recommendations. The study sought to examine the influence of innovation practices on performance of the public sector in Nairobi City County, Kenya. The summary of key findings, conclusions and recommendations is done in line with the objectives of the study based on the output of the descriptive, diagnostics and inferential statistical analyses that also guided the testing of the research hypothesis of the study.

5.2 Summary of Findings

The main purpose of this study was to empirically establish the influence of innovation practices on public sector performance in Nairobi City County, Kenya. The specific objectives included product innovation, process innovation, organizational innovation, technological innovation, marketing innovation and performance. The population of the study was all the civil servants in the public sector in Nairobi City County. The target population was 32, 109 staff, from which a sample of 384 was selected. A total of 350 questionnaires were filled and returned.

5.2.1 Influence of Product Innovation on the Public-Sector Performance

The first objective of the study was to determine the influence of product innovation on public sector performance in Nairobi City County, Kenya. Various tests were carried out

to detriment the relationship that existed between the two variables. The study found that product innovation had a strong positive significant relationship with performance, $r = .786$, $p = .000$. Multiple linear regression analysis was used to test the hypothesis which indicated that there is a positive significant relationship between product innovation and performance in the public sector in Nairobi City County, Kenya. The results of coefficients to the model estimates were significant at the 0.05 level of significance. This was because the significance was 0.000, which was less than 0.05. This indicated that the research hypothesis was rejected and it was therefore concluded that there is a positive significant relationship between product innovation and performance in the public sector in Nairobi City County, Kenya.

This finding is supported by the coefficient of determination which shows that unit increase in product innovation will lead to an increase of 0.250 in the public-sector performance in Nairobi County. Since P-value is 0.000 which is less than 0.05, the impact of product innovation on public sector performance is statistically significant and hence the accept alternate hypothesis was accepted.

5.2.2 Influence of Process Innovation on Public Sector Performance

The second objective of the study was to determine the influence of process innovation on public sector performance in Nairobi City County, Kenya. Various tests were carried out to detriment the relationship that existed between the two variables. The study found that process innovation had a moderate positive significant relationship with performance, $r = .802$, $p = .000$. Multiple linear regression analysis was used to test the hypothesis which indicated that there is a positive significant relationship between

process innovation and performance in the public sector in Nairobi City County, Kenya. The results of coefficients to the model estimates were significant at the 0.05 level of significance. This was because the significance was 0.000, which was less than 0.05. This indicated that the research hypothesis was rejected and it was therefore concluded that there is a positive significant relationship between process innovation and performance in the public sector in Nairobi City County, Kenya.

This finding is supported by the coefficient of determination which shows that unit increase in product innovation will lead to an increase of 0.206 in the public-sector performance in Nairobi County. Since P-value is 0.007 which is less than 0.05, the impact of product innovation on public sector performance is statistically significant and hence the accept alternate hypothesis was accepted.

5.2.3 Influences of organizational innovation on public sector performance

The third objective of the study was to establish how organizational innovation influences public sector performance in Nairobi County. Various tests were carried out to determine the relationship that existed between the two variables. The study found that organizational innovation had a moderate positive significant relationship with performance, $r = .594$, $p = .000$. Multiple linear regression analysis was used to test the hypothesis which indicated that there is a positive significant relationship between process innovation and performance in the public sector in Nairobi City County, Kenya. The results of coefficients to the model estimates were significant at the 0.05 level of significance. This was because the significance was 0.000, which was less than 0.05. This indicated that the research hypothesis was rejected and it was therefore concluded

that there is a positive significant relationship between organizational innovation and performance in the public sector in Nairobi City County, Kenya.

This finding is supported by the coefficient of determination which shows that unit increase in product innovation will lead to an increase of 0.327 in the public-sector performance in Nairobi County. Since P-value is 0.000 which is less than 0.05, the impact of product innovation on public sector performance is statistically significant and hence the accept alternate hypothesis was accepted.

5.2.4 Influence of technological innovation on public sector performance

The fourth objective of the study was to establish how technological innovation influences public sector performance in Nairobi County. Various tests were carried out to determine the relationship that existed between the two variables. The study found that technological innovation had a strong positive significant relationship with performance, $r = .853$, $p = .000$. Multiple linear regression analysis was used to test the hypothesis which indicated that there is a positive significant relationship between technological innovation and performance in the public sector in Nairobi City County, Kenya. The results of coefficients to the model estimates were significant at the 0.05 level of significance. This was because the significance was 0.000, which was less than 0.05. This indicated that the research hypothesis was rejected and it was therefore concluded that there is a positive significant relationship between technological innovation and performance in the public sector in Nairobi City County, Kenya.

This finding is supported by the coefficient of determination which shows that unit increase in technological innovation will lead to an increase of 0.645 in the public-sector

performance in Nairobi County. Since P-value is 0.005 which is less than 0.05, the impact of technological innovation on public sector performance is statistically significant and hence the accept alternate hypothesis was accepted.

5.2.5 Marketing innovation on the public-sector performance in Nairobi County

The fifth objective of the study was to establish how marketing innovation influences public sector performance in Nairobi County. Various tests were carried out to determine the relationship that existed between the two variables. The study found that marketing innovation had a moderate positive significant relationship with performance, $r = .454$, $p = .000$. Multiple linear regression analysis was used to test the hypothesis which indicated that there is a positive significant relationship between marketing innovation and performance in the public sector in Nairobi City County, Kenya. The results of coefficients to the model estimates were significant at the 0.05 level of significance. This was because the significance was 0.000, which was less than 0.05. This indicated that the research hypothesis was rejected and it was therefore concluded that there is a positive significant relationship between marketing innovation and performance in the public sector in Nairobi City County, Kenya.

This finding is supported by the coefficient of determination which shows that unit increase in marketing innovation will lead to an increase of 0.431 in the public-sector performance in Nairobi County. Since P-value is 0.000 which is less than 0.05, the impact of marketing innovation on public sector performance is statistically significant and hence the accept alternate hypothesis was accepted.

5.3 Conclusion

Based on the findings of the study, it can be concluded that product innovation positively influences public sector performance. The relationships were found to be statistically significant given that the p value was less than 0.05. Improved quality of goods and services in any organization will highly influence performance of public sector as seen in Nairobi County. Given the fore going it can be concluded that an improvement in product innovation will lead to improved performance in the public sector in Nairobi City County.

The findings of the study indicated that there was a positive relationship between process innovation and performance. It can therefore be concluded that process innovation positively influences public sector performance. The relationships were found to be statistically significant given that the p value was less than 0.05. Improved methodologies and procedures of innovation practices in any organization will highly influence performance of public sector as seen in Nairobi County. Given the fore going it can be concluded that an improvement in process innovation will lead to improved performance in the public sector in Nairobi City County.

The research findings indicated that there was a positive relationship between organizational innovation and public-sector performance in Nairobi County. It can therefore be concluded that organizational innovation positively influences public sector performance. The relationships were found to be statistically significant given that the p value was less than 0.05. Organizational restructuring, re-design and review will lead to improvement in performance of public sector as seen in Nairobi County. Given the fore going it can be concluded that an improvement organizational innovation will lead to improved performance in the public sector in Nairobi City County.

The research findings indicated that there was a positive relationship between marketing innovation and public-sector performance in Nairobi County. It can therefore be

concluded that marketing innovation positively influences public sector performance. The relationships were found to be statistically significant given that the p value was less than 0.05. Market innovations such as environmental analysis , response to change and aggressive anti-competitors will lead to improvement in performance of public sector as seen in Nairobi County. Given the fore going it can be concluded that an improvement marketing innovation will lead to improved performance in the public sector in Nairobi City County.

The research findings indicated that there was a positive relationship between technological innovation and public-sector performance in Nairobi County. It can therefore be concluded that technological innovation positively influences public sector performance. The relationship was found to be statistically significant given that the p value was less than 0.05. Technological innovations such as use of IT in communication and service delivery will lead to improvement in performance of public sector as seen in Nairobi County. Given the fore going it can be concluded that an improvement technological innovation will lead to improved performance in the public sector in Nairobi City County.

5.3 Recommendations

The study findings indicated that there exist positive relationships between product innovation, process innovation, organizational innovation, marketing innovation & technological innovation and performance. The study therefore makes the following recommendations:

The Republic of Kenya and Public Sector in Nairobi City County, Kenya should stipulate policies that provide and enhance platforms for product innovation so as to improve performance in the public sector in Nairobi City County. There is need also to

invest in product innovation strategies that would enhance new products, quality improvement, research & development and training on innovative product activities.

The Republic of Kenya and Public Sector in Nairobi City County, Kenya should stipulate policies that provide and enhance platforms for process innovation so as to improve performance in the public sector in Nairobi City County. There is need also to invest in process innovation strategies that would optimise the HR practices around innovation, resource mobilization , revenue allocation and monitoring and evaluation to ensure efficiency in the innovation practices. These recommendations are aimed at improving the level of innovation practices in Nairobi City county.

The Republic of Kenya and the Public Sector in Nairobi City County, Kenya should stipulate policies that provide and enhance platforms for organizational innovation so as to improve performance in the public sector in Nairobi City County. There is need also to invest in organizational innovation strategies that would ensure improved management practices, improve external relationships, improve the workforce commitment to innovation and generally improve the business practices.

The Republic of Kenya and the Public Sector in Nairobi City County, Kenya should stipulate policies that provide and enhance platforms for technological innovation so as to improve performance in the public sector in Nairobi City County. There is need also to invest in technological innovation strategies including those that enhance information sharing, commercialization, and information technology as well as production

techniques. The study recommends that addressing the above strategies would lead to improvement in performance in the public sector in Nairobi City County.

The Republic of Kenya and the Public Sector in Nairobi City County, Kenya should stipulate policies that provide and enhance platforms for marketing innovation so as to improve performance in the public sector in Nairobi City County. There is need also to invest in marketing innovation strategies including pricing, future customer engagement, product placement and product promotional avenues so as to improve performance in the public sector.

5.5 Areas for Further Research

In this section, suggestions for further research in areas related to this study are given. In future, it is recommended that research be done to address the limitations of this study.

This study considered influence of innovation practices in public sector performance only in Nairobi County a further study is recommended to perform the same study in other counties. Also, a comparative study on influence of innovation practices in public sector performance can be done per counties.

It would be interesting to explore how the results obtained when the methods applied in this study are applied in other contexts for example in other counties at higher or lower stages of development. It would be worthwhile establishing the extent to which the findings of this study are generalizable to other industries, sectors or settings.

Future researchers could also introduce different variables other than the ones used and test for moderation or mediating effect of such variables on the relationship between

innovation practices and performance. Studies using other additional variables, such as organization culture, government regulation as moderators or mediators can be carried out to gain further insights into the relationship.

The current study is cross-sectional other scholars can carry out the study as a longitudinal study. Since it is recommended to have continuous savings for retainment practices in place, a longitudinal study will show whether the findings vary over time. It could also reveal how the practices affect performance over time. Further research could also carry out in-depth studies on specific companies or groups of companies to analyze further the reasons for certain results specific to them.

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APPENDICES

Appendix I: Introduction letter

January 2017.

Dear Participant:

The undersigned is conducting research on influence of innovation practices on public sector performance in Nairobi city county government.

One of my research tools is a questionnaire which is intended to gather information that will enable the successful completion of the study. You have been identified as a significant player in this field, and your input in this research will be valuable.

Your kind response to the questions with honesty will be greatly appreciated. Kindly note that as a respondent, the information you will provide will be confidential, in addition this questionnaire will be used for academic purpose only. Feel free to express your most genuine opinion in each of the questions. Thank you for your co-operation.

The information that you provide will be treated in strict confidence. I thank you in advance for your sacrifice of your time to fill the questionnaire.

Fernando Wangila

Reg. No. HD420-7417/2015

Jomo Kenyatta University of Agriculture and Technology

Programme: PhD in Business Innovation and Technology Management

Appendix II: Questionnaire

This survey collects information on enterprise innovation and innovation activities in the public sector organizations. Any innovation is the introduction of a new or significantly improved product, process, organizational method, technological, or marketing method by your organizations.

An innovation must have characteristics or intended uses that are new or which provide significant improvement over what we previously used or sold by your organization.

However, an innovation can fail or take time to prove itself. An innovation need only be new or significantly improved for your organization. It could have been originally developed or used by other organizations.

Please complete **all** questions, unless otherwise instructed.

Section A: Back ground Information of Respondent.

- i. What is your gender? Male Female
- ii. What is your age bracket? 18 – 20yrs 21 – 25yrs 26 – 30yrs
31- 40yrs 41- 45yrs 46yrs and above
- iii. What is your work experience? 1 – 4yrs 5 – 10yrs 11 – 15yrs
16 – 20yrs 21yrs and above
- iv. What is your position in organization -----
- v. Specify the department you work -----

vi. Did your enterprise receive any public financial support for innovation activities from the following levels of government?

	Yes	No
	<input type="checkbox"/>	<input type="checkbox"/>
Local or regional authorities	<input type="checkbox"/>	<input type="checkbox"/>
Central government (including central government agencies or ministries)	<input type="checkbox"/>	<input type="checkbox"/>
The European Union (EU)	<input type="checkbox"/>	<input type="checkbox"/>
If yes, did your enterprise participate in the EU 7th Framework Programme for Research and Technical Development?	<input type="checkbox"/>	<input type="checkbox"/>

SECTION B: Product Innovation

This section examines how product innovation influences performance in the public sector. Kindly respond with the response that matches your opinion. Please rank by ticking (√) or cross mark (×) basing on a scale of 1-5 where; 1-Strongly Disagree (SD), 2-Disagree (DA), 3-Undecided (UD), 4-Agree (A), 5- Strongly Agree (SA).

Product innovation		SD	DA	UD	A	SA
1.	Did your organization introduce goods innovation: new or significantly improved goods?					
2.	Did your organization introduce service innovation: new or significantly improved service?					
3.	Were the new or significantly improved products introduced in your organization new to your market					
4.	Were the new or significantly improved products introduced in your organization only new to your firm					
5.	Research and development activities undertaken by your organization create new knowledge or to solve scientific or technical problems					
6.	Did your organization engage in In-house or contracted out activities to design or alter the shape or appearance of goods or services					
7.	Acquisition of existing know-how, copyrighted works, patented and nonpatented inventions, etc. by your organization from other enterprises or organizations for the development of new or significantly improved products.					

What recommendation do you think will impact product innovation in public sector performance

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SECTION C: Process Innovation

This section examines how process innovation influences performance in the public sector. Kindly respond with the response that matches your opinion. Please rank by ticking (√) or cross mark (×) basing on a scale of 1-5 where; 1-Strongly Disagree (SD), 2-Disagree (DA), 3-Undecided (UD), 4-Agree (A), 5- Strongly Agree (SA).

Process innovation	1	2	3	4	5
Did your organization introduce new or significantly improved methods of manufacturing or producing goods or services					
Did your organization introduce new or significantly improved logistics, delivery or distribution methods for your inputs, goods or services					
Did your organization introduce new or significantly improved supporting activities for					

your processes, such as maintenance systems or operations for purchasing, accounting, or computing					
Did your organization engage in acquisition of advanced machinery, equipment, software and buildings to be used for new or significantly improved processes					
Acquisition of existing know-how, copyrighted works, patented and nonpatented inventions, etc. by your organization from other enterprises or organizations for the development of new or significantly improved processes.					

What recommendation do you think will impact process innovation in public sector performance

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SECTION D: Organizational Innovation

This section examines how organizational innovation influences performance in the public sector. Kindly respond with the response that matches your opinion. Please rank by ticking (√) or cross mark (×) basing on a scale of 1-5 where; 1-Strongly Disagree (SD), 2-Disagree (DA), 3-Undecided (UD), 4-Agree (A), 5- Strongly Agree (SA).

Organizational innovation	1	2	3	4	5
Did your enterprise introduce new business practices for organizing procedures (i.e. supply chain management, business reengineering, knowledge management, lean production, quality management, etc.)					
Were new methods of organizing work responsibilities and decision making introduced (i.e. first use of a new system of employee responsibilities, team work, decentralization, integration or de-integration of departments, education/training systems, etc)					
New methods of organizing external relations with other firms or public institutions were introduced by organization (i.e. first use of alliances, partnerships, outsourcing or sub-contracting, etc.)					
Was the proportion of new products or services typically coming from ideas initially developed					

outside the firm					
Organization and innovative realignment of workforce influences public sector performance					
Management practices influence public sector performance					

What recommendation do you think will impact organizational innovation in public sector performance

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SECTION E: Technological Innovation

This section examines how technological innovation influences performance in the public sector. Kindly respond with the response that matches your opinion. Please rank by ticking (√) or cross mark (×) basing on a scale of 1-5 where; 1-Strongly Disagree (SD), 2-Disagree (DA), 3-Undecided (UD), 4-Agree (A), 5- Strongly Agree (SA).

Technological innovation	1	2	3	4	5
Use of technology is a priority in this organization					
The level of technological sophistication considered in the organization was satisfactory					
The commercialization of technological product innovations often requires the development of new marketing methods.					
New production technique will typically increase productivity only if is supported by changes in organization					
Diverse range of information enables the partner to better respond to internal processes and external market conditions					
Information technology skills influences public sector performance					
Does information sharing influence public sector performance					

Information Technology Network systems influences public sector performance					
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What recommendation do you think will impact technological innovation in public sector performance

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SECTION F: Marketing Innovation

This section examines how marketing innovation influences performance in the public sector. Kindly respond with the response that matches your opinion. Please rank by ticking (√) or cross mark (×) basing on a scale of 1-5 where; 1-Strongly Disagree (SD), 2-Disagree (DA), 3-Undecided (UD), 4-Agree (A), 5- Strongly Agree (SA).

Marketing innovation	1	2	3	4	5
Were significant changes to the aesthetic design or packaging of a good or service introduced					
Did your organization introduce new media or techniques for product promotion (<i>i.e. the first time use of a new advertising media, a new brand</i>)					

<i>image, introduction of loyalty cards, etc)</i>					
New methods for product placement or sales channels introduced (<i>i.e. first time use of franchising or distribution licenses, direct selling, exclusive retailing, new concepts for product presentation, etc.</i>)					
New methods of pricing goods or services were introduced (<i>i.e. first time use of variable pricing by demand, discount systems, etc.</i>)					
Did your organization benefit from competitors or other enterprises in your industry					
Uncertain demand for innovative goods or services					
Future customer engagement influence public sector performance					
Potential markets dominated by establishment enterprises					

What recommendation do you think will impact marketing innovation in public sector performance

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SECTION G: Public Sector Performance

This section examines how marketing innovation influences performance in the public sector. Kindly respond with the response that matches your opinion. Please rank by ticking (√) or cross mark (×) basing on a scale of 1-5 where; 1-Strongly Disagree (SD), 2-Disagree (DA), 3-Undecided (UD), 4-Agree (A), 5- Strongly Agree (SA).

Public sector performance	1	2	3	4	5
Do you think public sector performance in Nairobi has been effective					
Transparency influences public sector management					
Public sector performance is heavily reliant on accountability of public servants					
Efficiency influences public sector performance					
Both human and non-human resource influences public performance					
Skills have a direct relationship with public sector performance					

Thank you for your Time and Support

Appendix III: List of Departments interviewed

Public Sector in Nairobi County	Location
Health Service Sector	Upper hill, afya house
Education, Youth Affairs, Culture, Children And Social Services Sector	Taifa road, Jogoo house
Information, Communication And E-Government Sector	Kenyatta avenue, Teleposta towers
Public Service Management Sector	Public Service Commission
Lands, Housing And Physical Planning Sector	Ardhi House, 1 ST Ngong Avenue
Public Works, Road And Transport Sector	Community
Trade, Industrialization, Cooperative Development, Tourism And Wildlife Sector	NSSF Building Block A
Water, Energy, Forestry, Environment And Natural Resources Sector	Maji House, Community area
Finance And Economic Planning Sector	Harambee avenue, Tumbo lane
Agriculture, Livestock And Development Fisheries Sector	Kilimo House

